

**REGION OF WATERLOO****TRANSPORTATION AND ENVIRONMENTAL SERVICES
Rapid Transit**

TO: Chair Jim Wideman and Members of Planning and Works Committee

DATE: January 25, 2011 **FILE CODE:** A02-30/PW

SUBJECT: RAPID TRANSIT PROJECT OVERVIEW

RECOMMENDATIONS:

For information

SUMMARY:

The Region of Waterloo continues to plan for significant population and employment growth over the next two decades. The Provincial Growth Plan for the Greater Golden Horseshoe projects the Region's population will increase to 729,000 people by 2031, and that employment will increase to 366,000 by 2031. This is an increase from today of nearly 200,000 people and 80,000 jobs.

To provide for the projected growth, the Region will have to either continue its pattern of outward growth or encourage greater intensification in existing developed areas. High-quality rapid transit has been identified as a crucial component in managing growth, facilitating intensification and minimizing/reducing future "urban sprawl". A high-quality rapid transit system is vital for the Region to evolve into a more compact urban form, helping to prevent sprawl and protect sensitive environmental landscapes and high quality farmlands from urban encroachment. The rapid transit system being considered in the Region has the multiple goals of providing transportation choice, meeting future transportation needs, and building a viable, vibrant and sustainable community.

If the Region continues with current trends of auto use, the road network will need to expand by at least 500 additional lane-kilometres of traffic by 2031. As development spreads outward and congestion grows on the major arterial roads, further road construction will become necessary, including impractical road widenings through mature neighbourhoods. Without rapid transit, the road expansion costs including property would be in the range of \$1.4 to \$1.5 billion. On top of the high cost, this road expansion would seriously threaten the quality of life in much of the community. Achieving higher transit ridership targets will not eliminate the need for road improvements, but it can reduce the amount of road construction required and reduce road expansion costs by \$400 to \$500 million.

With little opportunity to add or expand the road networks in our core areas, and the expected increase in population, Regional Council has repeatedly identified rapid transit as the most sustainable transportation solution to meet our community's future transportation needs.

In 2006, the Region began the Rapid Transit Environmental Assessment (EA) to identify the best possible rapid transit system for Waterloo Region. In June 2009, after extensive public input, Regional Council approved a preferred technology and an implementation staging plan for Waterloo Region's rapid transit system.

This report reviews the rationale for building rapid transit, its long-term benefits, and the process used to substantiate the recommendations approved in June 2009. It also outlines the work being done to address affordability concerns, with implementation options for the rapid transit project,

including bus rapid transit (BRT) and combinations of light rail transit (LRT) and adapted BRT, to be brought forward in a report in February 2011.

REPORT:

1.0 Why Rapid Transit?

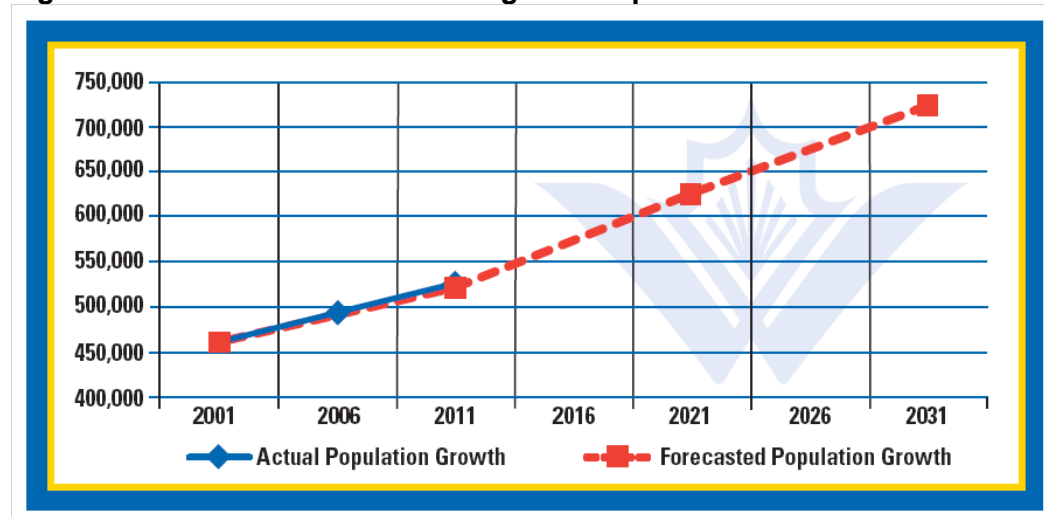
1.1 Overview

Waterloo Region has consistently ranked as one of the fastest growing communities in Canada. The Region’s population has increased by approximately seventeen per cent over the past decade, or more than 7,500 people per year.

Given this tremendous growth and the challenges that it is creating, in 2003 Waterloo Region developed the Regional Growth Management Strategy (RGMS) entitled *Planning Our Future*. This strategy identified where, when and how additional residents and jobs should be located to focus growth in a sustainable manner. The RGMS is solidly anchored on a proposed rapid transit system located within the linear urban corridor formed by the Cities of Cambridge, Kitchener and Waterloo. The RGMS seeks to address the housing, transportation, source water and environmental protection challenges that the Region faces through the promotion of a different urban form that balances greenfield development with reurbanization.

Growth management is critical as the Region continues to plan for significant population and employment growth over the next two decades. The Province’s *Places to Grow: Growth Plan for the Greater Golden Horseshoe* projects that the Region’s population will increase to 729,000 people by 2031, and that employment will increase to 366,000 by 2031. This is an increase from today of nearly 200,000 people and 80,000 jobs, roughly equal to the current population and employment of the City of Kitchener. As shown in Figure 1, Regional growth trends to date have been on track with these projections.

Figure 1: Actual and Forecasted Regional Population Growth



To provide for the projected growth, the Region will have to either continue its pattern of outward growth or encourage greater intensification in existing developed areas. High-quality rapid transit has been identified as a crucial component in managing this growth, facilitating intensification and minimizing/reducing future “urban sprawl”. An attractive, convenient, comfortable street-level link, serving a central spine in the context of an integrated Regional transit system, is key to managing the Region’s growth. It can help ensure a thriving inner core – where a significant part of the

population lives, works and shops – which is vital to maintaining and enhancing the quality of life across the entire Region. It is the next major step in the public transit system, in Waterloo Region, that has seen a significant climb in transit use over the past decade – from approximately 3,000 in 2005 to 9,000 daily riders on iXpress service alone and from roughly 9 million in 1999 to 18 million annual ridership Region-wide.

Investment in rapid transit in Waterloo Region is a key part of a broader strategy to encourage compact and transit-supportive communities, and provide greater transportation choice for Regional residents. Based on the EA work to date and experience in other municipalities, the rapid transit project would result in wide-ranging economic, social, and environmental benefits. These include reduced congestion, increased transit ridership, re-urbanization and intensification, improved mobility, environmental benefits, urban revitalization and enhanced public safety and health. Different rapid transit technologies and project staging options would determine the extent to which these objectives are achieved over time.

1.2 Reduced Congestion

The total number of trips on the Region's transportation system is forecast to increase more than 36 per cent by 2031. The increase in trips will place more demands on a transportation system that is already close to capacity. Symptoms of strain on the network include:

- growing congestion, which is increasingly affecting the ability to provide reliable, competitive transit service;
- the economic disruption from congestion and overall difficulty of getting around within the community;
- the impacts on the environment and public health; and
- the increasing personal and societal costs of transportation and mobility within the community.

As noted in the *Regional Transportation Master Plan – Moving Forward 2031*, if the Region continues with current trends of auto use, the road network will need to expand by at least 500 additional lane-kilometres of traffic by 2031. As development spreads outward and congestion grows on the major arterial roads, further road construction will become necessary, including disruptive road widenings through mature neighbourhoods. Without rapid transit, the road expansion costs including property would be in the range of \$1.4 to \$1.5 billion. On top of the high cost, this road expansion would seriously threaten the quality of life in much of the community.

Conversely, rapid transit as a centrepiece of an expanded transit network solution can help shift a substantial amount of future auto travel to transit. It can also encourage re-urbanization, with resulting intensification that can in turn promote a much higher percentage of trips by walking, cycling and transit. Achieving higher transit ridership targets will not eliminate the need for road improvements, but it can reduce the amount of road construction required and reduce road expansion costs by \$400 to \$500 million. Staff are developing the *Moving Forward Transit Program*, an integrated rapid transit project that brings together improvements identified in the Regional Transportation Master Plan and required to create a fully functional rapid transit system.

1.3 Increased Transit Ridership

Improved transit service in the central transit corridor and throughout the Region would result in a significant modal shift to transit. Rapid transit can improve travel conditions through reduced travel times, higher frequencies, improved journey quality, and improved reliability. The net effect is a change in patterns of accessibility, extending the distances that people will be prepared to travel by transit, reducing the costs of existing travel, and easing the movement of people and goods in the Region.

With rapid transit, increased ridership can result in a lower operating cost per passenger trip and a range of other socio-economic benefits, including:

- reduced vehicle operating costs (based on the reduction in vehicle kilometres travelled); and
- reduced number of traffic accidents (associated with transfer of travel to a much safer mode).

1.4 Re-urbanization and Intensification

Rapid transit, as a strategic street-level system along the central transit corridor, can be a significant catalyst for achieving re-urbanization and economic and demographic intensification. Intensification and redevelopment resulting from rapid transit is expected to shape urban form in a more efficient manner and thereby avoid, delay or minimize the expansion of urban areas into the Region's valuable agricultural, environmental and rural areas. This in turn would protect our community's food and water supply and diverse economy.

The prospect of future rapid transit can affect the desirability of real estate within the Region. Twice in the past six months, the Region has been named as one of the top places to invest in Canada. Recognition was based on, among other things, facilitating brownfield redevelopment and planning for the Region's rapid transit project. Rapid transit can enhance land image, value and desirability.

1.5 Improved Mobility and Improved Connections

By serving major destinations, rapid transit can connect key nodes such as the city centres, the universities, the Research and Technology Park, Grand River Hospital, and major shopping malls. This connection would provide increased access to cultural, commercial and residential opportunities. People will be able to access an expanded pool of facilities via rapid transit, such as employment and training centres, community facilities, places of worship, health centres, retail, and parks.

With the recently announced plans for a multimodal transit facility in the area of King Street and Victoria Street, rapid transit can also facilitate inter-regional trips connecting Waterloo Region with major destinations throughout the Greater Golden Horseshoe.

1.6 Reduced Emissions

Emissions resulting from passenger road transportation are a major contributor to air pollution and climate change. In fact, transportation is one of the single largest sources of air pollution in Canada. By shifting travel to transit and out of private cars, the rapid transit project can reduce greenhouse gas emissions.

1.7 Prosperous Community

Strategic investment in rapid transit can provide significant opportunities to encourage and stimulate additional economic productivity. In particular, it can contribute to the creation of new jobs or increased employment through:

- jobs associated with constructing, operating and maintaining the rapid transit system;
- jobs arising as a result of the improved travel conditions; and
- access by employees to jobs that were previously inaccessible by public transit and access by employers to a wider workforce living within acceptable travel times and costs.

More broadly, investment in rapid transit can help to establish the infrastructure required to support the knowledge-based economy in Waterloo Region. It can create an important physical link

mirroring the economic links among the universities, companies/business districts, and the labour force that together form one of Canada's leading knowledge-based economies.

1.8 Improved Public Safety and Security

A rapid transit system integrated with the urban environments along the central transit corridor can allow the rehabilitation of the streetside pedestrian environment, thereby enhancing the safety and security for pedestrians and residents. Increased pedestrian movement associated with the stations can provide additional activity and watchfulness, which helps create vibrant and safe places to live. While walking or using transit, passengers have a chance to interact with one another, creating a stronger community and greater sense of security. Rapid transit implementation can include improved pedestrian signage, lighting, crossing facilities and walkway surfaces, all aimed at improving the pedestrian experience.

1.9 Improved Public Health

A rapid transit system would reduce vehicle kilometres travelled and provide public health benefits based on improved air quality and on increased use of active transportation, resulting in fewer hospital admissions.

2.0 Rapid Transit Environmental Assessment

In 2006, the Region initiated an individual EA to select the rapid transit technology, routes and station locations that would best meet the RGMS goals, as well as the Region's future transportation needs and land-use objectives. A summary of the individual phases and their findings are described below.

2.1 Phase 1 – Completed July 2006

Phase 1 of the EA determined that rapid transit is the preferred transportation strategy for Waterloo Region as compared to expanding the road network or improving conventional transit. Using multiple criteria based on the goals and objectives of RGMS, the evaluation concluded that rapid transit:

- best achieves the goals of the RGMS;
- is consistent with the Provincial Policy Statement and conforms with the Provincial Places to Grow Growth Plan for the Greater Golden Horseshoe;
- supports reurbanization objectives, downtown revitalization and innovative urban design;
- increases transportation choice and transit ridership;
- is the least expensive form of motorized transportation when considering personal transportation costs;
- contributes to the Region's countryside protection goal by facilitating reurbanization and reducing the pressure to expand urban boundaries;
- provides a safe mode of transportation and promotes an active and healthier lifestyle; and
- utilizes the least amount of land and minimizes the impact on air quality and greenhouse gas emissions.

Two Public Consultation Centres were held in April 2006 and were attended by 145 individuals. The majority who provided comment recognized the rapid transit project as the most effective transportation strategy for meeting the Region's RGMS goals and future transportation needs. Regional Council approved rapid transit as the Region's transportation strategy in July 2006.

2.2 Phase 2 – Steps 1, 2 and 3a, b

Step 1 – Completed February 2007

Step 1 began with a public information session and workshop in September 2006 to discuss potential rapid transit destinations, routes and station locations, as well as those characteristics of rapid transit that the public feels are most important.

Using the EA Terms of Reference and the input from the workshop, the rapid transit Project Team developed criteria to evaluate 10 rapid transit technologies (BRT, LRT, commuter rail, diesel multiple units, aerobus, automated guideway transit, magnetic levitation, monorail, personal rapid transit and subway) and their associated route designs. Based on the results of the evaluation, BRT and LRT operating on a mix of on/off road route designs were short-listed because they had the greatest potential to:

- Support the Region's redevelopment and intensification objectives;
- Optimize the use of existing off-road routes and serve major destinations using on-road routes; and
- Be compatible with existing and planned built neighborhoods.

The results of the evaluation, and the recommended short-list of rapid transit technologies and route designs, were presented to the public and stakeholder groups for input at a series of Public Consultation Centres (PCCs) and presentations throughout January 2007. More than 350 community members attended the PCCs and took the opportunity to review the information presented. The majority of those who provided comments agreed with the results of the evaluation and the proposed short list or stated a preference for BRT or LRT.

Step 2 – Completed February 2008

Step 2 began in March 2007 with a public workshop. The workshop helped to identify the list of route and station location alternatives to be evaluated for both BRT and LRT in terms of the greatest benefits (e.g. reurbanization potential, ridership, travel time savings, ability to serve concentrations of employment) and lowest negative impacts. More than 450 community members came together to provide ideas, with more than half identifying themselves as property owners along routes. Of those who commented, more than 60 per cent agreed with the proposed route and station locations.

In consultation with the local municipalities and the public, the Region finalized a list of 91 route, station location and technology alternatives in the seven segments of the Study Area and began an in-depth evaluation based on 21 different criteria approved in the Terms of Reference by the Ontario Minister of the Environment. These criteria were grouped in four different categories:

- Transportation;
- Social and Cultural Environment;
- Natural Environment; and
- Economic Impact.

The evaluation resulted in more than 5,000 individual pieces of data using different units of measurement (hectares, dollars, ridership, greenhouse gas emissions). The Project Team used the results to rank each alternative. The results of the ranking demonstrate how each route and technology alternative perform against the other alternatives in the same segment in each of the four broad categories. Those alternatives that provided the greatest benefits and the fewest impacts were ranked highest.

The rankings were then presented at a series of Public Consultation Centres in January 2008, which were attended by approximately 1,350 people. The majority of public comments received indicated general support for the top-ranked route alternatives, a strong preference for LRT technology over BRT technology, and the importance of serving core areas and areas of high employment, commercial, retail and institutional land-uses.

Step 3a – Completed August 2008

In Step 3a, the Project Team used combinations of the top ranked route and technology options from Step 2 to assemble a short list of complete BRT and LRT system alternatives for the entire study area, along with staging options.

Each system alternative also had a number of different route variations. A field review was conducted along each variation to identify engineering considerations that could pose obstacles to construction or implementation of a final system. The purpose of this review was to look for engineering challenges that could impact the feasibility of the rapid transit system alternatives. Those rapid transit route variations that had multiple challenges or severe constraints considered too great to reasonably overcome were eliminated from further consideration.

The Project Team presented the details of the technical analysis and the short-listed LRT and BRT system alternatives at a series of three public consultation centres in June 2008. Approximately 880 people attended the public consultation centres. The majority of public comments received indicated support for the rapid transit project and a strong preference for LRT over BRT. In August 2008, the final short list was presented to Regional Council, which included one BRT option and one LRT option.

Step 3b – Completed June 2009

In Step 3b, the Project Team completed the Multiple Account Evaluation (MAE) to assess the costs and benefits of the rapid transit systems short-listed in Step 3a. The purpose of this evaluation was to determine which rapid transit system would best meet the goals of the RGMS and provide the greatest transportation, environmental, land-use and economic development, and social and community benefits to the Region.

The MAE provided for flexibility in measuring benefits, allowing decision makers to consider quantitative measures of benefits that were difficult or impossible to translate into dollars and a broader and more targeted representation of project benefits. To reflect the goals of the RGMS, the evaluation accounted for costs and revenue, travel times, accident avoidance, greenhouse gas emissions, air quality, residential development, new jobs, land value uplift, public health, community liveability and disruption during construction. The MAE established the preferred project alternative as a staged implementation of a light rail transit system with the initial stage consisting of a combination of LRT and adapted BRT, with future transition to full LRT through the central transit corridor. For a complete description of the evaluation results, see Appendix B of Report E-09-073, available for viewing by Regional Councillors in the Council Reference Library and for all on-line at www.region.waterloo.on.ca/rapidtransit.

In June 2009, after more than five years of study, and extensive public input, Regional Council approved LRT as the preferred technology for Waterloo Region's rapid transit system and the preferred implementation staging plan. Recognizing that the ridership, development potential and capital and operating costs vary along the route, Regional Council endorsed implementing the rapid transit project in stages. Council also approved an allocation of \$1,000,000 annually for an initial 10-year period to implement transit-supportive strategies in Cambridge. Finally, Council directed staff to pursue funding for the project from the Provincial and Federal governments, and noted that all of the

recommendations were subject to achieving acceptable funding agreement(s) which would be brought back to Council for approval.

2.3 Summary of Public Consultation

During the EA process, the Region undertook extensive consultation with and outreach to the public, agencies, community stakeholders, property owners, and the business community both within and outside of the EA process using a variety of formats, as follows:

- On four different occasions, more than 250,000 residential and business addresses received rapid transit newsletters;
- More than 140 newspaper news stories, features, editorials and letters to the editor have appeared since the EA began in 2005;
- Approximately 3,500 people attended 33 Public Consultation Centres (PCCs), Workshops and Focused Consultation events and provided more than 1,000 official formal comments;
- More than 2,500 businesses, located either along the proposed short-listed rapid transit routes or within a 200-metre radius of proposed rapid transit stations, received personal door-to-door visits as part of the Business Outreach Program;
- Staff hosted three “storefront” locations for two months, to provide additional opportunities for business and property owners along the proposed route to ask questions and provide comments;
- Staff presented the results of the MAE to the Municipal Councils in the Cities of Cambridge, Kitchener, Waterloo and the Township of Woolwich;
- The Rapid Transit InfoLine (phone), the Rapid Transit InfoBox (e-mail rinfo@Region.waterloo.on.ca) and the rapid transit website were advertised widely on all rapid-transit-related communications and the public was encouraged make contact with their questions and comments. Currently, the rapid transit website has an average of approximately 200 visits each day;
- The Rapid Transit Facebook page now has more than 500 Fans with 4 per cent aged 13 to 17, 34 per cent aged 18 to 24, 36 per cent aged 25 to 34, and 26 per cent over age 35;
- Rapid transit videos appear on YouTube and the Waterloo Region Record’s website; and
- Information about the rapid transit project was provided at more than 60 different public outreach events such as community stakeholder meetings, public events, presentations to groups, and educational displays where attendance was not recorded.

2.4 Ongoing Project Tasks

Following the June 2009 Council recommendations, staff continued to refine the rapid transit project and undertook a number of assignments, including:

- developing and submitting a business case for consideration by both levels of senior governments to secure funding for the project;
- consulting with regulatory authorities (e.g. future operations along the rail corridors);
- developing functional designs for:
 - the grade separation of King Street at the CN Guelph Subdivision in Kitchener (adjacent to the proposed multimodal hub);
 - the adapted BRT route on Highway 401 and Hespeler Road;
 - the route alignment along the Hydro Corridor in south Kitchener and the alternative on Fairway Road;
 - intersection design for the future Block Line Extension and Courtland Avenue integrated with rapid transit;
 - route options along Ottawa Street in view of the recently completed Regional Transportation Master Plan and its recommendations;

- completing site specific surveys to refine the design and minimize property impact; and
- refining project costs based on the above design work as well as further structural and utilities review.

3.0 Funding Status

On June 28, 2010, the Province of Ontario announced an investment of \$300 million towards the capital cost of constructing a rapid transit system in Waterloo Region. On September 2, 2010, the Government of Canada announced that it will provide one-third of eligible costs, up to \$265 million, to support the construction of the Region's rapid transit project. The estimated capital cost of the Council-approved rapid transit project in 2009 was \$790 million. The Provincial and Federal governments together have committed to funding more than 2/3 of the estimated project cost, to a combined level of up to \$565 million.

4.0 Next Steps

Once the Provincial and Federal governments had announced their funding commitments, staff recognized that it would be prudent to revisit the overall funding plan. During the fall of 2010, concerns were raised about the affordability of the rapid transit project, specifically in terms of the Region's contribution. Staff have been undertaking an objective review of project implementation options for Council's consideration, to identify a rapid transit project that is affordable to the Region, and provides best value to the community. This includes:

- investigating cost-saving strategies that could be implemented to reduce the cost of the rapid transit project without compromising its operation. For example, cost-saving opportunities have been found through a review of the electrical power supply, communications system, maintenance yard, track spacing (cross-sectional width), track depth (thinner track structure), and utility relocation costs; and
- identifying implementation options for the rapid transit project, including BRT and combinations of LRT and adapted BRT. To facilitate comparison, for each option staff will provide revised capital and net operating cost estimates that take into account the impacts of project timing and inflation.

Subject to Regional Council consideration, staff anticipate that next steps in 2011 for the rapid transit project would include:

- February 15: providing information on various implementation options to Planning and Works Committee and requesting approval to go to the public with the information;
- February/March: undertaking further public consultation regarding implementation options;
- April: providing feedback to Planning and Works Committee regarding public consultation and identifying a preliminary preferred option;
- April/May: undertaking public consultation regarding the preliminary preferred option;
- Late May: Public Input Meeting regarding the preliminary preferred option;
- June: Council approval;
- July/August/September: completing Environmental Project Report; and
- October: commencing 6-month Transit Project Assessment (the expedited Provincial EA process for transit projects).

In addition, staff will:

- work with Provincial and Federal governments on funding agreements; and
- work towards a recommendation of the most effective method of financing and procurement to deliver the rapid transit project.

CORPORATE STRATEGIC PLAN:

The report supports several objectives of Council's Strategic Focus. These include:

Focus Area 1: Environmental Sustainability: Protect and Enhance the Environment.

Focus Area 2: Growth Management: Manage and shape growth to ensure a livable, healthy, thriving and sustainable Waterloo Region.

Focus Area 5: Infrastructure: Provide high quality infrastructure and asset management to meet current needs and future growth.

FINANCIAL IMPLICATIONS:

As part of the report to Planning and Works Committee on February 15, 2011, staff will present implementation options for the rapid transit project including the project costs and the Region's share of the capital costs.

OTHER DEPARTMENT CONSULTATIONS/CONCURRENCE:

The rapid transit Project Team includes representatives from Regional Council, the CAO's office, Communications, Community Planning, Finance, Legal, Public Health, Social Services, Transit Development, Transportation and Environmental Services, Transportation Planning and Transit Services.

ATTACHMENTS:

NIL

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