



County of Essex

Transit Assessment Report

Final Report

March 2010

Excellence in
Transportation
Planning



County of Essex

Transit Assessment Report

Executive Summary

Study Objectives

This study investigates the feasibility of introducing a wider range of transportation options in the County of Essex. The key objectives of this study are to define transportation needs and provide guidelines and tools for identifying and implementing specific, cost-effective, and innovative public transportation services for residents in the County of Essex.

Public transit is an important component of public services in the community, benefiting not only the user, but the entire community, and fills a void for those citizens who need or want to access reliable alternative modes of transportation and will support more sustainable development for the local economy and environment. The opportunities provided by choice, access and mobility will enable everyone in the community to accomplish what is important to them, making the community stronger and more vibrant.

Needs and Opportunities

Through the completion of background research, online survey results, stakeholder and public consultations as well as a market analysis, it was recognized that there are limited transit services available to County residents and most County of Essex rely on their automobile for travel. Analysis of data from post-secondary and secondary school institutions and place of work information reveals an unmet need in the County for transit services to and from major educational facilities and employment areas. Lack of alternative transportation options also creates a barrier for businesses to retain employees and limits their flexibility in where they choose to locate in the region.

An effective transit system will provide alternative transportation to County of Essex residents, reduce traffic congestion and capital investments on road infrastructure as well as greenhouse gas emissions and therefore support more sustainable development for the local economy and environment.

Vision and Goals

Recognizing the County of Essex's regional transportation needs and the objectives of the Transportation Master Plan, this vision, developed for the purpose of this report, was identified to help focus efforts to develop a proposed future transportation system for the

County and used as the basis for the development of routes and services in the County. The proposed vision is:

To provide sustainable mobility options for all rural and urban residents, contributing to quality of life, economic and environmental sustainability, economic development and a healthy natural environment.

The proposed goals, related to the vision, are as follows:

- to provide multi-tiered accessible transit services connecting regional urban areas to employment, education, recreation, social and health facilities
- to support the County's transportation system by providing a transit alternative to complement the road network and active transportation systems
- to provide customer-focused services that meet the transportation needs of all our communities
- to provide supporting rural services connecting to urban communities and services in the County

Service Concept

Based on the County's unique demographic conditions and travel behaviour, four distinct types of service including Urban Connectors, County Connectors, Local Services and Rural Services were identified to fulfill the diverse needs within the County. Each service type supports different objectives and thus yields different degrees of transit service delivery.

- **Urban Connectors:** services designed to connect between urban communities in the County and the City of Windsor and its urban fringe with a primary focus to fulfill the needs of work and student commuters.
- **County Connectors:** services designed to provide warranted connections to and between urban communities in the County.
- **Local Service:** services designed to maximize coverage in the urban area and connect to County and Urban Connectors.
- **Rural Services:** services designed to provide connections between rural areas and the urban communities in the County, focused on providing access to necessary amenities and services.

Based on projected transit demand and feedback from the public and an array of stakeholders, ENTRA developed a system concept that is consistent with the context of the County and its transportation objectives. The overall system concept presents a long-term look of what the County of Essex might expect upon full system implementation (beyond 2021). In total, the service concept includes three proposed Urban Connectors, two proposed County Connectors, and seven areas proposed for Local Service. Rural Services would operate through a system of demand responsive

services based on a defined geographic area connecting the rural communities to urban areas and other transit services in the County.

Urban Connectors are the likely candidates for initial implementation, as they are focusing on post-secondary school student and commuter markets and observed to have the greatest travel demand, relative to other routes and connections. Nevertheless, these routes along with the remaining service types would be implemented only as projected ridership warrants.

Development of transit services throughout the County should proceed incrementally, based on observed demand, with expansion of routes or levels of service only when ridership projections and service costs demonstrate that the performance standards will likely be met.

Financial and Implementation Plan

Transit services included in the system concept were prioritized based on the identified travel needs of each community, estimated performance levels, and input from the community. The proposed services could be developed in three phases.

- The initial phase of the implementation plan (2011 to 2016) proposes the introduction of three Urban Connectors from Amherstburg, Lakeshore and Leamington to Windsor and the improved operation of Local Service in urban fringe areas and Leamington.
- The second phase of the implementation (2016 to 2021) calls for improved levels of service on some Phase 1 routes and an expansion of service to new areas including two County Connectors from Amherstburg to Kingsville and from Leamington to Windsor and one additional local route in Lakeshore.
- Upon the fulfillment of a matured ridership base, it is anticipated that all services proposed in the system concept could be operated in Phase 3 (beyond 2021). Rural Services and the remaining Local Services identified in the system concept will be introduced in this phase.

The proposed transit services require significant investment to fund the required equipment and infrastructure as well as ongoing operations. Based on the current financial projection, an estimated capital cost of approximately \$4 million, \$5.4 million and \$7 million would be required for the three phases, respectively. The annual operating cost would be approximately \$1.8 million, \$3.4 million and \$4.4 million for the periods of 2011 to 2016, 2016 to 2021 and beyond 2021, respectively.

Key Strategies and Next Steps

Three key strategies designed to capture key markets, provide long-term financial support and build a system incrementally are developed to bring success to the development of a transit service in the County of Essex. They are developed through an extensive public participation process and represent input from public, key stakeholders and the project steering committee.

Commitment to Service

Success will depend on customers' ability to rely on the transit service as a viable choice for transportation. This means that the County will need to commit to providing the service for a sustained period, and provide a minimum level of service designed to meet key market needs. This commitment will require investment, and will rely on key funding partners, including customers and local municipalities, as well as provincial and federal funding.

Key next steps:

- identify the appropriate governance structure for the service
- determine resource requirements for this organization
- determine appropriate cost allocation and funding sources

Incremental Implementation

A comprehensive County-wide system in the County of Essex is a long-term initiative. To be sustainable, and permit the commitment to service required for success, services should grow incrementally, based on demonstrated success. Initial implementation stages must focus on key markets such as students and commuters to ensure early success. Phase 1 services identified in the report, comprising service in the urban fringe and three key corridors are the most feasible first step.

Key next steps:

- consult with key market groups, especially post-secondary students and commuters for input into specific service requirements
- develop specific service plans for initial service implementation, including specific routes, schedules, destination points
- develop specific fare structures and a revenue management plan

Marketing and Promotion

Building support for the service is critical to its success, both during service development and following implementation.

Key next steps:

- develop partnerships with customer markets, funding partners and agencies
- identify and promote specific benefits of the proposed service among potential partners, including the broad spectrum of public policy elements supported by the plan, including economic, environmental, health and mobility benefits
- build understanding and support for the required funding, based on this broad spectrum of benefits

County of Essex

Transit Assessment Report

Final Report

Table of Contents

1. Introduction	1
2. Online Surveys	3
2.1 County of Essex Public Survey	3
2.2 County of Essex Stakeholder Survey	3
2.3 County of Essex Employer Survey	4
3. Stakeholder and Public Consultation	5
4. Background Review	7
4.1 Review of Relevant Studies	7
4.2 Existing Transit Services	8
4.3 The Experience of Others	10
5. Demand Analysis	17
5.1 Demographic Information	17
5.2 Employment-based Commuters	19
5.3 Post-secondary Students	22
5.4 Other Potential Markets	24
5.5 Key Regional Destinations	25
5.6 Existing and Future Travel Patterns	25
5.7 Potential Transit Demand	29
6. Needs and Opportunities	33
7. Vision, Goals and Objectives	35
7.1 Vision	35
7.2 Goals	35
7.3 Objectives	36

County of Essex

Transit Assessment Report

Final Report

Table of Contents

8. Service Concept and Performance Standards	37
8.1 Service Concept	37
8.2 Performance Standards	38
8.3 System Concept	40
8.4 Planning and Evaluation Guidelines	46
9. Financial and Implementation Plan	47
9.1 Prioritization and Phasing Plan	47
9.2 Governance	49
9.3 Fleet and Facility Requirements	54
9.4 Fare Strategies	57
9.5 Financial Summary	59
9.6 Partnership and Funding Opportunities	61
9.7 Marketing Strategy	62
9.8 Transit Supportive Policies	63
9.9 Accessibility and AODA Implications	65
10. Summary of Study Findings	69
11. Key Strategies and Next Steps	71
11.1 Commitment to Service	71
11.2 Incremental Implementation	71
11.3 Marketing and Promotion	72

County of Essex

Transit Assessment Report

Final Report

List of Exhibits

Exhibit 1 – Fixed and Flexible Transit Services	11
Exhibit 2 – County of Essex Population	18
Exhibit 3 – County of Essex Population Age Distribution	19
Exhibit 4 – Place of Work Data (2006)	20
Exhibit 5 – Mode of Transportation Taken to Work	21
Exhibit 6 – Post-secondary Student Population	23
Exhibit 7 – Secondary Student Walkers	24
Exhibit 8 – Existing PM Peak Hour Person Trips	26
Exhibit 9 – Existing Travel Patterns (2009 PM Peak Hour)	27
Exhibit 10 – 2016 PM Peak Hour Person Trips	28
Exhibit 11 – Future Travel Patterns (2016 PM Peak Hour)	28
Exhibit 12 – 2011 Potential Transit Demand	30
Exhibit 13 – 2016 Potential Transit Demand	31
Exhibit 14 – 2021 Potential Transit Demand	32
Exhibit 15 – Ridership Performance Standards	39
Exhibit 16 – A List of Proposed Services (beyond 2021)	40
Exhibit 17 – Potential Full Implementation – Concept	42
Exhibit 18 – Potential Full Implementation – Service Characteristics	43
Exhibit 19 – Potential Initial Implementation – Concept	44
Exhibit 20 – Potential Initial Implementation – Service Characteristics	45

County of Essex

Transit Assessment Report

Final Report

List of Exhibits

Exhibit 21 – Summary of Service Planning and Evaluation	46
Exhibit 22 – Vehicle Requirements	55
Exhibit 23 – Analysis of Fare Alternatives	58
Exhibit 24 – Financial Summary	60

County of Essex

Transit Assessment Report

Final Report

1. Introduction

Located in southwestern Ontario, the County of Essex comprises seven local municipalities including Amherstburg, Essex, Kingsville, Lakeshore, LaSalle, Leamington and Tecumseh. The County of Essex is the second most populated County in Ontario with a population of more than 176,000. According to the County's Official Plan, the County of Essex will reach a population of 196,305 by the year 2016.

The Statistics Canada 2006 Census data indicates that most people living in the County rely on their private vehicles for mobility. Approximately 46 percent of work trips were made to Windsor and 25 percent were made to other areas (outside of their own areas) both within and outside of the County.

Public transit services are currently limited for the County of Essex residents, and as a result, those without access to private vehicles have to rely on their family, friends or private taxi services to get around the community for employment, medical, education and other services. The lack of transportation is a barrier that affects everyone in the community, particularly those who need the services including the elderly, children, people with disabilities and low-income families.

The County has recognized the need and the importance of having public transit services within the County and connecting to Windsor to meet transportation needs as well as to reduce the use of private vehicles. The Essex-Windsor Regional Transportation Master Plan (2005) has established principles and objectives to increase the availability and use of alternative transportation modes, by making the public transit, cycling and walking more attractive for residents.

This study investigates the feasibility of introducing a wider range of transportation options in the community. The key objectives of this study are to define transportation needs and provide guidelines and tools for identifying and implementing specific, cost-effective, and innovative public transportation services for residents in the County of Essex.

Public transit is an important component of public services in the community, benefiting not only the user, but the entire community, and fills a void for those citizens who need or want to access reliable alternative modes of transportation and will support more sustainable development for the local economy and environment. The opportunities

provided by choice, access and mobility will enable everyone in the community to accomplish what is important to them, making the community stronger and more vibrant.

This report includes background review, summary of consultations, needs assessment, vision, goals and objectives, service concept and guidelines, an implementation and financial plan and other components related to the implementation of a successful public transit system including governance and funding, fare options, marketing strategies, and transit supportive policies.

2. Online Surveys

Surveys were developed and posted online in an effort to understand current transportation issues and needs, existing travel patterns and characteristics throughout the County of Essex, as well as to understand resident perspectives on potential transit services. Separate surveys were created for the public, major employers and key stakeholders. A total of 191 responses were received from the public, 54 from employers and 17 from stakeholders. The following sections summarize key questions of the public, employer and stakeholder survey results. It should be noted that these survey results were only used to assist the team with further understanding of issues, needs and expectations, and were not used for demand analysis.

2.1 County of Essex Public Survey

The public survey was developed to obtain community input on transit needs throughout the County and was available on County and local websites. A paper version of the survey was also made available at locations throughout the region including the County of Essex Library and at a Public Information Centre held on September 30, 2009, in the Town of Essex.

Survey responses were received from all municipalities of the County. The Town of Essex provided proportionally more survey responses than its population while the Municipality of Leamington provided proportionally fewer survey responses than its population.

The majority of respondents indicated that they travel to Windsor at least one to two times per week with more than one-third of the respondents travelling daily on weekdays. Other frequent inter-municipal/regional destinations of respondents include Tecumseh, Leamington and the Town of Essex.

Shopping and work were selected as the most frequent trip purposes for both travel within own municipalities and for inter-municipal travel.

Nearly 90 percent of respondent trips within their own municipalities are made by car as a driver or passenger, while more than 96 percent of inter-municipal/regional respondent trips are made by car as a driver or passenger.

Schedule reliability, frequency of trips in peak hours, environmental benefits and overall trip time were identified as important service features or factors that influence the decision whether or not to use transit.

2.2 County of Essex Stakeholder Survey

The stakeholder survey was developed to obtain input regarding transit needs of the region from stakeholders. Stakeholders were contacted and invited to participate in the survey online.

Nearly 90 percent of stakeholder respondents feel that transportation is a barrier for their community, organization, clients or program participants and that existing transit service does not meet the transportation needs of their community, organization, clients or program participants. In addition, the majority of stakeholder respondents believe transit needs and markets will be growing in the next five years.

Regional travel (to and from the City of Windsor) was identified as the most important type of transit service by the majority of stakeholder respondents followed by local (within each municipality) and inter-municipal (between municipalities of the County of Essex).

Faster and more direct service to and from main destinations, more service early in day/late in evening and more frequent service during A.M/P.M peak hours were identified as key ways to improve transit service.

2.3 County of Essex Employer Survey

The employer survey was developed to obtain input regarding transit needs from major regional employers. Employers were contacted and invited to participate in the survey online.

The majority of employer respondents were located in Windsor or Tecumseh with an average of approximately 80 employees. Nearly all respondents provide free parking for their employees. Nearly all employer respondents do not provide transportation services or support for their employees (such as a ride-home service, transit subsidies or an employee shuttle) while some employers (approximately 13 percent) indicated that the lack of transportation alternatives is a factor in staff retention.

3. Stakeholder and Public Consultation

Stakeholder meetings with transportation service providers including school transportation, health and social agencies, representatives from economic development and Chambers of Commerce were held on September 29 and 30, 2009. Several participants provided useful data and information, along with their input.

The main comments received through the stakeholder consultation include:

- Many residents in the County are travelling to and from Windsor, particularly in LaSalle, Lakeshore, Tecumseh and Amherstburg. Most residents currently rely on driving for their transportation, including post-secondary students.
- Existing bus/van services are very limited in the County and mostly provided by social agencies for seniors and the disabled with limited capacity.
- The lack of alternative transportation affects residents in all municipalities of the County, particularly those who need the services such as the elderly, children and low-income families. Some people have to turn down job opportunities because alternative transportation is not available. Transit services are therefore needed for accessing employment for low-income families and students who don't have access to vehicles.
- Secondary school students living within 3.2 kilometres of their schools are not eligible for transportation services provided by the school board and need transit services, especially during the winter time.
- Lack of transportation limits post-secondary opportunities and employment for County of Essex residents.
- Some businesses such as call centres, health and child care cannot be located within the County due to the lack of the transit access.
- Many families with students are currently spending a lot of time providing transportation to their children for after-school activities.
- All participants support transit services connecting County residents to employment, schools and other services and most are anxious for action on transit services in the County.

A Public Information Centre (PIC) was held on September 30, 2009. Approximately 20 people attended the afternoon and evening sessions. Comments received from the PIC further confirmed the need for transit services for the County residents. Comments related to the possible service options were also received and will be considered for the next phase of the study.

4. Background Review

4.1 Review of Relevant Studies

There are no recent studies directly related to transit needs and plans in the County. However, a number of recent transportation studies pertaining to the County of Essex and the City of Windsor provide information relevant to this study.

4.1.1 Essex-Windsor Regional Transportation Master Plan

The County of Essex and the City of Windsor completed the Essex-Windsor Regional Transportation Master Plan (EWRTMP) in 2005. The EWRTMP identified significant capacity deficiencies on the Windsor-Essex roadway network due to increasing demand projected for 2021 and established principles and objectives to increase the availability and use of alternative transportation modes by making public transit, cycling and walking more attractive for residents. This study also identified the need to improve transit services in the Windsor-Essex region to meet the growing demand due to the changing demographics.

4.1.2 City of Windsor Transit Master Plan

The City of Windsor Transit Master Plan completed in 2006 also identified the need for transit services in neighbouring municipalities outside the boundaries of the City of Windsor due to significant population and employment growth in these areas as well as changing travel patterns in the region. The Plan proposes new routes into the neighbouring municipalities of Tecumseh, LaSalle, Lakeshore and Amherstburg, although the extent that these routes can be implemented will depend on the funding that will be received from the four municipalities.

As an extension of the Transit Master Plan study, a telephone transit survey was completed for Amherstburg, LaSalle, Tecumseh and Lakeshore in 2005. A total of 160 household surveys were collected from each municipality, respectively, to understand the transportation needs and attitudes toward the possibility of providing transit services. While feelings about the introduction of transit service are mixed, residents in these communities see benefits of providing transit service and perceive a need for some service into Windsor and Tecumseh for commuters and students, as well as local service for seniors and high school students.

4.1.3 Other Relevant Studies

Some local municipalities such as Lakeshore and Leamington also identified transit needs and importance to their communities and included transit policies in their transportation plans and/or Official Plan. For example, the Town of Lakeshore has included specific policies for transit such as encouraging connections with a regional public transit system, supporting County Road 22 as a mixed use transit supportive corridor and working with the neighbouring municipalities, the County, and transit providers to provide a viable transit service for the Town.

The Municipality of Leamington emphasized the importance of transit services for the mobility of Leamington residents and indicates in its long-term transportation plan that a public transit link to Windsor could be considered to connect residents to amenities such as medical services, entertainment and air and rail travel.

In addition, other studies completed by social and health service agencies have indicated that the lack of transportation alternatives has become a barrier to seniors and youth to access services, education and employment, especially for rural communities.

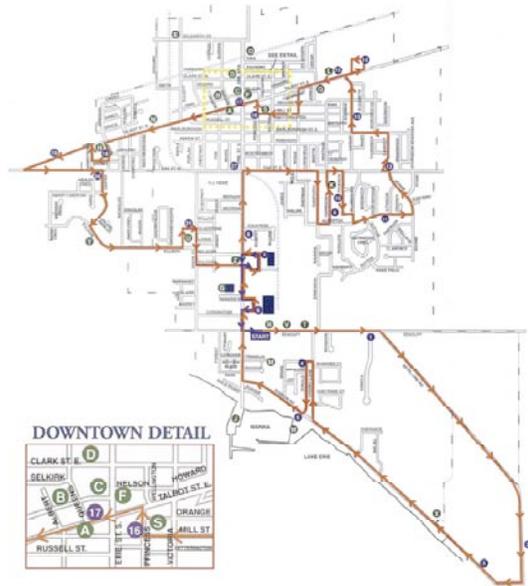
4.2 Existing Transit Services

There is currently very limited public transit service in the County of Essex. Leamington and Tecumseh are the only municipalities providing fixed-route transit services to its residents in the urban area while specialized service is available in LaSalle to persons with disabilities, and is provided by Handi-Transit Windsor. In addition, there are several Transit Windsor routes covering a small portion of LaSalle and Tecumseh while social service agencies such as community services provide bus and van services across the County and to the City of Windsor with focus on seniors and persons with disabilities.

4.2.1 Fixed-route Services

Municipality of Leamington

The Municipality of Leamington operates a bus system providing fixed-route services at hourly headways Monday to Saturday (eight hours per day with additional service on Friday and Saturday in July and August). During July and August, two seasonal routes are added to the system with similar service hours and operating headways. The service covers the urban areas in the municipality and provides an important transportation alternative to those who cannot or choose not to drive.



Town of LaSalle

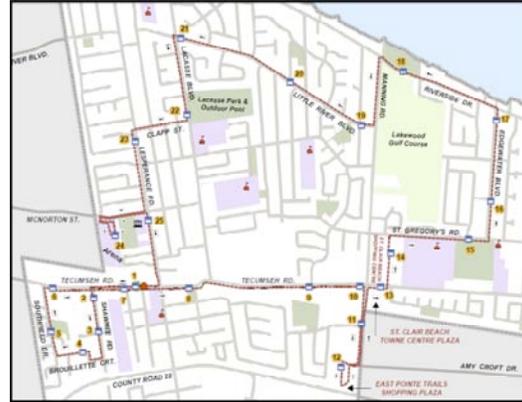
An extension of Windsor Transit Route #6 (Dougall) operates into the Town of LaSalle as far as the Windsor Crossing Mall. The service operates approximately 17 hours per weekday at 40-minute headways with reduced service on Saturday, Sunday and holidays.



In addition, Transit Windsor Route #7 (South Windsor) operates through the northern boundary of LaSalle along Todd Lane and Sprucewood Avenue between 7:00am and 11:00pm, Monday to Saturday, at a base headway of 40 minutes.

Town of Tecumseh

In December 2009, the Town of Tecumseh introduced transit service to the northern portion of the municipality. Currently one route operates in a circuitous loop connecting major residential areas, commercial corridors and plazas, recreation facilities, the Town Hall and other activity centres within the Town. Service operates every 30 minutes on Monday to Friday from 6:00am to 6:00pm.



Additionally, the Town of Tecumseh receives some transit service in the Oldcastle employment area as part of an extension of Transit Windsor Route # 8 (Walkerville). This route operates at 30-minute headways in the weekday peak periods and 40-minute headways in other service periods on weekdays and Saturdays with reduced service on Sundays and holidays.

As these services in LaSalle and Tecumseh are provided by Transit Windsor as part of their existing route network for better service connections, all costs incurred in operating the services are absorbed by the City of Windsor.

4.2.2 Other Services

Handi-Transit Windsor also operates into the Town of LaSalle providing service to approximately 100 LaSalle residents with disabilities. There were approximately 3,000 trips made by registered users in 2007 according to the 2007 CUTA Specialized Transit Fact Book, and the Town pays the net operating cost of the service.

Limited specialized transit services are available in other municipalities across the County, and provided by non-profit organizations such as community services and South Essex Community Council. These services are provided within local municipalities as well as to the City of Windsor and focus on transportation needs of seniors (55 or older) and persons with disabilities. The services are primarily funded by social agencies, contributions and government grants.

4.2.3 Summary

Public transit services are currently very limited for Essex residents. As a result, in most areas within the County, those without access to private vehicles have to rely on their family, friends or private taxi services to get around the community for employment, medical, education and other services. The lack of transportation is a barrier that affects everyone in the community, particularly those who need the services such as the elderly, children, people with disabilities and low-income families.

4.3 The Experience of Others

To create a service that best meets the needs for travel for County of Essex residents, elements from different service designs have been examined based on similarity of demographic and geographic characteristics compared to the County of Essex.

4.3.1 Potential Service Designs

There are a number of fixed and flexible service design options that may be appropriate to present transit in the County of Essex as a viable transportation option, and meet the needs of various communities. These services options are further detailed in Exhibit 1.

Fixed-route Services

Fixed-route services are generally conventional transit services that follow a set timetable and stop only at designated locations or at flag stops along routes. In fixed schedule service, vehicles are scheduled into runs according to a timetable. This service design may be applicable for sections of routes in densely populated centres. Express service is typically a fixed schedule service, and community connectors may operate a combination of fixed schedule and demand responsive services.

Demand Responsive Services

Demand responsive services allow flexibility for vehicles to be routed according to passenger origin and destination requests and can be adapted to the needs of different areas and different seasons. Trips can be scheduled as subscription (regularly occurring trips), advance notice (typically two to 14 days in advance), or through real time booking (typically on the day of service). Day of service booking allows for immediate needs.

Flexible routes have a defined degree of flexibility that allows for demand responsive operation. There may be a segment of a fixed route with a fixed schedule that operates as demand responsive for a portion of the route. Flexible routes can be designed to offer deviation zones around established routes or points. Connectors may operate as demand responsive within a defined area and provide transfers to fixed schedule service.

In flexible schedule service, vehicles are dispatched according to requested passenger pick-up and drop-off times.

Service may be limited to defined zones by time of day or day of week, with boundaries, major origins and destinations based upon historical or predicted trip making. Zone service is best used for short trip distances to a common destination and may be transformed to a fixed route service if demand and trip patterns warrant.

A summary comparison of fixed-route and demand responsive services as well as their applications is provided in Exhibit 1.

Exhibit 1 – Fixed and Flexible Transit Services

	Settlement	Trip Patterns	Origins and Destinations
Fixed Route, Fixed Schedule	Dense	Predictable	Predictable
Fixed Route, Flexible Schedule	Dense	Predictable	Variable
Flexible Route, Fixed Schedule (Route Deviation)	Sparse	Variable	Predictable
Flexible Route, Fixed Schedule (Point Deviation)	Sparse	Predictable	Variable
Demand Responsive (Subscription)	Sparse	Predictable	Predictable
Demand Responsive (Advanced Reservation)	Sparse	Variable	Variable
Demand Responsive (Real Time Scheduling)	Sparse	Variable	Variable
Demand Responsive (Connector)	Dense	Predictable	Predictable
Demand Responsive (Flexible Route Segments)	Sparse	Predictable	Variable
Demand Responsive (Route Deviation)	Sparse	Predictable	Variable
Demand Responsive (Zone)	Dense	Predictable	Predictable

4.3.2 Case Studies

Several case studies of transit providers who incorporate elements of transit services that may be appropriate for implementation in the County of Essex were examined. These elements are divided into three categories:

- service design
- fares
- governance

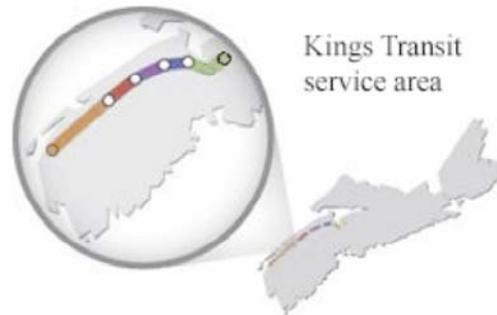
While transit services may be located in areas with settlement and geographical difference, the same elements may be applied on a scale that is effective for the County of Essex.

Kings Transit Authority – King’s County NS

Service Design

The Kings Transit Authority (KTA) operates service primarily in the Highway 101 corridor throughout the Annapolis Valley in Nova Scotia. The service is designed to serve the towns of Berwick, Kentville and Wolfville, as well as the other communities in the Municipality of the County of Kings.

Service began in 1981, serving the towns of Wolfville and Kentville. Routes passing through the Town areas connected the two communities with hourly service, Monday to Saturday.



Service is also provided in the Highway 101 corridor throughout the County, with a local loop in Berwick, also with hourly service, Monday to Friday.

Following this initial service a route was added in Annapolis County, serving Middleton, Bridgetown, and intermediate communities along the highway corridor. Connections at Greenwood to the Kentville Route allow passengers to travel into Kings County.

More recently, a route was added, extending the network westerly to Digby County, serving Weymouth and Digby with connections to the Annapolis route at Bridgetown.

On September 4, 2007, service was expanded again, with a new eastern route added to serve the communities of West Hants, including Windsor and Brooklyn, with connections to communities in between, and a connection to the Wolfville-Kentville service at Hortonville.

With this last extension, routes now extend almost 200 kilometres along the Highway 101 corridor.

KTA Transit has been historically heralded as a very successful service, uncharacteristic of its small size. In the 2004 Strategic Plan prepared by ENTRA Consultants, this success was attributed to the demographic and demand pattern in the corridor, where a significant portion of the population and employment is located within typical walking distances of the highway corridor. The success and growth of the KTA service over the years points to the significant potential of a corridor service to attract ridership, and provide a convenient, attractive service to passengers over a variety of distances.

Fares

Cash fares for all services are \$3.50. While it is possible to travel the full length of the network for this price, most travel is local, or extends over two routes at most. Cash discounts are extended to children only (age five through 11), and monthly passes are available with discounts for both seniors and children. No student discount is available.

KTA provides services outside the towns and the Municipality of the County of Kings at 100 percent cost recovery. These services are supported by fares and funded by the relevant local municipalities. Services within Kings County recovered more than 50 percent of the operating costs from fares – a cost-recovery level typical of much larger systems.

Governance

The KTA is designed to provide service to the towns of Berwick, Kentville and Wolfville and the Municipality of the County of Kings. The structure of the Authority is governed by

an agreement that sets out the various roles and responsibilities, membership and voting structure, cost sharing agreement and legal matters. The agreement has been in place since April 1999.

In addition to the services governed by the KTA, the Authority also operates service outside of Kings County, under contract to the Municipality of the County of Annapolis, Digby County, and the Municipality of West Hants. Services provided to the adjacent communities are fully funded by the communities on a 100 percent cost recovery basis. Representatives of Annapolis County are invited to participate in the regular meetings of the KTA, but do not vote.

Rural Transit, Bloomington, Indiana

Service Design

Rural Transit offers various transportation services. Express services provide residents opportunities to travel within Spencer, Ellettsville, and Bloomington, connecting to downtown Bloomington and Bloomington Transit on weekdays.



County Routes offer round-trip service between specific points in the counties one to five times weekly. County Routes link rural areas with towns, connecting to shopping centres, medical facilities and other services as well as Express Services, Bloomington Transit, Bedford & Mitchell Transit, and Indiana University buses.

County Sweeps provides round-trip transportation services Monday through Friday 6:00 – 8:00am and 4:00 - 6:00pm throughout Monroe, Owen and Lawrence counties.

These services are on a pre-schedule basis, with bookings required at least 24 hours in advance of a trip. Same day service is provided if time is available and accessible trips can be provided upon request.

Fares

To travel within one County, the adult cash fare is \$0.75 and two County trips are \$1.50. Transfers to Bloomington Transit and Indiana University buses are free. Reduced fares are available for children, and seniors are asked to donate the full fare amount. The low fare reflects the substantial funding support received by the Indiana Agency on Aging from the federal government.

Governance

The Rural Transit service is operated by the Area 10 Agency on Aging (AOA). In the United States, AOAs are established in each region as part of a national network of organizations established under the 1971 Older Americans Act (OAA) to respond to the needs of older adults. Funded by the federal government, most agencies are private,

non-profit corporations with a Board of Directors drawn from local agencies and public members, and provide a variety of program and funding support to seniors.

Rural Express – Metro Transit, Halifax, Nova Scotia

Service Design

The Halifax Regional Municipality (HRM) is introducing MetroX service and designed with the weekday commuter in mind, brings express transit to Park & Ride lots along 100-series highways within Halifax Regional Municipality. MetroX began with service to Tantallon in September 2009. The MetroX is proposed in three corridors including the Highway 103 corridor from Halifax to Upper Tantallon, the Highway 107 corridor from Halifax/Dartmouth to Musquodoboit Harbour, and the Highway 118/102 corridor from Halifax/Dartmouth to the airport and Enfield.



Once express bus service has been established on all three corridors, HRM will begin introducing local transportation services within the communities along the express routes, providing some level of transportation in and around those communities and connecting to the express bus service for travel into the downtown. Neighbouring East Hants is also considering local service serving Elmsdale and Enfield, with connections to the airport and the HRM service.

The service is proposed as a premium service with provisions for extra comfort, convenience and passenger amenities. The buses used for this type of service are different than standard city buses; specifically built and designed with comfortable seats and air conditioning. One wheelchair can be accommodated by a lift at the rear of the bus. A free designated Park & Ride lot at the Hubley Center can accommodate up to 185 vehicles. Each MetroX station will feature bike racks, with bike lanes available near each station, and every MetroX bus will also be equipped with a bike rack.

Fares

The cash fares for the service is \$3.25 for adult and student and \$2.50 for senior and child, reflecting the premium service, with direct, limited-stop service to the downtown core.

Governance

The Rural Express service is operated as a service of Metro Transit, a department of the Halifax Regional Municipality. Metro Transit is fully accountable to HRM council for operating and capital budget approval, major project initiatives and significant operating changes and improvements.

Downeast Transportation, Inc. (DTI) – Hancock County, Maine

Service Design

DTI is private, non-profit agency that operates flexible and fixed routes in Hancock County, Maine. The services include: a commuter service that is provided five days per week; contract services to workshops and employment centres; midday inter-city services between three Hancock County cities - Bar Harbor, Ellsworth and Bangor; and a seasonal fixed-route service servicing Acadia Park and the Schoodic Peninsula.

The weekday commuter service connects a variety of communities to Bangor, and is currently under review for service revisions.

Intercity services are scheduled on varying days, depending on the geographical area. For instance, the Bar Harbor-Ellsworth-Bangor service, and the Bar Harbor-Southwest Harbor-Ellsworth service operates on Mondays, while the Bar Harbor-Ellsworth service operates on Fridays. Each of these intercity routes operate one trip in each direction, from Bar Harbor in the morning and to Bar Harbor in the afternoon.

DTI also operates a seasonal fixed-route service, called the Island Explorer, which operates from mid-June to Labor Day using propane-powered 28-passenger vehicles. Service was extended to mid-October for 2007, with a grant from retailer LL Bean. Eight routes comprise this service, providing access to hiking routes, inns, beaches and campgrounds on Acadia National Park Island and providing connections to the Bar Harbor Airport and the Bay Ferry terminal (to Yarmouth, Nova Scotia) as well as to neighbouring villages.

A web-based automatic vehicle location system allows users to see the buses' location at any time.

The service began in 1999 with approximately 140,000 trips and has more than doubled today. Rider surveys show that out-of-state visitors comprise approximately 80 percent of the ridership.

Fares

The cash fares for the full year route are \$1.00 within one Town, and \$2.50 to \$5.00 between neighbouring towns. Rides to Bangor are \$9.00 from Bar Harbor and \$7.00 from Ellsworth. The seasonal Island Explorer fixed route service is free, with funding support from the National Park Service and LL Bean. The propane fuel option is part of this funding arrangement, helping to secure the participation of LL Bean.



Governance

A Board of Directors was appointed when constituents in Hancock County, Maine established the service in 1979. This Board was formed to govern the organization and focus on policy issues. The issues include providing direction and setting policies for Downeast Transportation Inc., promoting a comprehensive transportation system within Hancock County; monitoring and supervising operations; planning services, overseeing the General Manager; fundraising and budget approval.

The Board comprises a Chair, nine members and two alternates, serving three year staggered terms (which may be consecutive). Board meetings are semi-monthly, and are attended by two standing committees in addition to the Board and the General Manager. An agenda, relevant reports and financial statements are sent to Board members in advance keeping meetings short and informal. The General Manager leads the Board members through these meetings. The Board receives minimal training and no administrative support. Board members are not compensated for expenses.

The Board reflects the demographics of the area, and is comprised of seven males and three females. Membership is comprised of residents who are interested in transportation. The current board members are the Operations Manager for the Bay Ferry, the National Park Superintendent, representatives from the "friends of Acadia", transit planners, a housewife and retirees.

5. Demand Analysis

5.1 Demographic Information

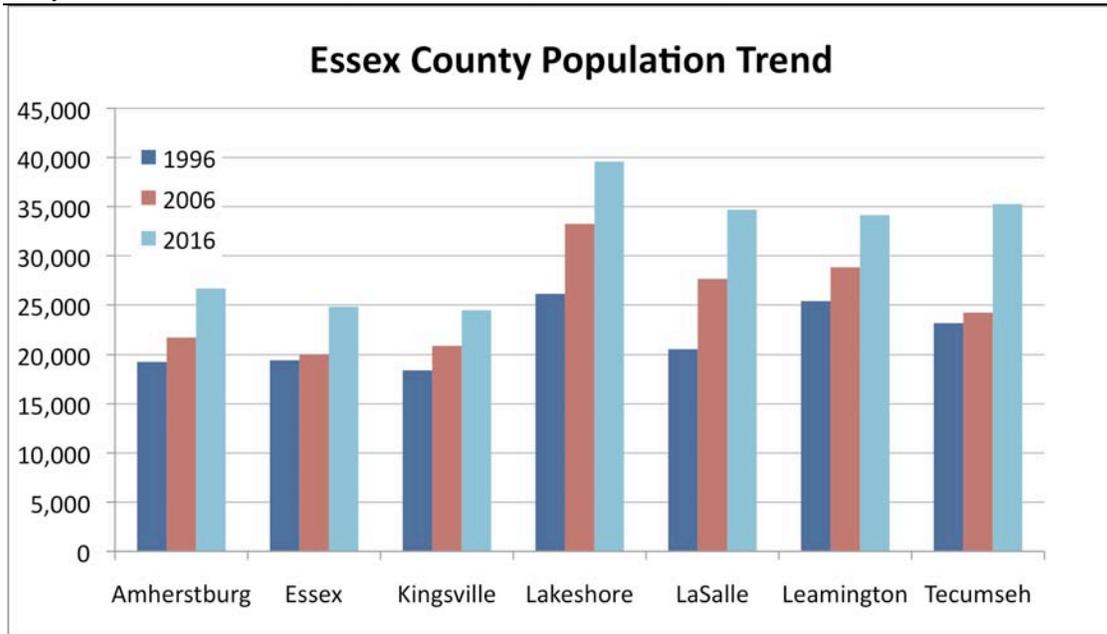
As shown in Exhibit 2, population in the County of Essex increased at a rate of 15.9 percent, from 152,352 to 176,642 during the time period from 1996 to 2006. Lakeshore and LaSalle grew at rates higher than the County at 27.2 percent and 34.5 percent respectively. Tecumseh and the Town of Essex experienced much slower growth than the County, at 4.6 percent and 3.1 percent respectively. As of 2006 Statistics Canada data, the Town of Lakeshore had the largest population in the County with 33,245 residents and the Town of Essex has the smallest population, with 20,043 residents.

A high growth scenario from 2006 to 2016 predicts continued population growth in all municipalities and overall County growth of 24.3 percent, from 176,642 to 219,612 residents. The County of Essex population in 1996, 2006 and projected growth for 2016 (high growth scenario) as per the County's Official Plan are shown in Exhibit 2. It should be noted that the County is in the process of updating its population projections and these figures may change.

As shown in Exhibit 3, in 1996 approximately 68 percent of County residents were under the age of 45, 13 percent between 45 and 54 years and 19 percent 55 years or older. In 2006 approximately 60 percent of County residents were under the age of 45, 16 percent between 45 and 54 years and 24 percent 55 years or older. This increase in population older than the age of 55 from 19 percent in 1996 to 24 percent in 2006, combined with a decrease in people under the age of 45 from 68 percent in 1996 to 60 percent in 2006 shows a general aging trend in the County. This suggests a potential transit need as senior citizens often rely on public transportation for mobility.

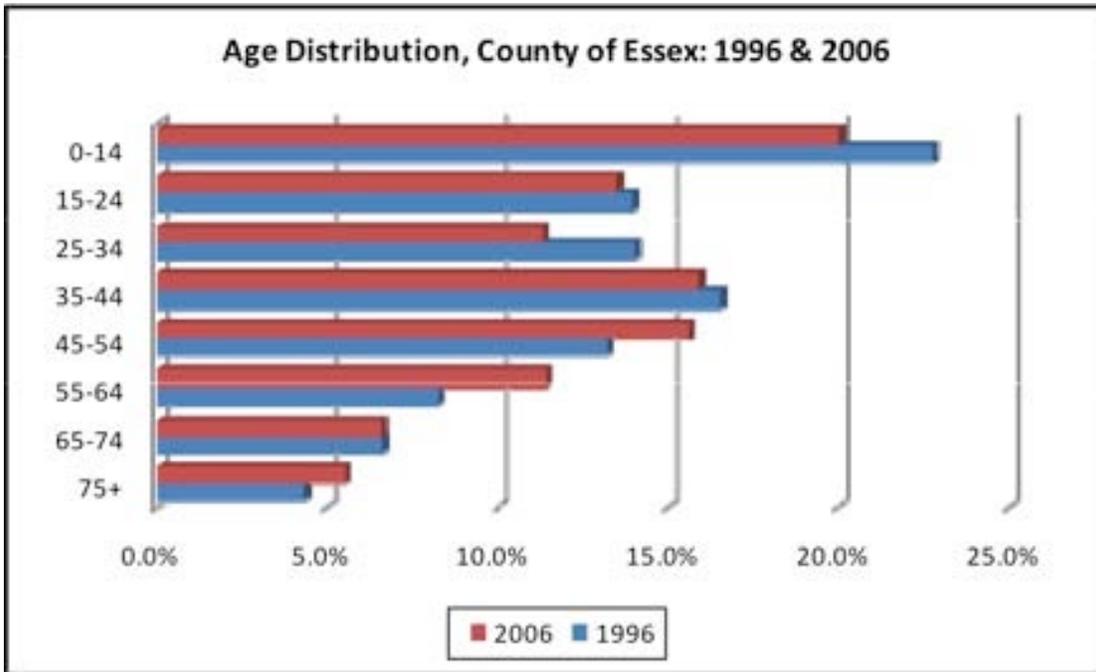
Exhibit 2 – County of Essex Population

Municipality	Population			Population Change
	1996	2006	2016	1996 - 2006
Amherstburg	19,273	21,748	26,671	12.8%
Essex	19,437	20,032	24,818	3.1%
Kingsville	18,409	20,908	24,461	13.6%
Lakeshore	26,127	33,245	39,579	27.2%
LaSalle	20,566	27,652	34,691	34.5%
Leamington	25,389	28,833	34,133	13.6%
Tecumseh	23,151	24,224	35,259	4.6%
County of Essex	152,352	176,642	219,612	15.9%
City of Windsor	197,694	216,473	236,948	9.5%



Source: Statistics Canada 1996 and 2006, County of Essex and City of Windsor Official Plan

Exhibit 3 – County of Essex Population Age Distribution



Source: Statistics Canada, 1996 and 2006

As population in the County grows, so do the transportation needs. As the population continues to age, an increasing number of people will become dependant on public transit as they are no longer able to drive.

5.2 Employment-based Commuters

5.2.1 Commuting Patterns

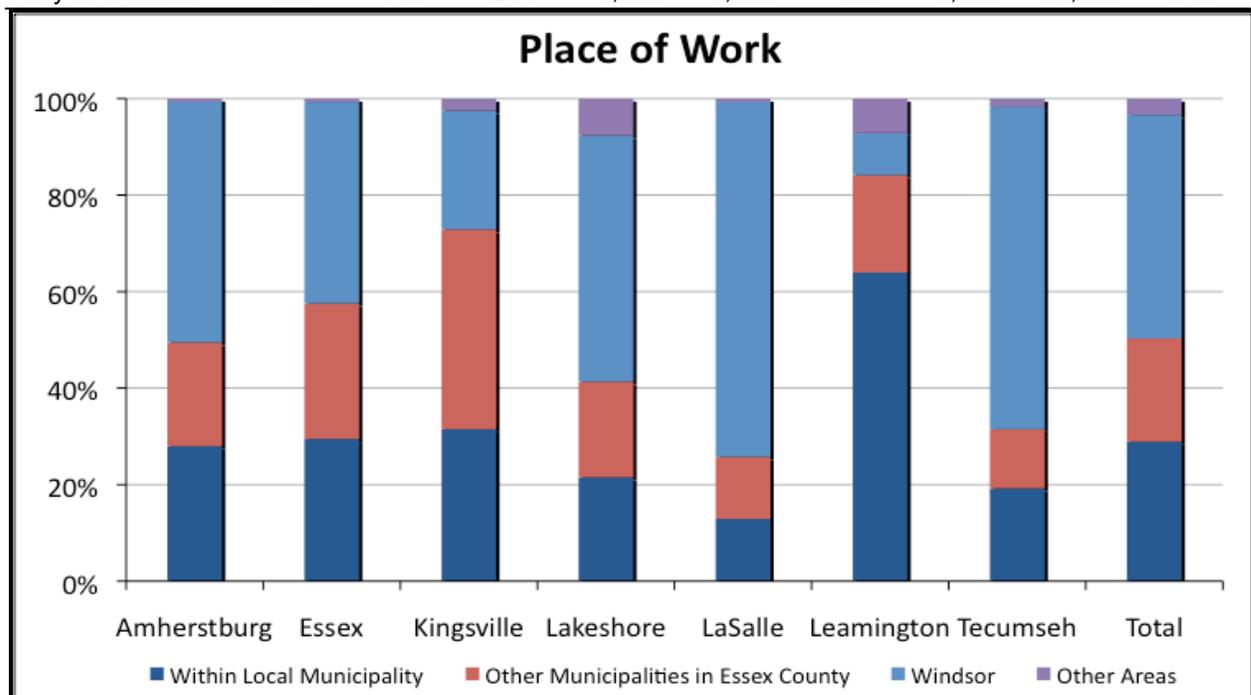
As shown in Exhibit 4, the City of Windsor is the most popular work place in the region, especially for residents in LaSalle (74 percent), Tecumseh (67 percent), Lakeshore (51 percent) and Amherstburg (50 percent). Residents in all County of Essex towns except Leamington and Kingsville make more external work trips to Windsor than all other municipalities in the region. Leamington residents make the fewest daily work trips to Windsor, at only 9 percent (935 trips).

Inter-municipal work trips between towns in the County of Essex are also worth noting, as approximately 21 percent (1,855 trips) of Kingsville work trips are made to Leamington, nearly as many as the 25 percent (2,130 trips) made to Windsor. Work trips from Leamington to Kingsville and from Lakeshore to Tecumseh also show significant daily inter-municipal travel at approximately 14 percent (1,450 trips) and 11 percent (1,610 trips) respectively.

There are also a notable proportion of travellers making reverse commutes from Windsor to access employment in the County of Essex. Nearly 20 percent (13,170 trips) of all Windsor residents work in County of Essex municipalities, namely in Tecumseh (9 percent), LaSalle (5 percent), and LaSalle (2 percent).

Exhibit 4 – Place of Work Data (2006)

Residence	Residents Employed in								
	Amherstburg	Essex	Kingsville	Lakeshore	LaSalle	Leamington	Tecumseh	Windsor	Other
Amherstburg	2,510	310	55	185	540	75	770	4,475	60
Essex	295	2,475	500	315	160	355	735	3,505	60
Kingsville	55	780	2,730	360	95	1,855	445	2,130	220
Lakeshore	70	565	195	3,030	125	230	1,610	7,175	1,085
LaSalle	265	175	40	240	1,510	45	735	8,595	80
Leamington	0	170	1,450	245	35	6,860	270	935	765
Tecumseh	50	175	50	870	145	20	2,060	7,155	180
County of Essex	3,245	4,650	5,020	5,245	2,610	9,440	6,625	33,970	2,450
City of Windsor	630	745	290	3,535	1,550	430	5,990	67,630	815



Source: Community Profiles, 2009

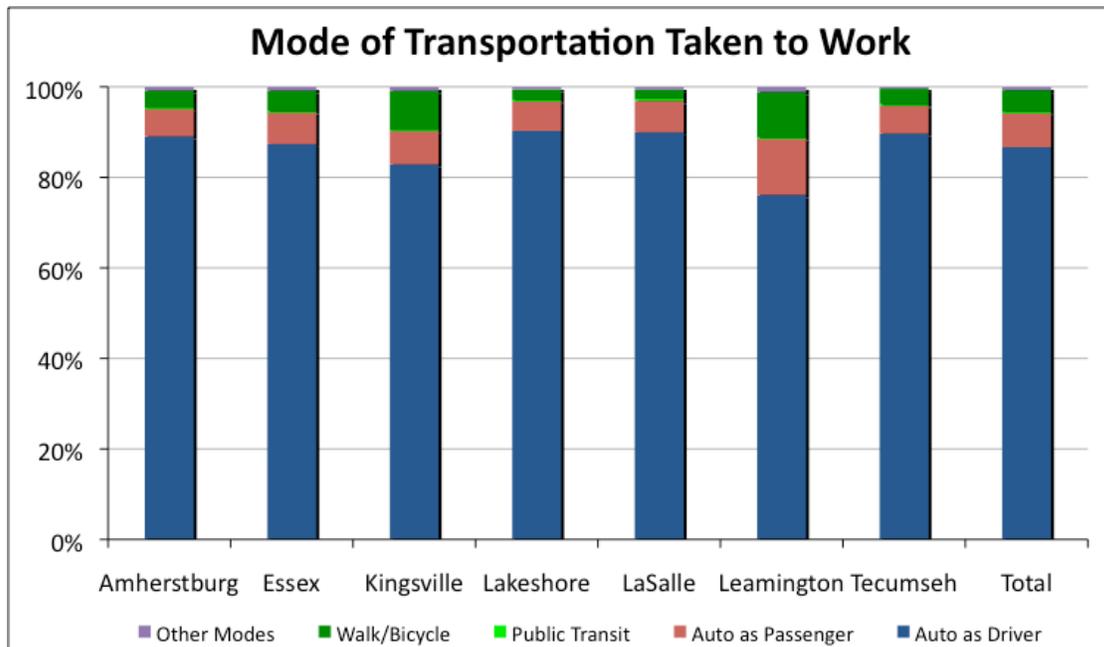
Leamington residents are the most likely to find employment within their own municipality as approximately 64 percent of daily work trips are made internally while LaSalle residents make the fewest internal daily work trips, at only 13 percent. Residents in other towns including Amherstburg, Essex, Kingsville, Lakeshore and Tecumseh all make between 19 percent and 32 percent of daily work trips internally.

Overall, more than 46 percent of County residents work in Windsor while fewer than 29 percent are employed within their home municipality and approximately 21 percent work within the County of Essex, but outside of their home municipality.

5.2.2 Commuting Mode

Due to the lack of alternative transportation modes, more than 94 percent of County of Essex work trips are made either as a driver or passenger of a private vehicle according to 2006 Statistics Canada data (see Exhibit 5). This is higher than provincial and Windsor averages of 79.2 and 87.5 percent respectively. Public transit use for work trips has a provincial modal split of 13 percent, yet account for less than 0.5 percent in the County of Essex. Walking and biking to work have a modal share of 4.7 percent in the County, slightly more than 4.3 percent in Windsor but less than the province-wide 6.8 percent average.

Exhibit 5 – Mode of Transportation Taken to Work



Source: Statistics Canada, 2006

5.2.3 Summary

The review of place of work data indicates that there is a significant demand for transportation services between all municipalities in the County of Essex and the City of Windsor, particularly those municipalities adjacent or close to the City of Windsor. Significant demand is also found between some municipalities in the County such as Kingsville – Leamington, Tecumseh – Lakeshore and Essex – Kingsville. Internal demand is also high in some municipalities such as Leamington.

Apart from full-time employees who require regular transportation services for their commuting trips, businesses that rely heavily on seasonal employment and lower-skilled workers are dependant on younger workers and other employees that tend to more dependant on public transit travel.

There is also likely a latent demand for transportation services, as some people have to turn down job opportunities because transportation is not available. Approximately 15 percent of employers who responded the online survey indicated that lack of alternative transportation options creates a barrier for retaining employees. Representatives from economic development also recognized that transit not only allows employee access to jobs, but gives employers more flexibility in where they choose to locate in the region.

5.3 Post-secondary Students

Post-secondary students often rely on public transportation to travel from home to their schools. Transit needs may exist from student commuters living in the County of Essex and attending the University of Windsor and St. Clair College.

Exhibit 6 shows that more than 5,300 County of Essex residents are currently enrolled in full time studies at major Windsor post-secondary institutions. Approximately 3,500 students from the County of Essex are attending school at the University of Windsor. More than 1,800 students from the County of Essex attend St. Clair College. Transit service from the County to the post-secondary schools in Windsor could alleviate an existing transit need and provide post-secondary education opportunities to those who cannot afford their own transportation as well as contribute to increased enrollment from County residents.

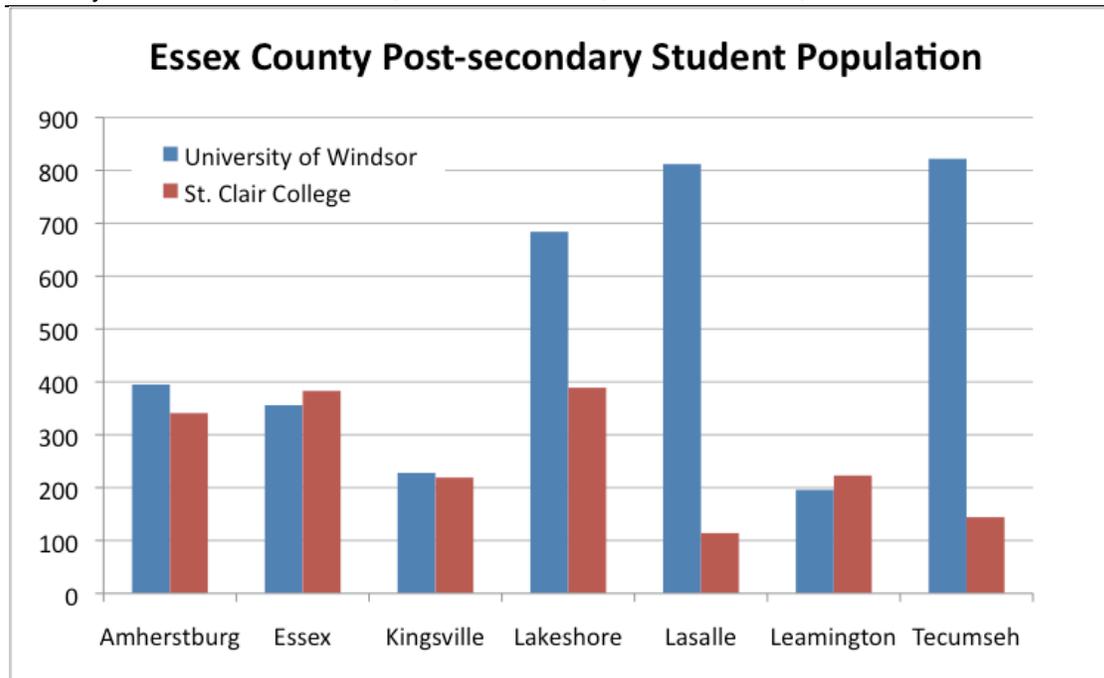
As shown in Exhibit 6, both Tecumseh and LaSalle have more than 800 students currently attending the University of Windsor. Kingsville and Leamington are the towns with the fewest students enrolled, with 228 and 196 respectively, likely due to the lack of transportation alternatives and relatively long distance. The University of Windsor has a total student population from the Windsor-Essex region of 11,119. Approximately 69 percent (7,625 students) come from Windsor and 31 percent (3,493 students) from the County of Essex. Student population at the university from the County of Essex is proportionally lower than the overall Windsor-Essex population proportion of 55 percent (216,473 residents) in Windsor and 45 percent (176,642 residents) in the County of Essex.

Both the towns of Essex and Lakeshore have approximately 400 full time students attending St. Clair College. Tecumseh and LaSalle are the towns with the fewest

students enrolled, with 144 and 114 respectively. The Windsor campus of St. Clair College has a total full time student population of 6,865 and more than 26 percent (1,813 students) come from the County of Essex. An additional 5,383 continuing education and part time post-secondary students are enrolled, and more than 21 percent (1,140 students) are from the County of Essex.

Exhibit 6 – Post-secondary Student Population

Municipality	Student Population			Percentage of Population
	University of Windsor	St. Clair College	Total	
Amherstburg	395	341	736	3.4%
Essex	356	383	739	3.7%
Kingsville	228	219	447	2.1%
Lakeshore	684	389	1,073	3.2%
LaSalle	812	114	926	3.3%
Leamington	196	223	419	1.5%
Tecumseh	822	144	966	4.0%
County of Essex Total	3,493	1,813	5,306	3.0%



Source: University of Windsor and St. Clair College, 2009

5.4 Other Potential Markets

In addition to commuters and post-secondary students, there are also significant needs for other purposes such as medical, shopping, education (secondary schools) and social based on the results of the surveys and consultation as well as other studies.

The County of Essex school boards provide student transportation for secondary students living beyond 3.2 kilometres of their schools. However, as shown in Exhibit 7, many students are living within 3.2 kilometres of their schools in all municipalities of the County of Essex. These students would have to walk for a great distance or get a ride from their family.

In addition to trips to and from school, their after-school activities such as recreation, shopping, entertainment and visiting friends heavily rely on the location of the activity centres or their parents' schedule. Parents of secondary students indicated how the lack of transportation options either restricted access to after-school activities, or detracted from overall quality of family life and added significant travel costs in transporting students to and from evening programs.

Secondary students are often potential transit users and most likely would use the service for their school trips as well as after-school activities if the service were available in their communities.

Exhibit 7 – Secondary Student Walkers

Secondary School	Location	Walkers
Belle River District High School	Lakeshore	196
Essex District High School	Essex	308
General Amherst	Amherstburg	402
Harrow District High School	Essex	108
Kingsville District High School	Kingsville	230
Leamington District High School	Leamington	438
Sandwich Secondary School	LaSalle	202
Western Secondary School	Amherstburg	-
Cardinal Carter	Leamington	91
St. Anne High School	Lakeshore	68
St. Thomas of Villanova	LaSalle	-
St. Mikes – Essex	Essex	23
Ecole l'Essor	Tecumseh	138

Source: Windsor and Essex Student Transportation Services

In the Essex-Windsor region, most services including medical, social, shopping and entertainment are located outside of their own municipality. For those who do not have access to a private vehicle, cannot drive, or prefer not to drive, such as seniors, youth

and persons with disabilities, especially dialysis patients, regular transportation services allow access services available to them locally and outside of their municipalities. However, the current transportation services provided by social service agencies are very limited, particularly to the City of Windsor, due to a lack of resources and funding.

Public consultation and stakeholder interviews suggest that lack of access to transportation options is a major quality of life issue and contributes to poor health and a pervasive loss of independence among senior citizens. Dependence on others to access medical appointments and visit friends and relatives may cause some senior citizens to move, give up social activities, or continue to own and drive an automobile past the time they can safely do so.

Access to public transit is important for low- and middle-income non-drivers to provide a basic level of mobility and enhance their quality of life.

5.5 Key Regional Destinations

Based on input from public, key stakeholders and the project steering committee, the key destinations in the Essex-Windsor area for the potential transit service include, but are not limited to:

- downtown Windsor
- University of Windsor
- St. Clair College
- Tecumseh Mall
- Devonshire Mall
- Old Castle area of Tecumseh

5.6 Existing and Future Travel Patterns

The PM peak hour Origin-Destination (OD) matrices obtained from the Essex-Windsor regional transportation forecasting model developed by the EWRTMP study were used to identify the overall travel patterns in Essex-Windsor.

Exhibit 8 shows the existing overall travel demand (2009 total person trips) in the PM peak hour derived based on the 2001 and 2021 OD matrices from the regional transportation forecasting model. The overall travel patterns are very similar to commuting patterns in the region, given that employment-based commuters represent a significant portion of peak period travel.

Exhibit 8 – Existing PM Peak Hour Person Trips

	Amherstburg	Essex	Kingsville	Lakeshore	LaSalle	Leamington	Tecumseh	Windsor	Total
Amherstburg	1,221	307	162	133	341	131	169	1,249	3,714
Essex	380	916	385	350	262	368	267	1,543	4,471
Kingsville	194	361	925	317	150	655	188	985	3,773
Lakeshore	140	273	265	1,303	220	341	541	2,167	5,249
LaSalle	371	226	121	233	959	114	246	2,611	4,882
Leamington	194	419	701	500	165	3,312	249	1,056	6,597
Tecumseh	222	270	210	573	347	215	1,040	3,061	5,938
Windsor	2,002	1,978	1,413	3,350	3,755	1,275	3,930	-	17,702
Total	4,724	4,750	4,182	6,760	6,200	6,411	6,628	12,671	52,326

Exhibit 9 shows a representation of the existing travel patterns within and between municipalities in the County of Essex as well as to and from the City of Windsor. It should be noted that lines are not shown when trips made between destinations total fewer than 500.

In addition to high travel demand between the City of Windsor and all municipalities in the County, the following links have relatively high inter-municipal travel demand:

- Amherstburg – LaSalle
- Amherstburg – Essex
- Essex – Kingsville
- Essex – Lakeshore
- Essex – Leamington
- Essex – Tecumseh
- Kingsville – Lakeshore
- Kingsville – Leamington
- Lakeshore – Leamington
- Lakeshore – Tecumseh
- LaSalle – Tecumseh

Local travel within each municipality is also high particularly in Leamington, Lakeshore, Amherstburg and Tecumseh.

Exhibit 9 – Existing Travel Patterns (2009 PM Peak Hour)

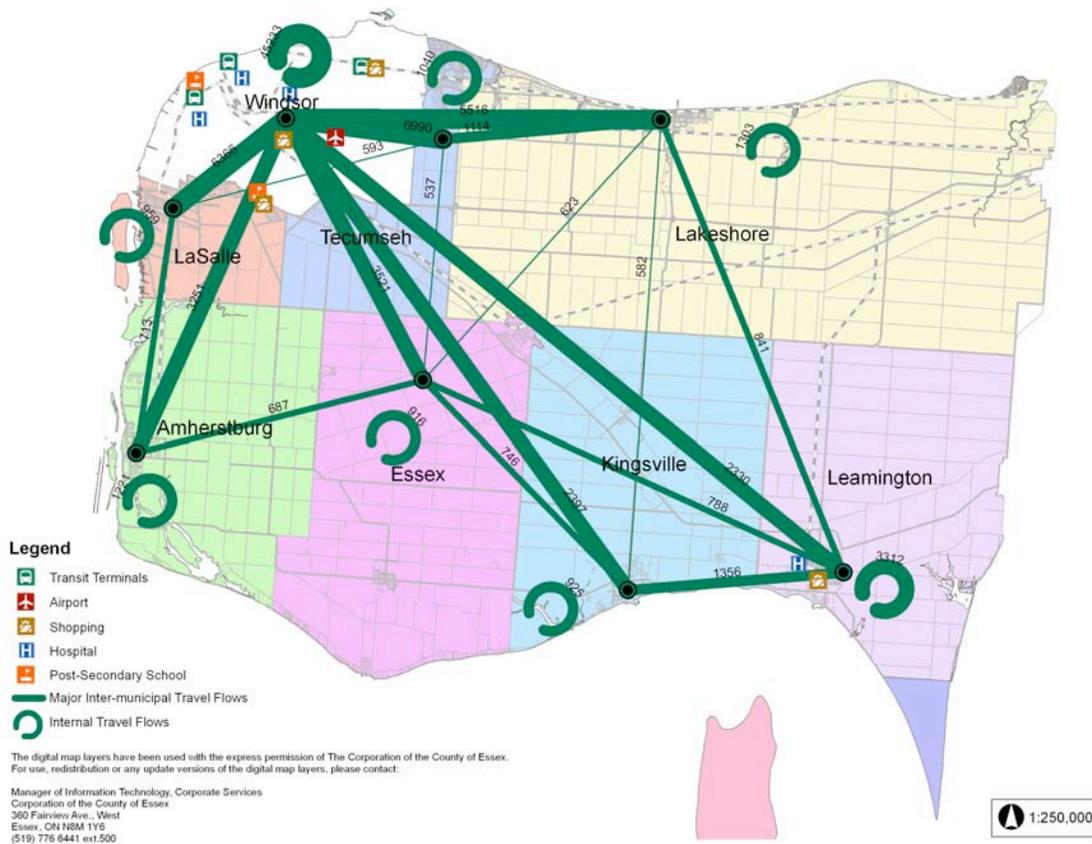


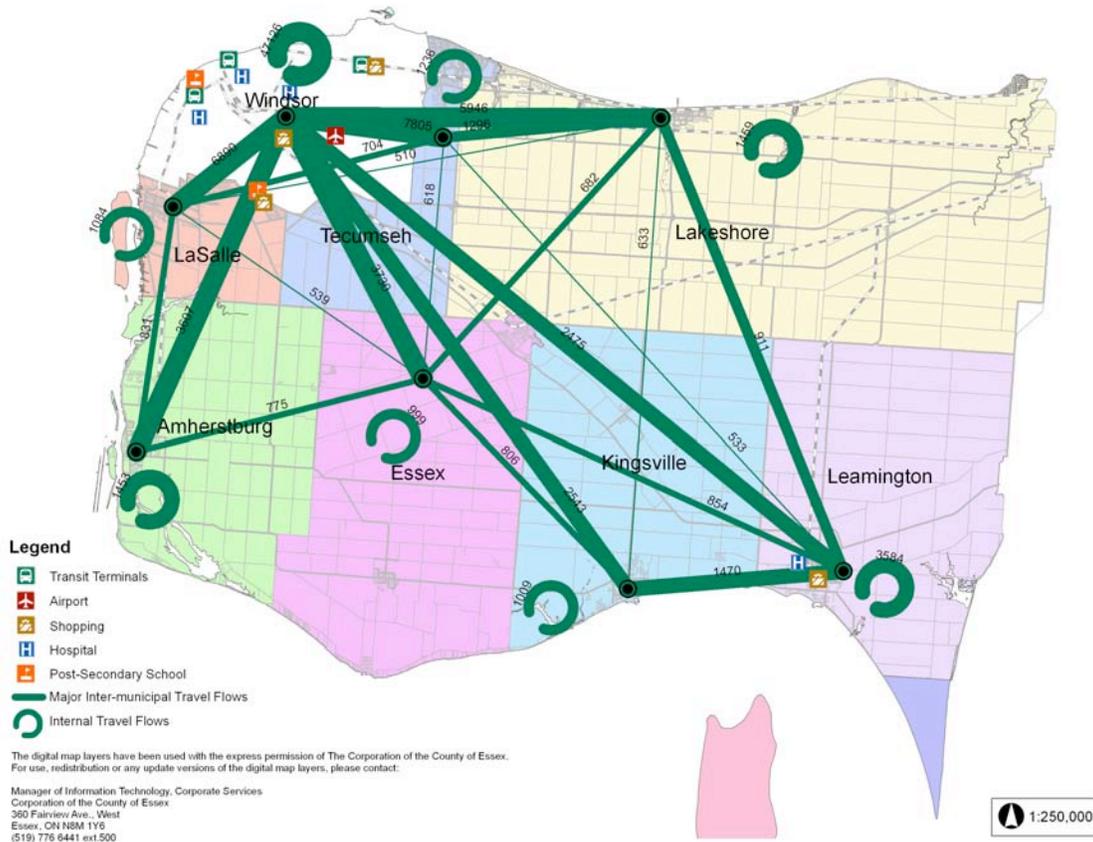
Exhibit 10 shows the 2016 PM peak hour travel demand for each municipality based on the results from the regional transportation forecasting model. The projected future travel demand indicates that travel within the region will grow between all municipalities as population and employment grow, especially in the areas in proximity in the City of Windsor including Tecumseh, Amherstburg, LaSalle and Lakeshore. However, as shown in Exhibit 11, the general travel patterns will remain similar within the region.

Travel patterns are based on where people live and where their main activities such as work, school and shopping are located. Transit services that follow popular travel patterns are most likely to attract riders and meet the transportation needs of most travelers.

Exhibit 10 – 2016 PM Peak Hour Person Trips

	Amherstburg	Essex	Kingsville	Lakeshore	LaSalle	Leamington	Tecumseh	Windsor	Total
Amherstburg	1,453	353	187	155	399	152	200	1,422	4,320
Essex	423	999	416	382	287	401	298	1,648	4,855
Kingsville	217	389	1,009	344	164	711	210	1,053	4,098
Lakeshore	159	300	289	1,459	248	369	618	2,375	5,817
LaSalle	432	252	136	262	1,084	128	282	2,879	5,456
Leamington	217	453	759	541	180	3,584	276	1,127	7,138
Tecumseh	276	320	251	678	421	257	1,236	3,538	6,977
Windsor	2,185	2,082	1,490	3,572	4,011	1,349	4,267	-	18,955
Total	5,361	5,149	4,536	7,394	6,794	6,951	7,387	14,042	57,615

Exhibit 11 – Future Travel Patterns (2016 PM Peak Hour)



5.7 Potential Transit Demand

ENTRA reviewed the transit demand in other regions in Ontario where region-wide transit services are currently available and identified potential transit modal splits between communities in the region. Based on the use of transit services in other similar municipalities, it is estimated that if transit services with good service coverage and level of service were fully implemented in the Windsor-Essex region, the overall transit modal split would be approximately two percent, with higher transit use within the City of Windsor and between urban areas in the County of Essex and the City of Windsor and relatively low demand to and from the rural areas in the County.

The current modal split within Windsor is approximately three percent. Given that there is virtually no transit service outside of these areas at this time (with the exception of Leamington), the modal splits will shift gradually with the introduction and increases in service in areas currently with no transit service. Assuming that the region including Windsor achieves a modal split of two percent at full system implementation, it is estimated that the County's modal share (excluding trips within Windsor) will gradually reach 1.2 percent as services mature.

Given the timing of the possible service development, the potential demand for 2011, 2016, and 2021 in peak and midday periods were developed based on the total travel demand and estimated mode splits between each urban and rural community. Travel demand during peak periods, midday and evening are assumed proportionally to PM peak hour demand and estimated based on the Transportation Tomorrow Survey (TTS) 2006 data.

Exhibit 12, Exhibit 13 and Exhibit 14 show the potential transit demand between municipalities in the region for 2011, 2016, and 2021 respectively. More detailed estimates were also developed for each urban and rural community in the County and will be used for the service options development.

It should be noted that these estimates represent potential transit demand only. Actual ridership may vary depending on the various service characteristics that will be provided, including service coverage, frequency and span, as well as other factors such as affordability and effective marketing. The estimated potential transit demand is mostly consistent with the overall travel patterns in the region.

Results of the travel and transit demand analyses indicate that the most popular transit destination is the City of Windsor where major employment, education and other services are located. The municipalities in the County of Essex with the highest future transit demands are the areas immediately adjacent to Windsor, including Tecumseh and LaSalle, and to a lesser extent, Lakeshore and Leamington.

Exhibit 12 – 2011 Potential Transit Demand

	Amherstburg	Essex	Kingsville	Lakeshore	LaSalle	Leamington	Tecumseh	Windsor	Total
Peak Periods (6:00am – 9:00am, 3:00pm – 6:00pm)									
Amherstburg	33	7	4	3	9	4	5	46	109
Essex	7	23	7	7	6	9	7	56	124
Kingsville	3	8	21	6	3	14	5	28	87
Lakeshore	3	7	6	41	8	10	23	142	241
LaSalle	9	6	3	9	44	4	14	206	295
Leamington	4	9	14	9	4	92	6	34	173
Tecumseh	5	7	5	23	13	7	52	233	344
Windsor	44	55	27	136	196	34	226	0	717
Total	107	123	86	233	283	175	337	746	2,090
Midday (9:00am – 3:00pm)									
Amherstburg	20	4	2	2	5	2	3	28	66
Essex	4	14	4	4	4	6	4	34	74
Kingsville	2	5	13	3	2	9	3	17	52
Lakeshore	2	4	4	25	5	6	14	85	144
LaSalle	5	4	2	5	26	3	8	124	177
Leamington	2	6	8	5	2	55	4	21	104
Tecumseh	3	4	3	14	8	4	31	140	206
Windsor	26	33	16	82	117	20	135	0	430
Total	64	74	52	140	170	105	202	448	1,254

Exhibit 13 – 2016 Potential Transit Demand

	Amherstburg	Essex	Kingsville	Lakeshore	LaSalle	Leamington	Tecumseh	Windsor	Total
Peak Periods (6:00am – 9:00am, 3:00pm – 6:00pm)									
Amherstburg	55	12	6	5	14	6	8	73	180
Essex	12	38	12	12	10	15	12	88	198
Kingsville	6	12	34	9	5	23	8	43	139
Lakeshore	5	12	9	69	14	15	38	224	387
LaSalle	14	10	5	14	72	7	24	319	464
Leamington	6	15	23	15	7	147	11	53	277
Tecumseh	8	12	8	38	24	11	88	375	564
Windsor	73	88	43	224	319	53	375	0	1,176
Total	180	198	139	387	464	277	564	1,176	3,385
Midday (9:00am – 3:00pm)									
Amherstburg	33	7	3	3	9	4	5	44	108
Essex	7	23	7	7	6	9	7	53	119
Kingsville	3	7	20	6	3	14	5	26	84
Lakeshore	3	7	6	41	8	9	23	134	232
LaSalle	9	6	3	8	43	4	14	192	279
Leamington	4	9	14	9	4	88	7	32	166
Tecumseh	5	7	5	23	14	7	53	225	339
Windsor	44	53	26	134	192	32	225	0	705
Total	108	119	84	232	279	166	339	705	2,031

Exhibit 14 – 2021 Potential Transit Demand

	Amherstburg	Essex	Kingsville	Lakeshore	LaSalle	Leamington	Tecumseh	Windsor	Total
Peak Periods (6:00am – 9:00am, 3:00pm – 6:00pm)									
Amherstburg	59	12	6	5	15	7	9	76	189
Essex	12	39	12	12	10	15	13	90	205
Kingsville	6	12	35	10	5	23	8	44	143
Lakeshore	5	12	10	73	15	15	41	232	403
LaSalle	15	10	5	15	75	7	24	328	479
Leamington	7	15	23	16	7	151	11	55	285
Tecumseh	9	13	8	41	26	12	94	394	598
Windsor	76	90	44	232	328	55	388	0	1,212
Total	189	205	144	403	481	285	588	1,219	3,514
Midday (9:00am – 3:00pm)									
Amherstburg	35	7	4	3	9	4	5	46	114
Essex	7	23	7	7	6	9	8	54	123
Kingsville	4	7	21	6	3	14	5	26	86
Lakeshore	3	7	6	44	9	9	24	139	242
LaSalle	9	6	3	9	45	4	15	197	288
Leamington	4	9	14	9	4	91	7	33	171
Tecumseh	5	8	5	25	15	7	57	237	359
Windsor	45	54	26	139	197	33	233	0	727
Total	114	123	86	242	289	171	353	732	2,108

6. Needs and Opportunities

This section summarizes the needs and opportunities for potential transit services in the County as well as service connections to the City of Windsor. This forms the base for the service development in the next phase of the study. The following needs and opportunities are identified based on our background research, online survey results, stakeholder and public consultations as well as the market analysis:

- Public transit services are currently very limited for County of Essex residents. As a result, in most areas within the County, those without access to private vehicles have to rely on their family, friends or private taxi services to get around the community for employment, medical, education and other services. The lack of transportation is a barrier that affects everyone in the community, particularly those who need the services such as the elderly, children, people with disabilities and low-income families.
- Population in all municipalities of the County is projected to grow in the next decade. As communities are growing, so are transportation needs. As the population continues to age, an increasing number of people will become dependant on public transit, as they are no longer able to drive.
- Lack of alternative transportation options creates a barrier for businesses to retain employees and limits their flexibility in where they choose to locate in the region, particularly those that rely heavily on lower-skilled and younger workers more dependant on public transit.
- Post-secondary students often rely on public transportation to travel from home to their schools. Transit service from the County to the post-secondary schools in Windsor could alleviate an existing transit need and provide post-secondary education opportunities to those who cannot afford their own transportation as well as to contribute to increased enrollment from County residents.
- A large number of secondary school students in every County of Essex municipality are currently not eligible for transportation services and require alternative transportation for their school trips, especially during the winter. In addition, the lack of transportation options either restricts access to after-school activities or detracts from overall quality of family life, and adds significant travel costs in transporting students to their after-school activities.
- There is also an unmet travel need from Windsor to municipalities of the County for various purposes such as employment, recreation and social activities.
- Most residents currently rely on driving for their transportation, particularly for work trips. However, peak traffic congestion often occurs on key County roads due to the increasing demand. An effective transit system will provide alternative transportation to County of Essex residents, reduce traffic congestion and capital investments on road infrastructure as well as greenhouse gas emissions and therefore support more sustainable development for local economy and environment.

- Given the broader transit context in the province, there is currently more funding available to establish a transit system as well as for future service expansion. The federal gas tax fund as the largest component of the Building Canada plan and targets exclusively municipal infrastructure to improve water and air quality and reduce greenhouse gas emissions could be a funding resource for set up a transit system in the County. And the gas tax funding allocated by the provincial government to all transit systems in Ontario could support the future service expansion.
- The County of Essex has a mature sophisticated transit neighbour, the City of Windsor, who has experience and skills in transit operations and is currently providing transit services in the area.

7. Vision, Goals and Objectives

If Essex County pursues the development of transit in the County, it should be guided by an overall vision, with goals and objectives that can help define the role of the service and guide its development.

The purpose of establishing a vision and drafting goals and objectives is to provide a long-term, definable and attainable direction to deliver desired services within the County. It also aims to infuse the organization with purposeful action that will help to achieve its desired goals.

This section describes a possible vision, with goals and objectives related to the development of a transit system for the County of Essex. This vision, developed for the purpose of this report, was used as the basis for the development of routes and services in the County.

7.1 Vision

Recognizing the County of Essex's regional transportation needs and the objectives of the Transportation Master Plan, this vision was identified to help focus efforts to develop a proposed future transportation system for the County. The proposed vision is:

To provide sustainable mobility options for all rural and urban residents, contributing to quality of life, economic and environmental sustainability, economic development and a healthy natural environment.

7.2 Goals

Setting specific goals and objectives are an integral part of directing and fulfilling the County's vision to provide sustainable mobility options for all County residents. The proposed goals, related to the vision, are as follows:

- to provide multi-tiered accessible transit services connecting regional urban areas to employment, education, recreation, social and health facilities
- to support the County's transportation system by providing a transit alternative to complement the road network and active transportation systems
- to provide customer-focused services that meet the transportation needs of all our communities
- to provide supporting rural services connecting to urban communities and services in the County

7.3 Objectives

Objectives are specific, measurable, intermediate ends that are achievable and allow measurement of progress toward achieving the proposed goals. The following are the proposed objectives:

- to provide an integrated network of accessible services comprising urban connectors, County connectors, local and rural service
- to design demand-based service levels and schedules to provide convenient affordable service
- to provide service with accessible vehicles and accessible options to meet the needs of all residents
- to provide direct service for work and school commuters, connecting Windsor and County origins and destinations for effective two-way travel
- to maintain reasonable cost structure, guided by the service standards, to ensure sustainability
- to provide fair and equitable fare structures that ensure fairness to customers and affordability for funding partners

8. Service Concept and Performance Standards

8.1 Service Concept

Based on the County's unique demographic conditions and travel behaviour, ENTRA identified four distinct types of service to fulfill the diverse needs within the County. Each service type supports different objectives and thus yields different degrees of transit service delivery. The four types of service include:

- Urban Connectors
- County Connectors
- Local Services
- Rural Services

Each of these distinct service types is described in the subsequent sections.

Urban Connectors

Urban Connectors are fully accessible transit corridors designed to connect between urban communities in the County and the City of Windsor and its urban fringe.

The primary focus of Urban Connectors is to fulfill the needs of work and student commuters, with consideration for all other trip purposes. Services are designed to facilitate travel from County origins into Windsor (and return) as well as from Windsor origins to the County (and return). Stop locations and service levels would vary depending on observed demand.

These routes are designed (1) to provide superior service particularly in urban areas and the urban fringe by installing more frequent stops and passenger amenities, (2) connect to major Windsor attractions and Transit Windsor services, and (3) to be integrated with local services where warranted and practical, in the County urban areas. They would operate initially on a weekday-only basis, with service expansions to evenings and weekends based on performance.

County Connectors

County Connectors are fully accessible transit corridors with the objective of providing warranted connections to and between urban communities in the County. These corridor-based services aim to satisfy all trip purposes and would operate with limited stops in rural areas, based on demonstrated demand.

Like Urban Connectors, these services are designed to integrate with local services where warranted and practical, particularly at corridor ends. They would operate primarily on a weekday-only basis, with service expansions to evenings and weekends based on performance.

Local Services

Local Services provide integrated, fully-accessible service to all residents in the service area and are designed to maximize coverage in the urban area and connect to County and Urban Connectors.

Local Services could be considered primarily in urban areas where the urban population exceeds a range of 7,000 to 10,000 people and will be planned in conjunction with, and may be supported by, the local municipality.

They would operate primarily on a weekday-only basis, with service expansions to evenings and weekends based on performance.

Rural Services

Rural Services are designed to provide connections between rural areas and the urban communities in the County, focused on providing access to necessary amenities and services. They would operate on a demand-response service design and would provide integrated accessible service to all residents in the service area.

These services should be planned in conjunction with, and may be supported by, the local municipality.

Like the other service types, Rural Services would be implemented on a weekday-only basis, with service expansions to evenings and weekends based on performance.

8.2 Performance Standards

This section outlines the recommended guidelines for developing, implementing, and monitoring transit services in the County of Essex. Establishing performance standards is a pivotal element to transit planning and decision-making as they provide a clear and consistent framework for justifying the provision of new or revised transit services and examining the effectiveness of services in operations.

Service standards also define the conditions that require action when standards are not met, but allow flexibility to respond to varied customer needs and community expectations in an accountable, equitable and efficient manner.

In the County of Essex, these service standards provide a framework to determine the initial feasibility for the provision of regional transit service. Transit services in the County of Essex should strive to achieve the following performance targets in a mature system, however, lower performance levels are to be expected in the short-term.

Amount of Service

Vehicle-hours per capita is an important measure of the amount of service provided. Vehicle hours provided in different systems tend to increase exponentially with population size, so that vehicle-hours per capita increases with population in a linear fashion. In practice, this means that small systems tend to provide service in the range of 0.5 to 0.75 annual vehicle hours per capita, while large systems typically provide in excess of 2.0 vehicle-hours per capita. For communities similar to the County of Essex, the typical range is 0.5 to 1.0 annual vehicle-hours per capita.

ENTRA recommends that a minimum target of 0.5 annual vehicle-hours per capita should be established to guide the provision of services within a defined service area, with a goal of 0.75 vehicle-hours per capita as the system matures.

Service Utilization

Passengers per vehicle-hour measures the total number of passengers divided by the number of vehicle-hours of service. It indicates the effectiveness of the system in attracting passengers to the service and a higher value indicates superior performance.

It is recommended that all transit services should generate at least the number of passengers per vehicle-hour outlined in Exhibit 15.

Exhibit 15 – Ridership Performance Standards

	Passengers per vehicle hour		
	Peak Periods ⁽¹⁾	Off-Peak Periods ⁽²⁾	Average
Urban Connectors	20	10	15
County Connectors	15	10	12
Local Service	10	5	8
Rural Service	8	5	6
Overall	15	8	11

Notes:

(1) Peak Periods include AM peak and PM peak

(2) Off-Peak Periods include weekday midday, weekday evening, Saturday, and Sunday

Financial Monitoring

The financial performance measures are all affected by inflation, particularly the changing cost of fuel. Since inflationary effects on costs cannot be precisely predicted and will significantly reduce or eliminate evidence of progress in this measure, financial measures are addressed in this document as an effective monitoring tool, but not recommended as a standard. The County of Essex should carefully monitor the following financial measures with consideration of the price index:

- Cost recovery ratio (R/C) is a principal indicator of economic performance in the transit industry. In this indicator, higher values indicate superior performance.
 - typical range in similar communities: 30 – 40 percent
- Net cost per passenger assesses the efficiency of the system, taking passenger revenue into account. In this indicator, lower values indicate superior performance.
 - typical range in similar communities: \$2.00 – \$3.00
- Cost per hour is a principal measure of the overall efficiency of the operations, and of course, lower values represent superior performance.
 - average in similar communities: approximately \$80

8.3 System Concept

Based on projected transit demand and feedback from the public and an array of stakeholders, ENTRA developed a system concept that is consistent with the context of the County and its transportation objectives. These concept routes are classified according to the four identified service types, as shown in Exhibit 16. The system concept is illustrated in Exhibit 17 and the service characteristics at the full implementation stage (beyond 2021) are outlined in Exhibit 18.

Exhibit 16 – A List of Proposed Services (beyond 2021)

Service Type	Proposed Routes
Urban Connectors	<ul style="list-style-type: none"> • Amherstburg-LaSalle-Windsor • Lakeshore-Tecumseh-Windsor • Leamington-Essex-Windsor (Highway 3 Express)
County Connectors	<ul style="list-style-type: none"> • Amherstburg-Kingsville • Leamington-Kingsville-Essex-Windsor Local
Local Service – <i>Urban Fringe Areas</i>	<ul style="list-style-type: none"> • Southern Urban Fringe (serving portions of LaSalle with connections to Transit Windsor) • Eastern Urban Fringe (serving portions of Tecumseh and Lakeshore with connections to Transit Windsor)
Local Service – <i>Other Areas</i>	<ul style="list-style-type: none"> • Amherstburg • Essex • Kingsville • Lakeshore • Leamington
Rural Services	<ul style="list-style-type: none"> • Amherstburg-Essex • Leamington-Lakeshore • Tecumseh-Lakeshore-Essex

The overall system concept presents a long-term look of what the County of Essex might expect upon full system implementation (beyond 2021). In total, the service concept includes three proposed Urban Connectors, two proposed County Connectors, and seven areas proposed for Local Service. Rural Services would operate through a system of demand responsive services based on a defined geographic area connecting the rural communities to urban areas and other transit services in the County.

8.3.1 Initial Implementation

Urban Connectors are the likely candidates for initial implementation, as they are focusing on post-secondary school student and commuter markets and observed to have the greatest travel demand, relative to other routes and connections. Nevertheless,

these routes along with the remaining service types would be implemented only as projected ridership warrants.

Exhibit 19 illustrates the Urban Connector concept for initial implementation, while Exhibit 20 outlines the proposed service characteristics.

If the County decides to proceed with the development of services, the initial Urban Connectors would still need to be more specifically defined in terms of routes and stops, connection points in Windsor, and specific schedules. This work would also include refining ridership estimates based on the specific of destinations, stops and schedules, and may result in refinements to the route, staging or levels of service to ensure the sustainability of the service and that service performance standards are met.

8.3.2 Long-term Service Concept

Development of transit services throughout the County should proceed incrementally, based on observed demand, with expansion of routes or levels of service only when ridership projections and service costs demonstrate that the performance standards will likely be met.

Within this framework, Exhibit 17 illustrates the potential range of services in a mature system. The overall alignment of Urban Connector routes have been roughly defined, while County Connector, Local Service and Rural Service routes only illustrate the proposed connections and general areas of service. Exhibit 18 outlines the potential service characteristics for this plan.

Exhibit 17 – Potential Full Implementation – Concept

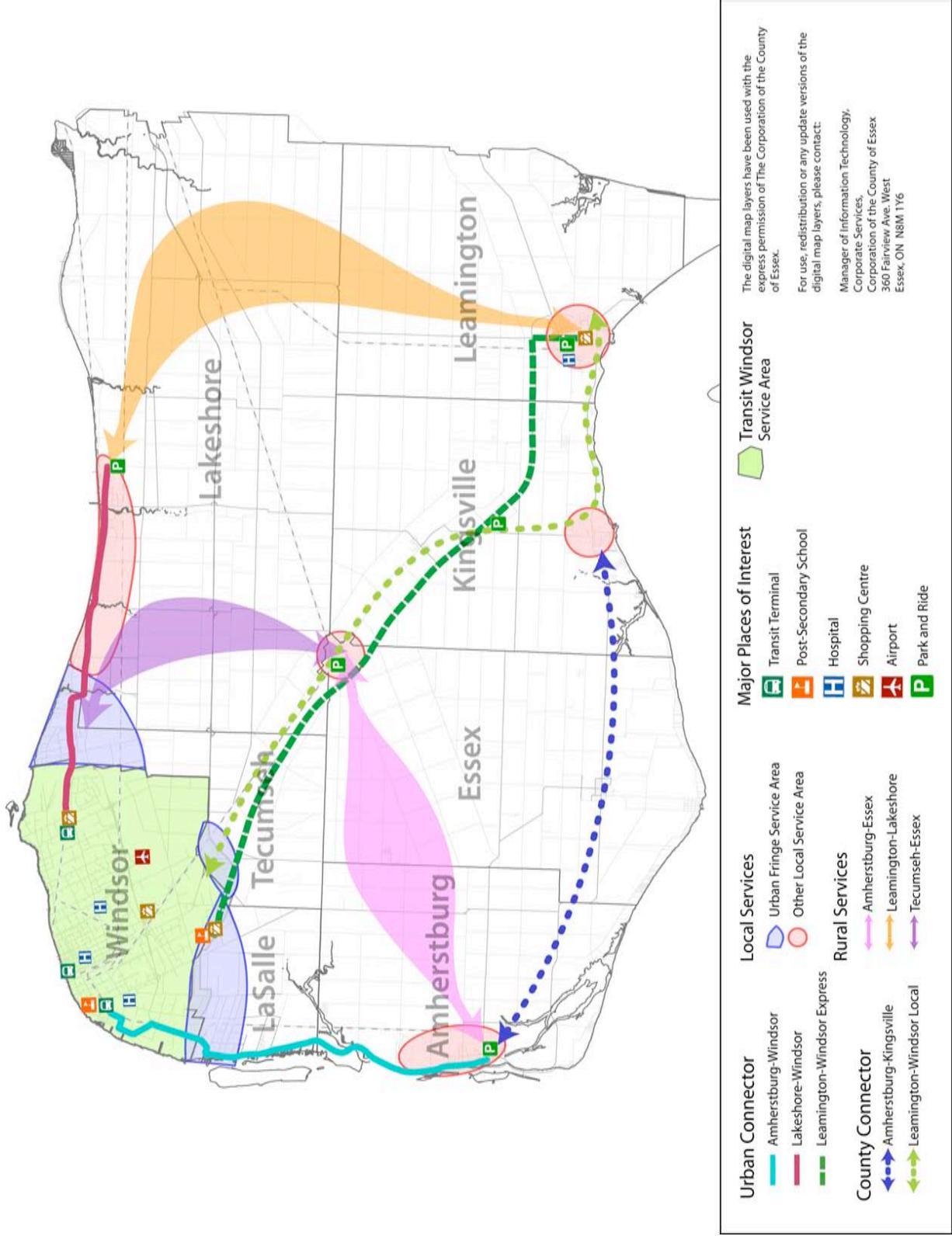


Exhibit 18 – Potential Full Implementation – Service Characteristics

Services	Service Frequency (min)			Vehicles	Annual Estimates (Full Implementation)			
	Peak	Base	Weekend		Service Hours	Operating Cost	Ridership	Rides Per Hour
Urban Connectors								
Amherstburg - Windsor	30	60	Yes	4	13,600	\$1,155,000	221,600	16
Lakeshore - Windsor	30	60	Yes	4	13,600	\$1,155,000	343,300	25
Leamington - Windsor	30	60	No	4	10,500	\$896,000	155,000	15
County Connectors								
Amherstburg - Kingsville	Demand-based	Demand-based	No	1	1,500	\$128,000	23,200	15
Leamington - Windsor	Demand-based	Demand-based	No	1	3,000	\$256,000	52,600	18
Local - Urban Fringe								
Southern Urban Fringe	30	30	Yes	2	8,300	\$706,000	150,600	18
Eastern Urban Fringe	30	30	Yes	2	8,300	\$706,000	138,700	17
Local - Other								
Amherstburg	60	60	No	1	3,000	\$256,000	23,000	8
Essex	60	60	No	1	3,000	\$256,000	15,400	5
Kingsville	60	60	No	1	3,000	\$256,000	16,400	5
Lakeshore	60	60	No	1	3,800	\$320,000	38,000	10
Leamington	60	60	Yes	1	5,300	\$450,000	56,200	11
Rural								
Amherstburg - Essex	Demand-based	Demand-based	No	1	1,500	\$128,000	13,800	9
Leamington - Lakeshore	Demand-based	Demand-based	No	1	1,500	\$128,000	8,200	5
Tecumseh - Essex	Demand-based	Demand-based	No	1	1,500	\$128,000	12,000	8
Total				26	81,400	\$6,919,000	1,268,000	16

Exhibit 19 – Potential Initial Implementation – Concept

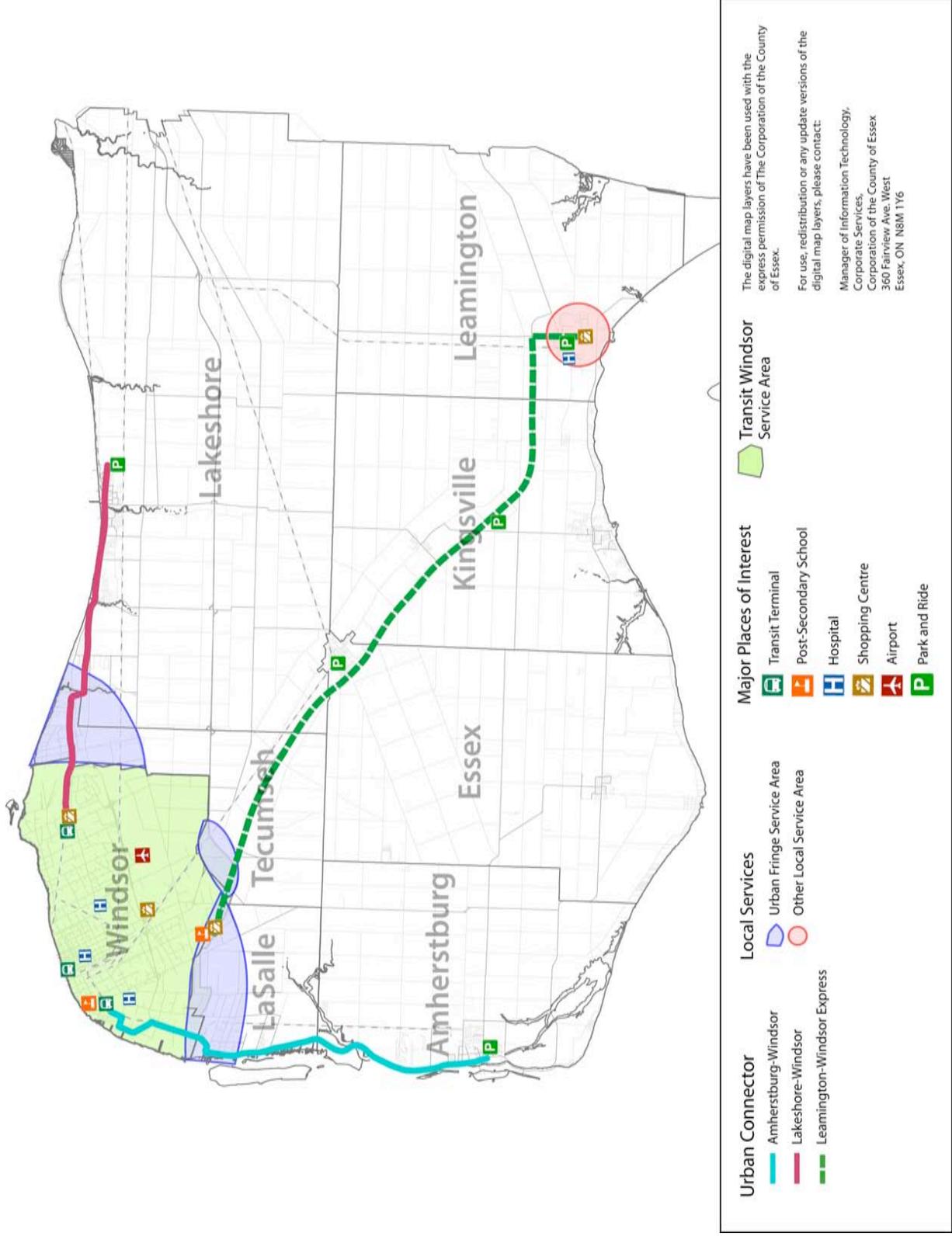


Exhibit 20 – Potential Initial Implementation – Service Characteristics

Services	Service Frequency (min)			Vehicles	Annual Estimates (Initial Implementation)				
	Peak	Base	Weekend		Service Hours	Operating Cost	Ridership	Rides Per Hour	
Urban Connectors									
	60	60	No	2	7,500	\$640,000	92,600	12	
	60	60	No	2	7,500	\$640,000	141,600	19	
	60	-	No	2	3,000	\$256,000	39,900	13	
Local - Urban Fringe									
	60	60	Yes	1	5,300	\$450,000	66,300	13	
	30	30	Yes	1	5,300	\$450,000	60,000	11	
Local - Other									
	60	60	No	1	3,000	\$256,000	25,700	9	
Total				9	31,700	\$2,695,000	426,000	13	

8.4 Planning and Evaluation Guidelines

Given the proposed conceptual transit network, this section presents a set of guidelines that can assist in planning for transit service and assessing the feasibility of specific proposals as population and demand grow and ridership increases.

ENTRA presented a conceptual transit service network and a transit service implementation plan based on current population and travel demand projections. However, it is expected that forecasted data might need to be modified depending on official plan updates, changing demographics, land use, travel patterns, economic conditions, or social situations. In light of this, ENTRA has developed planning guidelines to equip the County of Essex staff with adequate tools to facilitate decision-making with regards to transit service provision in the future.

The key objectives of these evaluation guidelines for transit service provision are to:

- familiarize County staff with the established service provision guidelines
- provide step-by-step instructions about how to use the analysis tools developed by ENTRA
- describe how to assess the appropriateness of the proposed transit service based on the findings of the analysis tools

In summary, the planning evaluation guidelines consist of three primary steps. The steps are summarized in Exhibit 21 and comprehensive details and instructions regarding the service planning and evaluation guidelines process are included in Appendix B.

Exhibit 21 – Summary of Service Planning and Evaluation

Steps	Description
1. Service design	<ul style="list-style-type: none"> • indicate the type of service, level of service, and route alignment of the proposed service
2. Ridership projections	<ul style="list-style-type: none"> • estimate ridership and evaluate whether the proposed service is warranted according to ridership performance standards • metric used for analysis: riders per revenue hour
3. Amount of service	<ul style="list-style-type: none"> • calculate the amount of service provided in a defined service area to examine whether the proposed service meets the performance standard • metric used for analysis: vehicle-hours of service per capita

9. Financial and Implementation Plan

9.1 Prioritization and Phasing Plan

Transit services included in the system concept were prioritized based on the identified travel needs of each community, estimated performance levels, and input from the community. As outlined in this section, the proposed services could be developed in three phases.

9.1.1 Phase 1 (2011 to 2016)

The initial phase of the implementation plan proposes the introduction of three Urban Connectors and the improved operation of Local Service in urban fringe areas and Leamington. Details on these services are outlined below:

- Urban Connectors
 - Amherstburg-LaSalle-Windsor: hourly service on weekdays
 - Lakeshore-Tecumseh-Windsor: hourly service on weekdays
 - Leamington-Essex-Windsor: hourly service in the peak periods only
- Local Services
 - Southern Urban Fringe (serving portions of LaSalle): hourly service on weekdays
 - extended service covering most urban areas with connections to Transit Windsor routes
 - Eastern Urban Fringe (serving portions of Tecumseh and Lakeshore): half-hour service on weekdays
 - continuation of the existing operation with connections to Transit Windsor routes
 - Leamington Local: hourly service on weekdays
 - continuation of the existing operation with improved service span and frequency and connection to the proposed Urban Connector

Services in other periods such as evenings and weekends should be considered only as the level of ridership meets the performance standards. Possible implementation of evening and weekend services in the later stage of Phase 1 would include:

- evening services on Amherstburg-LaSalle-Windsor and Lakeshore-Tecumseh-Windsor Urban Connectors and Urban Fringe Local Services
- weekend services on Urban Fringe Local Services

9.1.2 Phase 2 (2016 to 2021)

The second phase of the implementation calls for improved levels of service on some Phase 1 routes and an expansion of service to new areas. Nominally, this Phase is described as 2016 to 2021, but its specific implementation will depend on the relevant communities attaining projected populations, and ridership and costs projected to meet specified performance targets.

Specifically, the following services could be introduced or improved for this maturing phase:

- Urban Connectors
 - Amherstburg-LaSalle-Windsor: improve peak service to half-hour service
 - Lakeshore-Tecumseh-Windsor: improve peak service to half-hour service
 - Leamington-Essex-Windsor: introduce hourly service in the midday
- County Connectors
 - Amherstburg-Kingsville: demand-based service on weekdays
 - Leamington-Kingsville-Essex-Windsor: demand-based service on weekdays
- Local Services
 - Southern Urban Fringe: improve base service to half-hour service
 - Eastern Urban Fringe: extend service area to cover most urban areas
 - Lakeshore Local: hourly service on weekdays in areas beyond the urban fringe

Similar to Phase 1, services in other periods should be considered as the level of ridership meets the performance standards. Possible implementation of evening and weekend services in Phase 2 might include:

- evening services on Leamington and Lakeshore Local Service
- weekend services on Amherstburg-LaSalle-Windsor and Lakeshore-Tecumseh-Windsor Urban Connectors and Leamington Local Service

9.1.3 Phase 3 (Long-term Mature System)

Upon the fulfillment of a matured ridership base, it is anticipated that all services proposed in the system concept could be operated in Phase 3. This phase is expected to occur sometime beyond 2021. Rural Services and the remaining Local Services identified in the system concept would be introduced in this phase. This phase would likely represent a long-term incremental development process, with the services described introduced incrementally, based on observed demands, rather than in any specific timeframe or in relationship to one another.

The following summarizes the service expansions and improvements in this full implementation phase:

- Urban Connectors

- Leamington-Essex-Windsor: improve peak service to half-hour service
- Local Services
 - Amherstburg Local: hourly service on weekdays
 - Essex Local: hourly service on weekdays
 - Kingsville Local: hourly service on weekdays
- Rural Services
 - Amherstburg-Essex: demand responsive service in the rural areas in Amherstburg and Essex connecting to Amherstburg and Essex urban areas
 - Leamington-Lakeshore: demand responsive service in the rural areas in Leamington and east Lakeshore connecting to Lakeshore and Leamington urban areas
 - Tecumseh-Lakeshore-Essex: demand responsive service in the rural areas in west Lakeshore connecting to Essex, Lakeshore and Tecumseh urban areas

Similar to Phases 1 and 2, evening weekend services would be considered as warranted.

9.2 Governance

A strong governance structure is required to help guide strategic planning, ensure accountability, and develop standards and policies. Furthermore, it is required to encourage integrated land use and transportation planning, and ensure a close and seamless integration between local and inter-municipal transit services for customer convenience. As a result of good governance, transit services can be designed to be more efficient and well integrated, fairly distributed, able to promote positive land use changes, and foster community cohesion.

As part of the guidelines of the development of a transit system in the County of Essex, this section discusses various forms of transit governance that may be used for the County's transit system and identifies some of their advantages and disadvantages as they apply to the County's transit system. It is not an objective of this study to specifically recommend a preferred governance structure. If the County decides to pursue the development of transit services, a key next step will be to examine and select appropriate governance structure(s) to guide each of the implementation phases.

9.2.1 Transit Windsor Service Extension

Transit Windsor extends its service area to encompass surrounding municipalities and continues to maintain its own fleet and facilities. Respective municipalities provide a financial contribution for the delivery of transit services in their municipalities while the County and respective municipalities collaborate with Transit Windsor related to service planning and design.

Advantages

- easy to setup and provide services almost immediately (subject to available capacity in Transit Windsor operations)
- County municipalities can capitalize on Windsor's expertise with policy making, route planning, scheduling, operation, and maintenance
- no large initial investments required to purchase assets such as fleet vehicles and maintenance facilities
- minimizes administrative costs
- no governmental approvals or reporting requirements are necessary to establish this governance structure

Disadvantages

- surrounding municipalities may not be able to achieve all operational objectives if County routes are integrated with existing Transit Windsor routes
- services may not conform with the visions, goals and objectives for transit in the County
- more complicated processes for public transparency and financial accountability because of difficulty in separating costs and benefits exclusively for transit services in each municipality
- must delineate appropriate compensation and key responsibilities for each stakeholder for inter-municipal services

9.2.2 Municipal Service

Local municipalities establish, fund, and manage their own transit service, which may or may not include the operation of services outside of their respective local jurisdictions. Services may still be contracted, and may involve Transit Windsor.

Advantages

- allows municipal council to ensure desired goals are met
- allows for decision-making at a more localized level and does not require approval from the entire County

Disadvantages

- complicates the development of coordinated inter-municipal transit if individual municipalities create their own transit services without County feedback or oversight
- diminishes travel connectivity and duplicates of services could result from lack of service coordination if routes are not coordinated
- large initial investments may be required to purchase assets such as fleet vehicles (can be avoided through contract operation)

- need to obtain the services of experienced individuals to assist with policy making, route planning, implementation, operation, maintenance, and financing
- administrative costs required to establish and expand the transit system

9.2.3 Inter-Municipal Partnership

Local municipalities enter into agreement for provision of transit services, creating the partnership, an oversight committee, and specifying membership. Committee has advisory role only and municipal councils are ultimately responsible and accountable.

Advantages

- relatively easy to form, requiring no approval from provincial government
- allows board representation on the project steering committee
- each council can expropriate on behalf of the partnership
- exempt from property tax as lands held by municipal partners

Disadvantages

- not a separate legal entity; therefore, cannot hold land or borrow funds, reliant on municipalities for these functions and shares limitations on debt
- ultimate responsibility and accountability remains with municipalities; decision-making may prove cumbersome and overly complex as policies must be ratified by all councils
- potential problems relating to excessive administrative burden and conflicts over workload
- large initial investments may be required to purchase assets such as fleet vehicles (can be avoided through contract operation)
- need to obtain the services of experienced individuals to assist with policy making, route planning, implementation, operation, maintenance, and financing
- administrative costs required establish and expand the transit system

9.2.4 County Controlled Agency or Department

A department within the County is responsible for managing the transit services. County owns the service vehicles and facilities. A transit board, made up of County councillors, is established as the main decision-making body and reports to the County Council. Board is accountable for all organized actions, including financial performance and execution of contracts.

Advantages

- no governmental approvals or reporting requirements are necessary to establish this governance structure
- allows County Council to ensure regional goals are met

- ensures communication between the County transit system and other public works systems

Disadvantages

- large initial investments required to purchase assets such as fleet vehicles or land (can be avoided through contract operation)
- need to obtain the services of experienced individuals to assist with policy making, route planning, implementation, operation, maintenance, and financing
- administrative costs required to establish and expand the transit system

9.2.5 Regional Transit Authority

Option 1 – All Services are Controlled and Provided by the Authority

The Regional Transit Authority is a stand-alone agency within the County organizational structure and will own all vehicles and other infrastructure (facilities, bus shelters etc.) through the County. Authority members can either be political appointees or nominated by County Council from the population at large for set terms. The Authority will be responsible for developing policies, staffing and determining service delivery levels throughout the County. The County Council provides final approval for financial budget.

Advantages

- relatively easy to implement because it does not require senior government approvals
- can apply for direct provincial funding and grants aimed at provincial transit infrastructure and service growth related enhancements
- able to establish own policies and operating procedures in a manner that reflects the unique needs of the business
- exempt from property taxes as an agent of the County government
- opportunity to provide uniform transit system image to area residents
- service can operate at arms length from local political influences
- Authority can function independent of County administration
- all sectors of the County can have representation on the Authority to ensure that service is provided equally

Disadvantages

- some staffing and infrastructure requirements of the separate Authority may be deemed as duplication within the County organization
- Authority and its powers may encounter resistance from other municipal departments particularly in areas historically managed by others

- Authority will have to develop an organizational structure capable of administering, operating, maintaining and accommodating the service
- Authority still needs to compete with other County departments for funding

Option 2 – All Services are Controlled by the Authority and Local Service is Provided by Local Municipalities

The Authority would still have control of the vehicles and other infrastructure items. Political representation on the Authority could still be similar to that of Option 1. However, local municipalities would determine the level of service they wished to purchase from the Authority.

Advantages

- relatively easy to implement because it does not require senior government approvals
- can apply for direct provincial funding and grants aimed at provincial transit infrastructure and service growth related enhancements
- able to establish own policies and operating procedures in a manner that reflects the unique needs of the business
- exempt from property taxes as an agent of the County government
- provides local municipalities a degree of autonomy to determine levels of service to be provided
- Authority can function independent of County administration
- all sectors of the County can have representation on the Authority to ensure that service is provided equally

Disadvantages

- some staffing and infrastructure requirements of the separate Authority may be deemed as duplication within the County organization
- Authority and its powers may encounter resistance from other municipal departments particularly in areas historically managed by others
- Authority will have to develop an organizational structure capable of administering, operating, maintaining and accommodating the service
- Authority still needs to compete with other County departments for funding
- agreement for services has to be established between the Authority and local municipalities
- service segregation may impact (weaken) the overall transportation objectives of the Authority
- potential problems relating to excessive administrative burden controlling operation of split service

9.2.6 Non-Profit Corporation

Municipalities form a non-profit corporation under the Corporations Act. Board is accountable for all organized actions, including financial performance and execution of contracts. Non-profit corporations are less restricted in their financial relationship with municipal shareholders in terms of revenue support.

Advantages

- allows broad representation on corporation's board
- semi-autonomous body with separate liability from municipalities; ability to hold land in its own right
- benefit of preferred borrowing rates and option to avail itself of appropriation powers, property tax exemption
- income and property tax exempt
- less restricted in financial relationship with municipal stakeholders; free to enter fee-for-service contracts and receive municipal grants

Disadvantages

- lacks automatic GST exemption both on fares and expenditures on goods and services; appealing GST exemption is possible but is costly and time-consuming
- convoluted method to take advantage of municipal powers and grant eligibility, although absence of an overt profit motive enhances the success of grant approvals
- primary intent under the Corporations Act in addressing organizations with a public membership at large
- large initial investments required to purchase assets such as fleet vehicles or land
- need to obtain the services of experienced individuals to assist with policy making, route planning, implementation, operation, maintenance, and financing
- administrative costs required to establish and expand the transit system

9.3 Fleet and Facility Requirements

9.3.1 Vehicles

To ensure balanced operational efficiency and passenger comfort, this section describes vehicle requirements for various types of services provided in each area.

Routes operating between Windsor and the outlying municipalities of Amherstburg, Lakeshore, LaSalle, and Tecumseh could use low-floor 30' transit buses, which can seat 20 to 26 passengers (slightly less if wheelchair positions provided). These vehicles are 12-year buses and cost approximately \$350,000 each.

For longer trips such as Leamington-Windsor Urban Connector and County Connectors, the low-floor 30' transit buses could also be used, but consideration should be given to

equip the buses with highway seating and suspension to maximize passenger comfort on the long-distance journey.

A third vehicle type suitable for Local and Rural Service operations is an accessible van (cut away) which is usually a prefabricated fiberglass body mounted on a conventional truck frame. This equipment can be built to accommodate 12 riders and are rated as a seven to 10 year bus, normally costing approximately \$100,000 each. These types of vehicles are commonly used in paratransit operations in Ontario and elsewhere.

The total number of vehicles required by each type of service for each implementation phase, based on the proposed levels of service are outlined in Exhibit 22.

Exhibit 22 – Vehicle Requirements

Service Type	Proposed Routes	Vehicles Requirements (Total)					
		Phase 1		Phase 2		Phase 3	
		30' bus	Van	30' bus	Van	30' bus	Van
Urban Connector	Amherstburg-LaSalle-Windsor	2		4		4	
	Lakeshore-Tecumseh-Windsor	2		4		4	
	Leamington-Essex-Windsor Express	2		2		4	
County Connector	Amherstburg-Kingsville			1		1	
	Leamington-Kingsville-Essex-Windsor Local			1		1	
Local Service – <i>Urban Fringe</i>	Southern Urban Fringe (serving portions of LaSalle)	1		2		2	
	Eastern Urban Fringe (serving portions of Tecumseh and Lakeshore)	1		2		2	
Local Service – <i>Other Areas</i>	Amherstburg						1
	Essex						1
	Kingsville						1
	Lakeshore				1		1
	Leamington		1		1		1
Rural Service	Amherstburg-Essex						1
	Leamington-Lakeshore						1
	Tecumseh-Lakeshore-Essex						1
Total		8	1	16	2	18	8

Note: spare and replacement vehicles are not included in the summary.

9.3.2 Terminal and Park and Ride Facilities

Passenger terminal facilities in each of the municipalities for the initial service would be minimal and limited to an oversized shelter or storefront at a central location in the municipality and house a kiosk for ticket sales and dispensing transit information. As the system matures a more substantial facility could be provided if service demand warranted.

Park and Ride facilities should be considered along major transit corridors providing service connections to areas without direct services, particularly the rural communities. Bus shelters and schedule information should be provided at these facilities for passenger convenience.

9.3.3 Stops and Shelters

In the initial phase the service would probably be flag-stop but as ridership develops in the transit corridor, each municipality would identify priority locations for bus stops and construct stops using concrete or asphalt pads with sign posts to identify their location along the designated routes. At stops with high utilization by transit riders, a bus shelter could be erected for protection from the elements. Bus stop and shelter programs would be ongoing with a certain number added to the system on an annual basis.

At the existing and proposed park and ride lots located along Highway 3 in Leamington, Kingsville and Essex, bus stops and shelters should be established to encourage transit ridership in the Leamington – Windsor corridor.

9.3.4 Maintenance Facilities

In the initial phase of the service, buses operating in the municipalities of LaSalle, Tecumseh and Lakeshore could be stored, serviced and maintained by the municipalities at their respective public works yards or one of the municipalities could assume responsibility for the fleet maintenance and invoice the other municipalities for work done on the other vehicles.

A similar vehicle arrangement could be considered for both Amherstburg and Leamington although in the case of Leamington the current municipal service provider could possibly maintain the vehicles under contract.

Similarly, Transit Windsor could service and maintain the fleets assigned to the municipalities located on its perimeters (LaSalle, Tecumseh and Lakeshore). This option might require Transit Windsor to provide accommodations for the County of Essex bus drivers at the Transit Windsor facility, and similar to the arrangement that several transit systems in the GTHA have with GO Transit for vehicle servicing. If the service is contracted to a third party, including Transit Windsor, the contract terms should include the provision of facilities by the contractor.

During the subsequent system development stages and as the transit fleet expands, a more central location within the County should be identified where the fleet could be maintained. Although vehicles could also be stored at this location, deadheading costs should dictate that a portion of the fleet remain outposted to the individual municipalities

and vehicles rotated between these locations and the main maintenance depot for maintenance and servicing.

9.3.5 Technologies

In the initial phases of the service, only rudimentary technologies would be used in the system to keep capital expenditures to a minimum. This would include the use of mechanical fare boxes and route information limited to printed schedules and pre recorded transit information. Once the system becomes established, more sophisticated technologies should be employed to improve customer services and security and to facilitate system management and operations. These technologies include Automatic Vehicle Location (AVL), Automatic Passenger Counters (APC), Computer-Aided Dispatching (CAD), real time transit information, electronic fare collection, on-board security and so on.

9.4 Fare Strategies

This section discusses some of the potential fare structures applicable to the proposed services. If the County decides to pursue the development of transit services, more detailed analysis will be required to specifically determine fare structures for each type of service, examine the impact of the preferred structure on ridership and revenue, refine ridership estimates as a result, and possibly adjust the financial and operating plan accordingly.

9.4.1 Fare Structure Alternatives

The following fare structure alternatives are available to be applied to the proposed transit system in the County.

- Flat Fare – Exact single fare for a particular passenger class for a continuous transit journey anywhere in the County’s service area, including free transfers to connecting buses at transfer points.
- Zonal Fares – The County’s service area is divided into a number of fare zones. The zonal fare system operates the same as a flat fare system, but just for travel within the fare zone. For travel across a fare zone boundary to a destination in an adjacent fare zone, a fare zone supplement must be paid.
- Fare-by-Distance – Fares are determined based on the distance travelled for the transit journey. There is usually a base amount charged for a short journey and then an additional amount is charged based on the number of kilometres that the transit journey covers. This is similar to the way a taxi fare is determined.
- Fare-by-Time – Fares are determined based on the length of time required for the transit journey. There is usually a base amount charged for a short journey and then an additional amount is charged based on the number of minutes that the transit journey requires. This is similar to the way a taxi fare is determined.

9.4.2 Analysis of Fare Alternatives

Exhibit 23 outlines the advantages and disadvantages of each available alternative.

Exhibit 23 – Analysis of Fare Alternatives

Fare Structure	Advantages	Disadvantages
Flat Fare	<ul style="list-style-type: none"> • simple to implement with a manual and cash-based fare collection system – does not require any exit fare calculation • easy for passengers to understand • very customer friendly 	<ul style="list-style-type: none"> • higher fares for a short journey will be needed to subsidize the costs of longer journeys – may be seen as inequitable • average fare will not be comparable to coach or train alternatives
Zonal Fares	<ul style="list-style-type: none"> • possible to establish affordable fares for travel within zones that will apply to all local journeys and higher fares for longer distance commuter journeys that cross zone boundaries • perceived as equitable since the fare roughly correlates with the cost to deliver 	<ul style="list-style-type: none"> • requires driver to collect zone supplement when crossing fare zone boundary • perceived to be inequitable if short journey crossing zone boundary triggers requirement to pay zone supplement
Fare-by-Distance	<ul style="list-style-type: none"> • fares are roughly correlated with cost to deliver the service 	<ul style="list-style-type: none"> • very hard to implement with a pay-on-boarding fare system, particularly one that is based on cash since the fare needs to be determined when the passenger leaves the bus – significant technology investment required
Fare-by-Time	<ul style="list-style-type: none"> • fares are roughly correlated with cost to deliver the service 	<ul style="list-style-type: none"> • hard for passengers to understand why fare should be higher based on transit decision to plan indirect routes to service certain areas • very hard to implement with a pay-on-boarding fare system, particularly one that is based on cash • very few urban transit system examples where fare-by-time has been implemented

9.4.3 Fare Strategies

Based on review and analysis of the available fare alternatives as well as the proposed service concept, a zonal fare structure is considered suitable for implementation of the County's transit system.

Fare zones would be determined based on the proposed service concept and should have overlapping boundaries to deal with the problem of short journeys triggering the requirement to pay an unfair zone supplement.

Whenever a journey extends into an adjacent fare zone, the passenger should be required to pay a fare zone supplement. The amount of one-zone fare and the fare zone supplement(s) should be established based on an assessment of the comparable fare charged by Transit Windsor and the costs for alternative modes.

A co-fare discount should be negotiated with Transit Windsor for transfers to and from the County's transit service.

9.5 Financial Summary

Based on the proposed services from the three phases, a financial plan was developed. The following assumptions were made in the development of this financial plan:

- operating cost per hour: \$85 / hour, which is based on other similar transit operations in the area
- average fare: \$2.00, based on the other systems with similar service characteristics
- vehicle requirements:
 - standard low-floor 30' buses: \$350,000 each
 - cut away: \$100,000 each
 - spare vehicle allowance: 15 percent
- inflationary considerations: constant 2010 Canadian dollars

Based on these assumptions, Exhibit 24 outlines the capital and operating costs required for each phase of the implementation. It should be noted that capital costs shown are for the entire period of each phase while operating costs are annual costs of each phase.

The values in Exhibit 24 reflect total cost for operation of all services, including existing local services. This study does not address specific cost allocation between or among the municipalities, which would be developed in more detail at the implementation stage.

As shown in Exhibit 24, an estimated capital cost of approximately \$4 million, \$5.4 million and \$7 million would be required for the three phases, respectively. The annual operating cost would be approximately \$1.8 million, \$3.4 million and \$4.4 million for three phases, respectively, representing approximately 3, 5 and 6 percent of the County's current annual budget.

Exhibit 24 – Financial Summary

	Phase 1 (2011-2016)	Phase 2 (2016-2021)	Phase 3 (beyond 2021)
Total Capital Cost			
Vehicles			
Standard 30' Bus	8	8	2
Spare Bus	2		1
Accessible Van	1	1	6
Spare Van		1	1
Vehicle Cost	\$3,600,000	\$3,000,000	\$1,750,000
Other Capital Costs			
Station, Park and Ride Facility	\$280,000	\$100,000	\$40,000
Maintenance Facility		\$2,000,000	\$5,000,000
Stop and Shelter	\$100,000	\$100,000	\$100,000
Technology and Software	\$50,000	\$200,000	\$200,000
Total Capital Cost	\$4,030,000	\$5,400,000	\$7,090,000
Annual Operating Cost			
Total Vehicle-hours	31,700	60,400	81,400
Operating Cost	\$2,695,000	\$5,134,000	\$6,919,000
Annual Ridership and Revenue			
Service Area Population	60,000	100,000	125,000
Annual Ridership	426,000	883,000	1,268,000
Average Fare	\$2.00	\$2.00	\$2.00
Projected Revenue	\$852,000	\$1,766,000	\$2,536,000
Net Operating Cost	\$1,843,000	\$3,368,000	\$4,383,000
Performance Indicator			
Vehicle-hours per Capita	0.53	0.60	0.65
Passengers per Capita	7	9	10
Passengers per Hour	13	15	16
Cost Recovery	32%	34%	37%

Notes:

- Operating cost/hour is estimated based on other similar transit operations in the area at \$85/hour
- Average fare is estimated at \$2.00 based on other systems with similar service characteristics
- Vehicle requirements include an assumed spare ratio of 15 percent
- Vehicle replacement is not included in this plan
- Standard low-floor 30' buses are assumed for Urban and County Connectors and Fringe Local Services and estimated at \$350,000 each
- Accessible vans are assumed for other services and estimated at \$100,000 each
- All costs and revenues are in constant 2010 Canadian dollars

9.6 Partnership and Funding Opportunities

To help support the delivery of transit service, the County of Essex can rely not only on internally generated funding but also capitalize on available external partnerships. This section examines opportunities to fund and sustain transit services in the County of Essex. The discussion is organized according to three transit source types: internal; provincial and federal; and other sources.

9.6.1 Internal Sources

Internal funding sources may include the following opportunities:

- Fare Revenue – A portion of all operating expenses can naturally be recovered from the farebox, ranging from 30 to 40 percent in similar communities depending on system size, patronage, level of service, and the maturity of the system.
- Advertising Revenue – Advertising on transit vehicles and amenities may help to mend the gap between operating revenues and expenses. Advertising opportunities include areas within transit vehicles, outside transit vehicles, and transit shelters.
- Facilities Revenue – With the potential development of major transit stations in the County, there are opportunities to partner with businesses and intercity transit agencies to share the cost and use of transit facilities.
- Municipal Tax Base – Most transit agencies use regional and local property tax revenues to make up for operating shortfalls.

9.6.2 Provincial and Federal Sources

The following Provincial and Federal funding sources are available and could be used to support transit system development and expansion in the County:

- Provincial Gas Tax – A portion of the revenues generated from the provincial portion of the gas tax is distributed to all Ontario municipalities based on ridership and population. As the system develops, ridership will grow, as will the gas tax funding. The Provincial gas tax could partially fund the capital expenditure as well as service expansions and new services.
- Federal Gas Tax – A portion of the revenues generated from the federal portion of the gas tax is distributed to all municipalities based on population. Only capital projects are eligible for Federal Gas Tax funding (e.g. transit vehicles, stations and technologies).
- Ontario Bus Replacement Program (OBRP) – A program funded by the provincial government whose purpose is to provide long-term funding to replace or refurbish both aging conventional and specialized vehicle fleets.
- Transit Procurement Initiative – A program hosted by the provincial government whose purpose is to consolidate the purchase of transit buses using common bus specifications. The consolidation of purchases with other transit agencies allows for lowered vehicle and administrative costs. In 2009, 12 Ontario municipalities partnered in the initiative to purchase 160 30- and 40-foot buses.

9.6.3 Other Sources

There are other sources such as tourism and educational partnership, which would also support and sustain the public transit services in the County.

- Tourism Partnerships – There is an opportunity to work with tourism agencies such as Tourism Windsor-Essex Pelee Island to connect visitors to major tourist destinations in the County of Essex. Potential funding partnerships may help to promote transit ridership and to promote more tourist spending in the County.
- Educational Partnerships – Post-secondary and secondary school students are identified as main market segments with high ridership potential for the proposed services in the County. When the transit system matures, there are opportunities to partner with post-secondary and secondary schools to encourage increased use of County transit services.

9.7 Marketing Strategy

This section outlines various marketing strategies that could be used by the County to promote transit use in the County.

9.7.1 Identify Target Markets

A target market is the prime audience(s) for the service an organization wishes to sell to. For the County of Essex, it is the group of individuals or organizations that will be actively pursued for transit patronage and will initially involve groups that are most likely to use transit. The identification of target markets is not an attempt to exclude other groups. Instead, it is an attempt to organize a marketing strategy aimed at capturing potential passengers in the most effective manner.

From the market analysis, ENTRA has determined that post-secondary students, secondary school students, commuters, seniors, and low- to medium-income households are more likely to use transit services. Thus, the County of Essex should communicate and engage with these demographic groups to secure a sustainable ridership base and to tailor services to accommodate their needs where possible.

9.7.2 Develop a Visual Identity

A visual identity refers to the visual representation of the organization. In a highly competitive business environment for capturing the attention of a consumer audience, it is important that the County of Essex's transit system be recognized, remembered, and viewed positively in the minds of prospective passengers. A visual identity usually consists of a logo, a consistent set of typefaces, a set of organizational colours, and in some cases a slogan or motto.

ENTRA recommends developing a visual identity scheme to identify transit services throughout the region and to associate with County residents and employees an image synonymous with reliable and convenient transportation. Uniform colours and slogans should be used throughout stops, ads and on fleet vehicles.

9.7.3 Raise Public Awareness

It is often not enough to simply provide transit services to an area, particularly in the provision of a new transit system. It is important to make passengers aware of proposed regional transit services. The County of Essex should attempt to work with businesses, schools, hospitals, tourism and community groups to bring awareness to proposed transit services. As an example, County staff may work with a post-secondary school student union to advertise in student print, web, and radio media, and to launch information workshops at student activity centres and at major student events.

9.7.4 Establish Proactive Customer Service

An effective marketing strategy also encompasses proactive customer service. Transit organizations provide a service to customers and thus should naturally be interested with how their customers perceive and evaluate their services.

The aim is to make customers happier and that involves ensuring that the delivery of transit services is reliable, reasonably frequent, and suits the needs of current and potential riders. This entails actively seeking out passenger feedback and creating a system that supports improving the quality of services before complaints are directed to customer service agents.

Additionally, proactive customer service involves ensuring that riders can easily access information to enable them to make a transit journey. This entails providing transit service information that is timely and accessible across various mediums (e.g. bus stop sign posts, brochures in major activity centres, telephone and online).

9.7.5 Introduce Incentives and Programs for Transit

There is an opportunity to introduce incentives and programs that promote increased transit usage in the County. Specifically, the County can work with the business community, colleges and universities, and with County and local councils to offset the financial load and to enhance the overall delivery of public transit. The following are some programs for consideration:

- Employer-provided transit passes – Employers can purchase monthly passes in bulk, both to provide a fare discount incentive to their employees and to give revenue certainty to the County that is required to improve services to meet the employer's unique travel requirements.
- Collaboration with educational institutions – Secondary and post-secondary school students often rely on public transit for their transportation. The County could work with school boards and post-secondary school student unions to supply costs incentives for the bulk purchasing of transit passes. Similar to employer-provided transit passes, it provides a predictable revenue stream to provide tailored transit services to students.

9.8 Transit Supportive Policies

To maximize the potential benefits of transit, transit-supportive land use policies are adopted in many communities to encourage transit use. These policies include

promoting higher density in close proximity to transit services, providing easy walking and cycling access to transit stops and developing parking policies to reduce automobile use. This section provides details of the transit-supportive policies that should be considered by the County and local municipalities to ensure a successful transit system.

9.8.1 Development and Review Approval Process

The possible introduction of transit service in areas never served in the past poses new challenges for local development planning departments, especially as local official plans have none or few policies that recognize the provision of transit services and that guide transit-supportive developments.

The County should consider development of a collaborative and inclusive development approvals with local municipalities whereby County staff have the opportunity to supply feedback regarding development approvals that take place in lower-tier municipalities to ensure that transit services are best supported within the context of the given community and its planning policies.

In this process, County staff would collaborate with respective local municipalities to create specific development policies or guidelines that support the provision of transit services, are coherent with the County's transit vision, and are consistent with local planning policies. Development principles may include but are not limited to:

- providing suitable community densities
- providing appropriate mixed uses where applicable
- planning road networks that promote direct and efficient transit operations
- developing a safe and ubiquitous pedestrian and cycling network for easy access to bus stops
- organizing development in such a manner that promotes transit usage by orienting structures, rather than parking, to align with the street
- providing curb cuts and safe crosswalks for universal accessibility
- applying traffic calming measures and reducing surface parking

Once the principles are developed and adopted by all pertinent stakeholders, the County would partake in the development review process and supply feedback where necessary based on the established principles. If there is a limited capacity within the County to review development applications, the County could instead work with local planners to incorporate the established principles as part of its respective planning review process.

9.8.2 Engineering Approval Process

The provision of transit services requires that the current road infrastructure can efficiently and safely accommodate transit vehicle operations. County staff should work with County and municipal Engineering Departments to ensure that future road works have due consideration for transit operations where applicable. Specifically, road design guidelines should be developed so to safely accommodate future transit routes, stops and other operational amenities.

9.8.3 Parking and Cycling Policies

Wherever feasible, Park and Ride and Bicycle Parking facilities should be considered along major transit corridors (e.g. Urban Connector routes) with the aim to expand the coverage area of the transit system. The provision of these facilities allows for potential riders, particularly those living in rural areas, to access convenient transit services in the region.

Park and Ride facilities consist of parking facilities at transit stops and provide the added convenience for passengers for those who have a vehicle but choose to take transit. Travellers would park their vehicles at one of these facilities and connect to public transit services, usually to activity centres with scarce parking or where traffic congestion is apparent. These facilities are normally constructed at strategic stops along a main transit corridor. There are also opportunities to work with existing local businesses to designate existing, underutilized parking stalls (e.g. parking at shopping centres) for Park and Ride use.

Bicycle parking facilities at transit stations can also help to boost transit usage. Like Park and Ride facilities, the provision of these facilities in strategic locations along a transit route can help expand the geographic reach of its services.

9.9 Accessibility and AODA Implications

9.9.1 Background

In 2005, the Province of Ontario introduced the updated Accessibility for Ontarians with Disabilities Act (AODA, 2005), with the goal of making Ontario fully accessible to people with disabilities by 2025.

As part of this legislation, a variety of committees have been developing standards in five key areas: customer service, information and communication, built environment, employment and transportation. Of these, the customer service standard has been passed into law (as Ontario Regulation 429/07) and in force effective January 1, 2010. This standard is not transportation specific, and applies to all aspects of the County's services. It imposes specific requirements, such as providing training to staff on serving people with disabilities and having mechanisms to inform customers when services are disrupted.

The standards for communication and information, transportation and employment have completed public review, and are in the final stages of approval. The communication and information standard includes requirements such as providing alternative media or modes for printed materials such as schedules or forms, signage and information requirements, and for other communication mechanisms such as phone (ex. providing TTY or relay services).

The built environment standard has completed public review and is with the committee to develop the final draft of the standard. In its current form, the standard is silent on transit-specific requirements, but the final version is expected to include accessibility requirements for stops and shelters and other transit facilities.

The transportation standard has the most significant implications for the services under review in this study. This includes the requirement for all services to be operated with accessible vehicles, with a variety of accessibility features including calling of stops, visual and audible route identification and others. The draft standard also requires agencies operating conventional fixed route transit to provide an equivalent accessible-origin to accessible-destination service for those that cannot use the fixed route service. The services must be equivalent in terms of service area, hours of service, access and levels of service.

9.9.2 Implications for Service

In planning the service concepts for a County system, ENTRA has been mindful of the AODA requirements, and accounted for them in the design of the service.

Vehicles

First, all services and routes are to be served with fully accessible vehicles. Given the number of passengers with disabilities expected on the service, lift-equipped vehicles will likely be more cost-effective and meet the needs of passengers with mobility aids.

Services

Urban and County Connectors

For the Urban and County Connectors, service areas at route ends can be serviced by an extended loop that provides accessible-origin to accessible-destination service. This means that after arriving at the destination hub in the community, the bus would have time to service other destinations in the community, including door-to-door service on demand. This loop would serve to both distribute arriving passengers and collect departing passengers prior to returning to the hub. Time for these local loops has been accounted for in the high level service design developed for this study.

For stop areas along the routes, it will be necessary under AODA to provide accessible service in the area surrounding each stop. When developing details of stop locations in the implementation planning, this factor must be considered. It may be possible to divert trips short distances on demand to provide accessible service. In areas where the schedules or ridership demands do not permit this type of diversion, the stop might be eliminated or parallel accessible service may eventually have to be provided. The high level service designs developed for this study allow for a limited amount of diversion.

As part of its accessibility plan required under the Act, the County will identify the service areas of these routes, and indicate how accessible service is to be provided.

Local and Rural Services

For the Local and Rural services, integrated accessible services are anticipated, with schedules designed to allow diversions from fixed routes to provide accessible-origin to accessible-destination service. This type of service will likely accommodate the anticipated new areas of local service implementation for several years.

For the existing local services in Leamington, LaSalle and Tecumseh, service delivery will need to ensure that accessible services are provided, either through integrated

routes or with the introduction of parallel services where not currently existing. In areas such as Leamington, where parallel service is available, a review will be necessary to ensure it meets the “equivalent” requirements of the standard.

In the other urban areas, parallel services will likely be required to meet overall demands. The current version of the standard provides for up to two years from the effective date of the regulation to ensure that accessible services are equivalent to the fixed route services.

10. Summary of Study Findings

This section summarizes key findings of the Transit Assessment Study:

- Based on a detailed review and analysis of current and projected demographic information, travel patterns, transit demand and feedback from the public and an array of stakeholders, there is a clear need for public transit services to meet the overall transportation needs of the County of Essex residents.
- Recognizing the County of Essex's regional transportation needs and the objectives of the Transportation Master Plan, a vision was developed to help focus efforts to develop a proposed future transportation system for the County. The proposed vision is:

To provide sustainable mobility options for all rural and urban residents, contributing to quality of life, economic and environmental sustainability, economic development and a healthy natural environment.

- Based on the County's unique demographic conditions and travel behaviour, four distinct types of service including Urban Connectors, County Connectors, Local Services and Rural Services were identified to fulfill the diverse needs within the County. Each service type supports different objectives and thus yields different degrees of transit service delivery.
- Establishing performance standards is a pivotal element to transit planning and decision-making as they provide a clear and consistent framework for justifying the provision of new or revised transit services and examining the effectiveness of services in operations. Transit services in the County of Essex should strive to achieve the proposed performance targets in a mature system, however lower performance levels are to be expected in the short-term.
- The system concept was developed to meet the identified transportation needs and is consistent with the context of the County, its transportation objectives and the proposed vision, goals and objectives. The overall system concept presents a long-term look of what the County of Essex can expect upon full system implementation.
- Transit services included in the system concept were prioritized based on the identified travel needs of each community, estimated performance levels, and input from the community. The proposed services could be developed in three phases.
 - The initial phase of the implementation plan (2011 to 2016) proposes the introduction of three Urban Connectors from Amherstburg, Lakeshore and Leamington to Windsor and the improved operation of Local Service in urban fringe areas and Leamington.
 - The second phase of the implementation (2016 to 2021) calls for improved levels of service on some Phase 1 routes and an expansion of service to new areas including two County Connectors from Amherstburg to Kingsville and from Leamington to Windsor and one additional local route in Lakeshore.

- Upon the fulfillment of a matured ridership base, it is anticipated that all services proposed in the system concept could be operated in Phase 3 (beyond 2021). Rural Services and the remaining Local Services identified in the system concept will be introduced in this phase.
- To ensure balanced operational efficiency and passenger comfort, two types transit vehicles including a standard 30' low-floor transit bus and an accessible van should be considered for different types of services provided in each area. In addition to the transit fleet, significant capital investment on transit infrastructure including terminal and park and ride facilities, bus stops and shelters, a transit maintenance facility as well as various technologies would be required to ensure the successful delivery of the proposed transit services.
- The proposed transit services require significant investment to fund the required equipment and infrastructure as well as ongoing operations. Based on the current financial projection, an estimated capital cost of approximately \$4 million, \$5.4 million and \$7 million would be required for the three phases, respectively. The annual operating cost would be approximately \$1.8 million, \$3.4 million and \$4.4 million for the periods of 2011 to 2016, 2016 to 2021 and beyond 2021, respectively.

11. Key Strategies and Next Steps

Achieving the goal of implementing a public transit service in the County of Essex will rely on a variety of strategies designed to capture key markets, provide long-term financial support and build a system incrementally, based on demonstrated success.

These recommendations were developed through an extensive public participation process and represent input from public, key stakeholders and the project steering committee.

The key strategies are:

- Commitment to Service
- Incremental Implementation
- Marketing and Promotion

The following sections expand on these three recommended strategies.

11.1 Commitment to Service

Success will depend on customers' ability to rely on the transit service as a viable choice for transportation. This means that the County will need to commit to providing the service for a sustained period, and provide a minimum level of service designed to meet key market needs.

This commitment will require investment, and will rely on key funding partners, including customers and local municipalities, as well as provincial and federal funding.

Key next steps:

- identify the appropriate governance structure for the service
- determine resource requirements for this organization
- determine appropriate cost allocation and funding sources

11.2 Incremental Implementation

A comprehensive County-wide system in the County of Essex is a long-term initiative. To be sustainable, and permit the commitment to service required for success, services should grow incrementally, based on demonstrated success. Initial implementation stages must focus on key markets to ensure early success. Phase 1 services identified in the report, comprising service in the urban fringe and three key corridors are the most feasible first step.

Key next steps:

- consult with key market groups, especially post-secondary students and commuters for input into specific service requirements

- develop specific service plans for initial service implementation, including specific routes, schedules, destination points
- develop specific fare structures and a revenue management plan

11.3 Marketing and Promotion

Building support for the service is critical to its success, both during service development and following implementation.

Key next steps:

- develop partnerships with customer markets, funding partners and agencies
- identify and promote specific benefits of the proposed service among potential partners, including the broad spectrum of public policy elements supported by the plan, including economic, environmental, health and mobility benefits
- build understanding and support for the required funding, based on this broad spectrum of benefits



Appendices

A. Summaries of Online Surveys

B. Transit Service Planning Guidebook



Appendix A

Summaries of Online Surveys

Summary of Online Survey

1. Introduction

Surveys were developed and posted online in an effort to understand current transportation issues and needs, existing travel patterns and characteristics throughout the County of Essex as well as residents perspective on potential transit services. Separate surveys were created for the public, major employers and key stakeholders. A total of 191 responses were received from the public, followed by 54 responses from employers and 17 responses from stakeholders. The following sections summarize key questions of the public, employer and stakeholder survey results.

2. County of Essex Public Survey

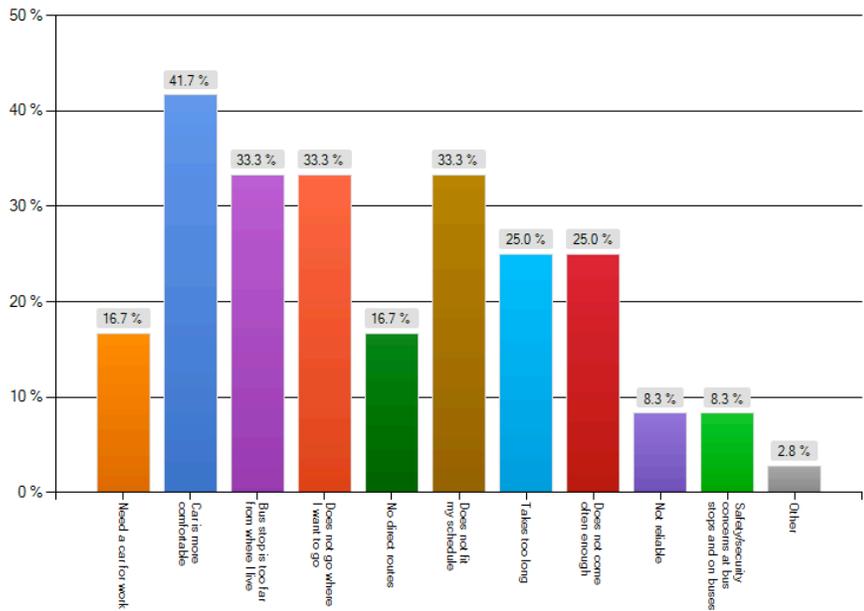
The public survey was developed to obtain community input on transit needs throughout the County and was available on County and local websites. A paper version of the survey was also made available at locations throughout the region including the County of Essex Library and at a Public Information Centre held on September 30, 2009, in the Town of Essex.

Place of residence – Survey responses were received from all municipalities of the County, but not in proportion to populations throughout the County. The Town of Essex makes up 11.3 percent of the County of Essex population and provided 22.9 percent of public survey responses. Conversely, the Municipality of Leamington makes up 16.3 percent of the County of Essex population yet provided only 4.6 percent of public survey responses.

	Percentage of Population from Census (2006)	Percentage of Place of Residence of Respondents
Amherstburg	12.3%	16.0%
Essex	11.3%	22.9%
Kingsville	11.8%	13.1%
LaSalle	15.7%	9.1%
Leamington	16.3%	4.6%
Lakeshore	18.8%	22.9%
Tecumseh	13.7%	11.4%
Total	100.0%	100.0%

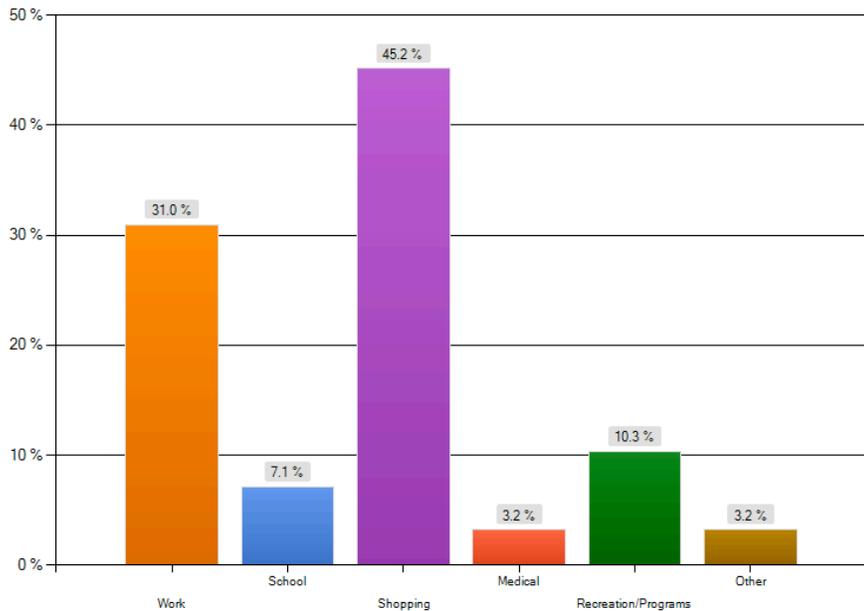
Reasons for not using transit – This question was designed for residents living in municipalities where transit services are already available such as Leamington and LaSalle. “Car is more comfortable” was selected by 41.7 percent of respondents as the most frequent reason not using local transit service. “Bus stop is too far from where I live”, “Does not go where I want to go”, “Does not fit my schedule”, “Takes too long” and “Does not come often enough” were also selected by at least 25 percent of respondents as reasons for not using transit. “Safety concerns” and “Not reliable” were the reasons with the fewest response at 8.3 percent each.

Reasons for not regularly using local transit service (multiple answers permitted)



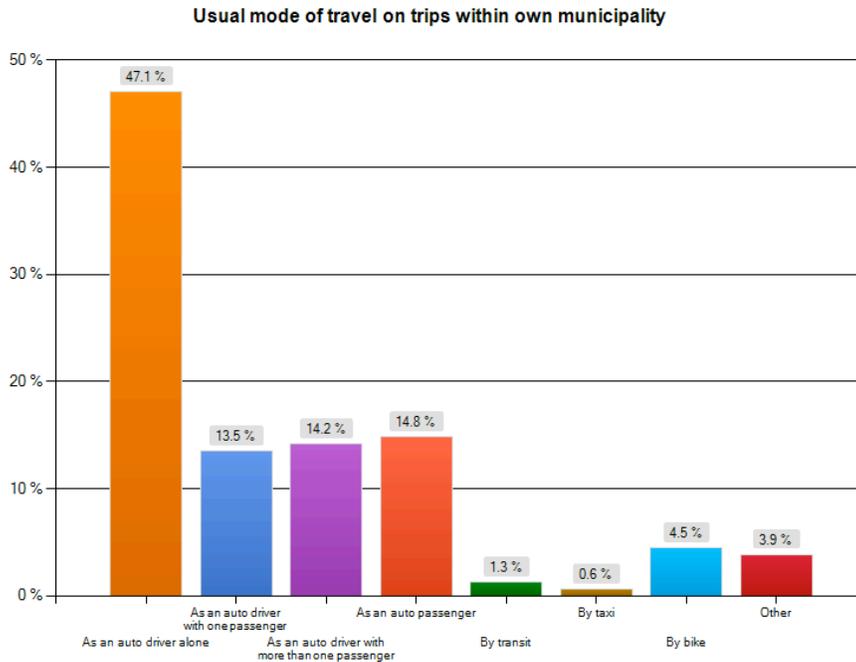
Purpose of most frequent trip within own municipality – “Shopping” was selected by 45.2 percent of respondents as the most frequent trip purpose within their own municipality, and “Shopping” and “Work” together represent more than 76 percent of respondent trips within their own municipalities. The fewest respondent trips taken within their own municipalities are for “Medical” purposes, at only 3.2 percent.

Purpose of most frequent trip within own municipality



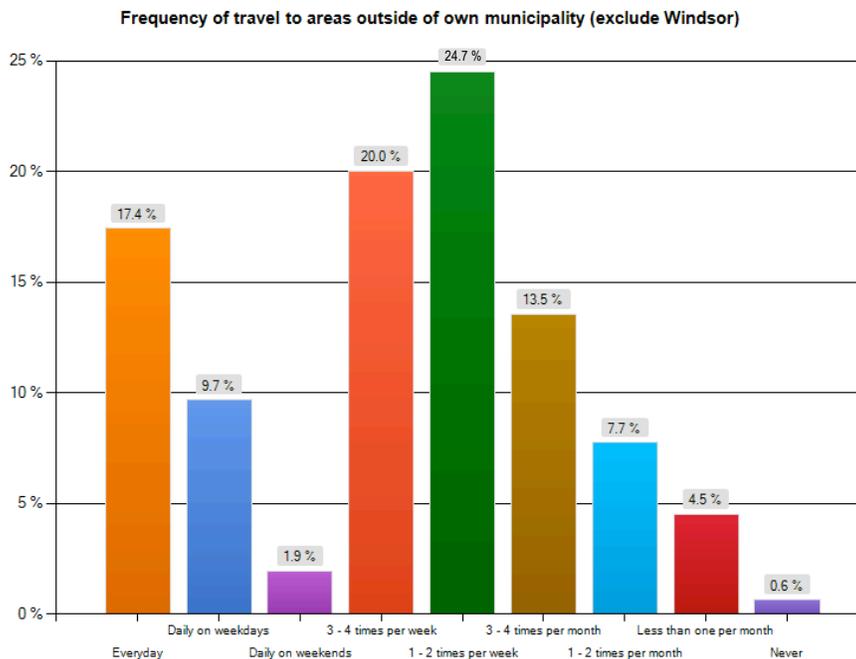
Usual mode of travel on trips within own municipality – Nearly 90 percent of respondent trips within their own municipality are made by car as a driver or passenger

and more than 47 percent are made as an auto driver alone. Only 1.3 percent of respondent trips within their own municipality are made by public transit.

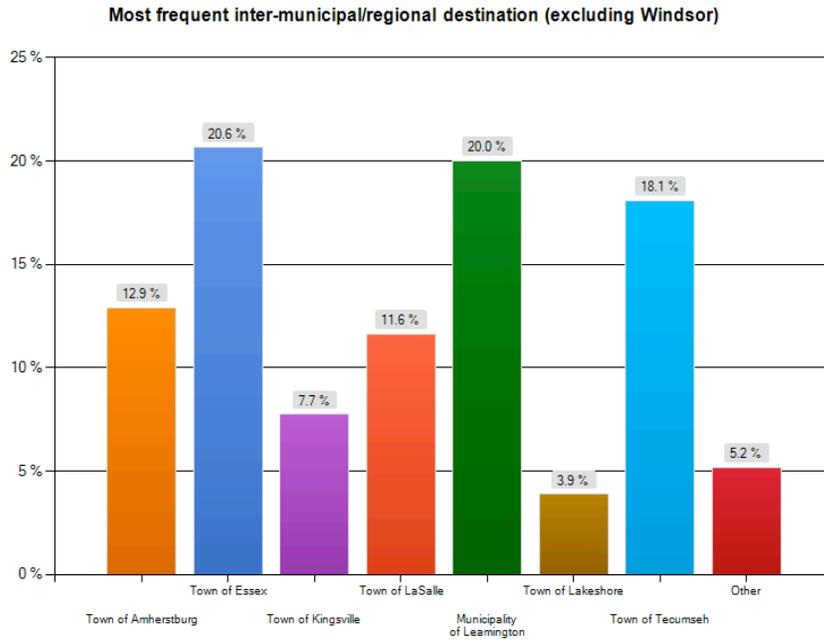


Frequency of travel to areas outside own municipality (excluding Windsor) –

Approximately 74 percent of respondents travel to areas outside their own municipality at least one to two times per week (excluding Windsor). More than 27 percent travel to areas outside their of own municipality every weekday (excluding Windsor). Less than 1 percent of respondents stated that they “Never” travel to areas outside their own municipality.

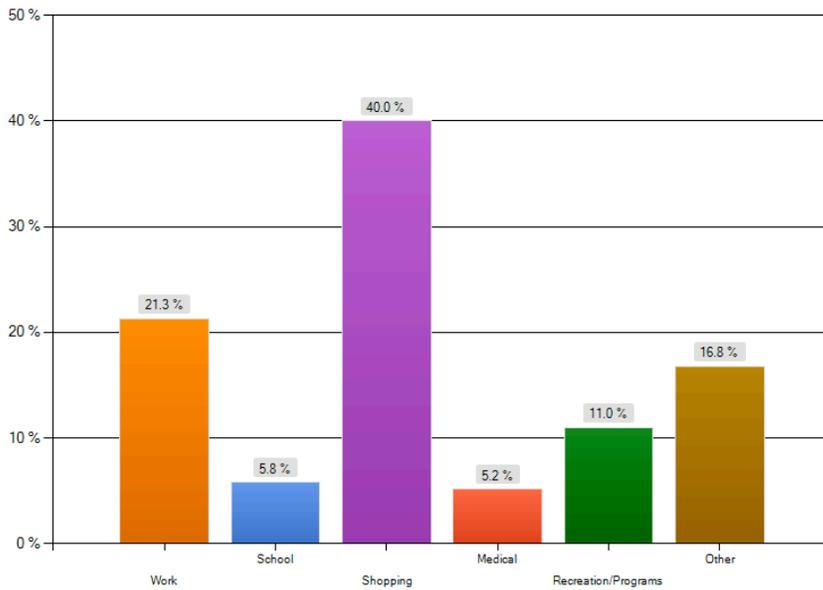


Most frequent inter-municipal/regional destination (excluding Windsor) – The Town of Essex, Leamington and Tecumseh are the most frequent inter-municipal/regional destinations of respondents, and represent approximately 60 percent of inter-municipal/regional travel (excluding Windsor). Lakeshore was selected by 3.9 percent of respondents and is the least frequent inter-municipal/regional destination (excluding Windsor).



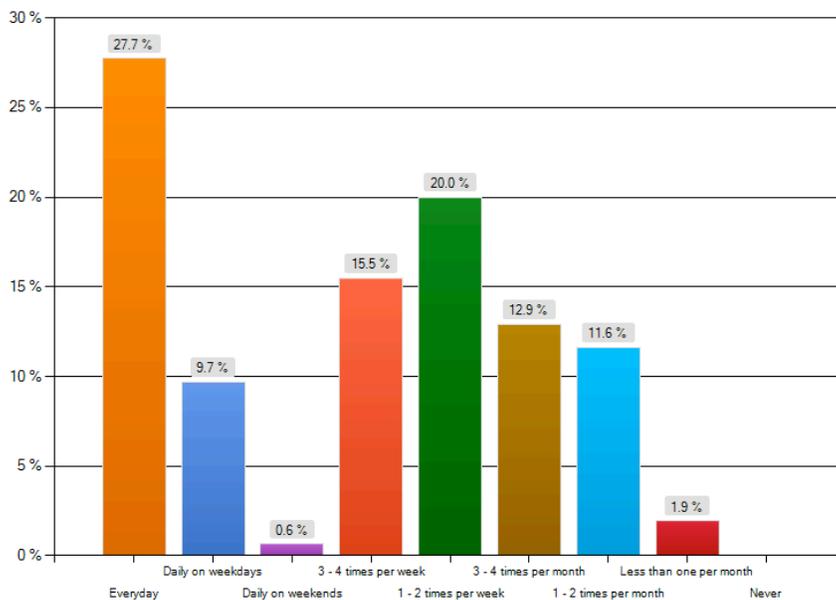
Purpose of most frequent, non-Windsor inter-municipal/regional trip – “Shopping” was selected by 40 percent of respondents as the most frequent trip purpose for inter-municipal/regional travel. “Shopping” and “Work” together account for 61.3 percent of inter-municipal/regional trips. “Medical” and “School” are the least frequent purposes for inter-municipal/regional trips at 5.2 percent and 5.8 percent respectively.

Purpose of most frequent, non-Windsor inter-municipal/regional trip



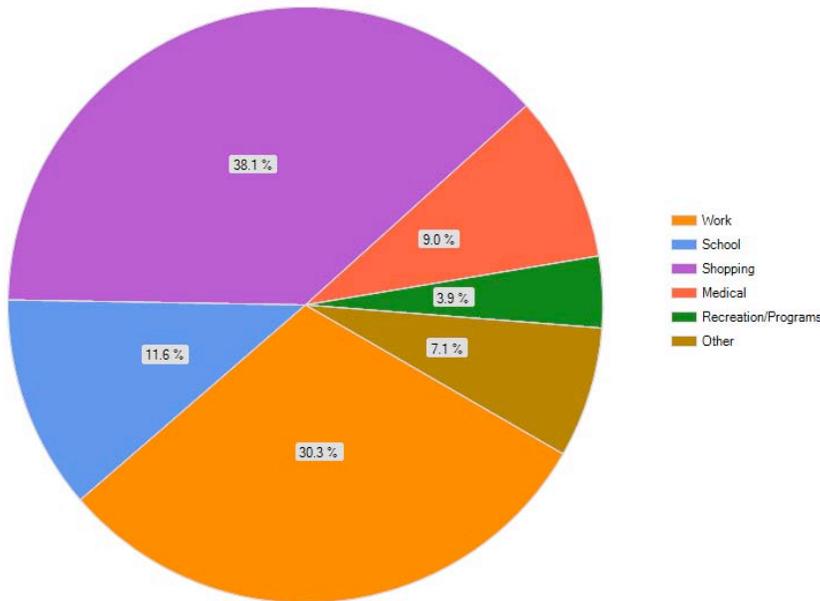
Frequency of travel to Windsor – More than 37 percent of respondents travel to Windsor daily on weekdays, and approximately 74 percent travel to Windsor at least one to two times per week. Only 13.5 percent travel to Windsor one to two times per month or less.

Frequency of travel to Windsor



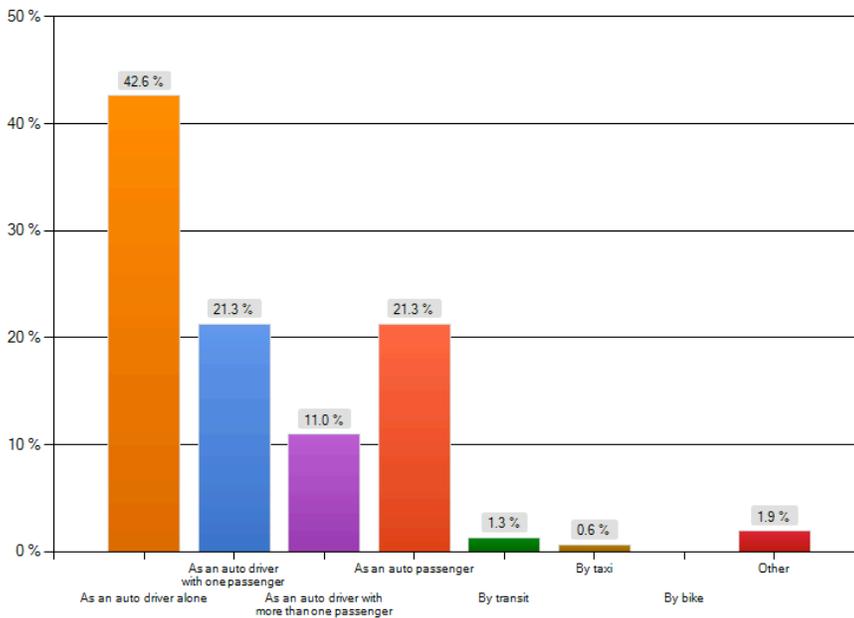
Purpose of most frequent trip to Windsor – “Shopping” was selected by 38.1 percent of respondents as the purpose of their most frequent trip to Windsor. “Shopping” and “Work” together accounted for 68.4 percent of trips to Windsor. “Recreation/Programs” were selected by only 3.9 percent of respondents as the purpose of their most frequent trip to Windsor.

Purpose of most frequent trip to Windsor



Usual mode of travel on inter-municipal/regional trips – More than 96 percent of inter-municipal/regional respondent trips are made by car as a driver or passenger and nearly 43 percent are made as an auto driver alone. Only 1.3 percent of inter-municipal/regional respondent trips are made by public transit.

Usual mode of travel on inter-municipal/regional trips

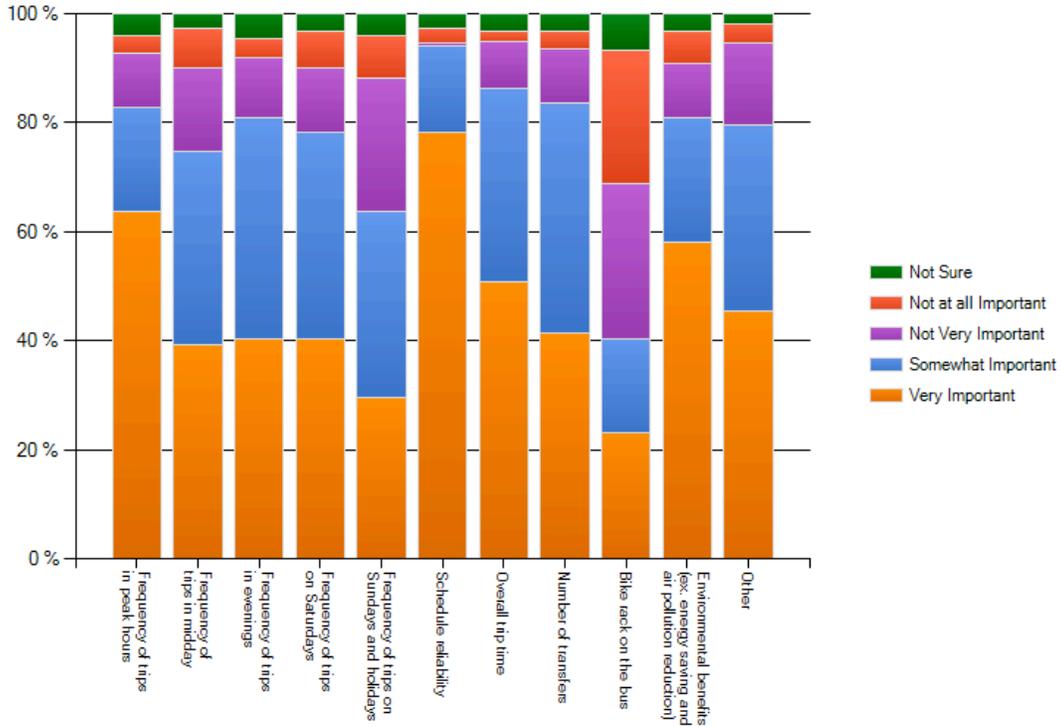


Access to Vehicle for Travel – Nearly 81 percent of respondents usually have access to a vehicle for their travel.

Importance of service features or other factors on decision to use transit (if provided) – “Schedule reliability” was the most frequently identified as “Very Important”

influence on the decision to use transit and was selected by more than 78 percent of respondents. “Frequency of trips in peak hours”, “Environmental benefits”, and “Overall trip time” were also selected as “Very Important” by more than 50 percent of respondents. “Bike rack on bus” was selected by 53 percent of respondents as a “Not Very Important” or “Not at all Important” influence on their decision whether or not to use transit.

Rate the importance of the following service features or other factors on your decision whether or not to use transit service (if it were provided)

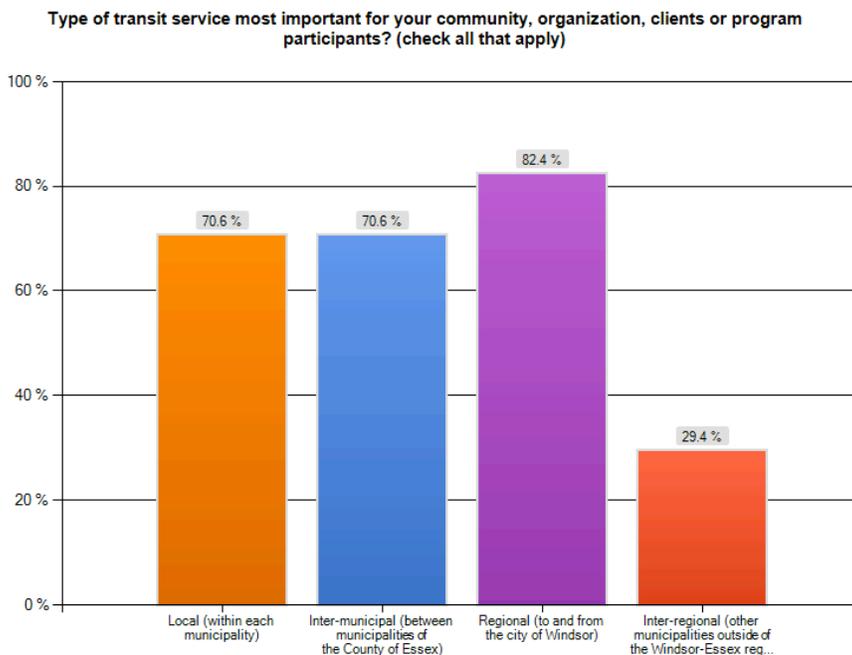


3. County of Essex Stakeholder Survey

The stakeholder survey was developed to obtain input regarding transit needs of the region from stakeholders. Stakeholders were contacted and invited to participate in the survey online.

View of changing needs and markets over the next five years – More than 88 percent of respondents believe needs and markets will be growing in the next five years while none believe there will be a decline. Approximately 12 percent of stakeholder respondents selected “Don’t know”.

Type of transit service most important for the community, organization, clients or program participants of the stakeholder – “Regional (to and from the City of Windsor)” service was identified as the most important transit service by 82.4 of stakeholder respondents. “Local (within each municipality)” and “Inter-municipal (between municipalities of the County of Essex)” were also considered to be important by 70.6 percent of respondents. Only 29.4 percent identified “Inter-regional (other municipalities outside of the Windsor-Essex region)” as an important type of transit service.

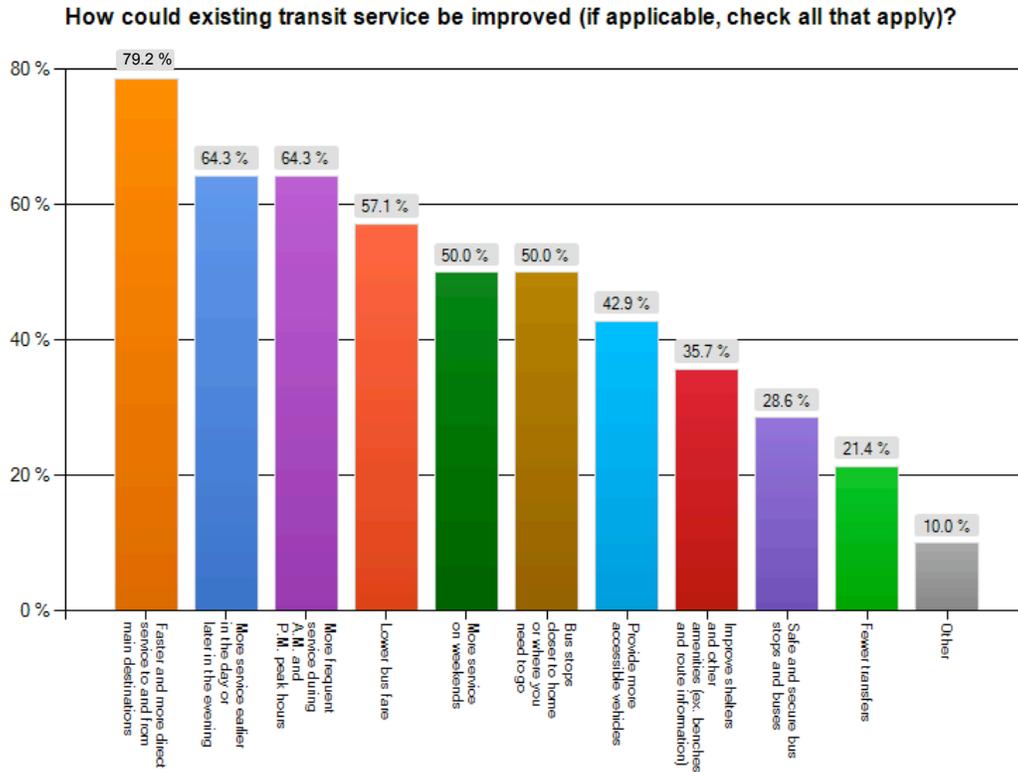


Transportation barriers – More than 88 percent of stakeholder respondents feel transportation is a barrier for their community, organization, clients or program participants. Approximately 12 percent feel transportation is not a barrier.

Existing transit service and transportation needs of community, organization, clients or program participants – More than 88 percent of respondents feel existing transit service does not meet the transportation needs of their community, organization,

clients or program participants. Approximately 12 percent feel that existing transit service meets transit need.

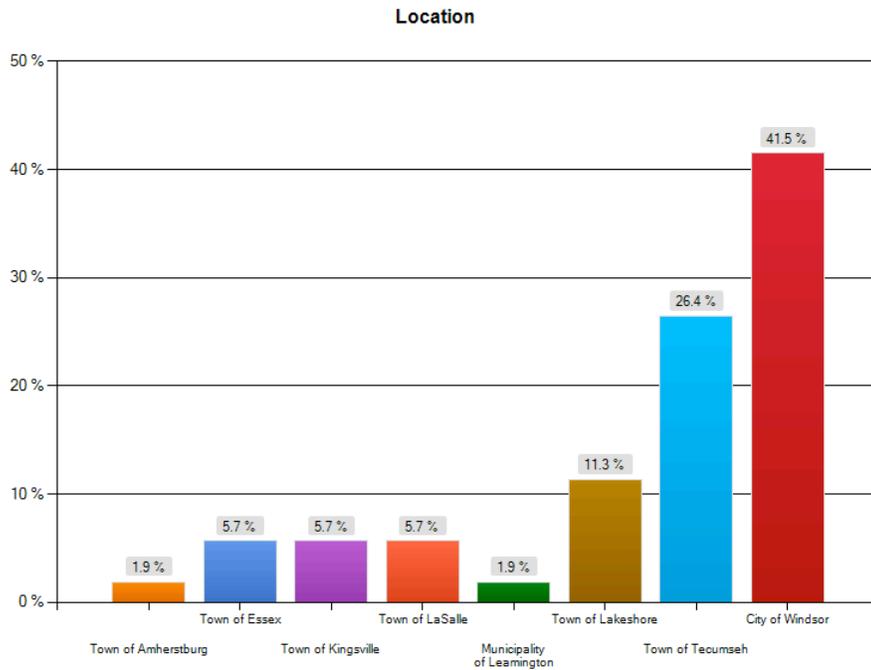
How to improve existing transit service – More than 79 percent of respondents indicated that transit service could be improved via “Faster and more direct service to and from main destinations”. “More service early in day/late in evening” and “More frequent service during A.M./P.M peak hours” were also identified by at least 64 percent of respondents as ways to improve existing transit service. “Fewer transfers” only received 21.4 percent of responses as a way to improve existing transit service.



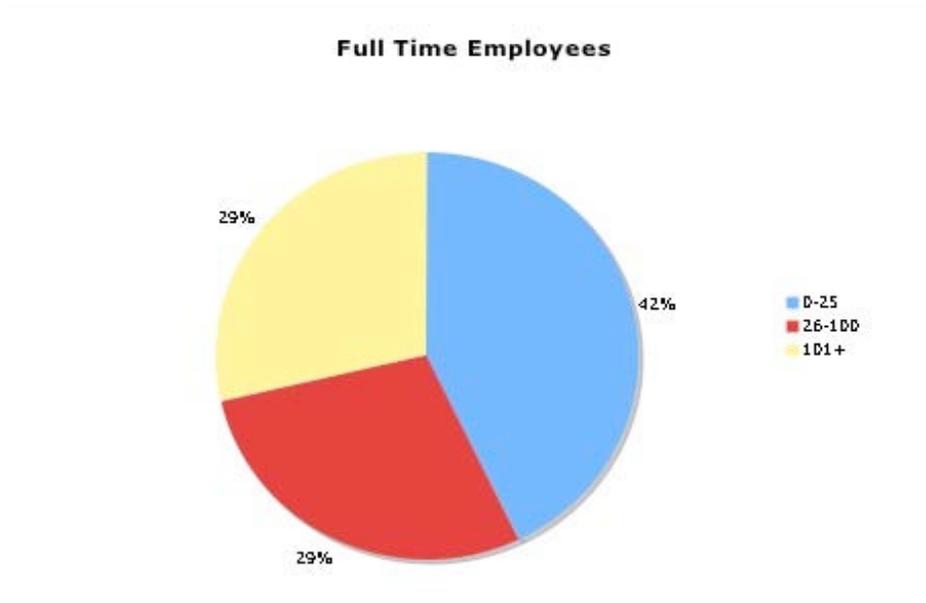
4. County of Essex Employer Survey

The employer survey was developed to obtain input regarding transit needs from major regional employers. Employers were contacted and invited to participate in the survey online.

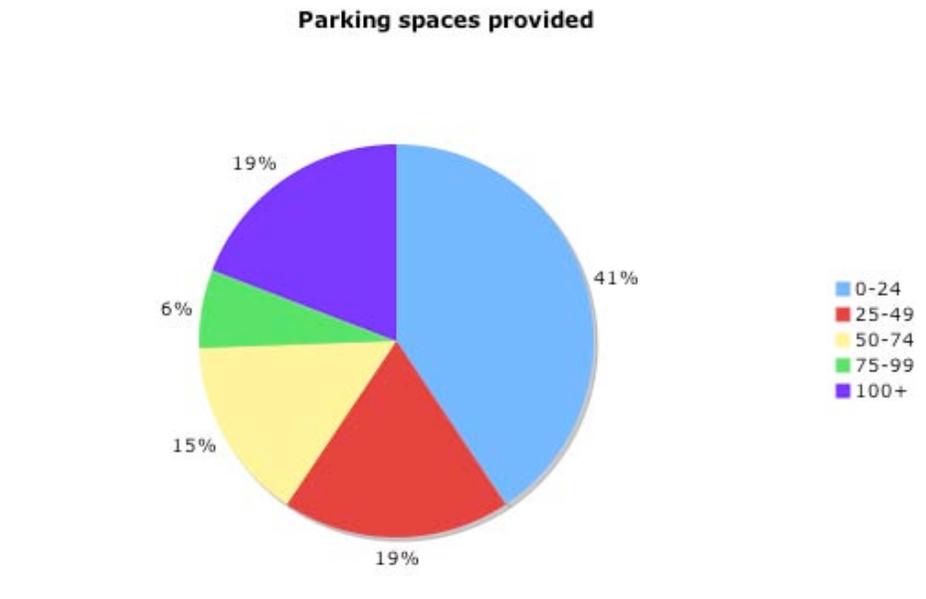
Location – Approximately 68 percent of employer respondents were located in Windsor and Tecumseh. Employers in Leamington and Amherstburg provided only 1.9 percent of survey responses each.



Full time employees – Approximately 58 percent of employers have more than 25 employees while 42 percent employ between 0 and 25 people. The average number of respondent employees was 80.



Parking spaces provided – Sixty (60) percent of employers provide between 0 and 49 parking spaces for their employees and 19 percent provide more than 100 spaces.



Charge for parking or limiting parking availability – More than 96 percent of employers do not charge or limit parking availability. Less than 4 percent of employers charge or limit parking availability.

Staff retention and transit – Nearly 87 percent of employers indicated that a lack of transportation alternatives is not a factor in staff retention. Approximately 13 percent felt that a lack of transportation alternatives is a factor in staff retention.

Transportation service or support provided for employees – More than 98 percent of employers do not provide transportation services or support for their employees (such as a ride-home service, transit subsidies or an employee shuttle).



Appendix B

Service Planning Guidebook

Transit Service Planning Guidebook

1. Guidebook Instructions

1.1 Introduction

This guidebook provides step-by-step instructions on how to develop a service design and to determine whether the proposed service is within the acceptable threshold as defined by the Performance Standards. This document will demonstrate how to compute the selected metrics (e.g. passengers per hour, hours per capita) to examine whether the proposed services meet established standard thresholds.

Each transit service proposal begins with the development of a service design. A service design comprises all the variables that dictate a proposed transit service. Typical service design components include (but not limited to):

1. Type of service
2. Route alignment and stop location
3. Span of service
4. Service frequency

In most cases, transit service levels are adjusted according to demand and vary depending on the type (e.g. weekday, Saturday, Sunday) and time of day (e.g. AM peak, midday, etc). Thus, service designs are usually developed on a period-by-period basis. Typically, transit service periods are defined as outlined in Exhibit 1 but may be altered according to local demand.

Exhibit 1: Transit Service Periods

Monday to Friday	
AM Peak	6:00 am to 9:00 am
Midday	9:00 am to 3:00 pm
PM Peak	3:00 pm to 6:00 pm
Evening	After 6:00 pm
Saturday	
Morning	6:00 am to 12:00 pm
Afternoon	12:00 pm to 6:00 pm
Evening	After 6:00 pm
Sunday	
Morning	6:00 am to 12:00 pm
Afternoon	12:00 pm to 6:00 pm
Evening	After 6:00 pm

1.2 Developing a Service Design

The first step to develop a service design is to identify a route alignment. This could be conducted through the use of Google Maps or Bing Maps¹. Once the route alignment has been identified, the worksheet illustrated in Exhibit 2 can be used to develop the remaining components of the service design.

In this worksheet, you will indicate the type and level of service by time period. A number of different service designs may be required to strike a balance between serving customer needs and financial sustainability.

Exhibit 2: Service Design Worksheet

Route Name 1								
Round Trip Distance 2		km						
Service Type 3	Urban Connectors							
	County Connectors							
	Local Services							
	Rural Services							
Time Period	Type of Service Operation	Level of Service (minutes) 5						
	✓	15	20	30	60	90	Other (Specify)	
Monday-Friday								
AM Peak	4 Fixed Route / Schedule							
	Demand Response	Not Applicable						
	No Service	Not Applicable						
Midday	Fixed Route / Schedule							
	Demand Response	Not Applicable						
	No Service	Not Applicable						
PM Peak	Fixed Route / Schedule							
	Demand Response	Not Applicable						
	No Service	Not Applicable						
Evening	Fixed Route / Schedule							
	Demand Response	Not Applicable						
	No Service	Not Applicable						
Saturday								
Morning	Fixed Route / Schedule							
Sunday								
Morning	Fixed Route / Schedule							

¹ Note: The distance measurements within from these web applications may not be entirely accurate. The use of GIS software will provide more accurate results.

Step by Step	
1	Identify a route name
2	Determine the round trip route distance (km), based on the proposed route alignment
3	Check off the appropriate service type according to the definitions in Service Concept section
4	Check off the appropriate type of service operation for each individual service period
5	Check off the appropriate level of service (min) for each individual service period

1.3 Evaluating Consistency with Ridership Standard

Once the Service Design Worksheet is completed, you will complete a Ridership Calculation Worksheet. This worksheet will allow you to determine whether the proposed service is within the outlined Performance Standard for ridership.

Exhibit 3: Ridership Calculation Worksheet

	Monday-Friday			Saturday	Sunday
	AM Peak	Midday	PM Peak	Morning	Morning
Calculating Transit Trips					
Total Trips – All Modes	1	trips	trips		trips
Percent of Transit Modal Share	2	%	%		%
Estimated Total Trips – Transit	3	trips	trips		trips
Calculating Round Trip Time					
Round Trip Distance	4	km	km		km
Estimated Vehicle Speed	5	km/h	km/h		km/h
Estimated Round Trip Time	6	h	h		h
Calculating Riders Per Revenue Hour					
Proposed Service Interval	7	mins	mins		mins
Vehicle-trips Per Period	8	trips	trips		trips
Vehicles-hours Per Period	9	h	h		h
Riders Per Revenue Hour	10				
Abide with Service Standard	11	Above Std	Above Std	Above Std	Above Std
		Below Std	Below Std	Below Std	Below Std

Step by Step	
1	Indicate the number of total trips (from all modes) made along the proposed route within the specified time period from the county's Transportation Forecasting Model
2	Indicate the estimated percent of transit's modal share <i>Transit's modal share would likely range from 0-5% depending on the area being served, the extent of convenient transit connections, and the maturity of the transit system</i>
3	Multiply 1 by 2
4	Indicate the route trip distance (km) of the proposed route, as already specified from the Service Design Worksheet
5	Indicate the estimated vehicle operating speed of the route <i>In Urban Areas, operating speeds could range from 15 to 25 km/h depending on the frequency of stops along the route and traffic conditions</i> <i>In Rural Areas, operating speeds could range from 25 to 50 km/h depending on the frequency of stops along the route</i>
6	Divide 4 by 5
7	Identify the proposed service interval (mins), as already specified in the Service Design Worksheet
8	Divide 60 by 7 and multiply the answer by the span of service (h) in that period <i>Span of service example: if the proposed route operates during the entire duration of AM peak as outlined in Exhibit 1, the service will operate for 3 hours</i>
9	Multiply 8 by 6
10	Divide 3 by 9
11	Check off whether the figure calculated in 10 is above or below the outlined standards

1.4 Evaluating Consistency with Amount of Service Standard

Once the Ridership Calculation Worksheet is completed, you will complete an Amount of Service Calculation Worksheet. This worksheet will allow you to determine whether the proposed service is within the outlined Performance Standard for amount of service in a defined service area.

Exhibit 4 - Amount of Service Calculation Worksheet

Population Coverage 1	Monday-Friday		Saturday	Sunday	Total
	AM Peak	Midday	Morning	Morning	
Calculating Annual Vehicle Hours					
Vehicle-hours Per Period 2	h			h	h 3
Number of Weeks Per Year					52
Annual Vehicle Hours					h 4
Calculating Vehicle Hours Per Capita					
Vehicle Hours Per Capita					5
Abide with Service Standard					Above Std 6 Below Std

Step by Step	
1	Indicate the population in which the proposed route will serve <i>Typically, the service area coverage is defined by areas within 500 metres along the proposed route</i>
2	Indicate the number of vehicle hours per period for each period, as already specified in the Ridership Calculation Worksheet
3	Create a subtotal for weekday vehicle hours by multiplying the sum of Monday-Friday Vehicle-hours Per Period by 5 (the number of weekdays) Add the vehicle hours from the weekday subtotal, Saturday, and Sunday to obtain the number of vehicle-hours per week
4	Multiply 3 by 52 to obtain the annual vehicle hours for the proposed route <i>Note: This calculation does not account for changes to schedules during holidays. Most transit agencies operate reduced service on the 10 recognized holidays in Ontario.</i>
5	Divide 4 by 1 to obtain the vehicle hours per capita
6	Check off whether the figure calculated in 5 is above or below the outlined Service Standards

2. Sample calculation

This section provides an example of a hypothetical transit service proposal for the Essex County. The purpose of this sample calculation is to better understand how the described worksheets can be used for transit service decision making.

In this example, an Essex County planner proposes to provide transit services connecting Lakeshore and Tecumseh communities to the Tecumseh Mall Transit Terminal in Windsor. Exhibit 5 illustrates the alignment of a proposed route. Exhibit 6 to Exhibit 8 show how the worksheets are completed and evaluated.

Exhibit 5 - Alignment of Proposed Route

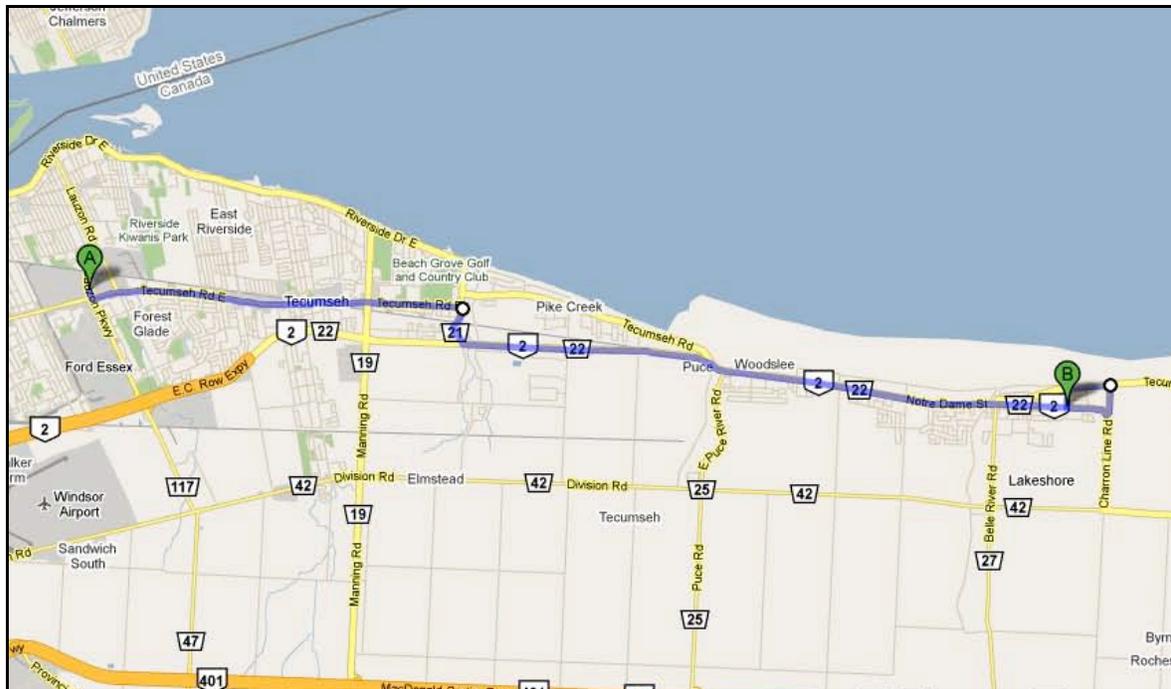


Exhibit 6 - Example of Completed Service Design Worksheet

Route Name	Route 1: Lakeshore-Tecumseh-Windsor							
Round Trip Distance	45.8	km						
Service Type	<input checked="" type="checkbox"/>	Urban Connector						
		County Connector						
		Local Service						
		Rural Service						
Time Period	Type of Service Operation		Level of Service (minutes)					
	<input checked="" type="checkbox"/>		15	20	30	60	90	Other (Specify)
Monday-Friday								
AM Peak	<input checked="" type="checkbox"/>	Fixed Route / Schedule			<input checked="" type="checkbox"/>			
		Demand Response	Not Applicable					
		No Service						
Midday	<input checked="" type="checkbox"/>	Fixed Route / Schedule				<input checked="" type="checkbox"/>		
		Demand Response	Not Applicable					
		No Service						
PM Peak	<input checked="" type="checkbox"/>	Fixed Route / Schedule			<input checked="" type="checkbox"/>			
		Demand Response	Not Applicable					
		No Service						
Evening		Fixed Route / Schedule						
		Demand Response	Not Applicable					
	<input checked="" type="checkbox"/>	No Service						
Saturday								
Morning		Fixed Route / Schedule						
		Demand Response	Not Applicable					
	<input checked="" type="checkbox"/>	No Service						
Afternoon		Fixed Route / Schedule						
		Demand Response	Not Applicable					
	<input checked="" type="checkbox"/>	No Service						
Evening		Fixed Route / Schedule						
		Demand Response	Not Applicable					
	<input checked="" type="checkbox"/>	No Service						
Sunday								
Morning		Fixed Route / Schedule						
		Demand Response	Not Applicable					
	<input checked="" type="checkbox"/>	No Service						
Afternoon		Fixed Route / Schedule						
		Demand Response	Not Applicable					
	<input checked="" type="checkbox"/>	No Service						
Evening		Fixed Route / Schedule						
		Demand Response	Not Applicable					
	<input checked="" type="checkbox"/>	No Service						

Exhibit 7 – Example of Completed Ridership Calculation Worksheet

	Monday-Friday			Saturday			Sunday			
	AM Peak	Midday	PM Peak	Evening	Morning	After-noon	Evening	Morning	After-noon	Evening
Calculating Transit Trips										
Total Trips – All Modes	12,130	9,450	14,900	trips						
Percent of Transit Modal Share	2.0	2.0	2.0	%	%	%	%	%	%	%
Estimated Total Trips – Transit	243	189	298	trips						
Calculating Round Trip Time										
Round Trip Distance	46	46	46	km						
Estimated Vehicle Speed	25	25	25	km/h						
Estimated Round Trip Time*	2	2	2	h	h	h	h	h	h	h
Calculating Riders Per Revenue Hour										
Proposed Service Interval	30	60	30	mins						
Vehicle-trips Per Period	6	6	6	trips						
Vehicles-hours Per Period	12	12	12	h	h	h	h	h	h	h
Riders Per Revenue Hour	20	16	25	riders						
Abide with Service Standard	✓	✓	✓	Above Std Below Std						

* Calculation of estimated round trip time includes provision for recovery time. Recovery time is defined as time that is added to the pure running time (1) to enable a vehicle to make up small delays and (2) to adjust travel time to be compatible with proposed service intervals.

3. Worksheet Templates

Service Design Worksheet

Route Name								
Route Distance			km					
Service Type		Urban Connectors						
		County Connectors						
		Local Services						
		Rural Services						
Time Period	Type of Service Operation	Level of Service (minutes)						
	✓		15	20	30	60	90	Other (Specify)
Monday-Friday								
AM Peak		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
Midday		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
PM Peak		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
Evening		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
Saturday								
Morning		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
Afternoon		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
Evening		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
Sunday								
Morning		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
Afternoon		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						
Evening		Fixed Route / Schedule						
		Demand Response	Not Applicable					
		No Service						

Amount of Service Calculation Worksheet

Population Coverage	Monday-Friday			Saturday			Sunday			Total
	AM Peak	Midday	PM Peak	Evening	Morning	Afternoon	Evening	Morning	Afternoon	
Calculating Annual Vehicle Hours										
Vehicles-hours Per Period	h	h	h	h	h	h	h	h	h	h
Number of Weeks Per Year										52
Annual Vehicle Hours										h
Calculating Vehicle Hours Per Capita										
Vehicle Hours Per Capita										hrs/cap
Abide with Service Standard										Above Std Below Std