VICTORIA, BRITISH COLUMBIA: GREEN ROAD INNER DUCT (VIC-G.R.I.D.) -

PLANNING FOR A MODERN TRANSPORTATION CITY

By

SUSAN IRENE KING

A thesis submitted in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

in

ENVIRONMENT AND MANAGEMENT

We accept this thesis as conforming to the required standard

Dr. Oksana Bartosh, Thesis Supervisor
Royal Roads University

Dr. Chris Ling, Director,
School of Environment and Sustainability

Dr. Matthew Heinz, Dean,
Faculty of Social and Applied Sciences

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ABSTRACT

Rapidly growing outlying communities, exasperated congestion, complex traffic challenges – coupled with the role of vehicle carbon emissions in climate change - have led to the need for long-term sustainable transportation planning in the Greater Victoria of British Columbia region. Using an exploratory mixed methods approach that employed a literature review, an on-line survey, interviews and the partaking of a personal transportation journey, this study examined the views of Greater Victoria residents regarding the implementation of a Victoria - Green Road Inner Duct (VIC-G.R.I.D.) network of roads as a way to address regional sustainable transportation needs. The study showed positive support from the residents with an approval rating of 81%, and described barriers, motivators and concerns identified by the residents (i.e., potential increase in congestion, funding, and resistance to change). The study results will inform policy development and planning of publicly and politically acceptable transportation strategies in the Greater Victoria region.
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Lastly and most graciously, I would like to thank Oksana Bartosh, my thesis supervisor, for her endless and unwavering patience and kindness in guiding me through each step along the way to the completion of this project.
**DEFINITIONS**

<table>
<thead>
<tr>
<th>Definition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Streets</td>
<td>Living streets where pedestrians and cyclists have legal priority over motorists.</td>
</tr>
<tr>
<td>Victoria-Green Road Inner Duct</td>
<td>Single occupancy vehicle use restriction on specified roads during peak traffic hours while supporting multi-modal sustainable transportation usage.</td>
</tr>
<tr>
<td>Q &amp; A’s</td>
<td>Questions and Answers.</td>
</tr>
<tr>
<td>Shared Spaces or Home Zones</td>
<td>Residential streets designed to be shared by pedestrians and vehicles.</td>
</tr>
<tr>
<td>Sustainable Transportation</td>
<td>Sustainability in transportation includes an intent to protect the interests of everyone, including the future generations and, sustainable transportation capture attributes of system effectiveness and efficiency, and system impacts on the economy, environment, and social quality of life.</td>
</tr>
<tr>
<td>Western Communities of B.C.</td>
<td>Colwood, Langford, Metchosin &amp; Sooke. B.C.</td>
</tr>
<tr>
<td>Woonerf</td>
<td>Offers equal priority to all modes of transportation including automobiles, bicycles, and pedestrians.</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>--------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>ASCE</td>
<td>American Society of Civil Engineers</td>
</tr>
<tr>
<td>CRD</td>
<td>Capital Regional District</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
</tr>
<tr>
<td>GHG</td>
<td>Green House Gas</td>
</tr>
<tr>
<td>HOV</td>
<td>High Occupancy Vehicle</td>
</tr>
<tr>
<td>ISI</td>
<td>Institute for Sustainable Infrastructure</td>
</tr>
<tr>
<td>LRT</td>
<td>Light Rail Transit</td>
</tr>
<tr>
<td>MoTI</td>
<td>Ministry of Transportation and Infrastructure</td>
</tr>
<tr>
<td>MOV</td>
<td>Multi Occupancy Vehicle</td>
</tr>
<tr>
<td>OCED</td>
<td>Organization for Cooperation and Economic Development</td>
</tr>
<tr>
<td>RBT</td>
<td>Rapid Bus Lane</td>
</tr>
<tr>
<td>RSS</td>
<td>Regional Sustainability Strategy</td>
</tr>
<tr>
<td>RTP</td>
<td>Regional Transportation Plan</td>
</tr>
<tr>
<td>SOV</td>
<td>Single Occupancy Vehicle</td>
</tr>
<tr>
<td>VRTC</td>
<td>Victoria Regional Transit Committee</td>
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</table>
CHAPTER ONE: INTRODUCTION

Research Problem Description

As a resident of Victoria, British Columbia, one becomes quickly acquainted with transportation issues that this city and its surrounding areas face. Victoria is a city with limited geographical boundaries and is a city that is growing rapidly. This rapid growth has led to the expansion of outlying areas within the Greater Victoria area, resulting in an ever-increasing problem of congestion for commuters whose needs necessitate travel to and/or from the downtown core and amongst other key destinations within the Greater Victoria region during peak traffic hours. As a result, transportation challenges have been a key focus of attention amongst residents, businesses, community leaders and within the media - with transportation related issues and potential solutions being locally discussed, evaluated and addressed most days.

Light Rail Transit (LRT) for the Victoria area has been promoted as a potential transportation option to alleviate traffic problems. However, implementation of this transportation strategy faces numerous challenges including enormous costs, opposing opinions held by various stakeholder groups and citizens in regards to the sustainability of this option, and the need to engage multiple land jurisdictions in the developmental implications (Capital Regional District [CRD], 2013). Other approaches such as grade separated interchanges (overpasses) in some areas have also been considered but these too face large financial implications and resistance from local residents (CRD, 2013). Resistance from the public to transportation initiatives that involve costly infrastructure upgrades often takes the form of
messaging in the media in which citizens implore their governing bodies to address transportation challenges that promote more modest, reasonable, and sustainable solutions.

In response to this plea from citizens along with the growing understanding of the role of vehicle carbon emissions in climate change and the need for government to embrace sustainability objectives within transportation planning, the CRD – the regional government for the Greater Victoria region - has developed a number of documents to define its approach to regional planning and to outline strategies to improve the sustainability of the CRD operations.

One such document - specific to transportation – *Travel Choices: A Long-Term Transportation Strategy for the Capital Region* (CRD, 2005) proposes “to significantly increase the proportion of people walking, cycling, using transit, ride-sharing or using other alternatives to driving alone” (p. 6). This particular statement clearly sends a message to the citizens who reside within the Greater Victoria area that their local government is committed to supporting and developing sustainable multi-modal transportation policies – seemingly aligning its goals with the community’s plea that transportation solutions must be reasonable, practical, and sustainable.

Based on the experiences of British Columbia and other jurisdictions, sustainable transportation initiatives that are easily accepted and adopted by the public seem to become successful. For example, High Occupancy Vehicle (HOV) lanes on highways has been a widely accepted policy that provides benefits to users in terms of efficiency in movement on less congested highway lanes as well as a benefit to the environment by promoting multi-passenger
vehicle ridership - thus reducing greenhouse-gas (GHG) emissions (Government of Ontario, 2013). On the contrary, solutions that face opposing perspectives and lack of support from local communities and municipalities (such as Light Rail Transit and overpasses in Victoria) appear to result in the stalling of proposals that proponents of the plans may otherwise view as completely viable and warranted of implementation. As stated by one Times Colonist Editorialist, “the debate over a proposed $1-billion light-rail system from the West Shore promises to be just as fierce as the debate over sewage treatment” (Bus lanes help traffic puzzle, 2013).

Thus, in order for sustainable transportation options to be considered for implementation in the Victoria region - such as a potential Victoria–Green Road Inner Duct (VIC-G.R.I.D.) policy as examined in this research paper – it is imperative to examine stakeholder and citizen perspectives in order to facilitate a fair and open dialogue within communities to determine the appropriateness of a proposal in terms of meeting the needs of a region and its residents. This research paper will begin to address this need.

**Research Purpose and Question**

By examining the perspectives of citizens and stakeholders within various local groups, my research aims to investigate whether the implementation of a VIC-G.R.I.D. policy – which would include single occupancy vehicle use restriction on specified roads during peak traffic hours while supporting multi-modal sustainable transportation usage - could be an appropriate and acceptable option for commuters, businesses, and municipalities to consider for implementation in the Greater Victoria region.
The research question posed by this exploratory study is:

What are the views and opinions of the Greater Victoria residents (i.e., commuters, businesses, and municipalities) regarding the implementation of a VIC-G.R.I.D. policy – which would include single occupancy vehicle use restriction on specified roads during peak traffic hours while supporting multi-modal sustainable transportation usage?

Significance of the Study

In order to investigate if citizens, business representatives, and key stakeholders would consider a VIC-G.R.I.D. policy as an approach that could facilitate enhanced sustainability within the Greater Victoria region’s transportation systems, this research paper has made a concerted effort to garner a diverse body of knowledge and opinions from these three main local interest groups.

Citizens, business representatives, and key stakeholders have been invited to play a key role in this study by participating in on-line surveys and/or one-on-one interviews. In conjunction with a thorough literature review, the survey responses and interview results illustrate the opinions and perspectives of local citizens, business representatives, and key stakeholders in terms of how they feel about this particular initiative and whether this approach would be a viable approach worthy of additional study and consideration to enhance sustainability within the Greater Victoria region’s transportation system. The information provided by the study will inform the transportation policies developed by the City and its municipalities.
This study also identifies potential barriers and motivators as expressed by the three identified groups in regards to this particular initiative which will provide valuable information to planners and policy makers for further development, communication and/or the marketing of a potential VIC-G.R.I.D. network of roads for the Greater Victoria region.

The Scope of the Project (Delimitations/Limitations)

The scope of this exploratory study was restricted to the population base of the Greater Victoria region as this study is mainly interested in the perspectives of citizens that reside in the Greater Victoria region. Although this study discusses global and regional sustainable transportation challenges and perspectives (for background and comparison purposes), it is only the perspectives of Victorian citizens and their specific transportation challenges that they experience in the Greater Victoria region (as related to a potential VIC-G.R.I.D. system of transportation) that are analyzed and presented in this research paper. This preordained restriction within the research of this project is the first delimitation that must be acknowledged as existent in this study.

The second delimitation that must be acknowledged is that the study was restricted to residents who had reached the age of majority. This delimitation was chosen in part to reduce a complexity in the study that would exist if I (the researcher) would have required formal consent from parents of underage participants. More specifically, because the study is transportation related and specific to the goal of reducing (or potentially reducing) Single Occupancy Vehicle (SOV) ridership to promote more sustainable transportation practices within the Greater Victoria
region, it was a logical choice to restrict participants to adults given that the majority of vehicle
owners and/or drivers would be in this age range.

This study focused on the perceptions and opinions of residents only and did not try to
assess the cost-effectiveness of the proposed initiative nor examine its impact on the
transportation patterns. The residents who were solicited to participate in the study included three
specific groups (commuters, business representatives and key stakeholders). Others groups may
have existed but have not been included in this study. In addition, the overall view of residents in
regards to a potential VIC-G.R.I.D. policy for the Greater Victoria region has been explored in
this study with minimal comparisons made of residents’ perspectives between municipalities or
regions, as these were beyond the scope of this project.

Limitations that arose and were observed within the research process were realized during
the pursuit of soliciting a sufficient and a broad enough range of citizens within the sample size
obtained for this study. Given that the total population of the Greater Victoria region is
approximately 322,000, the recommended sample size (with a typical margin of error,
confidence level and response distribution) was estimated at 384 participants (“Sample size
calculator”, n.d.).

This study resulted in 224 participants which is lower than the recommended response
sample size due mainly to my decision to limit the time allotted to obtaining sufficient survey
respondents to a five week period. However, given that the initial sample size identified in the
proposal was 100, I deem 224 participants as sufficient especially when combined with a series
of follow-up interviews which aimed to reach out to a larger and more specific audience to
obtain more in-depth feedback in regards to this study. The interviews added to the quantity and
substance of the data obtained via the on-line surveys and ultimately enhanced the validity of the study results which will be discussed in more detail in later chapters of this research paper. Furthermore, the goal of this exploratory study was to garner an initial insight into residents’ views and opinions with an understanding that a more focused investigation would need to be conducted when/if the VIC-G.R.I.D. initiative was to be considered for implementation.

Another limitation that I would like to bring to the attention of readers of this paper is that survey and interview participants were provided with information about the study and were invited to voluntarily participate which may have resulted in self-selection bias. In addition, participants might have had a specific interest in the topic. The attempt was made to engage diverse groups of residents (i.e., cyclists, members of car associations, families, etc.) to ensure that a range of experiences and views were gathered. Nevertheless, it is important for the readers to be aware of the voluntarily nature of the study as they review the results of this study.

Finally, given the nature of the research as one focusing on transportation and environmental issues, it can be assumed that participants in the study may have had existing biases, either positively or negatively, regarding the topic under investigation. For example, I attended and solicited participation at a well-attended Bike to Work Week barbeque reaching individuals who might already be demonstrating sustainable habits and actions. However, I did attempt to reach out to a diverse range of population groups during the five week time period that I allotted to myself to solicit study participants to balance the perspectives as best I could (see Methodology section for a full outline of participating groups). Therefore, based on the delimitations and limitations outlined, this study should be considered indicative but not
conclusive. Thus, this exploratory study provides initial insight into the residents’ views and opinions on the topic.

**Researcher’s Perspective**

On a personal level, I came into this study (in my opinion) with a relative balanced perspective and with an open-mind. Interestingly, I come from a family and a background of car racing as my father was a hall-of-fame recognized race car driver in Eastern Canada and owned a small stock car race track in London, Ontario for part of my childhood. The sport of car racing still exists in my family and I, with my husband, currently and will likely continue to enjoy and participate in the sport of car racing as spectators.

On the opposite scale, I am very much involved in the world of environmental studies and practices. I work for a large international environmental consulting firm and have been involved in academic environmental studies through the program that has led to this research paper. These two opposing perspectives coupled with a professional background in counselling, mediation and negotiation - which requires one to consider all sides to every issue – have allowed me to approach this study with the perspective that there will be unlimited variations to people’s backgrounds and perspectives and that each perspective is as valuable as the other.

Specific to this particular research and the potential implementation of a VIC-G.R.I.D. network of roads for the Greater Victoria region, it is my opinion that this region is at an opportune time to consider this type of progressive policy. I believe that slightly more aggressive courses of action are required to make significant changes to citizen’s transportation habits. And,
it is my opinion that providing a network of roads that support and promote multi-modal sustainable transportation options that would experience more freedom and ease of movement than otherwise congested and frustrating commuting routes may tip the balance and encourage more citizens to consider options to travel other than SOV ridership.

I believe that because this initiative involves the use of existing road networks (that would require upgraded infrastructure) that it is an option that would be more easily considered for adoption as it would involve less funding requirements than other current costly options such as LRT. It is my hope that this option would be considered an opportunity for this region to become a leader in promoting sustainable transportation systems and I would be excited to be a player in that development.

Overview of Thesis

In addition to the introduction that was just presented, this research paper will include:

- A literature review that will outline current sustainable transportation practices; challenges and perspectives on global, regional and local scales;
- An outline of the methodology used in the research;
- An analysis of the survey and the interviews conducted within the study;
- The sharing of a personal transportation journey that I undertook in conjunction with the research study;
- A summary of conclusions derived at as a result of the study; and
- Suggestions for future studies or work to facilitate continued interest in this initiative.
CHAPTER TWO: LITERATURE REVIEW

To situate this study in the body of existing research, a review of the literature was conducted. The chapter that follows will first discuss the widely held definitions of sustainable transportation. The literature review will then summarize and analyze some of the actions that have occurred to move us towards more sustainability within international transportation systems and review similar initiatives that have occurred at national and regional levels as well as at a Greater Victoria, British Columbia local level. Lastly, the review will discuss the local governance structure of the Greater Victoria region, along with barriers that exist and the role of innovation within the realm of sustainable transportation planning.

The information included in this review was gathered by reviewing academic research papers, accessing articles and information through the internet, reviewing local and regional published transportation and community plans, and by collecting, reviewing, archiving, and carefully considering the perspectives of citizens on local transportation issues as reported in local media over the past several months.

As the review of the literature unfolded, the following themes – relating to sustainable transportation - were identified and will be presented in the subsequent sections of this chapter:

- Defining Sustainable Transportation;
- Sustainable Transportation Relevance;
- International Sustainable Transportation Initiatives;
- National and Regional Sustainable Transportation Initiatives;
- Local Sustainable Transportation Initiatives: The City of Victoria;
Defining Sustainable Transportation

Sustainable transportation does not have a standard definition but sustainable transportation systems are commonly described as ones that address the economic, environmental, and social well-being impacts of transportation infrastructure (Johnson & White, 2010). Several major organizations such as the World Bank, the Organization for Cooperation and Economic Development (OECD), and Transport Canada have adopted definitions for sustainable transportation (Jeon, Amekudzi, & Vanegas, 2006). Table 1, adapted from Jeon et al. (2006), outlines definitions of the above listed organizations, other major organizations, and includes the addition of definitions adopted by Canadian institutions.

Table 1. Working Definitions of Sustainability (Transportation Focus)

<table>
<thead>
<tr>
<th>Organization</th>
<th>Definitions of sustainability (transportation focus)</th>
</tr>
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| Ontario Roundtable on Environment and Economy 1995 (Canada)       | (1) Produce outputs (emissions) at a level capable of being assimilated by the environment.  
(2) Have a low need for inputs of non-renewable resources (where nonrenewable are used, their use will be for non-consumptive investments and they will be recycled when no longer useful or needed).  
(3) Minimize disruption of ecological processes, land (and water area) use is also minimized as well as uses of sensitive habitats.                                                                                                                                                                                                 |
<p>| Transportation Association of Canada 1999 (Canada)               | (1) In the natural environment: limit emissions and waste (that pollute air, soil, and water) within the urban area’s ability to absorb/recycle/cleanse; provide power to vehicles from renewable or inexhaustible energy sources (such as solar power in the long run); and recycle natural resources used in vehicles and infrastructure (such as |</p>
<table>
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<tr>
<th>Organization</th>
<th>Definitions of sustainability (transportation focus)</th>
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</table>
| The Centre for Sustainable Transportation's (CST) | (1) Allows the basic access needs of individuals and societies to be met safely and in a manner consistent with human and ecosystem health, and with equity within and between generations  
(2) Is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy.  
(3) Limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise. |
| Organization for Economic Cooperation and Development 1999 | Environmentally sustainable transportation is defined as: Transportation that does not endanger public health or ecosystems and that meets needs for access consistent with (a) use of renewable resources at below their rates of regeneration, and (b) use of nonrenewable resources below the rates of development of renewable substitutes. |
| World Bank | General operational principles for physically sustainable societies (not especially for the transport sector) is defined as: Their rates of use of renewable resources do not exceed their rates of regeneration. Their rates of use of nonrenewable resources do not exceed the rate at which substitutes are developed. Their rates of pollution do not exceed the assimilative capacity of the environment. |
| Procedures for Recommending Optimal Sustainable Planning of European City Transport Systems 2003 | A sustainable urban transport and land use system: (1) provides access to goods and services in an efficient way for all inhabitants of the urban area; (2) protects the environment, cultural heritage and ecosystems for the present generation, and (3) does not endanger the opportunities of future generations to reach at least the same welfare level as those living now, including the welfare they derive from their natural environment and cultural heritage. |
Organization | Definitions of sustainability (transportation focus)
---|---
Transportation Association of Canada | To promote the provision of safe, secure, efficient, effective and environmentally and financially sustainable transportation services in support of Canada’s social and economic goals.

The Sustainable Transportation Task Force (STTF) | The ability to meet present human mobility needs without compromising the ability of future generations to meet their needs.

*Note: Table 1 (above) is adapted from Jeon and Amekudzi (2005), with additional reference from The Centre for Sustainable Transportation (2002), Transportation Association of Canada (2013), and Sustainable Transportation Task Force (2009).*

The majority of the definitions in the table above are, in part, consistent in defining sustainability in transportation as an intent to protect the interests of everyone, including the future generations. The Ontario Roundtable on Environment and Economy of 1995 (Canada) (as cited in Jeon et al., 2006) and the Transportation Association of Canada (“Connecting Knowledge and People”, n.d.) definitions are the only definitions that do not specifically reference an intent to protect future generations, however, one could imply this intent from the language and objectives specified in the definition.

*Addressing Sustainability in Transportation Systems: Definitions, Indicators, and Metrics*

Jeon and Amekudzi (2005) searched 51 State Departments of Transportation (DOTs) websites and concluded that, while varied, the operational definitions of transportation system sustainability capture attributes of system effectiveness and efficiency, and system impacts on the economy, environment, and social quality of life. This summation, although derived solely from within U.S. State Departments, seems to capture the essence of the varied definitions within the table presented above. Again, in this summary, ‘system impacts’ could be interpreted to refer
to impacts realized in the immediate future as well as impacts that could be carried forward and realized in future economies, environments and qualities of life.

Evaluating system impacts through the development of performance measurement frameworks are, as with the defining sustainability in transportation systems, important activities that allow us to evaluate the progress towards sustainability goals (Ramani, Zietsman, Knowles, & Quadrifoglio, 2011). One of many performance measurement frameworks, as defined in *Sustainability Enhancement Tool for State Departments of Transportation Using Performance Measurement* (Ramani et al., 2011), identified five specific goals that a sustainable transportation system needs to address and that need to be aligned with performance indicators. These goals suggest to: (1) reduce congestion, (2) enhance safety, (3) expand economic opportunity, (4) improve air quality, and (5) preserve the value of transportation assets. For each of the goals, the authors propose a range of performance measures such as travel-time index and buffer index (to assess reduction in congestion), annual severe crashes per mile and percentage lane-miles under traffic monitoring/surveillance (to evaluate safety), land-use balance and truck throughput efficiency (to measure expansion of economic opportunities), average pavement condition score, capacity addition within available right-of-way, cost recovery from alternative sources, and proportion of non-single-occupant travel (to examine the value of transportation assets), and air quality index and daily CO\textsubscript{2} emissions (to evaluate the changes in air quality) (Ramani et al., 2011).

A more sophisticated rating system that has been developed and one that could potentially be utilized for future study of the initiative being discussed in this research paper is
the Greenroads Rating System developed by the Greenroads Foundation. This rating system is a points-based system that certifies sustainable roadway and transportation infrastructure projects. The system provides metrics to measure the effect of design and construction practices and has currently rated over 120 projects (mostly in the U.S.), with the South Fraser Perimeter Road in Vancouver being the first Pilot Project to register with the Greenroads rating system in British Columbia, Canada. This particular rating system supports the following categories (with stated goals listed in brackets) for certification (“Greenroads”, n.d.):

- Sustainable Design (Reduce impacts due to alignment of the road);
- Material & Resources (Reduce impacts from material extraction, processing and transport);
- Stormwater Management (Reduce impacts of polluted stormwater and treatment devices);
- Energy & Environmental Control (Improve human and wildlife health);
- Construction Activities (Reduce impacts from construction activities); and
- Innovation (Encourage innovation in design).

Similarly, the Institute for Sustainable Infrastructure (ISI) has developed a rating system called Envision™ and states that “Envision™ is an in-depth guidance and rating system used to assess and improve the sustainability metrics of all types and sizes of infrastructure projects” (“Institute for Sustainable Development”, n.d.). This particular rating system is not specific to transportation projects but can be used for infrastructure projects of all types, sizes, complexities, and locations and includes tools to help project design teams to:
Assess costs and benefits over the project lifecycle;

- Evaluate environmental benefits;

- Use outcome-based objectives; and

- Reach higher levels of sustainability achievement.

In contrast to the performance measurement framework proposed by Ramani et al., (2011) that looks at five broad goals to measure sustainability in transportation systems, Greenroads Rating System and Envision™ frameworks allow for individual projects specific to a region and its community to be singly evaluated. *Evaluating Transportation System Sustainability: Atlanta Metropolitan Region* (Jeon et al., 2007) discusses that “sustainability evaluation results may be different depending on weights or priorities of the different sustainability factors as determined based on regional sustainability issues and goals” (slide 25).

Identifying goals and developing systems of measurement in reaching stated goals within a community context can be “used collectively to help agencies refine their visions as well as develop policies, planning procedures, and measurement and monitoring systems for achieving sustainable transportation systems” (Jeon & Amekudzi, 2005, p. 31). As will be outlined in subsequent sections of this paper, the regional government of the Greater Victoria area has indeed outlined its goals in its intent to enhance sustainability in transportation planning and, it is my premise that the VIC-G.R.I.D. network of roads proposed in this research paper addresses the specific transportation challenges and goals unique to this region.
In addition to the challenge of defining what sustainable transportation is and incorporating sustainable transportation goals into community contexts, society is taxed with determining how defined concepts of sustainable transportation translate into an understanding of what sustainable transportation is on a personal level. These personal interpretations would need to be translated into perspectives leading to favorable behaviour changes that would then determine what we would expect and demand from our governing bodies relative to the implementation of sustainable transportation strategies. Thus, evaluating the perspectives of the residents who reside in a region and whose voice influence their governing bodies in regards to how its region should respond to global environmental imperatives within a local context, is a valuable exercise.

The continued growth in global, community and personal understandings of the meaning and significance of sustainable transportation should give rise to an increased willingness for society to further question why sustainable transportation initiatives are important and how we, as individuals, can substantively contribute to a more sustainable society. Thus, defining sustainability in transportation, evaluating sustainable transportation performance metrics and bringing those imperatives into a local context that takes into account a region’s specific needs, current practices and barriers will provide the framework in which the VIC-G.R.I.D. initiative being evaluated in this paper - with the assistance of regional citizen input - will take place.

**Sustainable Transportation Relevance**

To avoid serious, widespread, and enduring harm resulting from climate changes, GHG emissions must be reduced by 50-80% from 2000 levels by 2050 according to the 2008 Fourth
Assessment Report of the Intergovernmental Panel on Climate Change (Intergovernmental Panel on Climate Change, 2007).

Personal transportation, at 28 percent, is the largest part of an individual’s average carbon footprint (Bauers, 2012) and transportation as a whole accounts for about 23% of the total GHG emissions worldwide and 30% in OCED countries (OCED, 2008). While it can be argued that the growing understanding of the role of vehicle carbon emissions in climate change coupled with traffic challenges, health related issues (such as obesity and respiratory illness) and an expanding awareness of global stewardship and societal responsibility in regards to promoting environmental sustainability has led to an increased need for long-term sustainable transportation planning, this process is not an easy one. Sustainable transportation planning has to satisfy competing agendas such as facilitating economic growth, providing safety in movement and ensuring equity amongst all social networks in terms of access and use (Mason, 2006) while preserving and protecting the value of transportation assets (Ramani et al., 2011). Thus, progress towards the advancement of sustainable transportation solutions is challenging on many fronts in regards to defining practical definitions of and frameworks for sustainable transportation along with determining the appropriateness and the societal acceptability of the direction of and resulting policies that would advance sustainability in transportation systems.

**International Sustainable Transportation Initiatives**

As previously outlined, sustainable transportation is defined and interpreted in many ways and those interpretations – whether at a personal, community, or regional level – take multiple forms. Translating those interpretations into agreed upon action that should be pursued
to advance sustainability in transportation planning and turning those intentions of action into reality takes concerted effort and time.

This concerted effort can be witnessed through the review of commitments of regions to carbon emission reduction and the resulting implementation of transportation strategies and initiatives. While commitments of some countries to reduce GHG emissions globally have been made through the Kyoto Protocol, other countries have committed to discussions in other ways to reduce emissions and have pursued alternatives to emission reduction such as carbon trapping and sequestration or climate engineering (Victor et al., as cited in Deakin, 2011).

Given the gravity of the required goal in regards to the level of the GHG emission reductions required to combat climate change proposed by the *Climate Change 2007: Synthesis Report* (2007), remarkable changes - if significant emissions reductions are to be attained - are required (Deakin, 2011). Changes to our approaches to sustainability in transportation is clearly an area in which strides to reduce emissions can be made given the proportion that transportation emissions contribute to overall emissions. However, motorized travel is growing fast, offsetting some of the gains made through climate engineering efforts such as fuel efficiency and de-carbonization or carbon offsetting (Deakin, 2011).

Despite these challenges, many countries and cities have successfully made significant advances within their transportation systems and have subsequently contributed to the intention of reducing the effects of climate change. For example, Freiburg, Germany - which has been at the forefront of modeling and implementing sustainable transportation policies since the 1960s - has realized a decrease in CO² emissions from transportation per capita despite strong economic
and population growth (The Freiburg model of transport sustainability, 2011). This has been achieved by a shift of public opinion away from automobile-centered growth due to air pollution, traffic fatalities and traffic congestion caused by cars. The strategies utilized by the city of Freiburg include: (1) successfully integrating land-use and transportation planning, (2) coordinating and integrating public transportation regionally, (3) promoting bicycling, (4) restricting automobile use, and (5) encouraging citizen participation throughout the process of developing strategies (“The Freiburg model of transport sustainability”, 2011).

In the United Kingdom the term *home zone* has been used to refer to residential streets designed to be shared by pedestrians and vehicles – also referred to as *shared spaces* (Biddulph, 2010). In the Netherlands, a similar concept exists - termed *Woonerfs* – which are defined as living streets where pedestrians and cyclists have legal priority over motorists. And, in the United States of America (USA) and Canada *complete streets* offer equal priority to all modes of transportation including automobiles, bicycles, and pedestrians. Techniques used within these similar models include the promotion of the equal sharing of space, traffic calming, and lowering speed limits (“Complete Streets”, n.d.). The Freiburg Model - which has promoted similar sustainable transportation initiatives to those discussed above since the late 1960s - has demonstrated that implementing sustainable transportation strategies are effective through its success in achieving the tripling of the number of trips by bicycle, doubling transit ridership and reducing the share of trips by car from 38 to 32 percent (The Freiburg Model of Transport Sustainability, 2011).
Additional examples of sustainable transportation initiatives include the case of Columbia, Missouri where new street standards calling for wider sidewalks and narrower lanes have been adopted and in South Carolina, where the Department of Transportation has passed a resolution stating that accommodation to bicycling and walking should be a routine part of planning, design, construction, and operating activities (McCann, 2005). In Oregon, a “Bike Bill” passed in 1971 requires bicycle and pedestrian facilities on all new roads, streets, and highways. According to McCann, this measure allows for highway funds to be used to retrofit all roads and also requires 1% of state highway funds to be spent on bicycle and pedestrian ways (McCann, 2005). In Los Angeles, the Metropolitan Transportation Authority is now developing “transit streets” that restrict automobiles but enhance pedestrian access (McCann, 2005). Finally, very recently in June, 2013 the city of New York launched the service Citi Bike which provides the sharing of 6,000 bikes throughout Manhattan and Brooklyn (The City of New York, 2013).

The emergence and continued growth of sustainable transportation strategies and initiatives - such as the aforementioned - assist to create a tangible sustainable transportation culture and partially illustrate a movement that inspires other countries, regions, cities and citizens to recognize that they too can create global, regional and personal paths that will shape the future for all of us and those to come. I believe that the consideration of a VIC-G.R.I.D. network of roads for the Greater Victoria region could be one step along this recognized stated movement and would hope that examples set by other jurisdictions will provide the inspiration for our region to take their existing transportation infrastructure systems to the next level.
National and Regional Sustainable Transportation Initiatives

To shift the focus from an international review of sustainable transportation initiatives as outlined above to a regional review, a Cross-Canada survey conducted in March of 2009 provides an outline of common sustainable transportation initiatives that have been undertaken across Canada (Sustainable Transportation Task Force, 2009). The Sustainable Transportation Task Force (2009) collected information from federal, provincial and territorial transportation departments across Canada to identify how jurisdictions approach the issue of sustainable transportation and to identify and inventory the range of sustainable transportation actions currently underway, such as transit planning and funding; active transportation studies and programs; fleet greening/“right sizing” of government fleets; emissions/GHG standards or strategies; greener ports and ferries; road salt management; construction/traffic initiatives; freight practices; green vehicle/vehicle inspection programs; anti-idling; vehicle scrappage and partnerships with NGO’s (see Table 2 below).
Table 2. *Common Sustainable Transportation Initiatives (Listed alphabetically by jurisdiction, Transport Canada at far right)*

<table>
<thead>
<tr>
<th>Programs / Initiatives</th>
<th>AB</th>
<th>BC</th>
<th>MB</th>
<th>NB</th>
<th>NL</th>
<th>NWT</th>
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<th>SK</th>
<th>YK</th>
<th>Canada</th>
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<td>Active Transportation studies and programs</td>
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<td>Fleet Greening / “Right Sizing” of government fleets</td>
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<td>Green Vehicle / Vehicle Inspection Programs</td>
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<td>Anti-Idling</td>
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<td>Env. Canada</td>
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*Information on Nunavut is not available at this time*

What can be deduced from the table above is that there is widespread participation of regional Canadian governments in sustainable transportation initiatives.
Specifically, in British Columbia, the Sustainable Transportation Task Force (2009) developed the following list of sustainable transportation efforts that include, but are not limited to:

- Funding for a Cycling Infrastructure Partnership Program;
- Funding for other active transportation facilities;
- Support for cycling promotion activities like Bike to Work Week;
- Funded trials for hybrid diesel electric buses and plans to purchase hydrogen fuel cell buses;
- Construction of a rail-based rapid transit line linking central Richmond, the Vancouver International Airport and Vancouver;
- Universal transit pass (U-Pass) programs at universities and employee transit pass programs in the Victoria region; and
- Implementation of high-occupancy vehicle (HOV) and bus-only lanes in the Lower Mainland.

The development of various strategies to promote sustainable transportation regionally can be further explored within various documents and campaigns, such as Vancouver’s Greenest City 2020 campaign and the Green Transportation (2012) document that states “we know that a green transportation future is possible and that people are ready for it” (p. 32). It is this continual growth and development of innovative and progressive sustainable transportation strategies that influence and locally drive citizens and governing bodies to respond and build on what models
currently exist to further advance our transportation systems to ones that will indeed play a role in assisting to ensure the sustainability of our future and future generations to come.

Local Sustainable Transportation Initiatives: The Greater Victoria Region

In the Greater Victoria region, *The Capital Regional District Transportation Corridor Plan* (CRD, 2010) predicts that the population of Greater Victoria will increase from the current levels of around 365,000 people to 475,000 people by 2038. Also, *The Capital Regional District Strategic Plan* (CRD, 2011) reports that ongoing population increases have resulted in an increase in work-related travel time and has indicated that the development of sustainable transportation strategies is one of the long-term goals to meet population and transportation infrastructure needs within the Greater Victoria region.

One strategy example is *Travel Choices: A Long-Term Transportation Strategy for the Capital Region* (2005) vision statement which proposes “to significantly increase the proportion of people walking, cycling, using transit, ride-sharing or using other alternatives to driving alone” (CRD, 2005, p. 6). The ‘Travel Choices’ (2005) vision statement is a further refinement to its predecessors’ vision found in the *Regional Growth Strategy* (CRD, 2003) whose goal was to enhance social well-being and the regional quality of life. To achieve these goals the CRD is specifically looking for mechanisms for directing corridor investment decisions towards projects that support regional sustainability (CRD, 2010). This paper will hope to determine if a VIC-G.R.I.D. network of roads could serve to fulfill this stated goal in terms of providing the basis for a project(s) that could promote corridor development to support regional sustainability.
At a more local level, the *City of Victoria Official Community Plan* (City of Victoria, 2012), similar to the CRD, states that one of its directives is to support the maintenance and implementation of *Transit Future Plan* (BC Transit Corporation, 2011) which aims “to be a leader of integrated transportation solutions connecting people and communities to a more sustainable future” (p. 3). This sampling of documents demonstrates the development of strategies that clearly send a message to Greater Victoria residents that their local government is committed to supporting sustainable transportation initiatives. The culmination of the above listed works have resulted in many continued improvements to Victoria’s regional transportation infrastructure with sustainable modes of local transportation clearly advocated for and enhanced in a commendable fashion. For example, the Victoria region hosts and continues to expand and improve the Galloping Goose Trail on which one can travel by bike, foot, inline skate or ride horseback for nearly sixty kilometers along what was a former rail line. The trail moves across several of the thirteen municipalities within the Greater Victoria region, including Sooke, Metchosin, Colwood, Langford, View Royal, Saanich, and Victoria (GallopingGooseTrail.com, 2013).

Similarly, the District of Saanich - the largest of the thirteen Greater Victoria municipalities (at 110,000 residents) –“has been actively engaged in encouraging walking and cycling by providing enhanced infrastructures for both activities” (Transport Canada, 2013). And, most recently, also in the District of Saanich, the Commuter Bicycle Network has been adopted which identifies and prioritizes streets requiring future cycling accommodation (District of Saanich, 2013).
In the Township of Esquimalt, despite being one of the smallest of thirteen municipalities at approximately 13,000 residents, the Admirals Road Corridor Improvement Project (Township of Esquimalt, 2013) is proceeding and will enhance safety and access for all modes of transportation. The project is able to proceed thanks to a $2.8 million contribution from the Government of Canada through the Gas Tax Fund for municipal infrastructure priorities and will include the addition of bike lanes, a two-way left turn lane, median islands, and street lighting upgrades. Sidewalks will also be improved to facilitate pedestrian access.

Clearly, many strides have been taken to enhance sustainable modes of transportation in the Greater Victoria region with the Greater Victoria area having achieved success in navigating the needs of its citizens through a comprehensive governance structure to be further defined below. This success, however, is thwarted in comparison to the previously stated lofty goals to reduce GHG emissions. Our attempts to enhance sustainability in transportation have served the purpose of moving our intentions towards our stated goals; however, recent reports such as the Capital Regional District: Draft Regional Transportation Plan (2013) state that, “the region’s mode shares have changed little since 2001 (p. 7) and suggest that due to trends in land use patterns, travel behaviour and population growth projections, the CRD is at a critical point in its evolution and requires strong policy and bold actions (CRD, 2013).

This study aimed to evaluate the perspectives of citizens, business representatives and key stakeholders in regards to a VIC-G.R.I.D. network of roads for the Greater Victoria region which will assist to determine if a policy such as the one being researched in this paper would fit
the criteria of being ‘a strong policy’ and ‘a bold action’ and be a policy that aligns with this regions stated sustainable transportation definitions and goals.

**The Greater Victoria Region Governance Structure**

The CRD is the regional government for the thirteen municipalities within Victoria region. The CRD provides regional governance and services, creates partnerships among municipalities and is also the local government for the outlying areas that do not fall within one of the thirteen municipalities. The CRD derives authority from Letters Patent and from provincial legislation, primarily the Local Government Act and is run by a 23-member Board of Directors (CRD, 2012). Leonard and Fortin (2012) state that “the board of the CRD takes transportation issues very seriously and is committed to improving regional transit governance as part of its broader objective to improve regional transportation” (p. A13).

The specific delivery of transit service is operated by the Victoria Regional Transit Commission (RTC) who makes many of the decisions regarding transit in the Victoria region. The commission is appointed by the Lieutenant Governor in Council from persons holding elected office in municipalities specified in the *BC Transit Act* (Transit BC, 2012). These same elected municipal officials, in many cases, also sit on the CRD board. As a result, the Greater Victoria region has a network of governing bodies that are cross represented by councilors and mayors from within the various municipalities. The *City of Victoria Official Community Plan* (City of Victoria, 2012), similar to the CRD, is one document that demonstrates this collaborative governance structure and indicates that one of its directives is to support the maintenance and implementation of BC Transits Victoria Region 25 Year Future Plan.
Despite this framework for collaboration, the CRD has requested for the authority and power of the Victoria Regional Transit Committee (VRTC). As a result to this request, a three-person Independent Review Panel was appointed on March 15, 2012 by the B.C. Government (Government of British Columbia, 2013). Subsequently, on August 1, 2012, the panel delivered a report that included eighteen recommendations to the Minister of Transportation and Infrastructure. Along with the recommendations, the panel stated that it did not find consensus on transit governance in Greater Victoria and as a result, the Government of British Columbia has expressed its preparedness to re-examine the issue once consensus is reached (The Province of British Columbia, 2013).

In addition to collaboration with the VRTC, the CRD also has the ability to work with and within the umbrella of the Ministry of Transportation and Infrastructure (MoTI) to collaborate and provide direction and support to local goals that will facilitate further strides in achieving sustainable transportation solutions. With municipal, provincial and political support, the CRD and MoTI have recently co-funded and developed a draft Regional Transportation Plan (RTP) that aims to enhance inter-community mobility, expand the range of accessible and affordable transportation choices, and support regional sustainability (CRD, 2013). The RTP proposes to identify strategies to guide planning and development of a regional multi-modal transportation system the meets future growth demands and is focused on sustainability (CRD, 2013).

In addition, it is proposed by the CRD that the Regional Transportation Plan (RTP) will be able to identify regional transportation priorities as well as outline new options for governance and funding directives to inform decisions on roads, rail, bridges, bike lanes and trails (CRD,
2013). Thus, as previously hypothesized, as comprehensive and widely accepted principles and understandings of the meaning of sustainability and sustainable transportation are outlined in documents, frameworks for local bodies to expand upon will be further developed (and ideally adequately funded) to facilitate the future growth of efficient and sustainable transportation networks.

**Barriers to Sustainable Transportation Initiatives**

The above discussions have outlined ways in which global, regional, and local bodies have strived to define sustainability transportation systems and have also detailed what initiatives have and are transpiring to facilitate sustainability in transportation. It can, however, be assumed that a challenge as large as shifting the behaviour and practices of global, regional and local communities to achieve significant reductions in GHG emissions from energy - and particularly from GHG emissions through transportation energy consumption – would be a complicated process facing a number of barriers. This next section will outline barriers that have been identified through the literature review conducted within this study.

**Funding challenges.**

Competing large scale infrastructure initiatives can pose challenges for communities and regions when prioritizing needs and lobbying for funding is required. For example, in the Greater Victoria region there are two very large projects in the developmental stages - The Johnson Street Bridge Replacement project with an estimated budget of 92.8 million (Johnsonstreetbridge.org, 2013) and the proposed sewage treatment plant estimated to cost 780 million (CBC News, 2013). Although both of these massive projects either have committed or
anticipated funding support through the Federal and Provincial governments, the projects can only be assumed to put enormous strain on local resources and result in limited attention required to otherwise well deserving projects and initiatives.

A report, *The Capital Regional District Transportation Corridor Plan* (CRD, 2010), discusses a process in which the CRD created a document to identify important Provincial and Municipal Transportation proposals and ranked them in terms of priority for funding. Determining which projects are the priority when multiple objectives amongst multiple jurisdictions are to be considered poses an enormous challenge when, particularly in the Greater Victoria region, “responsibility for the transportation system is fragmented amongst various municipalities, CRD departments and Provincial agencies” (CRD, 2010, p. 5).

In addition to funding challenges, there lies the challenge of how decisions in the transportation planning context are made. *Sustainability Enhancement Tool for State Departments of Transportation Using Performance Measurement* (Ramani, Zietsman, Knowles & Quadrifoglio, 2011) states that “single-objective decision-making techniques, such as a benefit-cost analysis, convert all aspects into monetary values” and that “such methods are not adequate to deal with the complexities and intangible aspects associated with sustainable transportation” (p. 406). A study presented in *Sustainable Transportation in Canadian Metropolitan Areas: Assessing the Mechanisms for Planning, Funding, and Implementation* (Hatzopoulou & Miller, 2008) concludes that progress has been made in regards to the thinking and the crafting of plans at the urban level that incorporate sustainability visions and objectives within strategic plans but that those visions have not been matched by increased funding.
However, the developed Federal Gas Tax Fund as described on the Infrastructure Canada website (Government of Canada, 2013) is a program that “supports municipal infrastructure projects that contribute to cleaner air, water and reducing greenhouse gas emissions, and fall into the following categories: (1) drinking water, (2) wastewater infrastructure, (3) public transit, (4) community energy systems, (5) solid waste management, and, (6) local roads. This designated funding mechanism combined with the BC Greenhouse Gas (GHG) Reduction Targets Act that targets a 33 percent reduction in GHG emissions by 2020 provides for and has been instrumental in funding major transportation projects in the CRD such as a pedestrian and cycling trail, the purchase of new vehicles to increase public transit capacity and an upgrade to enhance transit, cycling and pedestrian facilities on a regional road (CRD, 2010).

It remains my opinion, however, that as regional sustainable transportation objectives and infrastructure requirements continue to grow, adequate funding sources will continue to be a challenge as we grapple with what to fund based on not only traditional cost-benefit analysis type approaches but on approaches that attempt to promote sustainable practices that must consider less than tangible aspects such as how to protect the economies, the environment and the quality of life of future generations.

Achieving progress in shifting travel behaviour.

The Regional Sustainability Strategy Policy Option Series (CRD, 2010) – publication specific to transportation - states that despite regional efforts to increase transportation choices, statistics reveal that “little progress has been made in shifting travel behaviour” (p. 1). The report also sites that “almost half of children are driven to school, 78% of all trips are made by private
VICTORIA, B.C. GREEN ROADS: PLANNING FOR A MODERN CITY

vehicles and 58% of all GHG emissions are attributable to vehicle travel” (CRD, 2010, p. 1). It is argued that despite transportation plans that have noble sustainability objectives such as the promotion of transit, walking, and the reduction of vehicles kilometers travelled, estimations of environmental, social, and economic impacts of strategic plans are still in their infancy. Financial stakes are often more important to planners than environmental preservation and social equity and without stable sources of funding, evaluation, and implementation of envisioned policies, planners admit to an inability to implement or initiate change (Hatzopoulou & Miller, 2008). As inferred earlier, it may very well be time to enhance our progress to sustainable transportation practices through the consideration and implementation of policies that are stronger and bolder.

The hypothesis of my paper is that regional governance efforts to increase transportation choices have been passive in nature resulting in a limited response of citizens to shift their behaviour. Our efforts to implement small-scale, incremental change to appease the human imperative to be able to adapt to change easily and to avoid unrest amongst citizens would appear be a self-defeating approach that has led to the need of a much more aggressive course of action if initiatives are expected to achieve the bold goals that are being stated within our municipal and regional mission statements. The Regional Transportation Plan (2013) reports that “without strong policy and bold actions, the pattern of growth could continue to gravitate toward the dispersed auto-dependent built form common in high-growth areas of many other North American cities” (p. 1). It also states that the CRD is well-positioned as a regional facilitator to continue to push the envelope on sustainable development and sustainable transportation.
Ambiguity toward the concept of sustainable development.

As noted previously, sustainable development - along with sustainable transportation - can mean very different things to many different people and groups. It is my opinion that lack of consensus amongst groups of individuals who are required to make decisions and determine directions of action will likely result in the stalled progress of effective gains in reaching sustainability within the transportation sector until a common understanding of what sustainable transportation is understood as is achieved.

Making Sustainable Transport Politically and Publicly Acceptable: Lessons from the EU, USA and Canada (Banister, Pucher, & Lee-Gosselin, 2007) states that “even though there is an acceptance that transport is contributing increasingly to global warming and the lowering of environmental quality in cities (and elsewhere), that is not sufficient to encourage effective action” (p. 24). However, Promoting Sustainability through Transportation Infrastructure? Innovation and Inertia in the Kansas City Metropolitan Area (Johnson & White, 2010) reports that “as researchers and practitioners delve deeper into the reality of pursuing sustainable transportation systems, the list of possible impacts become more and more numerous” (p. 304).

In recognition of this imperative, the CRD board has directed regional planning staff to review, update and transition the 2003 Regional Growth Strategy (RGS) document to a Regional Sustainability Strategy (RSS) document to advance policies to reflect a greater commitment to sustainability (CRD, 2012).

As suggested by Banister, Pucher, and Lee-Gosselin (2007), a case could be made for a high level education program that explains and widely publicizes the links between transport, the
environment and health (p. 24). As strategies, such as the planned Regional Sustainability Strategy (above) develop and mature to reflect advanced policies, perhaps this reflection of a greater commitment to sustainability can be reflected by a greater commitment to publication and education of why these types of strategies are imperative.

**Differences in priorities within jurisdictions.**

Johnson and White (2010) suggests that “different communities have varying visions of their ideal futures” and that further complications ensue as there is often the misconception that sustainability strategies can turn all conflicts into win/win scenarios (p. 304). As an example, the proposed sewage treatment plant as discussed previously is slated to be constructed in the Township of Esquimalt. Currently, open houses are being held to engage citizens in the debate of where the sewage treatment should be housed. In addition to the local outrage that is being demonstrated within the Township of Esquimalt that the sewage treatment plant may reside in their backyard, many citizens in other municipalities are also opposed to the sewage treatment plant proposal as a whole as many are not convinced that this project is needed or agree that this option is a sustainable alternative from both environmental and economic perspectives.

Large scale projects such as this have multi-jurisdictional ramifications as do large scale transportation systems. However, with Esquimalt being a much smaller community at a population of 16,000 citizens (“Esquimalt British Columbia”, n.d.), and at 5% of the total regional population of 345,000 (“Greater Victoria”, n.d.), it can unfortunately be assumed that Esquimalt is limited in its voting power within the overall Greater Victoria governance structure and must leverage and communicate its voice of opposition through public events and the media.
Public outcry.

The case study of Whitehorse conducted by Waldron (2007) presents an innovative strategy in which two four-lane roadways were converted to two-lane roads to reduce automobile use while increasing land allocation to bike lanes, widened sidewalks and treed center medians. Unfortunately, upon drivers’ complaints of traffic delays – within a one month period of the implementation of this initiative – the Whitehorse city council decided to revert part of the road back to its original configuration – eliminating 200 metres of bike lanes. Thus, the goal of reducing the amount of land allocated to vehicle traffic and subsequently increasing land allocation to sustainable transportation modes was lost. What was acknowledged in this case study was that changing the status quo of existing road design was a difficult and significant political risk and that policy acceptance by a sufficient majority of road users was critical both in implementing change and keeping change intact (Waldron, 2007).

Division between top-down managerialism and grassroots initiatives.

High-level panels have convened to address sustainability challenges who agree on the enormity and urgency of charting pathways to sustainability that keep human societies within a “safe operating space” (Leach et al., 2012). These high-level panels, however, mostly settle on solutions based on combinations of international cooperation and top-down global and national policies and management. “Agenda 21”, (as cited in Leach et al, 2012) launched at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, envisaged a community-led response to sustainable development challenges, based on local initiatives. But
the two strands of sustainable development rarely connected as senior officials related only sporadically to innovative grassroots initiatives being outlined (Leach et al., 2012).

Transforming Innovation for Sustainability report by Leach et al. (2012) states that “global and regional scenarios, forecasting, and back-casting need to be triangulated with grounded local process and implications” (p. 5). My paper and its objective to examine the perspectives of citizens, business representatives and key stakeholders to a grassroots initiative within, in part, the higher-level local political arena will be an interesting endeavor to gauge this community’s ability to connect to its ‘higher-level’ agendas through local grassroots initiatives.

**The Role of Innovation in Transportation Planning**

Walker (2008) describes resilience as the capacity of a system to undergo change and still retain its basic function and structure. The report *Community Vitality: The Role of Community-Level Resilience Adaptation and Innovation in Sustainable Development* (Dale, Ling, & Newman, 2010) states that “one of the ways communities respond and exhibit resilience is through their ability to innovate” (p. 220). Incorporating innovation into a model of sustainable development is difficult and there is inherent uncertainty in the predicted outcomes of innovation (Dale et al., 2010). It is argued by Hamel (2003) that strategic innovation is the result of bringing a diverse set of voices into the strategy dialogue and that there is evidence that minority opinions stimulate creativity and divergent thought which manifests as innovation through participation.

As examples of community resilience, in 2006, New York City Mayor Michael Bloomberg launched a city-wide planning initiative that challenged New Yorkers to generate
ideas for achieving 10 key goals for the city’s sustainable future (Davidson, 2009). Similarly, Sydney, Australia, Mayor Clover Moore undertook a similar project revealing the Sustainable Sydney 2030 program (Davidson, 2009). These initiatives invited a diverse set of voices into the building of strategies at a community level which have been reported to be key in terms of the scale of intervention required to address our many serious environmental issues (Dale et al., 2010).

Innovative sustainable transportation strategies that could have parallels drawn with the VIC-G.R.I.D. initiative being proposed in this research paper in terms of promoting the reduction of SOV ridership could be: HOV lanes that exist within many current highway systems, park-and-ride facilities for carpool and vanpool users, carpool and vanpool programs, High Occupancy Toll lanes (HOT) and, gas and carbon taxes (Deakin, 2011). However, the VIC-G.R.I.D. initiative being researched in this paper is unique in its approach in terms of its intent to develop a network of roads that would be solely limited to MOV ridership and promote other commonly understood sustainable transportation modes such as the use of energy efficient vehicles, transit, cycling and walking during specified peak traffic hours.

It is my hope that this research paper will serve to provide a forum of debate in regards to if citizens, businesses representatives and key stakeholders would entertain this type of initiative or at least serve to stimulate and enhance future conversations in regards to imagining a future of transportation systems and infrastructure with the Greater Victoria region that is broad, ‘strong’ and ‘bold’ in its approach to consider the values and ideals of citizens – and ideally future citizens.
CHAPTER THREE: RESEARCH METHODOLOGY

The purpose of this study is to explore if the implementation of a policy within the Greater Victoria region (involving the promotion of multi-modal transportation use, multi-passenger vehicle use and single occupancy vehicle usage restrictions during peak traffic hours on a designated Victoria-Green Road Inner Duct (VIC-G.R.I.D.) network of roads–would be considered by Victoria residents, business representatives and key stakeholders as a feasible and desired option to facilitate sustainable transportation in the Greater Victoria area. To investigate this topic, I have conducted a mixed methods study using a literature review, an on-line survey, one-on-one interviews and the partaking of a personal transportation journey.

Mixed methods research is formally defined as the class of research where the researcher combines quantitative and qualitative research techniques, methods, approaches, concepts, and/or language into a single study to explore the topic from multiple lens, perspectives and through a range of data sources (Johnson & Onwuegbuzie, 2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come (Johnson & Onwuegbuzie, 2004) states that “taking a non-purist or compatibilist or mixed position allows researchers to mix and match design components that offer the best chance of answering their specific research questions” (p. 15).

From a wide range of mixed methods design, I have selected a concurrent mixed methods approach (QUAN-QUAL) as the quantitative (survey) and qualitative (interviews) data was collected concurrently and weighted equally (Johnson & Onwuegbuzie, 2004). This study utilized both qualitative and quantitative research methodology approaches through the collection of data derived from a literature review, a personal transportation habit exploration, an
online survey, and one-on-one interviews - resulting in a mixed methods approach to my investigation.

Mixed methods research has a number of benefits. It allows for: (1) an increase to the validity of the results by examining issues through different methods, techniques and data sources and through the triangulation of the results, (2) provides for a deeper understanding of the results through the exploration of quantitative trends and patterns and analysis of qualitative descriptive information that contextualizes the quantitative findings, (3) allows to “offset” weaknesses of one method using strengths of the other method, and (4) “mixed methods research provides more evidence for studying a research problem than either quantitative or qualitative research alone” (Creswell & Plano Clark, 2011, p. 12).

Finally, according to Creswell and Plano Clark (2011),

Mixed methods research is “practical” in the sense that the researcher is free to use all methods possible to address a research problem. It is also “practical” because individuals tend to solve problems using both numbers and words, combine inductive and deductive thinking, and employ skills in observing people as well as recording behavior. It is natural, then, for individuals to employ mixed methods research as a preferred mode for understanding the world. (p. 13)

It is for these stated purposes that the process of using a mixed methods research approach was chosen for this study and it is this author’s hope that this comprehensive analysis
of the research data will allow for a valid interpretation of the perspectives of citizens in regards to the consideration of a VIC-G.R.I.D. policy for the Greater Victoria region.

**Methods of Data Collection**

To explore the views and perspectives of Victoria residents on the VIC-G.R.I.D. initiative, this mixed methods study employed the following strategies: (1) a literature review of academic and grey literature publications, media reports and policy documents (presented in Chapter 2), (2) development of the VIC-G.R.I.D. concept, (3) recording of my personal transportation journey, (4) on-line survey of Victoria residents and businesses, and (5) interviews with local citizens, business representatives and key stakeholders. These steps are described below in more detail.

**Literature review.**

The purpose of the literature review was to gain a deep understanding of the current culture of sustainable transportation systems, infrastructure, beliefs and goals from a broad perspective both at the global stage but also regionally and locally. To examine the existing body of information in detail several types of documents were reviewed to: (1) gather knowledge in regards to current local transportation challenges and the perspectives of citizens in regards to these challenges, (2) to examine what current global and regional sustainable transportation strategies and understandings to sustainability in transportation systems are in existence, and (3) to more fully understand what sustainable transportation strategies are being considered and/or being planned at the local level.
Prior to the onset of a formal academic literature review I began my study by reviewing and becoming familiar with local transportation issues via the media - including the perusal of hundreds of local and regional newspaper and online articles. This influx of information gave me the ability to become versed in transportation issues and challenges that would be pertinent to my study and provided me with an initial understanding of what some of the perspectives of citizens, businesses and key stakeholders were along with a glimpse into the approach that our regional governance structure takes in response to transportation challenges and issues. This approach gave me a basis of understanding in which to launch and be able to assimilate to a formal academic literature review.

The subsequent academic literature review that I conducted allowed me to be able to identify and analyze relevant information found within the body of knowledge available to outline past, current and future interpretations of sustainable transportation beliefs, practices and goals at international, regional and local scales. The types of documents reviewed were sourced mainly through the Environment Complete article database supported by Ebscohost (EBSCO Industries, 2013) and obtained via the Royal Roads University library.

The types of documents that I searched were articles relating to the topic of sustainable transportation, were available in full text version, and were published in English. Upon a preliminary screening, the articles chosen as potentially relevant were saved to electronic folders.
for thorough reading at a later date. Upon a secondary screening of saved articles, those deemed of specific use relating to topics that were perceived to be pertinent to this study were printed and categorized by subject matter. Articles were then re-read with specific key points highlighted and tagged for use upon the writing on subject matter to be presented in this paper.

The themes chosen for presentation within this paper were broken into sub-sections and presented within the literature review section to provide an analysis and summary of what sustainable transportation strategies, policies, and steps have been taken – at the various jurisdictional levels outlined above - to address and implement strategies to further advance sustainability within transportation systems. Also specific attention was paid to documents describing barriers or perceived barriers that make the advancement of sustainable transportation priorities difficult.

**Review of policy documents.**

To complement the review of local and regional transportation challenges and the study of published academic literature, my research also included an investigation into the governance structure that exists in the Greater Victoria region. This investigation was to not only become familiar with how decisions are made at a local and regional level but to also explore - at an in-depth level - what strategies exist and are planned to advance sustainability in regards to transportation systems and infrastructure in the Greater Victoria region.

The review of policy documents was conducted by searching individual municipally hosted websites that provide public information in regards to each of the thirteen regional
municipalities that exist in the Greater Victoria region. I also reviewed public documents available through other websites of interest such as the Ministry of Transportation (MoTI), the CRD, B.C. Transit, etc. To further enhance my understanding of the governance structure that exists in the region specific to this study, I attended multiple public forums and open-houses such as Standing and Select Committee meetings hosted by the CRD; municipally hosted open-houses and B.C. Transit public forums.

The governance structure within the Greater Victoria region was studied, interpreted and outlined in this paper in order for the author and the reader to understand what challenges a VIC-G.R.I.D. concept may face in its’ determination of consideration and implementation as a strategic plan to enhance multi-modal sustainable transportation choice and use in the region.

**Development of the VIC-G.R.I.D.**

In conjunction with the literature review, I began an inquiry into what roads or route would be a logical choice should a VIC-G.R.I.D. network be considered. I travelled local roads while considering the regions’ main transportation destinations (within the Greater Victoria region) to determine what could be a road or network of roads that would accommodate common transportation commutes that residents choose to make with as minimal a projected impact as possible to Single Occupancy Vehicle (SOV) riders who would not able to choose or who would choose not to access a VIC-G.R.I.D. network.

This inquiry involved utilizing a familiarity with the region that I have obtained by being a resident of the region in terms of what traffic challenges exist in the Greater Victoria region
and combining that with what are generally considered common commutes exercised by local residents. I also conducted a thorough, careful and purposeful consideration of current transportation issues as expressed by local citizens as presented by the media over a period of several months which allowed me to validate and choose the roads that seemed to best suit the purpose of this initiative. The determination of the specific roads entailed travelling the region by vehicle and choosing a network of roads that connected in such a way to allow for an ease of transition to and amongst key commuting destinations within the region while avoiding areas such as the downtown core or the two main transportation arterials (Patricia Bay Highway and TransCanada Highway) which may have caused undue strain on an already strained transportation grid. The roads ultimately chosen were outlined on a purchased printed map of the Greater Victoria region with each section of road noted in terms of length and travel time.

As a result to this exploration, I developed the Victoria-Green Road Inner Duct (VIC-G.R.I.D.) which is a 33.7 kilometer (km) route that takes approximately forty two minutes to drive (not including any significant delays due to congestion) that would transport commuters to, from and/or within the vicinities of the Western Communities, downtown Victoria, the Royal Jubilee Hospital, Camosun College, the University of Victoria, the Patricia Bay Highway at Royal Oak Drive, the Interurban College, the Victoria General Hospital and the Old Island Highway at Helmcken Road that leads back to the Western Communities. I then inputted the parameters of the route into the software program Arc GIS Explorer Desktop (©2013) and developed the following map (Figure 1). Note: The proposed route is depicted in green.
Figure 1. Victoria-Green Road Inner Duct – VIC-G.R.I.D. (King, 2013)

Note: ArcGIS JavaScript API (Adapted Figure 1) is owned by © 1995 – 2013 Esri and is used subject to the Terms of Use found at: http://www.esri.com/termsofuse.

It should be noted, however, that this route was developed to initiate a conversation with residents to explore their attitudes towards this initiative. If this type of network was to be implemented, key stakeholders and regional planners would need to conduct an indepth feasibility study to select the most appropriate route to manage traffic patterns and would need to facilitate and develop sufficient supporting infrastructure and policies to make this initiative feasible and practical.

**Personal transportation journey.**

As an additional step to experience first-hand and record the consequences of my personal transportation choices, I conducted a personal transportation journey by journaling my
usual transportation mode choices and the experiences related to those usual commutes for a one week period. I then purposefully chose alternative transportation modes for my usual commute such as taking transit, cycling and/or walking for an additional two week period and documented those experiences to allow me the opportunity to compare the differences in experiences on a personal level between how I was usually commuting and how those experiences differed while utilizing alternative modes of transportation.

Each day for a three week period – whether using my usual mode of transportation or an alternative mode of transportation - I documented in a daily journal the mode of travel that I took to commute on that day, how many minutes the commute took, how many kilometers I travelled, my emotional responses and experiences during the commute, the weather, how many cyclists and walkers I observed and what traffic congestion existed during each commute. The data obtained from this personal transportation journey will be added to the data obtained from participants involved in the on-line survey that was conducted to support this study as well as the data that was collected via the one-on-one interviews and will be presented in the analysis section of this paper.

**Survey.**

To gather further information about the current transportation habits of citizens, business representatives and key stakeholders within the Greater Victoria region and their perspectives in regards to a VIC-G.R.I.D. initiative, this study embarked upon an on-line survey consisting of eighteen multiple choice and two open ended questions (see Appendix A). The goal of this approach was to elicit information regarding whether the implementation of a VIC-G.R.I.D.
network of roads would be seen by residents, businesses and our collective local governing bodies as a feasible and desirable approach for the Greater Victoria region to embark upon to facilitate its stated desire to achieve sustainability within our local transportation systems, infrastructure and culture.

The survey questions were constructed and altered through several iterations until consensus was reached that the questions developed would garner sufficient information regarding the perspectives of a sampling of citizens to the VIC-G.R.I.D. infrastructure system being studied. The questions were piloted at four intervals with two colleagues (one being a senior transportation planner and the other being a community planner with extensive experience in community engagement). Their suggestions were instrumental in the development of the survey instrument. Once the questions were finalized, an on-line survey was developed via FluidSurveys website.

Survey participants were selected using a combination of purposive and volunteer sampling strategy (Walliman, 2006). A set of criteria was developed to identify initial groups of participants. This study specifically aimed to elicit participation of local residents, municipal councillors, city planners, and local business representatives. Also, potential participants should have been familiar with the neighbourhood of the proposed road and/or used the proposed streets to commute. Information about the study was made available to potential participants through the distribution of posters and business cards that I created specifically for this purpose to strategically chosen local locations such as coffee houses, a hospital, a pub and home-based gaming club, door-to-door visits to local businesses, a mall food court, the Oak Bay Tea Party, a
Victoria Jazz Festival public event, a Resilient Region Exchange-Greater Victoria Breakfast Series meet-up, an open-house for the Esquimalt’s Admirals Road Improvement Project, a Passive House workshop, a Transit Future open-house and a Bike to Work Week wrap-up barbeque on the Galloping Goose Trail in Saanich.

Further solicitation and sharing of the survey link was achieved through on-line invitations with the assistance of personal Facebook page postings, the Royal Road’s student body electronic mail out list, the University of Victoria’s electronic sustainability newsletter mail out list, email invitations to all publicly listed Island Car Clubs and through email notifications to local interest groups such as the Island Transformation Organization and the Philosophers’ Forum. Participation was geared to attract residents from within all thirteen municipalities that exist in the Greater Victoria region and whom would be representative of the three main groups being targeting within this study (citizens, business representatives and key stakeholders). The survey was not limited to residents who live along the proposed route but was limited to adults who had reached the age of majority of over eighteen years old.

The sampling approach described above had an element of self-section as once the study was introduced to the potential respondents, they had an opportunity to choose whether or not they wanted to participate. One of the limitations of this approach was that there might have been selection bias as it could be assumed, to a certain extent, that those who already support sustainable-type initiatives may be more inclined to participate in the study. One could also assume that some individuals who would be strongly opposed to an initiative such as the one being studied in this paper, alternatively, may have also be inclined to participate to have their
voices heard. It is for this reason that I attempted to approach a wide diversity of groups within the region and ensured potential participants that regardless of their opinions, their participation would be very much valued. The online survey resulted in 224 respondents and the results will be presented in later sections of this thesis.

**Interviews.**

Survey respondents were invited to provide their contact information should they wish to participate in a follow-up interview. This process of selection of potential interviewees resulted in a self-selection type sampling strategy for some of the interviews that were ultimately conducted (Walliman, 2006). In addition to having a number of volunteers obtained through the participation of the online survey, I also solicited a number of potential interviewees by engaging in a targeted sampling approach (Fink, 2003). This approach involved purposefully targeting potential interview candidates from within the three target groups identified being citizens, business representatives and key regional stakeholders. The number of participants selected from each of the target groups was determined after the analysis of the on-line proportions of the survey respondents to ensure that equal representation between the target groups was achieved. This process involved directly contacting potential interview participants either by email, telephone or by personally visiting the locations in which potential target individuals could be located (i.e., visiting a business directly located on the proposed VIC-G.R.I.D. route and speaking with business managers) and inviting them to participate in an confidential and consensual interview (see Appendix F).
The initial target number of interviews was between fifteen and twenty interviews. Through the elicitation processes described above, a total of nineteen interviews were successfully arranged and conducted. Eight interviews were arranged through the on-line self-selection process and eleven additional interviews were arranged by way of direct invitation. The interviews lasted approximately between forty-five minutes and one hour and forty-five minutes with all interviews being conducted in face-to-face meetings. These meetings were arranged and conducted at times and locations chosen to best fit the needs of the participants.

Seventeen of the nineteen interviews were audio taped and the remaining two interviews were recorded via note taking due to a technical difficulty with the audio software program. Each participant was advised on approximately how many minutes the interview would take, were invited to inquire about any concerns or questions they may have had about the research project in general and were requested to sign a consent form prior to the start of the interview (see Appendix B). Each interview was conducted using one of three sets of interview questions as the list of questions used to conduct the interview were similar in format but adjusted slightly to fit the type of individual being interviewed (i.e., citizen, business professional or key stakeholder such as a representative of a municipality or a regional planner) (see Appendices C, D & E). Once all interviews were complete, each interview was transcribed at which point all text was sorted and categorized to begin the process of determining the main themes that would be identified and discussed in the Results chapter.

The goal of the interviews was to identify and segregate specific varying viewpoints amongst the stated target groups to further investigate the various perspectives within these
specific populations and to supplement the insights obtained via the on-line survey. Combining these two approaches along with the literature review and the personal transportation journey study served the basis of enhancing results for the mixed methods approach that was determined to be used for this research paper.

Data Analysis

The intent of this mixed methods study was to compile and explore in-depth the diverse set of opinions, perceived benefits and barriers, feedback, and recommendations in regards to my research question. Quantitative and qualitative data was analyzed separately and will be presented in separate subsections below, followed by a section that will synthesize and triangulate information from the survey and interviews.

Quantitative data analysis.

The quantitative data utilized in this study was obtained through the on-line survey. The resulting data was analyzed using descriptive statistical procedures and utilized to identify the similarities and differences of opinions amongst participants from within the various groups identified in the survey. The data obtained has been utilized to outline common themes of concern or interest of citizens in regards to a potential VIC-G.R.I.D. policy and to determine if this particular policy would be publicly and municipally acceptable as a potential suitable transportation initiative for the Greater Victoria region.

This survey analysis examined a number of variables such as age, gender, location, employment status, transportation mode use, length of commutes, impacts of congestion on
commutes, passenger status during vehicle commutes, factors that affect transportation decisions, opinions about sustainable transportation initiatives and opinions regarding the proposed VIC-G.R.I.D. initiative - with this criteria being utilized to compile the data into multiple sub-sets of data. The results were then represented via tables, graphs and charts to outline the differences and/or similarities of opinions and the statistical information found within the multiple variations of data compilations that could be segregated from within the structure of the survey questions and will be presented in the analysis section of this paper. Because the purpose of the study was to explore the opinions of the residents rather than to determine whether there are differences in opinions across the groups of respondents, no inferential analysis was conducted (as it was outside the scope of this study).

**Qualitative data analysis.**

The qualitative data utilized in this study was obtained through the conducting of the nineteen interviews. A similar set of questions were used amongst the three identified target groups in order to facilitate consistency within the information being obtained through the interviews with the questions being altered slightly to acknowledge the uniqueness of the different groups being interviewed (i.e., municipal representative rather than a resident). The interviews were held in person and audiotaped using the software program Audacity for Windows®. Key points made by the interviewees were also intermittently noted and used in conjunction with the audiotaped dialogue in order to ensure that important themes acknowledged by the interviewee were included in the analysis. (Note: two of the nineteen interviews were not audiotaped with note taking being the main source of data retention in these cases).
All interview audiotapes were transcribed to text, reviewed and divided into common themes using inductive coding (Thomas, 2003). The data was then used in a similar fashion as the survey data with identified themes outlining the concerns and/or areas of interest of the participants in regards to the VIC-G.R.I.D. concept utilized to present the results in the analysis section of this paper.

Triangulation

To ensure the validity of this research, I employed methodological triangulation and data triangulation within my study. Flick (2007) defines triangulation as “a concept meaning that an issue of research is considered … from (at least) two points” (p. 4). Triangulation is achieved when a researcher analyses the topic from different perspectives by utilizing a variety of study methods, theories, participants and/or approaches. Triangulation is “typically a strategy for improving the validity and reliability of research or evaluation of findings” (Golafshani, 2003) and is seen as a mechanism that can be utilized to address possible biases while minimizing potential deficiencies or limitations that may otherwise flow from a single methodological type approach (Golafshani, 2003).

Denzin (1970) states that methodological triangulation “involves a process of using two or more methods to investigate an issue and then playing each method off against the other to maximize the validity of research” (p. 310). To perform methodological triangulation I incorporated qualitative and quantitative approaches and then cross referenced the findings of the surveys taken from the sample populations against the findings derived from the interviews conducted with the representatives of the same populations compared and summarized in regards
to their perspectives to the possible implementation of a VIC-G.R.I.D. policy within the Greater Victoria communities.

Data triangulation, also described by Denzin (1970) “entails gathering data through several sampling strategies, so that slices of data at different times and social situations, as well as on a variety of people, are gathered” (p. 301). For the purpose of data triangulation I conducted the surveys and interviews amongst a variety of populations and groups (i.e., commuters, cyclists, pedestrians and city officials) within multiple municipalities who were recruited from within a wide range of locations, times and through various means.

As stated in Triangulation in Research (Bryman, n. d.), “triangulation is very much associated with measurement practices in social and behavioural research” (p. 1). My study very much observed and interpreted the social and behavioural responses to my research questions. Adopting the use of triangulation allowed me to cross reference my findings against each other to test their validity. It gave me the opportunity to more fully grasp and understand the complexities that arose and, provided different reference points from which I could derive and report on collective conclusions which will be outlined in the following chapters.
CHAPTER 4: RESULTS AND DISCUSSION

Survey Results

The survey conducted was hosted on the FluidSurveys website for a total of thirty six days to engage as many participants as possible (in the given time frame) from a variety of backgrounds to assist to determine if local citizens, business representatives and key stakeholders would consider the adoption of a VIC-G.R.I.D. network of roads for the Greater Victoria region. The survey entailed twenty questions - eighteen multiple choice questions and two open ended questions (see Appendix A). In summary, the questions consisted of three main topic areas: (1) general information about the respondents such as age, gender, the area of the Greater Victoria region in which they live and their current lifestyle (i.e., employed, student, etc.), (2) respondents current transportation situations such as their main source of transportation, how often they commute, how congestion affects their commutes, etc., and (3) respondents opinions in regards to the relevancy of sustainable transportation initiatives, what factors affect their personal transportation decisions, and what barriers or suggestions they would have in regards to the VIC-G.R.I.D. policy for the Greater Victoria region that was presented in the survey.

Two hundred and twenty four respondents participated in the survey. The results of the data obtained from the survey respondents will be detailed in three sections based on the topic areas outlined above with the first section presented being the general information about the respondents such as age, gender, the area in the Greater Victoria region in which they live and their current lifestyles (i.e., work full-time, student, etc.).
General Information about the respondents.

Age.

In the survey, the participants could select from the following identified age ranges: 18-24, 25-33, 34-48, 49-66, and older than 66. The age ranges were strategically set to mimic generally accepted generational groupings (Noren, 2011). For example, the age ranges 18 – 24 and 25 – 33 identify with the generation generally referred to as the Gen Y or the Millennial age range; ages 34 – 48 identify with the Gen X population; ages 49 – 66 represents the Boomer group and; the “older than 66” age range is representative of the Traditionalist or Silent Generation age group.

In regards to the Gen Y category, I decided to represent this age range as two sub set age groups (ages *18 – 24 and ages *25 – 33) as I felt that, relative to transportation, this particular age range may have a large variation in opinion with the assumption that older Gen Y individuals may have very differing experiences than the younger Gen Y sub set (if, for example, there is a larger percentage of older Gen Y’s in the work force as opposed to potentially more younger Gen Y’s being students). Of the 224 respondents, the largest number of participants (i.e., 73 participants) were in the Boomer age range (49-66 year olds), with the Generation Y (18-24 and 25-33 year olds) and the Generation X (34-48 year olds) age ranges represented by 70 and 68 individuals respectively (see Table 3).
Table 3. *Survey Age Ranges*

<table>
<thead>
<tr>
<th>Age</th>
<th>Count</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>*18 – 24 - Gen Y</td>
<td>14</td>
<td>6%</td>
</tr>
<tr>
<td>*25 – 33 - Gen Y</td>
<td>56</td>
<td>25%</td>
</tr>
<tr>
<td>34 – 48 – Gen X</td>
<td>68</td>
<td>30%</td>
</tr>
<tr>
<td>49 – 66 - Boomer</td>
<td>73</td>
<td>33%</td>
</tr>
<tr>
<td>Older than 66 – Traditionalists</td>
<td>13</td>
<td>6%</td>
</tr>
</tbody>
</table>

The above identified age parameters will be used and combined with additional descriptive information about the respondents in later sections to further analysis the various perspectives that were obtained from within the conducted survey questions (see Appendix A) and how those perspectives compared within the different age groups.

*Gender.*

Of the 220 respondents who responded to the gender inquiry, 120 (or 55%) were females and 100 (45%) were male.

*Location of respondents within the Greater Victoria region.*

The survey also asked respondents to indicate which areas of the Greater Victoria region they resided in. Of the 224 total participants, 223 responded to this inquiry with 6 respondents indicating that they did not live in any of the thirteen municipal districts in Greater Victoria. The majority of the respondents were from the Victoria and Saanich regions. However, these two
municipalities are also the two largest population bases within the Greater Victoria region. I have thus, constructed the table below (see Table 4) to demonstrate what percentage of the respondents reside in the various municipalities (*Respondents as % by Region) with an added column that demonstrates what percentage each region holds of the total population (**Total Population as % by Region). This approach was taken to determine if a fair representation of the municipal population bases were achieved in the survey. When the percentage values of respondents by region are compared against the percentage values of the total population by region, it can be seen that a fair representation of the total population was achieved.

In addition to demonstrating which regions the various respondents to the survey live in, Table 4 also demonstrates which regions would be directly impacted by the network of roads that were chosen as the VIC-G.R.I.D. network. The municipalities identified in **bold** represent the municipalities that the proposed VIC-G.R.I.D. network of roads flow directly through and the municipalities highlighted in *italics* are the two main municipalities in which the proposed VIC-G.R.I.D. network of roads do not directly flow through but would be representative of the municipalities in which large populations of commuters would be travelling to and through municipalities in which the proposed VIC-G.R.I.D. network would flow through. This approach allowed for the determination of which municipalities would be **directly impacted** and which municipalities would be *in-directly impacted*. This information will be used for further analysis in a later section of this paper.
Table 4. *Respondents by Municipality*

<table>
<thead>
<tr>
<th>Municipality/Area</th>
<th>Survey Data</th>
<th>Regional Data</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Respondents</td>
<td>*Respondents as % by Region</td>
<td>Total Population by Region</td>
<td>**Total Population as % by Region</td>
</tr>
<tr>
<td>Central Saanich</td>
<td>6</td>
<td>3%</td>
<td>15,000</td>
<td>5%</td>
</tr>
<tr>
<td>Colwood</td>
<td>6</td>
<td>3%</td>
<td>15,000</td>
<td>5%</td>
</tr>
<tr>
<td>Esquimalt</td>
<td>16</td>
<td>7%</td>
<td>16,000</td>
<td>5%</td>
</tr>
<tr>
<td>Highlands</td>
<td>1</td>
<td>0%</td>
<td>2,000</td>
<td>1%</td>
</tr>
<tr>
<td>Langford</td>
<td>12</td>
<td>5%</td>
<td>22,000</td>
<td>7%</td>
</tr>
<tr>
<td>Metchosin</td>
<td>1</td>
<td>0%</td>
<td>5,000</td>
<td>2%</td>
</tr>
<tr>
<td>North Saanich</td>
<td>4</td>
<td>2%</td>
<td>11,000</td>
<td>3%</td>
</tr>
<tr>
<td>Oak Bay</td>
<td>16</td>
<td>7%</td>
<td>18,000</td>
<td>6%</td>
</tr>
<tr>
<td>Saanich</td>
<td>63</td>
<td>28%</td>
<td>109,000</td>
<td>34%</td>
</tr>
<tr>
<td>Sidney</td>
<td>1</td>
<td>0%</td>
<td>11,000</td>
<td>3%</td>
</tr>
<tr>
<td>Sooke</td>
<td>1</td>
<td>0%</td>
<td>10,000</td>
<td>3%</td>
</tr>
<tr>
<td>Victoria</td>
<td>76</td>
<td>34%</td>
<td>80,000</td>
<td>25%</td>
</tr>
<tr>
<td>View Royal</td>
<td>14</td>
<td>6%</td>
<td>8,000</td>
<td>3%</td>
</tr>
<tr>
<td>None of the above</td>
<td>6</td>
<td>3%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>223</td>
<td><em>98%</em>*</td>
<td>322,000</td>
<td>*102%</td>
</tr>
</tbody>
</table>

*Total percentages not totalling 100% is due to the rounding of low numbers of respondents in a specific municipality or the rounding of total populations to the nearest thousand.

In order to gauge the acceptance level of respondents to a possible VIC-G.R.I.D. network of roads for the Greater Victoria region, the following question was asked: Would you agree to a proposed 'Green Road' policy? Participants could select one of the following response options: (1) I would not agree to this policy under any or likely most circumstances, (2) I would agree to this policy under certain circumstances, (3) I would agree to this policy under most circumstances, and, (4) I would agree to this policy only if it had little effect on me.

The graph below (see Figure 2) represents the overall proportion of respondents who selected one of the four response options. Out of the 221 respondents who answered this question, 35 respondents (or 16%) indicated that they would not agree to this policy under any circumstances, 107 respondents (or 48%) stated that they would agree to this policy under most circumstances; 74 respondents (or 33%) indicated that they would agree to this policy under certain circumstances; and 5 individuals (or 2%) said that would agree to this policy only if it had little effect on them.
Age is a factor that might influence people’s attitudes towards the VIC-G.R.I.D. policy.

Table 5 (below) compares the agreement ratios between respondents by age group.

Table 5. Agreement with the VIC-G.R.I. D. Policy by Age Range

<table>
<thead>
<tr>
<th>Responses Selected</th>
<th>Gen Y 18-24</th>
<th>Gen Y 25-33</th>
<th>Gen Y Combined 18-33</th>
<th>Gen X 34-48</th>
<th>Boomers 49-66</th>
<th>Older than 66</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would not agree</td>
<td>0%</td>
<td>13%</td>
<td>10%</td>
<td>10%</td>
<td>25%</td>
<td>23%</td>
</tr>
<tr>
<td>Would agree under CERTAIN circumstances</td>
<td>29%</td>
<td>35%</td>
<td>34%</td>
<td>37%</td>
<td>32%</td>
<td>23%</td>
</tr>
<tr>
<td>Would agree under MOST circumstances</td>
<td>71%</td>
<td>50%</td>
<td>54%</td>
<td>49%</td>
<td>41%</td>
<td>54%</td>
</tr>
<tr>
<td>Responses Selected</td>
<td>Age Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gen Y 18-24</td>
<td>Gen Y 25-33</td>
<td>Gen Y Combined 18-33</td>
<td>Gen X 34-48</td>
<td>Boomers 49-66</td>
<td>Older than 66</td>
</tr>
<tr>
<td>Would agree only if did not impact me</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
<td>3%</td>
<td>3%</td>
<td>0%</td>
</tr>
</tbody>
</table>

What can be summarized from the above table is that:

- 88% of the Gen Y’s would be in general agreement “would agree under certain or most circumstances” to a VIC-G.R.I.D. policy;

- 86% of the Gen X’s would be in general agreement “would agree under certain or most circumstances” to a VIC-G.R.I.D policy with the Gen Y and Gen X groups both indicating only a 10% disapproval rating.;

- However, the Boomer and Traditionalists (older than 66) approval ratings of either “would agree under certain or most circumstances” both fall to within the 70 percentile range (73% and 77% respectively) with their disapproval ratings both being in the 20 percentile (25% and 23% respectively);

- Boomers would appear to have the highest disapproval rating of all groups but a slightly higher “would agree under certain circumstances” rating than the Traditionalists which would indicate that there is a slightly higher level of openness to change by some Boomer individuals than Traditionalists; and

- Boomers also have the highest response rating in the “would agree if it has little effect on me” category, and notably, the Traditionalists response rating to this
category is 0%. This information would suggest that the Boomers are the
generation that would appear to place a higher value on what affects them on a
personal level.

This summation would indicate that generally speaking, younger individuals would
appear to be more open to the possible implementation of a VIC-G.R.I.D. policy in the Greater
Victoria region than their older counterparts with a larger percentage of the older populations
demonstrating direct disagreement to a potential VIC-G.R.I.D policy.

When applying the gender parameters to the approval inquires in regards to a potential
VIC-G.R.I.D. policy the following data is revealed (see Table 6 and Figure 3).

Table 6. Agreement with the VIC-G.R.I.D. Policy by Gender

<table>
<thead>
<tr>
<th>Responses Selected</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of respondents</td>
<td>% of Female respondents</td>
</tr>
<tr>
<td>Would not agree</td>
<td>16</td>
<td>13%</td>
</tr>
<tr>
<td>Would agree under CERTAIN circumstances</td>
<td>35</td>
<td>29%</td>
</tr>
<tr>
<td>Would agree under MOST circumstances</td>
<td>67</td>
<td>56%</td>
</tr>
<tr>
<td>Would agree only if did not impact me</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100%</td>
</tr>
</tbody>
</table>
What can be summarized from the data above is that more females than males appear to be more open to the possibility of a VIC-G.R.I.D. policy than their male counterparts. For example, in the “would agree under most circumstances” to a proposed VIC-G.R.I.D. policy, 56% of the female participants responded favourably to this option as opposed to 40% in the male category. In the “would agree only if it did not impact me”, male respondents chose this response at a 3% response rate as opposed to females at a 2% response rate. And, in the “would not agree” category, the response rate for males was 19% over 13% for females.

The only category where males expressed a higher approval ratio was in the “would agree under certain circumstances” with male respondents choosing this response at a 37% response rate over the 29% female response rate. An interpretation that can be drawn from this data is that more males than females may take a slightly more caution approach to new policies and may be less inclined to agree to new initiatives without further consideration or perhaps more information being provided.
In addition to analyzing the approval rating of a potential VIC-G.R.I.D. policy based on age and gender separately, I have also compared the responses of males and females regarding their acceptance of the policy organized by gender groups. Thus, the below table (see Table 7) combines these distinctions in regards to the perspectives of respondents to this initiative for the Greater Victoria region with the following results.

Table 7. Agreement by Gender and Age Range

| Response Selected                      | Females | | | | | | Males | | | | | |
|----------------------------------------|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| Would not agree                        | **0    | 3     | 5     | 6     | 2             | **0    | 4     | 2     | 12    | 1             |
| Would agree under CERTAIN circumstances| 2      | 12    | 13    | 7     | 1             | 2      | 6     | 11    | 16    | 2             |
| Would agree under MOST circumstances   | 8      | 20    | *25   | 13    | 1             | 2      | 0     | 7     | 17    | 6             |
| Would agree only if did not impact me  | 0      | 1     | 0     | 1     | 0             | 0      | 0     | 2     | 1     | 0             |

* Highest ranking  
** No responses

From the table above, it can again, be summarized that females have expressed a stronger approval rating with the female age range of 34-48 demonstrating the highest approval rating overall. What is an interesting statistic that can be acknowledged from within the derived data is that in the “would not agree category” - whether female or male - there are no respondents in the 18-24 range who would not agree to the proposed VIC-G.R.I.D. policy as represented in the
survey. Once again, this would indicate that the youngest of the survey respondents would be the most in favour of this type of initiative.

Age and gender parameters can be further delineated by adding in the lifestyles (i.e., transportation mode choices) in which the individuals who participated in the survey lead. For example, many of the respondents may already be proponents to sustainable transportation modes of transportation and demonstrate this sustainable behaviour by cycling or walking for the majority of their commutes rather than driving a vehicle. Additionally, other respondents such as students may also be already utilizing more sustainable transportation modes such as public transit due to possible limits to access of funds, or alternatively, other respondents may have other challenges such as being employed single parents whose needs necessitate that they have full access to all roads at all times in order to keep strict work and daycare schedules. Thus, it can be reasonably stated that there are many layers and contributing factors to the complexities in which the population sampled in this survey would demonstrate. However, these types of analyses are beyond the scope of this paper. Given the expansiveness of the multiple possible combinations of situations amongst respondents, this research paper, to a certain extent, will be focusing on the overall trends and patterns in the approval responses rather than examining the impacts of various factors that might have influenced the respondents’ views. Instead information from the interviews will be used to identify some of the contributing factors that might be at play in terms of respondents’ perspectives to this type of policy.

An interesting analysis of the data – in addition to evaluating the approvals rating by age and gender - was to then review the approval ratings dependent on the municipalities in which
the respondents resided in. The below graph (see Figure 4) demonstrates that the respondents who live in regions that would be directly impacted by the G.R.I.D. network of roads (i.e., designated ‘Green Roads’ would be in those regions) have a higher approval rating than the respondents who live in regions that would be less directly impacted by the VIC-G.R.I.D. network (i.e., the network of ‘Green Roads’ would not be in their region but would be in a region that they may require to travel through in which the VIC-G.R.I.D. road network would exist).

Figure 4. Approval by Regions Directly or Indirectly Impacted by the VIC-G.R.I.D. Network.

Lifestyles of respondents relative to their transportation choices.

The next series of questions within the survey related to the lifestyles of respondents and reflected their transportation habits and opinions in regards to sustainable transportation initiatives. The table below (see Table 8) outlines the current lifestyle situations of 221 respondents. The number of respondents per each category has also been translated to a percentage value for the purpose of comparison.
Table 8. *Lifestyles of Respondents*

<table>
<thead>
<tr>
<th>Lifestyle</th>
<th># of Respondents</th>
<th>% of Total Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed Full-Time</td>
<td>102 (106)</td>
<td>46% (48%)</td>
</tr>
<tr>
<td>Employed Part-Time</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>Full-Time Student</td>
<td>20 (21)</td>
<td>9% (10%)</td>
</tr>
<tr>
<td>Part-Time Student</td>
<td>6</td>
<td>3%</td>
</tr>
<tr>
<td>Employed and Student</td>
<td>27 (33)</td>
<td>12% (15%)</td>
</tr>
<tr>
<td>Unemployed and Not Attending School</td>
<td>5 (6)</td>
<td>2% (3%)</td>
</tr>
<tr>
<td>Self-Employed/Business Owner</td>
<td>16</td>
<td>7%</td>
</tr>
<tr>
<td>Retired</td>
<td>21 (23)</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>12 (0)</td>
<td>5% (0%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>221</td>
<td>*99% (101%)</td>
</tr>
</tbody>
</table>

*A 100% value has not been achieved due to the rounding of values.

**The ‘Other’ category of respondents consists of more complicated combinations of lifestyles than what could be captured in the individual choices available to the respondents. (i.e. ‘Self-Employed & Student’ or ‘On Disability Leave’). I have therefore taken the ‘Other’ responses and applied them as an adjusted value to the best suited category available (represented in brackets).*

What can be summarized from the table above is that the largest group of respondents are those who are employed full time (48% of respondents) with the next largest represented group being those who are employed and attending school (15%). The third and fourth largest groups are full-time students and retirees (both at 10%). This information has been further explored by combining the types of transportation modes each specific group primarily uses. (See the expanded table below relative to the four largest represented groups).
Transportation situations.

This next section of the survey analysis will outline the specific transportation situations of respondents who participated in the survey.

Transportation mode choices.

In the survey respondents were asked to specify their most typical choice of transportation. This multiple choice question allowed the participants to select only one response so that the respondents’ most usual modes of transportation were identified. The table below (see Table 9) identifies the transportation choices from a total of 194 respondents and has been sorted by order of preferred choice of transportation by lifestyle group.

Table 9. Lifestyles of Respondents Combined with Modes of Transportation

<table>
<thead>
<tr>
<th>Lifestyle</th>
<th># of Respondents</th>
<th>% of Respondents within lifestyle category</th>
<th>% of Total Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed Full-Time - TOTAL</td>
<td>103</td>
<td>100%</td>
<td>53%</td>
</tr>
<tr>
<td>Drive a Vehicle</td>
<td>56</td>
<td>54%</td>
<td></td>
</tr>
<tr>
<td>Bike or Walk</td>
<td>35</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>Bus</td>
<td>12</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Employed and Student - TOTAL</td>
<td>33</td>
<td>100%</td>
<td>17%</td>
</tr>
<tr>
<td>Drive a Vehicle</td>
<td>16</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>Bike or Walk</td>
<td>9</td>
<td>27%</td>
<td></td>
</tr>
<tr>
<td>Bus</td>
<td>8</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td>Full-Time Student - TOTAL</td>
<td>21</td>
<td>100%</td>
<td>11%</td>
</tr>
<tr>
<td>Drive a Vehicle</td>
<td>6</td>
<td>29%</td>
<td></td>
</tr>
<tr>
<td>Bike or Walk</td>
<td>7</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Lifestyle</td>
<td># of Respondents</td>
<td>% of Respondents within lifestyle category</td>
<td>% of Total Respondents</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------------------</td>
<td>------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Bus</td>
<td>8</td>
<td>38%</td>
<td>11%</td>
</tr>
<tr>
<td>Retirees - TOTAL</td>
<td>23</td>
<td>100%</td>
<td>11%</td>
</tr>
<tr>
<td>Drive a Vehicle</td>
<td>15</td>
<td>65%</td>
<td></td>
</tr>
<tr>
<td>Bike or Walk</td>
<td>5</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>Bus</td>
<td>3</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Self-Employed/Business Owner -TOTAL</td>
<td>16</td>
<td>100%</td>
<td>8%</td>
</tr>
<tr>
<td>Drive a Vehicle</td>
<td>9</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>Bike or Walk</td>
<td>6</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>Bus</td>
<td>1</td>
<td>1%</td>
<td></td>
</tr>
</tbody>
</table>

* The fifth largest group being the ‘Self-Employed/Business Owner’ group (at 7%) has been added to the table to reflect their preferred modes of transportation as this research paper specifically seeks the opinions of business owners - making this information imperative despite their overall representation within the survey being one of the lowest (at less than 10%).

** Values has been adjusted to account for respondents in the categories only represented by the following modes: Bike or Walk, Bus or Drive a Vehicle (including adjustments for non-responses).

*** A 100% value has not been achieved as a result of rounding.

From this particular compilation of data it can be noted that within the five largest groups analyzed, four out of the five groups (all except the full-time student category) prefer to drive vehicles for their main method of transportation. The graph below (see Figure 5) demonstrates as a summary the preferred modes of transportation found within the five main groups (i.e., Employed Full-Time; Employed and Student; Full-Time Student; Retirees & Self-Employed/Business Owners) combined.
Figure 5. Transportation Mode Choices by Five Main Lifestyle Groups

Frequency of commutes by round trip to repetitive destinations.

Table 10 (below) outlines the frequency of round trip commutes made by the 220 respondents during an average week to their most common repetitive destination.

Table 10. Commute Frequencies

<table>
<thead>
<tr>
<th>Frequency of Commute</th>
<th>Count</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 3 times</td>
<td>28</td>
<td>13%</td>
</tr>
<tr>
<td>4 - 6 times</td>
<td>134</td>
<td>61%</td>
</tr>
<tr>
<td>7 - 10 times</td>
<td>42</td>
<td>19%</td>
</tr>
<tr>
<td>11 - 14 times</td>
<td>7</td>
<td>3%</td>
</tr>
<tr>
<td>15 or more times</td>
<td>9</td>
<td>4%</td>
</tr>
</tbody>
</table>
This particular table demonstrates that the majority of respondents travel between four and six times per an average week to their most common destinations which supports an earlier finding that indicates that the majority of respondents are full-time employees.

**Kilometers traveled during respondents most common commutes.**

Table 11 below, derived from a total of 219 respondents, indicate that the majority of commuters travel between one and ten kilometers during their most common commute. This would be consistent with the fact that the Greater Victoria region is a relatively small area with most commuters needing to travel relatively short distances.

Table 11. Kilometers Driven During Most Common Commute

<table>
<thead>
<tr>
<th>Kilometers Driven</th>
<th>Count</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10</td>
<td>129</td>
<td>59%</td>
</tr>
<tr>
<td>11 - 20</td>
<td>59</td>
<td>27%</td>
</tr>
<tr>
<td>21 - 30</td>
<td>17</td>
<td>8%</td>
</tr>
<tr>
<td>Over 30</td>
<td>14</td>
<td>6%</td>
</tr>
</tbody>
</table>

According to the Google maps (https://maps.google.ca/), many common destinations in the Greater Victoria region are indeed located within 10 kilometer radius:

- Colwood to downtown Victoria is less than 10 kilometers.
- Downtown Victoria to the University of Victoria, the Lansdowne Camosun College and the Jubilee Hospital are all under 10 kilometers.
Downtown Victoria to the Victoria General Hospital is less than 10 kilometers.

Downtown Langford to the CFB Esquimalt Naval & Military base is 10.3 kilometers.

Traffic congestion impacts on commuting times.

In regards to the usual commutes in the Greater Victoria region reported by the survey respondents, the table below (see Table 12) indicates that almost half of all commuters (44%) did not experience traffic congestion during their usual commutes. However, if all commuters who report experiencing some level of an increase to their travel times due to congestion are combined, the total percentage of respondents who experience at least some level of increased travel time due to congestion is a total of 56% (marked by a “*” symbol in the table).

Table 12. Congestion Impacts on all Commuting Times

<table>
<thead>
<tr>
<th>Congestion Impacts on all Commuting Times</th>
<th>Count</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>95</td>
<td>44%</td>
</tr>
<tr>
<td>Makes my trip up to 1 and 1/3 times as long</td>
<td>67</td>
<td>*31%</td>
</tr>
<tr>
<td>Makes my trip up to 1 and 1/2 times as long</td>
<td>27</td>
<td>*12%</td>
</tr>
<tr>
<td>Makes my trip up to 1 and 2/3 as long</td>
<td>11</td>
<td>*5%</td>
</tr>
<tr>
<td>Makes my trip up to twice as long</td>
<td>16</td>
<td>*7%</td>
</tr>
<tr>
<td>Makes my trip more up to or more than three times as long</td>
<td>2</td>
<td>*1%</td>
</tr>
<tr>
<td>Total</td>
<td>218</td>
<td>100%</td>
</tr>
</tbody>
</table>
An exercise to further explore this statistic would be to segregate the population within the survey who use vehicles for their most common commutes from those who walk, bike, or take public transit to determine if and/or how this statistic changes. Table 13 (below) demonstrates the results to this exercise and supports the assumption that commuters who travel by vehicle experience a higher ratio of increased commute times as a result of traffic congestion.

Table 13. *Congestion Impacts on Commuting Times (All Commutes versus Vehicle Commutes)*

<table>
<thead>
<tr>
<th>Congestion Impacts</th>
<th>All Commutes</th>
<th>Vehicle only Commutes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of respondents</td>
<td>%</td>
</tr>
<tr>
<td>Not at all</td>
<td>95</td>
<td>44%</td>
</tr>
<tr>
<td>Makes my trip up to 1 and 1/3 times as long</td>
<td>67</td>
<td>*31%</td>
</tr>
<tr>
<td>Makes my trip up to 1 and 1/2 times as long</td>
<td>27</td>
<td>*12%</td>
</tr>
<tr>
<td>Makes my trip up to 1 and 2/3 as long</td>
<td>11</td>
<td>*5%</td>
</tr>
<tr>
<td>Makes my trip up to twice as long</td>
<td>16</td>
<td>*7%</td>
</tr>
<tr>
<td>Makes my trip more up to or more than three times as long</td>
<td>2</td>
<td>*1%</td>
</tr>
<tr>
<td>Total</td>
<td>218</td>
<td>100%</td>
</tr>
</tbody>
</table>

To summarize the table above, the total percentage of all commuters who experience at least some level of increased travel times due to congestion is 57% (marked with a “*” in the
Given the fact that commuters who more fully experience traffic congestion are those who commute by vehicle, another useful statistic to analyze would be - of those vehicle commuters - how would the level of acceptance to a potential VIC-G.R.I.D. policy vary when weighted against the overall acceptance level when all groups are considered?

As reported in the earlier sections, from a total of 221 respondents 16% would **not** agree to this policy under any or likely most circumstances, 33% **would agree** to this policy under certain circumstances, 48% **would agree** to this policy under most circumstances and 2% **would agree** to this policy only if it had little effect on them.

When only the number of respondents who mainly commute by vehicle (111 out of 221 respondents) during their most common commute in an average week are analyzed, the following results are obtained: 23% would **not** agree to this policy under any or likely most circumstances, 36% **would agree** to this policy under certain circumstances, 37% **would agree** to this policy under most circumstances, and 4% **would agree** to this policy only if it had little effect on them. (Figures 6 below demonstrates this comparison).
This analysis supports the facts that there is a 73% approval rating either in part or in full (would agree under certain and would agree under most) for the vehicle only group as opposed to an 81% approval rating obtained within the larger study group which includes commuters who use all multi-modes of transportation. It should also be noted, however, that there is a higher acceptance level by the vehicle commuters in the “would approve this policy under certain circumstances” category at 36% over 33% which would indicate that there is a larger but guarded (depending on the circumstances) type of willingness to consider a VIC-G.R.I.D. policy by vehicle commuters which is a similar determination to what was previously acknowledged when males were found to be more willing to consider the policy “under certain circumstances” than females.

**Single occupancy ridership inquiry.** An important insight that can also be demonstrated through the findings of the survey results is how often vehicle commuters have passengers on board during their usual commutes. The table below (see Table 14) indicates that the majority of vehicle commuters are travelling alone most of the time.
Table 14. Frequency of Multi-Occupancy Vehicle (MOV) Ridership

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>37</td>
<td>17%</td>
</tr>
<tr>
<td>Seldom</td>
<td>36</td>
<td>17%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>24</td>
<td>11%</td>
</tr>
<tr>
<td>About half the time</td>
<td>13</td>
<td>6%</td>
</tr>
<tr>
<td>Most of the time</td>
<td>32</td>
<td>15%</td>
</tr>
<tr>
<td>Always</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>**N/A</td>
<td>64</td>
<td>30%</td>
</tr>
<tr>
<td>Total</td>
<td>216</td>
<td>*101%</td>
</tr>
</tbody>
</table>

*An over 100% total has been achieved due to rounding.**  
** Is largely representative of public transit and cycling commuters.

This information supports the premise and goal of what a VIC-G.R.I.D. initiative could potentially attain in regards to the policy having the desired impact of increasing the incentive to commuters to carpool. It is assumed that a VIC-G.R.I.D. initiative would facilitate reduced congestion when ridership on the route is restricted to sustainable modes of transportation only and that commuters could join in experiencing this ease of movement along the VIC-G.R.I.D. route by simply becoming a MOV or choosing an alternative sustainable mode of transport that would be supported on the route. This type of assumption would need to be substantiated with enhanced feasibility studies that will be discussed in more detail within the Future Work section of this research paper.
Factors that affect transportation choices.

The survey also explored factors that might influence respondents’ transportation choices. The table below (see Table 15) outlines factors that affect transportation choices as reported by the 216 participants who responded to this question. Respondents were asked to rank which factors were the most important to them in regards to their transportation choices. The categories that were ranked as the highest influential factor are listed at the top of the table below with the lowest ranking influential factor listed at the bottom of the table.

According to the Table 15, time, convenience, availability, affordability and weather are the highest ranking contributing factors to commuter’s transportation choices. This topic was further explored through the interviews and will be further discussed in the interview section below.

Table 15. Ranked Factors that Influence Transportation Mode Choice (1 is the highest rank)

<table>
<thead>
<tr>
<th>Factors</th>
<th>Rankings (%)</th>
<th>Total # of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Time</td>
<td>23%</td>
<td>15%</td>
</tr>
<tr>
<td>Convenience</td>
<td>22%</td>
<td>18%</td>
</tr>
<tr>
<td>Availability</td>
<td>21%</td>
<td>13%</td>
</tr>
<tr>
<td>Affordability</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Weather</td>
<td>20%</td>
<td>12%</td>
</tr>
<tr>
<td>Personal Comfort</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>Social or Media Influence</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>Environmental / Climate</td>
<td>13%</td>
<td>13%</td>
</tr>
</tbody>
</table>
Opinions in regards to sustainable transportation.

The third and final part to the survey examined the views of the participants in regards to sustainable transportation initiatives in general along with the perspectives of respondents in direct regard to a VIC-G.R.I.D. policy for the Greater Victoria region.

Responses to the usefulness of sustainable transportation initiatives.

Respondents to the survey were requested to express their agreement or disagreement to the following statements: (1) Sustainable transportation initiatives are useful endeavours for citizens, (2) Sustainable transportation initiatives are useful endeavours for governing bodies, and (3) Making personal changes to improve the sustainability of my own transportation choices will make a difference to the environment. The results obtained upon the evaluation of the 217 responses received indicated that respondents strongly believe that sustainable transportation initiatives are useful endeavours for citizens (69%) and strongly believe that sustainable transportation initiatives are useful endeavours for governing bodies (67%). (Table 16 below demonstrates these results).
Table 16. Responses to the Usefulness of Sustainable Transportation Initiatives

<table>
<thead>
<tr>
<th>Statements</th>
<th>Level of agreement with the statements (%)</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable transportation initiatives are useful endeavours for citizens.</td>
<td>Strongly Agree: 69%  Agree: 26%  Disagree: 2%  Strongly Disagree: 2%  Don't Know: 1%</td>
<td>217</td>
</tr>
<tr>
<td>Sustainable transportation initiatives are useful endeavours for governing bodies.</td>
<td>Strongly Agree: 67%  Agree: 25%  Disagree: 2%  Strongly Disagree: 3%  Don't Know: 3%</td>
<td>217</td>
</tr>
<tr>
<td>Making personal changes to improve the sustainability of my own transportation choices will make a difference to the environment.</td>
<td>Strongly Agree: 54%  Agree: 33%  Disagree: 6%  Strongly Disagree: 4%  Don't Know: 4%</td>
<td>221</td>
</tr>
</tbody>
</table>

In contrast, fewer respondents strongly agree that making personal changes to improve the sustainability of their personal transportation choices would make a difference to the environment (54%). However, if the agree and strongly agree responses are combined the difference is not quite as large (i.e., 95% believe that sustainable transportation initiatives are useful endeavours for citizens, 92% believe that sustainable transportation initiatives are useful endeavours for governing bodies and 87% believe that making personal changes would make a difference). Nonetheless, this finding would indicate – without following up further with additional direct inquiries to these particular respondents - that there would appear to be a level of disempowerment or perhaps a lack of motivation amongst respondents in regards to them having a sense that they have the ability of making substantive differences in regards to the status of the environment in which we live within the realm of the sustainability of their transportation choices. This interpretation of the data will be further discussed in the interview section of the
research paper where it is also noted that there is a disconnect between what people say is important to them in regards to improving the environment and how they behave.

*Factors that would impact the support of a VIC-G.R.I.D. initiative.*

Respondents were also asked to rank the factors that might impact their level of approval of the VIC-G.R.I.D. initiative. The list of factors included: (1) an improvement to environmental impacts, (2) improved traffic congestion, (3) improved travel times, (4) convenience, and (5) a more enjoyable commute. Respondents ranked each factor on a scale from 1 to 5 with 1 being the most important. Table 17 (below) presents the results as percentages of respondents (out of a total of 217 respondents). The responses have been sorted by the most important factor listed at the top of the table to the lowest ranking factor listed at the bottom of the table.

Table 17. *Factors That Would Impact Respondents Approval Ratings to the VIC-G.R.I.D. Initiative*

<table>
<thead>
<tr>
<th>Factors</th>
<th>Rankings (%)</th>
<th>Total # of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>An improvement to environmental impacts</td>
<td>45%</td>
<td>17%</td>
</tr>
<tr>
<td>Improved traffic congestion</td>
<td>35%</td>
<td>23%</td>
</tr>
<tr>
<td>Improved travel times</td>
<td>27%</td>
<td>26%</td>
</tr>
<tr>
<td>Convenience</td>
<td>22%</td>
<td>20%</td>
</tr>
<tr>
<td>A more enjoyable commute</td>
<td>21%</td>
<td>22%</td>
</tr>
</tbody>
</table>
Again, this particular analysis indicates that respondents regard improved environmental impacts as an important factor relative to sustainable transportation initiatives. However, two assumptions could be made: (1) an improvement to environmental impacts may be a socially acceptable response, and (2) one could assume that if a VIC-G.R.I.D. policy was perceived to be instrumental in improving environmental impacts, respondents may be more in favour of this type of policy and would place this factor as the utmost of importance in regards to this type of initiative being accepted at a local level. Improvements to traffic congestion and travel times are the next highest ranking factors with convenience and a more enjoyable commute being the categories that fall to the lowest level.

This is an interesting comparison to Table 15 (above) that noted that environmental/climate change concerns were one of the least important factors that affected respondents’ transportation choices. Yet in Table 17 respondents placed an improvement to environmental impacts as the highest factor of the choices provided. Again, this appears to indicate that there is large value placed by respondents on improving environmental impacts, but that value does not always translate to the choices that respondents ultimately make.

This interpretation of the data provides a strong argument that in order to garner support from citizens, business representatives and stakeholders, initiatives such as the VIC-G.R.I.D. policy being researched in this paper would require substantive studies that provide proven analysis that the policy being considered would result in an improvement to environmental impacts. This particular point will be raised and discussed in further detail in later sections of this paper.
Barriers and motivators of a VIC-G.R.I.D. policy as identified by respondents.

In addition to the eighteen multiple-choice survey questions that resulted in the previously presented analyses, the survey also included two open-ended questions in which respondents were invited to provide feedback in regards to: (1) the barriers they believed a ‘Green Road’ initiative would face, and (2) potential motivators or factors that might encourage them to support a ‘Green Road’ initiative. Although the two open-ended survey questions were administered in a two-part format within the survey, the data obtained from the two questions listed above have been combined, coded thematically and presented as one analysis as it was determined that quite often an identified motivator to a respondent to support a VIC-G.R.I.D. initiative was the same as the barrier that was identified (i.e., barrier = lack of supporting infrastructure and motivator = an increase in infrastructure).

The responses relative to the barriers, specific areas of interest or concern that respondents believed would exist were noted and categorized into thirteen specific themes relative to the potentiality of a ‘Green Road’ initiative. A percent value was then assigned to the thirteen themes by assigning each response to a theme, determining the overall response count, noting how many times each theme was identified by respondents, and then dividing the themes’ total response count by the overall total number of responses. The table below (see Table 18) provides a summary of the top nine themes most frequently identified by respondents in terms of what they felt particularly concerned with and/or motivated to comment on in regards to their opinions to a potential ‘Green Road’ policy. The table is sorted highest to lowest based on the identified themes respective values.
The purpose of categorizing the opinions of the respondents of the two open-ended questions posed in the survey was to be able to determine what topics of interest or concern were prevalent to respondents when considering a potential VIC-G.R.I.D. policy. Because the topic of barriers and motivators was also discussed during the interviews, the results of the survey and interviews were combined and compared against each other. These comparisons will be presented in subsequent sections of this paper and will provide the basis to the mixed methods analysis to follow.

Table 18. Top Nine Identified Survey Themes

<table>
<thead>
<tr>
<th>Top Nine Identified Survey Themes</th>
<th>Response Count</th>
<th>Percentage of Respondents who Mentioned the Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in Congestion and Commute Time Fears – Lack of Alternative Roads</td>
<td>35</td>
<td>17%</td>
</tr>
<tr>
<td>Resistance to Change – Public Opposition</td>
<td>33</td>
<td>16%</td>
</tr>
<tr>
<td>The Need of Supporting Infrastructure</td>
<td>29</td>
<td>14%</td>
</tr>
<tr>
<td>Local, Business &amp; Servicemen Traffic Needs</td>
<td>27</td>
<td>13%</td>
</tr>
<tr>
<td>Monitoring/Enforcement</td>
<td>19</td>
<td>9%</td>
</tr>
<tr>
<td>Costs</td>
<td>16</td>
<td>8%</td>
</tr>
<tr>
<td>Conflicting Interests (publicly &amp; municipally) and Concerns in Difficulty in Gaining Consensus Regionally</td>
<td>13</td>
<td>6%</td>
</tr>
<tr>
<td>Analysis/Education</td>
<td>13</td>
<td>6%</td>
</tr>
</tbody>
</table>
Top Nine Identified Survey Themes | Response Count | Percentage of Respondents who Mentioned the Theme
--- | --- | ---
Public Engagement | 11 | 5%

Total # of Responses | 196 responses out of a possible 203 total responses | **94% out of possible 100%**

* The top nine themes identified above achieved weighted values of at least 5% with the remaining four themes identified (safety, the need for incentives, the importance of keeping the initiative simple and inertia towards turning intentions to achieve sustainability into action) not listed as they resulted in combined weighted value of less than **4%**.

** Rounding also affects the results in the table to a total weighted value of 2%.

Interviews Results

Similar to the survey that was conducted for this research paper, the interviews also provided an opportunity for respondents to define and describe the benefits and barriers of a potential VIC-G.R.I.D. policy (see Appendices C, D & E). This section of the analysis will outline barriers and areas of concern that respondents felt would be key issues needed to be fully addressed in order for a VIC-G.R.I.D. policy to be considered for implementation in the Greater Victoria region. This approach may at first glance appear to place the focus on the negative, however, the benefits to a potential VIC-G.R.I.D. can be assumed and were arguably agree upon by many respondents in terms of its intention to enhance transportation sustainability for the Greater Victoria region and, if that assumption or intention was challenged by a respondent, that challenge usually resulted in an identified barrier or area of concern requiring further discussion or analysis. Therefore, focusing on what issues would need to be fully addressed in order to gain approval from citizens, business representatives and key stakeholders is, in fact, the result sought and ultimately satisfies the purpose of this research. Thus, the themes identified from within the
interviews conducted will be identified and weighted in a similar fashion to the two open-ended survey questions in order to achieve a comparison between the prevalent themes identified within the survey responses and the prevalent themes identified within the interviews.

The interview results provided a greater depth of context and understanding to the most common themes identified in the survey as the interviews allowed for dialogue to occur between myself and the interviewees in regards to the themes identified as opposed to the survey questions which did not have an allowance for dialogue to occur. And, when the results from the survey are combined with the results from the interviews, a comparison of themes identified will allow for an opportunity for themes that were consistent between the two research methods to be outlined as well as an opportunity for themes that were not consistent to be discussed.

As previously outlined in the methodology section, interviewees were derived – in part - from survey participants who volunteered to be interviewed as a follow-up to them completing the on-line survey and also included participants whom I purposefully solicited. My intention was to facilitate a balance between the three main target groups - citizens, business representatives and key stakeholders. In addition to succeeding in obtaining consent from a suitable number and range of participants amongst the three main target groups, I was also able to engage representatives from groups not previously considered (i.e., a police member, a CRD Roundtable member and advisor to the Regional Sustainability Strategy (RSS), a car-free citizen, a member of a Centre for Social and Sustainable Innovation and a transportation policy researcher/consultant).

The complete list of the nineteen individuals who participated in the interviews includes:
• Member of a downtown Victoria business association;
• General Manager of a car dealership located on the proposed ‘Green Road’ route;
• General Manager of a motorcycle and motor scooter dealership located on the proposed ‘Green Road’ route;
• CRD Roundtable on Environment member and advisor to the development of the CRD RSS;
• CRD departmental manager and planner;
• Municipal Mayors (3);
• Municipal councillor;
• Municipal planner;
• Retired planner and university student supervisor;
• University staff member and car-free citizen;
• University staff member within a Centre for Social and Sustainable Innovation department and cyclist;
• Citizen – student, employee and cyclist;
• Citizen – student, employee and vehicle commuter;
• Citizen – student, employee and transit commuter;
• Citizen – student and cyclist;
• Transportation policy researcher and consultant; and
• Saanich police member and student.
From the review of the transcribed interviews, key themes have been identified. Similar to the approach taken to identify key themes in the analysis of the survey open-ended questions, the identified interview themes have been weighted by noting a total of sixteen themes discussed within the interviews and then determining a response count and a response value (percentage of respondents who mentioned the topic/issue) (see Table 19 below) by noting the frequency in which the identified themes were discussed during all interviews. The top nine themes were then determined by sorting the themes generating at least a 50% response value by highest to lowest.

Table 19. Top Nine Identified Interview Themes

<table>
<thead>
<tr>
<th>Top Nine Identified Interview Themes</th>
<th>Response Count</th>
<th>Response Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Win/Win – Collaboration – Competing Interests</td>
<td>12</td>
<td>75%</td>
</tr>
<tr>
<td>Public Consultation and Business Perspectives</td>
<td>12</td>
<td>75%</td>
</tr>
<tr>
<td>Championship &amp; Marketing Appeal/Approach</td>
<td>10</td>
<td>63%</td>
</tr>
<tr>
<td>Space Priorities – Complete Cities</td>
<td>10</td>
<td>63%</td>
</tr>
<tr>
<td>Analysis &amp; Safety</td>
<td>9</td>
<td>56%</td>
</tr>
<tr>
<td>Resistance to Change</td>
<td>9</td>
<td>56%</td>
</tr>
<tr>
<td>Sprawl, Geographical Limits &amp; the Overemphasis on Vehicle Use</td>
<td>9</td>
<td>56%</td>
</tr>
<tr>
<td>User Equality – Infrastructure to Support all Modes</td>
<td>9</td>
<td>56%</td>
</tr>
<tr>
<td>Sustainability Relevance - Intention versus Action</td>
<td>9</td>
<td>56%</td>
</tr>
</tbody>
</table>
The following remaining themes represent the topics that were identified but discussed at a lesser frequency:

- Costs versus Value of Expenditures - resulting in a 50% response value;
- Monitoring - resulting in a 44% response value;
- Safety – resulting in a 44% response value;
- Quality of Life – resulting in a 31% response value;
- Using other Communities as Role Models – resulting in a 25% response value;
- The Role of the Police in Infrastructure Decision Making – resulting in a 13% response value; and
- The Value of Taking Small Steps to Create Change – resulting in a 13% response value.

These top nine identified interview themes will be evaluated against the top nine identified survey themes in order to identify the themes that were common within both the survey and the interview research methods and to evaluate and discuss the themes that were not common to both research methods. This approach will form the framework from which the subsequent mixed methods analysis will evolve.

**Mixed Methods Analysis**

The following table (see Table 20 below) combines and represents the top nine themes identified from within the surveys and the interviews. Themes that are identified as common from this table will then be outlined and fully discussed from within the context of dialogue derived from the interviews and will be coupled with and analyzed in conjunction with the
results obtained from the survey open-ended questions. Themes identified as not in common (but of certain relevance) will also be outlined and discussed either within the subsequent discussions of the main common themes or as individual follow-up topics of interest as identified by citizens, business representative and stakeholders with regards to the consideration of a potential VIC-G.R.I.D. policy for the Greater Victoria region.

Table 20. *Top Nine Identified Survey and Interview Themes*

<table>
<thead>
<tr>
<th>Top Nine Identified Survey Themes</th>
<th>Top Nine Identified Interview Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in Congestion and Commute Time Fears – Lack of Alternative Roads Options</td>
<td>Win/Win – Collaboration – Competing Interests</td>
</tr>
<tr>
<td>Resistance to Change – Public Opposition</td>
<td>Public Consultation and Business Perspectives</td>
</tr>
<tr>
<td>The Need of Supporting Infrastructure</td>
<td>Championship &amp; Marketing Appeal/Approach</td>
</tr>
<tr>
<td>Local, Business &amp; Servicemen Traffic Needs</td>
<td>Space Priorities – Complete Cities</td>
</tr>
<tr>
<td>Monitoring/Enforcement</td>
<td>Analysis &amp; Safety</td>
</tr>
<tr>
<td>Costs</td>
<td>Resistance to Change</td>
</tr>
<tr>
<td>Conflicting Interests (publicly &amp; municipally) and Concerns in Difficulty in Gaining Consensus Regionally</td>
<td>Sprawl, Geographical Limits &amp; the Overemphasis on Vehicle Use</td>
</tr>
<tr>
<td>Analysis/Education</td>
<td>User Equality – Infrastructure to Support all Modes</td>
</tr>
<tr>
<td>Public Engagement</td>
<td>Sustainability Relevance - Intention versus Action</td>
</tr>
</tbody>
</table>

From the table above, it can be determined that the following themes are common within the top nine themes identified within both research methods:
• *A potential increase to traffic congestion.* This topic was identified as an area of concern by survey respondents who talked about the potentiality of increased traffic congestion or travel times due to the lack of alternative roads within the Greater Victoria region. Similarly, interviewees spoke to geographical limits existent in the Greater Victoria region;

• *Resistance to change.* This topic has been identified as a challenge by both survey respondents and interviewees;

• *Supporting infrastructure and incentives.* The need for supporting infrastructure and incentives for commuters to be motivated to utilize alternative modes of transportation has been identified by survey respondents; whereas the interviewees talked about a need for more infrastructure that creates ease of use and equality amongst all transportation modes used by commuters;

• *Addressing the needs of local and business traffic.* Both the survey respondents and interviewees have questioned how the needs of local and business traffic would be addressed should a ‘Green Road’ policy be implemented and they emphasized the importance of consultation with business representatives;

• *Conflicting interests of stakeholders.* Conflicting interests, the challenge in gaining consensus amongst citizens and municipalities, and the need to create win/win scenarios to address competing interests in a collaborative manner has been discussed by both survey and interview participants;
• *The need for in-depth analysis of initiatives.* Both the survey respondents and the interviewees have suggested that a thorough analysis of initiatives being considered are necessary so that facts pertaining to the validity of the approach in regards to environmental impacts, safety and traffic patterns can be presented to the public for their input; and

• *The need for public engagement.* The need for public engagement has been identified by both survey respondents and interviewees.

Thus this research paper will begin to address each of the above common themes more fully within the following sub sections.

**A potential increase to traffic congestion on alternative routes.**

The most prevalent concern amongst survey respondents is that if SOV commuters have restricted access within the specified VIC-G.R.I.D. network during peak traffic hours it may simply shift traffic flow to alternative roads – causing an increase to traffic congestion on roads that may already be experiencing congestion (i.e., Highway #1 which transports many commuters from the Western Communities to downtown and other key destinations within the Greater Victoria region). From a total of 203 respondents who answered this question, this particular concern was noted a total of 35 times (or 17%) as a potential resulting impact of the VIC-G.R.I.D. policy being researched. However, the concern of how this type of policy may affect current traffic patterns was expressed by interviewees in various forms.

For example, one interviewee was concerned that traffic would be pushed onto smaller more residential side streets which would potentially put roads that were previously considered
safer for cyclists at risk of becoming more congested and less safe. This particular interviewee stated that “my main concern in traffic planning is to reduce the number of vehicles on the road and to reduce the number of cars that I have to interact with” and that, “the only concern that I think I can see is if it pushes people onto the side roads that cyclists tend to go”.

This concern is reiterated by several interview respondents as they point out that the Greater Victoria region is limited to a relatively small geographical land base that is surrounded by water and that there is a limitation to the amount of alternative roads available and/or roads that can be expanded upon in terms of capacity. One interviewee expressed this concern by stating that “it would be a heck of a challenge because we are basically an island so our routes in and out are limited and across and through”. As noted previously, when we consider the main destinations within the Greater Victoria region (such as downtown Victoria), it is can be argued that most common destinations within the region can be generally navigated within a 10 km basis. And, the survey data substantiated that 56% of commuters travel between 1 and 10 kilometer per commute. Thus, we can safely agree that the Greater Victoria region is indeed a small area that struggles to accommodate growing populations that have exasperated transportation issues within this region.

From an alternative perspective, however, another interviewee (experienced in local regional transportation planning) expressed that “in terms of functionality we should prioritize corridor routes for automobile use and crowd source them but the problem is how do you fit transit on them so that is where we start getting the conflict”. It could be assumed, that if this approach was consistent amongst regional planners, municipal stakeholders and Ministry representatives, a VIC-G.R.I.D. network could be accommodated on roads not identified as main
crowd sourced corridors (i.e., main highways) and that measures could then be implemented to address congestion concerns on these main arterials (i.e., Rapid Bus Transit (RBT) lanes).

During the conversations of traffic flow and congestion, both survey respondents and interviewees alike expressed a wide range of opinions on how traffic issues relative to congestion and traffic flow should be addressed - dependent on the lifestyles that respondents preferred to lead. For example, one interviewee, who is a business owner, believed that increasing capacity to enhance vehicle mobility by building more overpasses and providing relief to bottle necks on major roadways should be a priority for transportation planners. This particular respondent also suggested that this type of approach should be coupled with the construction of transportation hubs that would include large parking facilities and connections to mass transit infrastructure such as rapid transit. Alternatively, an interviewee who has chosen to live a lifestyle that is independent of owing a vehicle and who is someone who places a large value to a quality of life that does not include the support of an increase to highway capacity to accommodate the mass movement of vehicles, would argue that commuters should be encouraged to make their transportation experiences ones that would involve – through cycling and walking - a more intimate interaction with nature and other commuters.

This diversity of opinion relative to how traffic patterns may change and what measures should be taken to address traffic patterns and congestion was compassionately and even emphatically expressed in some cases within many of the interview sessions. This expression of interest, in one particular interview session at the regional planning level, prompted follow-up conversations with a regional transportation planner who was provided permission to test and apply the parameters of the proposed VIC-G.R.I.D. policy to an existing regional transportation
model. The results to this inquiry will be further outlined in the Future Work section of this paper as this preliminary testing of the VIC-G.R.I.D. policy on traffic patterns - which is planned to be followed up with additional analysis at the regional level - was not part of the initial scope of this study.

The keen interest with which participates responded to this study demonstrates that transportation related issues are very important to citizens, business representatives and key stakeholders. This emphasis of the importance by respondents to their personal transportation experiences may provide the basis for an understanding to a resistance to change that has been identified as the next most prevalent identified topic to be discussed.

**Resistance to change.**

Resistance to change has been a common theme expressed both amongst survey respondents and amongst interviewees. Resistance to change was counted as an identified topic of concern 33 times (or 16%) out of a possible 203 total number of concerns raised by survey respondents and was also noted as one of the top nine themes identified from within the interviews.

One interviewee simply stated that “the only thing that people hate more than the way things are is change”. Another interviewee seemed to think that a resistance to change may be more prevalent amongst older populations as opposed to younger populations. This particular interpretation seems to be consistent and seemed to be substantiated in the survey analysis of this paper when age ranges were factored into respondents approval ratings to the VIC-G.R.I.D.
policy and younger age ranges proved to generally express a greater willingness to consider an initiative that may involve considerable change to the existing transportation systems in the Greater Victoria area. A third interviewee discussed a more factual interpretation to change resistance from a societal perspective and claimed that in regards to new ideas, “there are early adopters who are people who are willing to take risk, then there are late adopters and then there are laggers which account for about 20% of the population who will stall everything”. A fourth participant stated, “you’re gonna get a resistance to change but it’s amazing how life goes on even after change”.

However, resistance to change, in my opinion, is actually an expression of underlying forces that perhaps manifest and become interpreted as a resistance to change. A similar phenomenon within the expression of anger can be drawn as a comparison, as anger is commonly identified as an emotion being expressed when in fact anger is usually an expression of other underlying emotions such as fear, hurt, disappointment, etc. Some of the relevant underlying forces that could be interpreted as a resistance to change have been expressed within this study such as the previously noted concern of a potential increase in traffic congestion on other routes and has also been expressed in other noted areas of concern that are discussed in later sections of this paper such as enforcement concerns, fear of decisions being made without sufficient studies being conducted, the lack of adequate or sufficient alternative routes, local traffic and business access, a lack of public consultation and a lack of confidence in our regions’ ability to collaborate and cooperate for the common good.
Howard Gardner, a Harvard psychologist, in *Changing Minds: The Art and Science of Changing Our Own and Other People’s Minds* (2006), introduces a framework of seven factors or levers that could be at work in cases involving changing minds (p. 15-18):

- **Reason** – a logical, rational approach;
- **Research** – a collection of relevant data/findings that is formal or informal;
- **Resonance** – the approach/change feels right or fits the situation;
- **Representational Redescription** – the change lends itself to multiple representations in a number of different forms;
- **Resources and Rewards** – positive reinforcements;
- **Real World Events** – the broader context surrounding one’s environment; and
- **Resistances** – difficulties associated with change or reasons not to.

For Gardner, “a mind change is most likely to come about when the first six factors operate in consort and the resistances are relatively weak” (p. 18). These first six factors identified by Gardner (2006) are definitively at play within this study and can be identified with survey respondents and interviewees attempts to rationalize the VIC-G.R.I.D. concept when:

- The need for the initiative to be thoroughly analyzed is expressed;
- The idea is considered on an emotional level as respondents ponder how the change would play out amongst multiple personal scenarios;
- It is acknowledged that this initiative may require incentives to motivate people to adopt the policy;
• The concept is considered in context with the potential implications on the global environment; and when

• Reasons why a VIC-G.R.I.D. policy may prove difficult to implement are explored.

Despite a perceived resistance to change being noted as one of the top themes identified within the study and with a wealth of issues and concerns being expressed by respondents both in the survey and the interviews, the survey analysis results demonstrate that out of 221 survey respondents, 82% would consider this policy either under certain circumstances or under most circumstances. Even when survey respondents who mainly drive vehicles for their main commutes are considered (114 or 52% of the overall survey respondents), the results still indicate that 74% of those respondents would be willing to consider a VIC-G.R.I.D. policy under certain or most circumstances.

An even more exciting development within this research paper was that this region seems to embody stakeholder representation by individuals who hold key positions of influence who, in one specific case, pride themselves on not being a ‘yah-but’ type of individual and who instead welcome new ideas with wonder and take an optimistic outlook towards new opportunities. This one specific participant stated that “the biggest challenge of this is it’s outside the box”, and shared a story with me in regards to when the Galloping Goose Trail in Victoria was at a conceptual stage. It was explained to me that

there was something that was a little outside the box and that was converting the railways to trails and I can remember staff coming to us with this rails to trails idea and I didn’t
visualize how successful it could be and staff seemed to really believe in it so I was supportive of it and others were appalled (they might have been older than me) because it was a change. I wasn’t really able to sell it because I didn’t really grasp how successful it would be but it was worth a shot, so if I was in a meeting I would try not to be a ‘yah-but’. I would say why don’t you flush it out? It might be worth a shot. It might be more successful than I envision. That’s kind of how I put these things. So what’s the harm in floating it? Why say no at this stage. Why don’t you put it out there and let’s see if it’s a good idea. So that’s how I would approach it. (Interview 6, 2013)

This type of openness and willingness to explore the realm of possibilities at a regional governance level is an example of the type of local culture that exists in this region and is likely, in part, what led to the invitation for this initiative to be modeled at a local level within a transportation modeling platform used by regional authorities. Through this development, it has been suggested through discussions with regional planners that this particular initiative would require the support of alternative supporting transportation systems which will be the next main topic identified as requiring further discussion in this paper.

**Supporting infrastructure and incentives.**

The need for supporting infrastructure within the current local transportation system with an even stronger emphasis for the need of supporting infrastructure when considering a VIC-G.R.I.D. policy was clearly communicated by both the survey respondents and the interviewees. Survey respondents were noted to identify with this theme a total of 29 times (or 14%) out of a
total of 203 noted concerns and the interview response value in regards to this theme was determined to be 56%.

It was expressed by participants in the study that the Greater Victoria transportation system has challenges that make it difficult for citizens to, for example, choose public transit for their commutes. One of the participants shared that

I live out in the peninsula and by the time the bus gets to me its standing room only and that means I have to stand on the bus on the highway doing 80kms an hour which is not safe by anybody’s standards because if the bus comes to a stop I am flying through the windshield (Interview 8, 2013).

Others felt that because the region operates within thirteen distinct boundaries, it results in systems such as bike lanes that have inconsistent infrastructure between regions. For example, one interviewee expressed their experience of enjoying a level of ease of mobility when cycling in one regional municipality only to lose that ease of mobility due to disconnects between or complete lack of bike lanes in other municipal regions. Another interviewee expressed their frustration with the time involved to get to a local bus stop and the time sometimes required or wasted while waiting for transit service. These experiences are of course individual expressions which would vary depending on the locale of the commuter, the transportation services offered and the infrastructure that is existent within their specific area.

Frustrations with the Greater Victoria regions’ transportation systems appear to be not uncommon complaints but perhaps complaints that may come with some assumptions. For example, one respondent when discussing transit schedules expressed that,
for the most part it has been hellishly reliable….so this notion that they are always late….I don’t know what buses these people are talking about”. She continued to express that, in her opinion that, “it only takes one person…so the more positive experiences you can get out there about taking the bus the better (Interview 8, 2013).

As a personal example, during the time period that I was collecting data through the on-line survey and the interviews, I embarked upon a personal transportation journey during which I purposefully altered my usual travel behavior in order to experience firsthand all the transportation options that were available to me. I then documented my observations, my experiences and my emotional responses while exercising the various transportation modes that were at my disposal. I am fortunate that transit services are within very close proximity to where I live and work and that I am one of those Victoria citizens whose commute is less than 10 kilometers from their homes. I was, however, also one of the many Victoria citizens - as similarly reported in the survey responses – who was mainly commuting by vehicle and had (what some people would consider to be common excuses) as to why I was not cycling more, or walking more or using public transit more based on assumptions that I held that altering my transportation choices would have an effect on things such as my schedule and/or my time.

My observation and deduction of my experiences while utilizing the various transportation modes available to me was that driving and taking transit equated to the same average trip duration time of twenty three minutes. I experienced minimal frustration while taking transit as the buses on the route that I used were effective in keeping a reliable adherence to the bus schedule, were comfortable and clean, and were not overly crowded during most trips which allowed me to find seating for the majority of my trips.
Any frustration experienced by using transit services was mainly due to missing a bus and having to wait for the next bus. This frustration, however, was usually offset by the bus lane right of way rules that allow buses priority upon re-entering traffic from bus pullouts which resulted in saved transit time and also resulted in experiences that were not any more frustrating than what I usually experience while driving in traffic and being delayed due to congestion. A final observation and an appreciation realized from utilizing alternative to vehicle modes of transportation was an increase in my personal physical exertion which allowed me to make a greater contribution to my personal health.

My conclusion to this experiment was that, in my case, choosing an alternative mode (or modes) of transportation was a positive experience overall. I became aware that the supporting infrastructure that is currently in place within the Greater Victoria areas that I was travelling in was quite efficient, convenient and enjoyable. For me, and I am guessing that I am not alone, the decision to change my transportation habits required a level of (if not a minimal amount of) motivation. The motivation in my case was the conducting of this research paper which resulted in me having an enhanced appreciation of sustainable transportation issues on a personal level for which I, and I alone, can take personal responsibility of.

I hypothesis that if (we) are successful in implementing strategies that encourage (without overtly inconveniencing) citizens to be motivated to alter their transportation habits, we can succeed in regionally advancing sustainability in transportation. This personal experience leads this paper to the next section of discussion that involves an expression of concern from
Addressing the needs of local and business traffic.

Another area of much discussion evolved around the question of how local traffic would navigate within and around a network of roads that were designated to sustainable only transportation modes within peak traffic hours and how people would access businesses and perform routine daily activities like dropping children off at daycares or visiting their family doctors. For example, one participant was looking at this initiative from the perspective of who might be the winners and who might be the losers, and, when asked who they believed might be the losers replied that, “people use this route for business, for deliveries” and added that, “I know SOV users are politically incorrect but they are still out there and what alternatives are they going to have”. I steered away from trying to directly address queries in regards to the specific routes chosen for the study as the intention of this study was to not address all feasibility ramifications of the concept but to rather tease out perspectives of citizens to the possibility of this type of policy being considered. In fact, this same participant advised me to keep it at a high level. Don’t be entrenched in a route. Be more focused on the concept and less on an actual route because people will start micro-managing this thing and try to figure out what’s going to happen on their street. I generally look for people to embrace a concept before trying to roll out the details (Interview 6, 2013).

This approach would not necessarily eliminate the types of concerns noted above but may assist to keep the focus at a higher level in which the study and analysis of the goals and the
potential impacts of a VIC-G.R.I.D. network could be followed by a public engagement process where the determination of an appropriate choice of roads or even perhaps a variation to the initial idea could manifest.

However, some suggestions or ideas that formulated within the interview process were that local residents could have a resident sticker that would allow them to access roads otherwise restricted until a convenient time for them to find an alternative route was found. Or, perhaps some people could simply adjust their scheduling to accommodate a change in road designation (i.e., an appointment or shopping could be scheduled during non-peak traffic hours). One interviewee, with an exceptionally innovative and entrepreneurial type perspective felt that some businesses may even find ways to capitalize on a VIC-G.R.I.D. network by offering discounts to customers who access the route for their commutes. I agree with these suggestions as potential mitigating measures and would add that with enough publicity and education in regards to the benefits and why our region would take this type of approach, a level of acceptance to this type of initiative may develop to a sufficient degree that would allow moral suasion to occur given that our region appears to be progressive in its thinking in terms of supporting environmental initiatives. I would also suggest the possibility of incorporating GPS software system capability to allow commuters to either choose or avoid a G.R.I.D. road network could be pursued.

Specific to direct business representation perspectives received via the interview process, the business and association managers that I spoke to had a relatively open mind to the VIC-G.R.I.D. concept. The general consensus was that businesses need to be consulted at the planning stages and that businesses are positioned (and in the business of) responding to trends and adjusting their practices to stay current with and respond to market demands.
To summarize, what seemed to be intriguing to some respondents and alternatively questionable to others was that a concept such as this one may indeed have a relevant if not significant impact on the culture and lifestyles of citizens within the Greater Victoria region. This variation to the responses and diversity of opinion made apparent through the study in regards to this particular initiative leads to the next area of discussion which addresses the issue of conflicting interests in our region as acknowledged by respondents.

Conflicting interests of stakeholders.

Another key area of concern, discussion and common consensus identified within this study was that this small region has varying interests and needs, and that it is sometimes difficult to gain consensus upon the direction that should be taken to address the needs of our communities or our region as a whole amongst the thirteen different municipalities. This theme has been noted as common amongst the survey responses with a response rate of this particular topic being discussed 13 times (or 6%) out of a possible 203 responses and was acknowledged as the most common theme through the interview process with a response rate of 75%.

Again, this was an area of discussion that generated a diverse range of opinion. Some respondents and interviewees felt that having thirteen different municipalities made decision making next to impossible and that amalgamation of the municipalities to one regional body would create of more cohesive governance structure. Others felt that perhaps not full amalgamation would be required but that perhaps simply reducing the number of municipalities would suffice to ease conflicts between regions. Yet, others felt that we have a governance structure that works fairly well. One respondent emphasized that
I am a big fan of prioritization from a regional perspective. It is all about prioritization and how do we prioritize all the competing interests. So what you are up against is thirteen municipalities that all have control over their roads, all the arterials are owned by the Ministries and we are one tiny section in a large complex province that doesn’t talk to the municipalities. So jurisdictionally, it is very, very complex (Interview 3, 2013).

Despite the apparent challenges of gaining collaboration between varying interests and multiple players, a positive common theme discussed by many interviewees - especially those who have experience in the planning and governance realms - is that regardless of the topic of discussion, the common goal of addressing everyone’s needs fairly and creating as many win/win scenarios as possible should be the utmost priority. One particular respondent who expressed this intention quite explicitly stated that,

I try to have a concept of always looking for win/wins as opposed to winners and losers and so when something is adjudicated for this use I try to figure out, okay, so those who use this will be the winners and now who are the losers and what are their alternatives? So, that is what I am thinking in my own mind. Can this be a win/win as opposed to winners and losers? (Interview 6, 2013).

This intention of placing value on addressing the needs of everyone and considering how initiatives would impact residents from the different perspectives leads to the next two topics that were commonly discussed amongst survey respondents and interviewees which was the need to conduct thorough analyses of initiatives and to actively seek full and in-depth public engagement.
The need for in-depth analysis of initiatives.

The need for a thorough analysis of this potential initiative has been iterated by different participants both within the body of survey respondents and interview respondents. Survey respondents were noted to discuss this theme 13 times (or 6%) out of the possible 203 response counts and resulted in a 56% response rate from within the interview sessions.

It is my assumption that a need for respondents to have more information before fully committing to a VIC-G.R.I.D. type of policy may have been one of the contributing factors that led to the overall 34% response rate of respondents in the survey who ‘would agree to this policy under certain circumstances’ as opposed to a higher percentage that ‘would agree to this policy under any or most circumstances’. Even the respondents who would support this policy under ‘any or most circumstances’ – which comes in at 48% - is a group that still represents a population that would have some reservations, questions and/or concerns that only a thorough analysis would more fully answer. If this was not the case, my results would not have generated such a rich body of discussion for use as obtained through the survey and interview process.

This interpretation of the data presented in this section supports the premise that - although (we) may speak of ourselves as humans beings that do not generally have a large appetite for change, the data and results suggest that we do indeed have a willingness (at least within the population parameters of this study) to broadly consider options that may result in change. This openness to consider alternatives that may result in changes to our current experiences and livelihoods is, however, approached with caution which manifests itself as the need to have our inquisitive minds satisfied and our questions answered.
Some of the questions posed by respondents and interviewees included questions previously discussed such as how would we address the needs of local and business traffic or would traffic flow simply be shifted to other routes causing more congestion on those routes. Participants also questioned how such an initiative would be monitored, what improvements to environmental impacts might be realized by such a policy and what are other communities doing to support sustainable transportation systems.

These types of questions would only be fully addressed with a comprehensive analysis of the potential impacts of the VIC-G.R.I.D. policy being researched in this paper in regards to the potential effects on traffic patterns, behavioural patterns, environmental impacts, monetary implications, etc. A promising trend within our current culture to the consideration of new initiatives is that broad based decisions such as ones that would be required to address transportation infrastructure are considered from within a triple bottom line or three pillar framework that takes into account what impacts would be realized socially, environmentally and economically.

This trend would appear (from within the context of this study as represented through the respondents and interviewees) to be a trend that is fairly widely accepted from an intentional perspective and, as previously discussed, not always a trend that manifests itself into our actions. A respondent speaks to this point clearly stating, “publicly everybody’s all about being green and they don’t want to appear to be un-environmentally friendly but then they say screw that I’m gonna drive”. However, through thorough analyses and the mass sharing of information and facts through education and public engagement, changes to our behaviours would have greater chances of more serious consideration and adoption.
The need for public engagement.

The final common theme identified within the two research methods used in this study to be discussed is the topic of public engagement. In this case, survey respondents engaged in this theme 11 times (or 5%) out of a possible 203 response counts with the interview results determined to have a response rate of 56%.

As with a thorough analysis, public engagement allows for new endeavours to be scrutinized but within a more public forum. Through public engagement citizens are invited and given the opportunity to ask the questions and voice the opinions that are important to them. A word of caution that was raised by more than one interviewee and particularly one interviewee with decades of planning experience was that there are quite often consequences of proposed initiatives that are not always readily identified, acknowledged and/or addressed. This respondent warned to be aware of potential elements of surprise and/or the chance of a new barrier presenting itself that was not previously apparent or realized within the realm of possibilities that may occur when a new initiative is being proposed and considered within a larger audience.

Again, a thorough analysis would assist to avert any missed potential impacts that would require consideration, and, public engagement would certainly facilitate a more thorough analysis to fully ensure that all potential ramifications of an intended policy are brought to the forefront of not only the public’s attention but to the attention of those who would be the key decision makers and stakeholders involved. Fortunately, this region, from my experience in this context and with limited experience relative to other regions, would appear to have a system of
governance that actively engages the public to participate in regional planning. One respondent supports this interpretation with a statement that, “our region is pretty thorough when it comes to process. There would be community meetings and Q & A’s”.

Themes Not Identified as Common Key Areas of Concern or Interest

As suggested previously, themes that were not recognized as common between the survey interviewees but were topics that either survey respondents or interviewees have raised and for which I have therefore acknowledged as relevant are:

- The importance of initiatives having champions;
- The importance of the type of approach that is taken both within a political arena as well as from a marketing perspective;
- The relevance of the need for a holistic approach to be taken in regards to transportation infrastructure and how we plan for and address growth within the context of considering the concepts of complete cities, complete streets, trends toward urban sprawl and the overemphasis and culture of the common use of vehicles as our main source of transportation;
- Value versus monetary costs;
- Monitoring;
- Safety;
- Comfort and beauty as it relates to transportation infrastructure and quality of life;
- Turning to other communities for guidance and as role models;
- The influence of the police in policy decision making; and
- The value of taking small steps towards change.

Some of these additional themes have been addressed in part within the previous discussions of the main common themes. Others would be assumed to be addressed within potential future studies or analysis. For example, safety considerations would likely be a topic best suited to a future study or analysis given that this particular topic presented itself as a relatively lesser area of importance within the study as a whole. And, using other communities as examples of what has worked and what has not worked to achieve sustainability within transportation systems will not be discussed here at much more length as this point has been raised and presented within the literature review of this paper and would be an area of specific importance to any further developments in the study of the feasibility of this particular initiative.

However, there a few not as common themes that I believe are significant and worthy of further dialogue. This dialogue will, in part, be discussed in this section - with other themes likely to be discussed within the conclusion and/or future work sections of this paper.

**The type of approach taken to garner support.**

One of the themes that I would like to discuss in more detail is the importance of what type of approach is taken when initiatives are warranted of further investigation. It was made clear through interview conversations with participants within the planning, governance, business and public sectors that the approach taken to try to leverage and bring attention to an idea is extremely important. One participant suggested that “the research shows that you have to have something for everybody”. This interviewee also stated that they are “an advocate for having three options. Options, A, B, & C”.
It would appear that this is a common approach in this region. When I went to an open-house for the public that was inviting feedback on a road network upgrade for the Esquimalt region, multiple options where presented to the public for review and comment. The Johnson Street Bridge replacement project for the City of Victoria was presented to the public as a referendum that provided for three bridge options to choose from and most recently, another bridge currently under construction in the Greater Victoria region was previously featured in the Times Colonist (2011) prior to construction as reported on the web site (“Vibrant Victoria, n.d.”) where it was stated that “the Craigflower Bridge, at 78 years old, is showing its age. An open house Wednesday will give the public a peek at three possible replacements”.

Whether a government official, municipal planner or a local citizen, many discussed that initiatives would need to garner strong public support in order to gain any headway in turning an idea into a reality. As previously discussed, the approach would need to be carefully considered both at the onset as was suggested in terms of (“keep it at a high level”), and during the inquiry stage in terms of considering all the (“winners and losers”) and trying to provide (“something for everybody”).

Another aspect that I had not considered was looking at the initiative in terms of its marketing appeal. One respondent with extensive experience in the planning sector stated that they “liked the term ‘Green Roads’” and that when we were working on trying to articulate on how to make room for cyclists and pedestrians on the roads, the one term that’s really caught on and that people use is ‘complete streets’. So, one of the reasons I like ‘complete streets’ is because in my mind you don’t have to have a paragraph to explain it, people just get it. So, then I tested that
and in fact people don’t get it. So, that is close and it caught on really quickly in the U.S. and so then I thought we need something similar that people just get right away. So ‘Green Roads’, I like it because everybody understands ‘green’ and it’s all about sustainable transportation, it’s all about local. So the concept in terms of what I think about this particular initiative? I think it’s important because that’s what we are all struggling with is actually, how do we have corridors that give priority to the ‘Green Roads’. And so, that just captures that here. So, I like the initiative. I like how it conveys a message efficiently and quickly (Interview 18, 2013).

The term ‘Green Roads’ and its apparent marketing appeal played out during the research stage of this project when, following my attendance at a public event to promote the study, I was contacted via email by a local radio show news reporter who invited me to participate in an interview. I agreed and the interview was aired one morning during three top of the hour early morning news segments. This reporter, during her production of the news piece, also approached people on the street to gather feedback from the public in terms of whether they thought it might be a good idea or a bad idea which, again, solicited a variety of responses. Following this broadcast, I then received another call from the same radio network with an invitation to participate in a live noon hour radio show later that day. That show entailed the host asking me a series of questions about the initiative which, as with the early news show, demonstrated that indeed local transportation challenges and potential solutions are of high public interest and that this particular initiative does entail a type of marketing appeal and does solicit attention.
Value versus costs.

The final theme worthy of discussion in this research paper is the topic of what is the difference between how much money is spent and what is the value of how much money is spent along with what is the value that is placed (or should be placed) on the beauty within our surroundings and the quality of life in which we live. This area of discussion was not one of the most common themes brought up during this study but the respondents who did wish to discuss these themes had very strong opinions in these areas.

One respondent passionately expressed that when we are considering how much money will be spent we must strongly consider what the value of what we are spending is. For example, not so tangible gains such as reducing the impacts of GHG emissions should be given more consideration as a value that could be realized in the long term rather than us only putting our efforts towards what might be more convenient or less costly in the short term. As put by one respondent, when the discussion around what they would consider to be of lesser importance in regards to transportation planning was

I think it’s how costs are measured and very often you see a price and then something will be dismissed because it costs too much but you’re only measuring one thing. So I think you have to be looking at the other ways of assigning costs or what would be the cost of inaction (Interview 3, 2013).

Another consideration discussed was the value placed on the beauty of our surroundings and that the types of transportation experiences we have should be given a larger value. As an example, a respondent stated that a benefit is
anything that calms traffic. You know, we talk about traffic calming and often
neighbourhoods resist those measures initially fearing that maybe one of their personal
freedoms are affected but once they realize the benefits, once they live in a traffic calmed
area and they feel safe and their children are safe, you would think then they would see
the benefits in terms of quality of life (Interview 3, 2013).

These types of opinions are, of course, widely diverse as each of us will place varying
importance on things such as our time, our moral codes, our individual needs and challenges
within our daily lives, our sense of global stewardship, etc. One of perhaps the wisest of my
participants said that

the real value of what you are doing is that this is how you frame questions. This is the
type of research that needs to be done by anybody trying to deal with a change. You need
to be able to describe how people feel about that change. You need to understand that and
nobody does that (Interview 16, 2013).

He suggests that planners and engineers try to drive solutions to fruition without looking at the
problem from a grassroots perspective with the people who will be impacted. And, this is exactly
why the opinions of the public must be evaluated and why the perspectives of citizens is crucial
when we are considering the importance of decisions to be made or considering what courses of
action to take in regards to issues such as achieving sustainability within our transportation
systems, transportation infrastructure, and transportation behaviour.
CHAPTER 5: SUMMARY AND CONCLUSION

The purpose of this study was to gather the views and opinions of Greater Victoria residents (i.e., commuters, businesses representatives, and key stakeholders) regarding the implementation of a VIC-G.R.I.D. policy – which would include single occupancy vehicle use restriction on specified roads during peak traffic hours while supporting multi-modal sustainable transportation usage. In this section I will summarize the findings of my study (based on the literature review, on-line survey, interviews and the analysis of my personal transportation journey) which have been determined to be the following:

- The literature review indicates that while there are variations in how sustainability in transportation is defined, it is generally described as an intent to protect the interests of everyone, including the future generations and, sustainable transportation capture attributes of system effectiveness and efficiency, and system impacts on the economy, environment, and social quality of life.

- Many initiatives to support and promote sustainable transportation infrastructure and systems have been developed globally, regionally and locally such as: (1) the development and/or implementation of shared spaces/home zones, complete streets, Woonerfs and travel calming, (2) funding for programs such as Bike to Work Week and U-Passes, (3) increased cycling infrastructure and the fleeting of energy efficient buses, and (4) the development of HOV and bus only lanes. The review also indicates that to be effective, initiatives need to have support from the public and other stakeholders.
• Sustainability rating systems such as Envision™ and the Greenroads Rating System have been developed in which initiatives can be evaluated and rated according to defined sustainability standards.

• The participants in this study seemed to express a positive attitude toward the green road initiative. In regards to the approval rating of a potential VIC-G.R.I.D. policy, 48% stated that they would agree to this policy under most circumstances and another 33% indicated that they would agree to this policy under certain circumstances.

• Younger individuals appeared to be more open to the possible implementation of a VIC-G.R.I.D. policy in the Greater Victoria region and more females appeared to be in favour of this type of policy. However, higher percentages of males than females indicated that they would agree with the policy “under certain circumstances”.

• Respondents who live in regions that would be directly impacted by the VIC-G.R.I.D. route presented a higher approval rating to the initiative than respondents who lived in outlying areas that would be indirectly impacted.

• Driving is reported to be the primary mode of transportation for the majority of participants. The largest group of respondents were those who were employed full time and the majority of respondents preferred to drive vehicles for their main commutes. Those who drive usually commute between four and six round trip times per an average week, generally commute between 1 and 10 kilometers per
trip and 56% of vehicle commuters experience traffic congestion at some level. Almost 50% of all commuters either never or almost never travel with passengers during their commute.

- Commuters who mainly travel by vehicle demonstrated an approval rating of the VIC-G.R. I.D. policy at 73% as compared to an 81% overall approval rating.
- Time, convenience, availability, affordability and weather are the highest ranking contributing factors to commuter’s transportation choices.
- Of all survey respondents, 95% believe that sustainable transportation initiatives are useful endeavours for citizens, 92% believe that sustainable transportation initiatives are useful endeavours for governing bodies and 87% believe that making personal changes would make a difference.
- The survey results indicate that respondents place a large value on improvements to environmental impacts, but that value does not always translate into sustainable transportation choices.
- The main topics that respondents deemed to be important in regards to a potential VIC-G.R.I.D. initiative were: (1) a potential increase of traffic congestion, (2) resistance to change, (3) supporting infrastructure and incentives, (4) addressing the needs of local and business traffic, (5) conflicting interests of stakeholders (6) the need for in-depth analysis of initiatives, and (7) the need for public engagement.
As outlined through the body of work of this paper, defining, striving for and evaluating the effectiveness of sustainability in transportation has been a key focus of leaders, planners and citizens at the global, national, regional and local levels. My initial intention was to first analyze the research and initiatives related to sustainable transportation from a global perspective, followed by an examination of actions occurring down to a local level. This seemed like a logical choice of how to approach this study but it soon became apparent that there are strong grassroots incentives to promote sustainability in transportation infrastructure and systems at the community level (such as the public demand for more cycling routes) that feed up to a system of top down managerialism in terms of moving our communities towards more sustainable futures. As a matter of fact, it has become quite apparent that local support to foster political will is critical.

Banister et al. (2007) in the their paper entitledMaking Sustainable Transport Politically and Publicly Acceptable: Lessons from the EU, USA and Chinastate that, “public acceptability drives political acceptability, and perhaps the only way to progress the debate is to establish whether there is sufficient public support for change, as this is the main way to influence political thinking” (p. 14). However, governance structures to lead the charge that marry global, national, and regional imperatives to local needs are critical as well.

The research in this paper has demonstrated that the Greater Victoria region has, what I would argue, a system that is sophisticated in its approach to respond to the needs of citizens within a local context in terms of regional sustainable transportation mandates and challenges that reflect societal perspectives. The CRD has demonstrated leadership in charging forward in
making a difference to improve regional outcomes in terms of fostering sustainability in transportation and as discussed previously, this region also embodies stakeholder representation by individuals who hold key positions of influence that are progressive in their thinking and welcome new ideas with curiosity and open-minds.

However, despite efforts made, mode shares in the Capital region have changed little since 2001 (CRD, 2013). Further, the *Draft Regional Transportation Plan* (CRD, 2013) states that: (1) trends in land use patterns and travel behaviour as well as population growth projections suggest that the CRD is at a critical point in its evolution, (2) there is significant risk that, without strong policy and bold actions, the pattern of growth could continue to gravitate toward the dispersed auto-dependent built form common in high-growth areas of many other North American cities and, (3) “decisions made today will have implications and benefits for future generations” (p. 1). It is my opinion that this document (in its bold language) clearly sends the message to its readers that more aggressive regional approaches to enhance regional sustainability in transportation systems and infrastructure will be the course of action that the CRD is currently positioned to take.

The Victoria–Green Road Inner Duct (VIC–G.R.I.D) initiative presented to local groups of citizens, businesses representatives, and key stakeholders in this paper was well received and initiated discussions that demonstrated a willingness within the region to consider a policy that some may be considered ‘bold’ and ‘strong’. This indicates that perhaps the region is at its critical point in its evolution and that it would encourage further investigation into a VIC-G.R.I.D. type of policy. It is this researchers perspective that this type of policy could be the
nudge required to tip this region’s performance to one where we do not have to advertise in our public disclosures that, “Mode shares show…..No Change. More Action is Needed” (CRD, 2013, p. 104).

The CRD’s comprehensive document Draft Regional Transportation Plan (CRD, 2013) outlines that “road network planning will focus on optimizing existing capacity to minimize the need for widening and expansion, and reducing infrastructure costs while managing congestion” (p. 15) and that “a greater emphasis on providing the right kind of services and infrastructure for non-captive markets is needed to encourage this shift and to make transit and active transportation more attractive and more competitive to driving” (p. 13). Again, it is this researchers’ opinion that a VIC-G.R.I.D. network of roads could be implemented to fully utilize existing corridor road infrastructure with minimal infrastructure costs (relative to the much higher projected infrastructure costs for other options such as LRT) to promote and increase multi-modal, sustainable transportation usage.

Rating Sustainability: Transportation Investments in Urban Corridors as a Case Study (2010) states that, “transportation corridors play a significant role in vehicular mobility, specifically within the United States. FHWA’s “Corridors of the Future” program focuses on developing innovative regional approaches to address the needs of the public through reducing congestion (FHWA, 2007, p. 177). It is my opinion that providing a system of transportation in which corridors are maximized to facilitate movement that ‘crowd’ sources vehicles to arterials that focus on mobility and congestion while providing corridors that promote multi-modal and sustainable transportation systems that attract usage, may be an approach that a VIC-G.R.I.D.
type of policy may facilitate. The approach of ‘crowd’ sourcing vehicles to main arterials while promoting more sustainable multi-modal systems on alternative corridors (with supporting parking, cycling, walking and transit systems) may encourage commuters to reconsider their transportation choices when traditionally used modes of transportation become less appealing than newly implemented enhanced multi-modal modes that prove to be both effective and efficient in moving traffic in a sustainable manner.

The study presented here was exploratory and aimed to explore initial views of residents on the topic of ‘green roads’. In order for the City of Victoria (or other interested jurisdictions) to be able to implement this initiative, more work needs to be undertaken. To provide planners and policy makers with more detailed information and to address the concerns outlined in the study, further investigation would be needed to explore the idea of ‘green roads’, including an examination of effectiveness and efficiency of this initiative. A comprehensive feasibility study would need to be conducted to determine a cost/benefit value of this policy as compared to other initiatives and/or in combination with other initiatives. Furthermore, a thorough examination of whether this type on policy would indeed encourage commuters to choose more sustainable modes of transportation and how that change would impact the human and technological effects on the environment and impact transportation mobility in the Greater Victoria region would need to be undertaken.

As discussed in this paper, the public plays an important role in regional transportation decisions and therefore, it is crucial to engage the public at all stages of the policy development. A thorough examination of this type of policy in terms of how it would impact users, businesses
and the community as a whole would assist planners and policy makers, and provide information and education to the public at the engagement stage.

It has been stated that transportation systems and infrastructure in the Greater Victoria region should be considered at the regional level and it has been determined that different regions and different groups of stakeholders may have different needs. The VIC-G.R.I.D. policy presented in this paper, in its nature, provides an opportunity for regional planners and governing bodies to further evaluate transportation needs from a regional perspective from within the framework of an initiative that proposes to further enhance transportation sustainability in the Greater Victoria region.

In the earlier sections of this paper I have discussed a number of limitations (e.g., relatively small sample size, potential self-selection bias, etc.). These methodological limitations need to be kept in mind as the readers review this work. If the VIC-G.R.I.D. policy was to be considered by the City of Victoria (and/or other jurisdictions), a study involving a larger sample size with random selection of the participants might be beneficial. Furthermore, to promote a ‘green road’ initiative among stakeholders, it would be recommended to undertake a systematic review of the empirical evidence on the topic.

Making Sustainable Transport Politically and Publicly Acceptable: Lessons from the EU, USA and China (2007) states that “the overriding conclusion is that there is too much complacency with the current situation in the EU, the USA and Canada” and that “now is the crucial time to employ every possible strategy to increase the public and political acceptability of the necessary policies to improve the sustainability of our transport systems” (p. 24). It is my hope that if not this initiative, others that compare in their intent to stimulate discussion and
foster innovative and progressive strategies to substantively make a difference to the status quo will be regionally welcomed for further consideration and investigation.
CHAPTER 6: FUTURE WORK

The most important future work for the initiative presented in this paper, from this researchers’ perspective, is to keep the idea alive if indeed this initiative is believed to have sufficient merit to support further investigation and development. It is my understanding from the support of the CRD, the public, business representatives, the media and key stakeholders that this work is indeed of merit for continued investigation as a potential strategy to move Greater Victoria to a modern transportation city.

It is my hope that this preliminary analysis of the perspectives of citizens, business representatives and key stakeholders in regards to the potential public and political consideration of the VIC-G.R.I.D. initiative will provide a starting point in which identified barriers, concerns, interests, enthusiasm, and the will to consider this as a potential strategy to enhance sustainability in local transportation infrastructure and systems in the Greater Victoria region will be further utilized to more fully investigate this initiative in terms of feasibility.

The potentiality of continued interest appears to have a promising future as the CRD, as previously identified in an earlier chapter, has generously supplied their support to this research by running a test model of this initiative using their transportation planning software by applying the parameters of the VIC-G.R.I.D. network of roads to existing local traffic scenarios. The illustration of some of the results of this modelling are presented below. While this analysis is beyond the scope of this study, it illustrates the keen interest of the CRD towards the VIC-G.R.I.D. initiative as well as serves as an illustration of the potential future expansion of this project.
The parameters applied to the model are: (1) streets with more than one lane in each direction were reduced by one lane, and (2) streets with just one lane in each direction were made to have only HOVs and transit. The streets used in the model are:

- Island Highway/Craigflower Road from Colwood Interchange to Tillicum Road. Existing one lane in each direction. HOV and transit only;
- Tillicum Road from Craigflower Road to Gorge Road. Reduction to one lane in each direction;
- Gorge Road/Hillside/Lansdowne from Tillicum to Foul Bay Road. Reduced to one lane in each direction;
- Foul Bay Road from Lansdowne to Cedar Hill X-Road. Existing one lane in each direction. HOV and transit only;
- Cedar Hill X-Road from Foul Bay Road to Blenkinsop. Existing one lane in each direction. HOV and transit only;
- Blenkinsop Road from Cedar Hill X-Road to Royal Oak Drive. Existing one lane in each direction. HOV and transit only;
- Royal Oak Drive from Blenkinsop to Wilkinson Road. Reduced to one lane in each direction; AND
- Wilkinson/Helmcken from Royal Oak Drive to Island Highway. Existing one lane in each direction. HOV and transit only.
The CRD’s conclusion was that this policy would cause, *quite a bit of displacement of traffic. However, the only increase in congestion seems to occur at Highway 1 and McKenzie.* Further preliminary results to the scenario are demonstrated in the below maps (see Figures 7, 8 and 9).

*Figure 7. Existing A.M. Traffic Patterns*

*Note: Figure 7 is reprinted with permission from the CRD.*
Figure 8. Anticipated Changes to A.M. Traffic Patterns with G.R.I.D. Policy Applied*

*Note: Figures 8 and 9 are reprinted with permission from the CRD.

Figure 9. Increase (Green) / Decrease (Red) in Traffic Density Projections*

*Note: Figures 8 and 9 are reprinted with permission from the CRD.
The CRD has offered continued support to experiment with this idea by running the same model for a P.M. scenario, providing data in terms of how many transit ride increases are projected to occur if a VIC-G.R.I.D. policy were in place and to also apply the VIC-G.R.I.D. strategy to another existing revised transit system model that has been developed. Again, this level of previous support and intent of continued support provides encouragement that this initiative has garnered sufficient interest to motivate high level stakeholders to utilize their valuable time and resources to explore potential future consideration of this type of policy.
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Appendix A

Survey

VIC-G.R.I.D (Victoria-Green Road Inner Duct) - 'Green Roads'

This survey is part of a research project being conducted by Susan King - a Master of Arts in Environment and Management graduate student at Royal Roads University. The purpose of this study is to understand if citizens and local governing bodies within the Greater Victoria region would consider adopting a policy that restricts single occupancy vehicle ridership during 'peak traffic' hours on specified 'Green Roads' (see map inset). Your completion of the survey will constitute your informed consent. Identifiable or contact information is not requested in the survey, however, should you wish to provide contact information to be further involved in a follow-up interview and to be eligible for random coffee gift card drawings, please use the provided contact email upon completion of the survey. This survey will end June 30, 2013 at which point the coffee draws will be made from those who provided their contact information.

Please tell us a little about yourself by answering the following questions below.

What is your age range?

18 - 24
25 - 33
34 - 48
49 - 66
Older than 66
Younger than 18 - do not continue. Survey restricted to those who have reached age of majority.

Thank you.

I identify my gender as:

Male
Female
Transgender

What municipality of the Greater Victoria of BC region do you reside in?

Central
Saanich
Colwood
Esquimalt
Highlands
Langford
Metchosin
North Saanich
Oak Bay
Saanich
Sidney
Sooke
Victoria
View Royal
None of the above

Please describe your current lifestyle.

Employed Full-Time
Employed Part-Time
Full-Time Student
Part-Time Student
Employed and Student
Unemployed and Not Attending School
Self-Employed/Business Owner
Retired
Other, please specify... __________________________

Please answer the following questions regarding your personal transportation habits.

What mode of transportation do you typically use?

Gas Operated Truck,
SUV or Van
Mid or Full Size Gas Operated Car
Compact Gas Operated Car
Hybrid or Electric Car
Diesel or Other Alternative Fuel Vehicle
Scooter or Motorcycle
Bus
Bike or Walk
Other, please specify __________________________
How many times during an average week do you make round trip commutes to work, school or any other repetitive destination?

1 - 3
4 - 6
7 - 10
11 - 14
15 or more

How many kilometers do you travel per your most common commute?

1 - 10
11 - 20
21 - 30
Over 30

During an average week, how many (individual) times do you:

Ride a bus ______________________
Ride a bike ______________________
Drive alone ______________________
Carpool ______________________
Walk ______________________
Use a scooter or motorcycle ______________________
Other - Please Describe List How Often ______________________

By how much time do you think traffic congestion usually increases your commuting time?

Not at all
Makes my trip up to 1 and 1/3 times as long
Makes my trip up to 1 and 1/2 times as long
Makes my trip up to 1 and 2/3 as long
Makes my trip up to twice as long
Makes my trip more up to or more than three times as long
If you drive a vehicle, how often do you have one or more passengers during your most usual commute?

Never
Seldom
Sometimes
About half the time
Most of the time
Always
N/A

What factors affect your transportation decisions? (Rank 1 - 9 with 1 being the strongest influential factor).

Affordability
Weather
Availability
Environmental/Climate Change Concerns
Social or Media Influence
Personal Comfort
Convenience
Time
Habit
Other

Please express your agreement or disagreement to the following statements using the following descriptors; Strongly Agree, Agree, Disagree, Strongly Disagree, Don't Know

Sustainable transportation initiatives are useful endeavours for citizens.
Sustainable transportation initiatives are useful endeavours for governing bodies.
Making personal changes to improve the sustainability of my own transportation choices will make a difference to the environment.

This research questionnaire is being conducted to gather feedback in regards to transportation challenges facing Greater Victoria residents and to explore a 'Green Road' initiative for the Greater Victoria region. 'Green Roads' would be defined as stretches of commonly used commuting roads that would restrict single occupancy vehicle ridership during 'peak traffic' hours and would promote usage of fuel efficient, hybrid and electric vehicles, carpooling, buses, walking and cycling.
Would you agree to a proposed 'Green Road' policy? (Select one response only).

I would not agree to this policy under any or likely most circumstances.

I would agree to this policy under certain circumstances.

I would agree to this policy under most circumstances.

I would agree to this policy only if it had little effect on me.

**How important are the following factors in affecting your decision to support a 'Green Road' initiative in your community? (Please rank 1 to 5 with 1 being the most important factor).**

- Improved traffic congestion
- Improved travel times
- Convenience
- A more enjoyable commute
- An improvement to environmental impacts

Please describe what barriers you think a 'Green Road' initiative would face.

________________________________________________________________________

________________________________________________________________________

**Please describe what would motivate or make it easier for you to support a 'Green Road' initiative.**

________________________________________________________________________

________________________________________________________________________

Thank you for your time. It is very much appreciated. Please do not forget to provide your contact information should you wish to be contacted to be a part of a follow up interview regarding this initiative and to be entered into a random coffee card prize drawing.
Appendix B

Interview Research Consent Form

My name is Susan King and this research project is part of the requirement for a Master of Arts at Royal Roads University (RRU). My credentials with RRU can be established through Dr. Chris Ling, MEM Program Head.

This document constitutes an agreement to participate in my research project, the objective of which is to understand if citizens and local governing bodies within the Greater Victoria region would consider adopting a policy that restricts single occupancy vehicle ridership during peak hours on specified ‘Green Roads’ while promoting and implementing enhanced modes of sustainable transportation methods on those same roads. Through your participation, I hope to understand how citizens and various stakeholders would respond to a local ‘Green Road’ policy.

This research will involve interviews. If you agree to participate in this study, you will participate in one interview that is estimated to last approximately 45 minutes. The foreseen questions will refer to your specific transportation habits and challenges, questions regarding your perspective of sustainable transportation initiatives in general and your response to a potential ‘Green Road’ policy for the Greater Victoria region.

Information may be recorded via audio tape and transcribed and, where appropriate, summarized, in anonymous format, in the body of the final report which will be submitted to RRU as partial fulfillment for a MA in Environment and Management. A copy of the final report will be published and archived in the RRU Library.

At no time will any specific comments be attributed to any individual unless specific agreement has been obtained beforehand. All documentation will be kept strictly confidential. Data obtained will be retained for a one year period and then destroyed.

Should a conflict of interest arise between you (the respondent) and myself (the researcher), an open dialogue will be pursued to actively explore any potential issues and possible implications to enable both parties an opportunity to decide upon the appropriateness of continued participation.

You are not compelled to participate in this research project. If you do choose to participate, you are free to withdraw at any time without prejudice at which point all information collected will be destroyed.
By signing this letter, you give free and informed consent to participate in this project.

Name: (Please Print): ________________________________________________________________

Signed: (Respondent) ___________ Signed: (Researcher) ___________

Date: ________________________________________________________________
Appendix C

Sample Interview Questions – Resident Focus

This research interview is being conducted to gather feedback in regards to transportation challenges facing Greater Victoria residents and to determine if the implementation of ‘Green Roads’ in the Greater Victoria region would be an acceptable transportation initiative to citizens and local governing bodies. ‘Green Roads’ would be stretches of commonly used commuter roads that would restrict single vehicle occupancy ridership during peak traffic hours unless those vehicles were fuel efficient, hybrid or electric. These roads would have enhanced bus service, walking and biking lanes and would be chosen only where an adjacent alternative route was available for traditional single occupancy vehicle ridership.

When thinking about this particular initiative, what is your initial response?

What benefits would you anticipate would be realized from a ‘Green Road’ policy?

What disadvantages would you anticipate?

To be considered a policy, what challenges do you foresee this type of initiative would face?

What suggestions would you have?

When thinking about transportation initiatives in general, what considerations are critical from your perspective?

What considerations should be regarded as less important when thinking about transportation initiatives?
When visualizing a ‘Green Road’ with only sustainable transportation modes being active, what level of impact do you believe the visual messaging of ‘Green Roads’ might have, if any, on users transportation choices?

What do you believe the current culture for innovation is within the Victoria citizen base?

What do you believe the current culture for innovation is within the governance structure of Victoria?

What initiatives in the environmental/sustainability realm do you believe Victoria has been at the forefront of and/or what are you personally proud of as a citizen of Victoria for its past/current initiatives?

What are your thoughts on how able 13 municipalities are to come together on issues that require collaboration?
Appendix D

Sample Interview Questions – Business Focus

This research interview is being conducted to gather feedback in regards to transportation challenges facing Greater Victoria residents and to determine if the implementation of ‘Green Roads’ in the Greater Victoria region would be an acceptable transportation initiative to citizens and local governing bodies. ‘Green Roads’ would be stretches of commonly used commuter roads that would restrict single vehicle occupancy ridership during peak traffic hours unless those vehicles were fuel efficient, hybrid or electric. These roads would have enhanced bus service, walking and biking lanes and would be chosen only where an adjacent alternative route was available for traditional single occupancy vehicle ridership.

When thinking about this particular concept, what is your initial response?

To be considered a policy, what challenges do you foresee this type of initiative would face?

What suggestions would you have to me in regards to the feasibility and/or consideration of this concept?

What benefits do you anticipate would be realized from a ‘Green Road’ policy in general terms along with any potential benefits to businesses in particular?

What disadvantages might you anticipate in general as well as from a business perspective?

When thinking about transportation initiatives in general, what considerations are critical from your perspective?

What considerations should be regarded as less important when thinking about transportation initiatives?
How would you describe this city’s top transportation infrastructure priorities?

When visualizing a ‘Green Road’ with only sustainable transportation modes being active, what level of impact do you believe the visual messaging of ‘Green Roads’ might have, if any, on users transportation choices and the branding of our city?

What do you believe the current culture for innovation is within the Victoria citizen base, governance and business community?
Who do you believe plays the most important role in the consideration and/or adoption of new policies?

What would you describe are the primary obstacles to the adoption of new policies?

What initiatives in the environmental/sustainability realm do you believe Victoria has been at the forefront of and/or what are you personally proud of as a citizen of Victoria for its past/current initiatives?

What are your thoughts on how able 13 municipalities are to come together on issues that require collaboration?
Appendix E

Sample Interview Questions – Municipal Focus

This research interview is being conducted to gather feedback in regards to transportation challenges facing Greater Victoria residents and to determine if the implementation of ‘Green Roads’ in the Greater Victoria region would be an acceptable transportation initiative to citizens and local governing bodies. ‘Green Roads’ would be stretches of commonly used commuter roads that would restrict single vehicle occupancy ridership during peak traffic hours unless those vehicles were fuel efficient, hybrid or electric. These roads would have enhanced bus service, walking and biking lanes and would be chosen only where an adjacent alternative route was available for traditional single occupancy vehicle ridership.

When thinking about this particular initiative, what is your initial response?

To be considered a policy, what challenges do you foresee this type of initiative would face?

What suggestions would you have to me in regards to the feasibility and/or consideration of this concept?

What benefits do you anticipate would be realized from a ‘Green Road’ policy?
What disadvantages would you anticipate?

When thinking about transportation initiatives in general, what considerations are critical from your perspective?

What considerations should be regarded as less important when thinking about transportation initiatives?

How would you describe your city’s top transportation infrastructure priorities?
When visualizing a ‘Green Road’ with only sustainable transportation modes being active, what level of impact do you believe the visual messaging of ‘Green Roads’ might have, if any, on users transportation choices?

What do you believe the current culture for innovation is within the Victoria citizen base as well as in governance?

Who plays the most important role in the consideration and/or adoption of new techniques or policies?

What would you describe are the primary obstacles for adoption of new techniques or policies?

What initiatives in the environmental/sustainability realm do you believe Victoria has been at the forefront of and/or what are you personally proud of as a citizen and municipal member of Victoria for its past/current initiatives?

What are your thoughts on how able 13 municipalities are to come together on issues that require collaboration?
Appendix F

Letter of Invitation

Dear Prospective Participant:

I would like to invite you to be part of a research project that I am conducting. This project is part of the requirement for a Master’s Degree in Environment and Management, at Royal Roads University (RRU). My name is Susan King and my credentials with RRU can be established by calling Dr. Chris Ling, MEM Program Head.

The objective of my research project is to understand if citizens and local governing bodies within the Greater Victoria region would consider adopting a policy that restricts single occupancy vehicle ridership during peak hours on specified ‘Green Roads’ while promoting and implementing enhanced modes of sustainable transportation methods on those same roads. Through your participation, I hope to understand how citizens and various stakeholders would respond to a local ‘Green Road’ policy.

My research project will consist of a brief questionnaire containing questions regarding your specific transportation habits and challenges, your perspective of sustainable transportation initiatives in general and your response to a potential ‘Green Road’ policy for the Greater Victoria region. This survey is foreseen to last approximately 5-10 minutes and is available online. In addition, everyone will be invited to participate in a short interview, and those who volunteer for the interviews will be contacted by the researcher directly.

The survey does not collect any personal or identifiable information and no one will know whether you participated in this study. Information will be recorded via electronic data entry and, where appropriate, summarized in anonymous format in the body of the final report. At no time will any specific responses be attributed to any individual unless your specific agreement has been obtained beforehand. All documentation will be kept strictly confidential.

The survey data obtained will be retained for a one year period and then destroyed. My research findings will be submitted in my final report to RRU in partial fulfillment for a MA in Environment and Management with a copy of the final report being published and archived in the RRU Library.

Should a conflict of interest arise between you (the respondent) and myself (the researcher), an open dialogue will be pursued to actively explore any potential issues and possible implications to enable both parties an opportunity to decide upon the appropriateness of further participation.
You are not compelled to participate in this research project. If you do choose to participate, you are free to withdraw at any time without prejudice with all information collected being kept in confidence.

If you would like to participate in my research project, please access the following link to an online survey. http://fluidsurveys.com/surveys/sue-TM/green-roads/. Gifts cards of $10.00 will be randomly drawn as prizes and offered to participants who follow up with contact information to be further involved in a volunteer interview. The responses and contact information will be stored in separate - and not linked to each other - databases.

Sincerely and Thank you

Susan King