Minute No. 298
Report – Executive Policy Committee – February 8, 2006

Item No. 3 **Rapid Transit Task Force Recommendations - Implementation Plan of Transit Improvements**
File TT-8

COUNCIL DECISION:

Council amended the recommendation of the Executive Policy Committee and adopted the following:

1. That the Implementation Plan of Transit Improvements, as shown in Table E2 contained in the administrative report dated January 30, 2006, be approved in principle as the first stage of implementation of the recommendations of the Rapid Transit Task Force.

2. That capital funding authorizations recommended in the Implementation Plan for each of the years 2006 – 2011 be referred to the Capital Budget review process in each of those years, including:

   A. That Federal Gas Tax revenues specified for transit purposes and to be transferred to the City in 2007, 2008, and 2009 under the auspices of the Canada – Manitoba Agreement of November 18, 2005 be allocated to those projects in the implementation plan identified to be funded by such revenues.

   B. That Federal Gas Tax revenues specified for transit purposes and to be transferred to the City in 2006 and 2007 under auspices of Federal Bill C-66 be allocated to those projects in the implementation plan identified to be funded by such revenues.

   C. That Innovative Transit Program funding in each year be allocated to those projects in the implementation plan identified to be funded by the Innovative Transit Program.

3. That subject to approval of the proposed "Articulated Electric Hybrid Buses" project in the City's 2006 Capital Budget and the completion of an agreement with the Federation of Canadian Municipalities (FCM) for funding assistance through the Green Municipal Funds program, Federal Gas Tax revenues specified for transit purposes and to be transferred to the City in 2006 and 2007 under the auspices of Federal Bill C-66 be approved to prepay the savings-based and low-interest FCM loans at the earliest opportunity.

Report – Executive Policy Committee – February 8, 2006

COUNCIL DECISION (continued)

4. That any changes in operating costs resulting from transit projects approved in the Capital Budget process for each of the years 2006 – 2011 be referred to the Operating Budget review process in each of those years.

5. That the Council Decision of July 23, 2003, to provide the Director of Planning, Property and Development with authorization "to negotiate such property acquisitions as the Transit Department through its Consultants may identify for completion of Stage 1 of the Southwestern Corridor and Stage 1 of the Eastern Corridor . . . and to report back with the results thereon", be amended to extend that authority to include property acquisitions identified by the Transit Department for Stage 2 of the Southwestern Corridor and Stage 2 of the Eastern Corridor.

6. That Section 7 of the Rapid Transit Task Force Report dated September 2005 be referred to the Executive Policy Committee for report back to Council by June 28, 2006.

7. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

Report – Executive Policy Committee – February 8, 2006

DECISION MAKING HISTORY:

Moved by His Worship Mayor Katz,
That the recommendation of the Executive Policy Committee be adopted.

In amendment,

Moved by Councillor Wyatt,
Seconded by His Worship Mayor Katz,

WHEREAS Item 3 of the Report of the Executive Policy Committee, dated February 8, 2006, provides a comprehensive response to the detailed recommendations of the Rapid Transit Task Force for Council and addresses technical recommendations regarding route improvements, rapid transit planning and on-street improvements;

AND WHEREAS the Rapid Transit Task Force also made recommendations in Section 7 (pages 52-53) of its Report addressing policy proposals to improve transit service in Winnipeg through changes to policies regarding access, customer service, governance, development planning and linkage to economic development strategies, for which no response has yet been received;

AND WHEREAS Council and the Executive Policy Committee are best-placed to properly initiate discussions of changes in policy with respect to the recommendations in the Task Force Report;

THEREFORE BE IT RESOLVED THAT Section 7 of the Rapid Transit Task Force Report be referred to Executive Policy Committee and that the Executive Policy Committee report back to Council by June 28, 2006.

The amendment proposed by Councillors Wyatt and His Worship Mayor Katz was put and declared carried.

The motion for the adoption of the recommendation of the Executive Policy Committee, as amended, was put and declared carried.

EXECUTIVE POLICY COMMITTEE:

On February 8, 2006, the Executive Policy Committee concurred in the administrative recommendation and submitted the matter to Council.

Report – Executive Policy Committee – February 8, 2006

DECISION MAKING HISTORY (continued)

COUNCIL:

On October 26, 2005, Council concurred in the recommendation of the Executive Policy Committee and received as information the Rapid Transit Task Force – Made in Winnipeg Rapid Transit Solution – Final Report dated September 2005.

EXECUTIVE POLICY COMMITTEE RECOMMENDATION:

On October 19, 2005, the Executive Policy Committee recommended to Council that the Rapid Transit Task Force – Made in Winnipeg Rapid Transit Solution – Final Report dated September 2005, be received as information.

Further, on October 19, 2005, the Executive Policy Committee requested the Administration to review the Report of the Rapid Transit Task Force and report back to Executive Policy Committee within ninety (90) days on analysis of options and advice with respect to:

- Implementation of the Report recommendations;
- A priority list of short term improvements that can be undertaken in 2006-2007;
- Timelines for potential implementation;
- Costs of options being recommended;
- Funding options for potential project costs.

REPORT

RE: Implementation Plan for Rapid Transit Task Force Recommendations
FOR SUBMISSION TO: **Executive Policy Committee**

ORIGINAL REPORT SIGNED BY: **Dave Wardrop, Director of Transit**

REPORT DATE: **2006-01-30**

RECOMMENDATIONS:

1. **That the implementation plan of transit improvements, as shown in Table E2 on page 6 of this report, be approved in principle as the first stage of implementation of the recommendations of the Rapid Transit Task Force.**

2. **That capital funding authorizations recommended in the implementation plan for each of the years 2006 – 2011 be referred to the capital budget review process in each of those years, including:**

    a. **That Federal Gas Tax revenues specified for transit purposes and to be transferred to the City in 2007, 2008, and 2009 under the auspices of the Canada – Manitoba agreement of November 18th, 2005 be allocated to those projects in the implementation plan identified to be funded by such revenues.**

    b. **That Federal Gas Tax revenues specified for transit purposes and to be transferred to the City in 2006 and 2007 under auspices of Federal Bill C-66 be allocated to those projects in the implementation plan identified to be funded by such revenues.**

    c. **That Innovative Transit Program funding in each year be allocated to those projects in the implementation plan identified to be funded by the Innovative Transit Program.**

3. **That, subject to approval of the proposed "Articulated Electric Hybrid Buses" project in the City's proposed 2006 Capital Budget and the completion of an agreement with the Federation of Canadian Municipalities (FCM) for funding assistance through the Green Municipal Funds program, Federal Gas Tax revenues specified for transit purposes and to be transferred to the City in 2006 and 2007 under the auspices of Federal Bill C-66 be approved to prepay the savings-based and low-interest FCM loans at the earliest opportunity.**

4. **That any changes in operating costs resulting from transit projects approved in the capital budget process for each of the years 2006 – 2011 be referred to the operating budget review process in each of those years.**

5. That the authorization provided by Council to the Director of Planning, Property, and Development on July 23rd, 2003 "*to negotiate such property acquisitions as the Transit Department through its Consultants may identify for completion of Stage 1 of the Southwestern Corridor and Stage 1 of the Eastern Corridor . . . and to report back with the results thereon*," be extended to include property acquisitions identified by the Transit Department for Stage 2 of the Southwestern Corridor and Stage 2 of the Eastern Corridor.

REPORT SUMMARY:

Key Issues:

1. At its meeting on October 26th, 2005, Council adopted the October 19th, 2005 recommendations of Executive Policy Committee with respect to the final report of the Rapid Transit Task Force. The Administration was directed to review the report of the Rapid Transit Task Force and report back to Executive Policy Committee on analysis of options and advice with respect to:

    - Implementation of the Report's recommendations
    - A priority list of short-term improvements that can be undertaken in 2006-2007
    - Timelines for potential implementation
    - Costs of options being recommended
    - Funding options for potential project costs

2. The Task Force recommended that an **integrated** set of transit improvements be implemented in the major travel corridors of Winnipeg. Within each of these **"Quality Corridors,"** a specific set of improvements tailored to the needs of each is to be employed to improve the *speed, reliability, comfort, convenience* and *accessibility* of transit travel. The **basic service elements** recommended for application include **new vehicles** with alternative propulsion technologies, **upgraded stops and stations**, system-wide **Intelligent Transportation (ITS) Systems** technology, **transit priority measures** (diamond lanes, queue jump lanes, transit signal priority, and busways), and **Park and Ride** facilities. These service elements are to be "packaged" in appropriate combinations to establish a number of "Quality Corridors" throughout the city.

3. Council has approved two policy documents to guide the development of the transit system. These include the City's official plan, *Plan Winnipeg 2020 Vision* (adopted in December 2001) and the Transit Department's strategic plan, *Direction to the Future – The Guide to Better Transit for Winnipeg* (adopted in February 2000). Since adoption of these policies, many of the transit improvements specified in the policies have been implemented. The Task Force's recommendations include several initiatives specified in the policy documents that remain to be implemented. In this respect, the Task Force recommendations are very consistent with Council policy on public transit.

4. While the Task Force suggested particular combinations of strategies for each travel corridor, its recommendations are conceptual in nature. The treatments prescribed by the Task Force necessarily require detailed analysis. Since consideration of the Task

Force's Final Report by Council, some of this detailed analysis has been completed and, for several initiatives, a course of action for implementation is outlined in this report. In other instances, additional work needs to be undertaken and the nature and costs of that work are also outlined.

5. The nature, scale, and timing of the transit improvements is dependent on the level of funding that is projected to be available to the City for transit initiatives over the next few years. The projected capital funding available for initiatives recommended by the Rapid Transit Task Force over the 2006 – 2011 time period totals $76.599 million and includes:

    a) Amounts projected in the City's 2006 – 2011 capital program for the following projects:
        - Bus Radio/AVL System – final phase ($1.659 million in 2006)
        - Fare Collection System ($13.5 million in 2008, 2009, 2010, 2011)
        - Innovative Transit Program ($4.4 million in 2006 – 2011)
        - Articulated Electric Hybrid Buses ($16.714 million in 2006 – 2007)

    b) Federal Government initiatives to share federal gasoline tax revenue:
        - Transit portion of $0.05/litre Federal Gas Tax funds ($11.606 million in 2007, 2008, and 2009)
        - $0.01/litre Federal Gas Tax Funds dedicated for transit ($28.72 million in 2006, 2007 – referred to as Federal Bill C-66 funds).

6. Consistent with the Task Force's recommendations, the following integrated set of transit improvement projects is recommended to be funded from the available $76.599 million over the 2006 – 2011 time period:

Table E1: Implementation Summary for Recommended Projects

Category	Project	Allocation ($ millions)	Implementation Period
Stop Upgrades	Portage Avenue – Downtown	$0.180	2006
Stop Upgrades	Osborne Exchange	$0.055	2006
Stop Upgrades	Graham Transit Mall	$1.225	2006
Stop Upgrades	University of Manitoba Transit Centre	$0.110	2006
Stop Upgrades	New Quality Corridor Stop Upgrades (~30)	$1.300	2006
Transit Priority	Diamond Lane Feasibility Studies – Part 1	$0.200	2006
Park & Ride	Expansion of "On-Street" Park & Ride – Part 1	$0.055	2006
Stop Upgrades	Polo Park Transit Centre	$0.625	2006 - 2007
ITS	Bus Radio/AVL System (final phase)	$1.659	2006 – 2007
ITS	On Board "Next Stop" Enunciators/Displays	$3.000	2006 – 2007
ITS	Control Centre/Website Upgrade	$0.200	2006 – 2007
ITS	Telebus Upgrade	$0.350	2006 – 2007
ITS	Wireless (WAP) Protocol	$0.150	2006 – 2007
ITS	On Board Security Camera System	$1.100	2006 – 2007
Transit Priority	Busways – Alternative Funding Study	$0.100	2006 – 2007
Stop Upgrades	Kildonan Place Transit Centre	$0.145	2007
Stop Upgrades	St. Vital Centre Transit Centre	$0.100	2007

Category	Project	Allocation ($ millions)	Implementation Period
Stop Upgrades	New Quality Corridor Stop Upgrades (~30)	$1.300	2007
Vehicles	Articulated Electric Hybrid Buses	$26.939	2007
Transit Priority	Diamond Lane Feasibility Studies – Part 2	$0.200	2007
Park & Ride	Expansion of "On-Street" Park & Ride – Part 2	$0.055	2007
Transit Priority	Southwestern Busway – Stage 1 Detailed Design	$2.600	2007
ITS	Electronic Bus Departure Displays: Prototype	$0.300	2007 – 2008
Transit Priority	Signal Priority: Expansion of Actuated TSP	$0.600	2007 – 2008
Transit Priority	Signal Priority: Active TSP Pilot Project	$0.500	2007 – 2008
Transit Priority	Eastern Busway – Stage 1 Preliminary Design	$1.300	2007 – 2008
Transit Priority	Diamond Lanes - Implementation	$9.451	2007 – 2009
ITS	Electronic Bus Departure Displays: Expansion	$1.700	2008
Stop Upgrades	New Quality Corridor Stop Upgrades (~50)	$2.100	2008
Transit Priority	Diamond Lane Feasibility Studies – Part 3	$0.200	2008
Park & Ride	Expansion of "On-Street" Park & Ride – Part 3	$0.100	2008
ITS	New Fareboxes, Automatic Transfer Dispensers	$6.000	2008 – 2009
Transit Priority	Southwestern Busway – Stage 2 Prelim Design	$0.800	2008 – 2009
Stop Upgrades	New Quality Corridor Stop Upgrades (~50)	$2.100	2009
Park & Ride	Expansion of "On-Street" Park & Ride – Part 4	$0.140	2009
Transit Priority	Signal Priority: Expansion of Active TSP	$2.160	2009 – 2011
ITS	Transit Smart Card System	$7.500	2010 – 2011

7. For the Bus Radio/AVL System, the amount shown in Table E1 ($1.659 million) is only that portion of the project that would be funded from the City's 2006 capital budget to complete the project. The remainder of the project is already funded from the previously approved 2003 and 2005 capital budgets.

8. For the Articulated Electric Hybrid Buses project, the total project cost of $26.939 million would be funded by $3.833 million in grants (from the Federation of Canadian Municipalities Green Municipal Funds program and from the *Winsmart* Urban Transportation Showcase Program), $12.881 million from City sources, and $10.225 million in Federal Gas Tax funding.

9. The implementation of the recommended projects will have some general impacts on the operating costs of the transit system:

    - The ongoing costs for the cleaning and maintenance of shelters and street furniture will increase as a result of the higher number of upgraded stops and stations in the system.

    - A higher standard of cleaning and maintenance recommended for the Quality Corridors requires a further increase in cleaning and maintenance costs for shelters, street furniture, and buses in the Quality Corridors.

- The installation of the ITS projects will increase the requirement for electronic technicians and systems analyst staff, and for the maintenance and support of software/hardware used in those systems.

- The electric hybrid buses will result in some increase in bus parts costs, but will result in some fuel cost savings.

- Although difficult to quantify at this time, the transit improvements are expected to result in some increase in ridership and passenger revenue.

Table E3 summarizes those costs that can be estimated at this time.

Table E3: Estimated Impacts of Recommended Projects on Annual Operating Costs

Project	Impacts	Annual Costs (Savings)	In Effect
Bus Stop Upgrades	Increased carpentry/shelter servicing staff and support equipment for additional upgraded stops	$110,000	2007
Higher Standard of Cleaning and Maintenance in Quality Corridors	Increased carpentry/shelter servicing staff and support equipment	$110,000	2008
	Increased bus cleaning staff	$250,000	2008
Bus Radio/AVL System Electronic Bus Departure Displays On-Board "Next Stop" Displays On-Board Security Camera System	Increased electronic technician staff	$216,000	2007
	Increased systems analyst staff and software/hardware maintenance	$200,000	2007
Articulated Electric Hybrid Buses	Increased bus parts costs	$200,000	2008
	Fuel Savings	($500,000)	2008

10. The recommended funding authorizations for each of the projects in the implementation plan are shown in Table E2 on page 6.

Table E2: Recommended Transit Improvement Projects
Proposed Funding Authorization: 2006 - 2011
(in $ millions)

		Proposed City of Winnipeg Capital Program: 2006 - 2011													Federal Gasoline Tax					Total
		Bus Radio/AVL	Innovative Transit Program						Artic Hybrids		Fare Collection System				$0.05/litre Funds - Transit Portion			C-66 Funds		
		2006	2006	2007	2008	2009	2010	2011	2006	2007	2008	2009	2010	2011	2007	2008	2009	2006	2007	
Available Funding . . .		**1.659**	**0.700**	**0.700**	**0.700**	**0.700**	**0.800**	**0.800**	**10.243**	**6.471**	**6.000**	**2.500**	**2.500**	**2.500**	**2.443**	**3.054**	**6.109**	**14.360**	**14.360**	**76.599**
Category	Project																			
Vehicles	**Articulated Electric Hybrid Buses**								10.243	6.471								6.808	3.417	**26.939**
Stop Upgrades	**Bus Stop/Station Refurbishment Projects:**																			
	Portage Avenue - Downtown		0.180																	**0.180**
	Osborne Exchange		0.055																	**0.055**
	Graham Transit Mall																	1.225		**1.225**
	University of Manitoba Transit Centre		0.110																	**0.110**
	Polo Park Transit Centre																	0.227	0.398	**0.625**
	Kildonan Place Transit Centre			0.145																**0.145**
	St. Vital Centre Transit Centre			0.100																**0.100**
	New Bus Stop Upgrade Projects														1.300	2.100	2.100	1.300		**6.800**
Intelligent Transportation Systems (ITS)	**Bus Radio/AVL System**	1.659																		**1.659**
	Real Time Schedule Information:																			
	Control Centre/Website Upgrade																	0.200		**0.200**
	Telebus Upgrade																	0.350		**0.350**
	Wireless (WAP) Protocol																	0.150		**0.150**
	Electronic Bus Departure Displays: Prototype Project																		0.300	**0.300**
	Electronic Bus Departure Displays: Expansion																		1.700	**1.700**
	On-Board "Next Stop" Enunciators/Displays																	3.000		**3.000**
	On-Board Security Camera System																	1.100		**1.100**
	Fare Collection System Replacement:																			
	Fareboxes, Transfer Dispensers										6.000									**6.000**
	Transit Smart Card Fare System											2.500	2.500	2.500						**7.500**
Transit Priority	**Diamond Lanes/Queue Jump Lanes:**																			
	Feasibility/Design Studies		0.200	0.200	0.200															**0.600**
	Diamond Lanes/Queue Jump Lanes: Implementation														1.143	0.154	4.009		4.145	**9.451**
	Transit Signal Prioirty:																			
	Expansion of Actuated TSP			0.100															0.500	**0.600**
	Active TSP Pilot Project			0.100	0.400															**0.500**
	Expansion of Active TSP					0.560	0.800	0.800												**2.160**
	Busways:																			
	Southwestern Corridor: Stage 1 Detailed Design																		2.600	**2.600**
	Eastern Corridor: Stage 1 Preliminary Design																		1.300	**1.300**
	Southwestern Corridor: Stage 2 Preliminary Design															0.800				**0.800**
	Alternative Funding Study		0.100																	**0.100**
Park and Ride	**Expansion of "On-Street" Park and Ride Program**		0.055	0.055	0.100	0.140														**0.350**
	Total Funding Allocation	**1.659**	**0.700**	**0.700**	**0.700**	**0.700**	**0.800**	**0.800**	**10.243**	**6.471**	**6.000**	**2.500**	**2.500**	**2.500**	**2.443**	**3.054**	**6.109**	**14.360**	**14.360**	**76.599**

Implications of the Recommendations:

General Implications:

X	None
	For the organization overall and/or for other departments
	For the community and/or organizations external to the City of Winnipeg
	Involves a multi-year contract

Policy Implications:

X	No
	Yes

Environmental Implications:

	No
X	Yes

Comment:

The implementation of the recommended projects will improve transit service and increase ridership. Improved environmental outcomes result from higher transit use.

On high-frequency routes serving areas of growing ridership, articulated buses provide additional capacity in a cost-effective manner. Based on experience in other cities, the hybrid electric propulsion technology is expected to improve fuel economy by up to 25%. Compared to an equivalent number of standard diesel transit buses, the 20 articulated hybrid buses proposed for acquisition are expected to emit 85% less carbon monoxide, 47% less carbon dioxide, 21% less nitrogen oxide, 57% fewer hydrocarbons, and 54% less particulate matter.

Human Resources Implications:

	No
X	Yes

Comment:

The implementation of the recommended projects will increase the requirement for carpentry, shelter servicing, bus cleaning, electronic technician, and systems analyst staff.

Financial Implications:

	Within approved current and/or capital budget
X	Current and/or capital budget adjustment required

Comment:

The capital funding required for the recommended projects can be accommodated by provisions in the City's projected 2006 - 2011 capital program and by the transfer of Federal Gas Tax funding to the City for transit purposes.

The implementation of the projects will require some adjustments to the operating budget of the department beginning in 2007. While some savings in diesel fuel and debt servicing are expected, additional expenditures will be required for batteries for the hybrid electric buses and for additional staff for carpentry, shelter servicing, bus cleaning, electronic technician, and systems analyst staff.

REASON FOR THE REPORT:

Executive Policy Committee directed the Administration to review the Report of the Rapid Transit Task Force and to report back.

HISTORY:

On September 29th, 2004, Council adopted a recommendation of Executive Policy Committee to reallocate $43 million of the Canadian Strategic Infrastructure Fund agreement from the Bus Rapid Transit project to community recreation and leisure facility projects, to allocate $7.5 million of the BRT funding to transit modernization initiatives, to pursue funding for transit modernization from other sources (including the Green Municipal Funds Program), and to establish a Rapid Transit Task Force to recommend a long-term rapid transit plan for the City.

In October 2004, the Mayor appointed the Rapid Transit Task Force, with Councillor Wyatt as Chair and Councillors Pagtakhan and Gerbasi as members. In addition, a six-person Advisory Council of citizens was appointed to support the Rapid Transit Task Force in its work.

The Rapid Transit Task Force officially commenced its work on December 15th, 2004 with approval of its work plan by EPC Secretariat and Council approval of its project budget. The Task Force was to submit its report to Executive Policy Committee by June 30th, 2005. In July 2005, Council granted a 90-day extension to this deadline. The Task Force completed its final report in September 2005.

On October 19th, 2005, Executive Policy Committee received the final report of the Rapid Transit Task Force and recommended to Council:

1. That the Rapid Transit Task Force – Made in Winnipeg Rapid Transit Solution – Final Report dated September 2005, be received as information.

2 That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

3 That the Administration review the report of the Rapid Transit Task Force and report back to Executive Policy Committee on analysis of options and advice with respect to:

- Implementation of the Report's recommendations
- A priority list of short-term improvements that can be undertaken in 2006-2007
- Timelines for potential implementation
- Costs of options being recommended
- Funding options for potential project costs

At its meeting on October 26th, 2005, Council adopted the October 19th, 2005 recommendations of Executive Policy Committee with respect to the final report of the Rapid Transit Task Force.

DISCUSSION:

1. Summary of Recommendations of Rapid Transit Task Force

The Task Force recommended that an **integrated** set of transit improvements be implemented in the major travel corridors of Winnipeg. Within each of these **"Quality Corridors,"** a specific set of improvements tailored to the needs of each is to be employed to improve the *speed, reliability, comfort, convenience,* and *accessibility* of transit travel.

The **basic service elements** recommended for application by the Rapid Transit Task Force include the following:

Service Element	Includes
Vehicles	Buses with **"clean diesel"** or **"diesel electric hybrid"** propulsion technologies **Articulated** buses for corridors with high daily passenger volumes
Upgraded Stops and Stations	**Shelters (heated ones at major stops)**. Posted **route and schedule information** (in real-time at major stops). **Attractive streetscaping** (landscaping, signage, benches, waste receptacles, public telephones)
Intelligent Transportation Systems (ITS) Technology	**Bus Radio/Automated Vehicle Location** system for complete fleet. **Real-Time Schedule Information** (via Telebus, transit website, wireless devices; and at major stops/stations) **On-board "Next Stop" Displays/Enunciators** for complete fleet. **Automated Fare Collection System**
Traffic Priority for Transit	**Diamond lanes** (on-street) **Queue jump lanes** (on-street) **Transit signal priority** (on-street) **Busways** (separate road right-of-way for transit and emergency vehicles with integrated active transportation paths)
Park and Ride	Expansion of **existing park and ride** program Major **new park and ride** facilities in conjunction with busway construction

The Task Force recommended that improvements be implemented in two phases over a period of approximately 12 years:

1. Several initiatives are **system-wide** ones and would provide **benefits for all transit users throughout Winnipeg**. These include:

System-Wide Improvements
Buses with Alternative Technology Propulsion Systems
Bus Radio/Automated Vehicle Location System
Real-Time Schedule Information System
On-board "Next Stop" Displays/Enunciators
Automated Fare Collection System

2. The service elements described above were recommended by the Task Force to be "packaged" in appropriate combinations to establish the following "Quality Corridors" throughout the city:

Quality Corridor	Segment	Recommended Improvements	
		Phase 1	Phase 2
Within Downtown	**Portage Avenue** (Spence – Main)		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays
	Graham Mall (Vaughan – Main)		**On-Street Improvements:** Refurbish Existing Transit Mall Upgrade Stops Real-Time Schedule Displays
	Main Street (Higgins – Q. Eliz. Way)		**On-Street Improvements:** Existing Diamond Lanes Upgrade Stops Real-Time Schedule Displays
Donald-Osborne–Pembina	**QE Way & Stradbrook – Pembina & Bison**	**Southwestern Busway:** Exclusive Right-of-Way Stations Real-Time Schedule Displays Park and Ride Active Transportation Path	
	Pembina & Bison – Pembina & Killarney	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority	
Higgins–Nairn–Regent	**Downtown – Nairn & Grey**	**Eastern Busway (Stage 1):** Exclusive Transit Right-of-Way Stations Real-Time Schedule Displays Park and Ride Active Transportation Path	
	Nairn & Grey – Regent & Rougeau	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps Coloured Diamond Lanes	**Eastern Busway (Stage 2):** Exclusive Right-of-Way Stations Real-Time Schedule Displays Park and Ride Active Transportation Path

	Regent & Rougeau – Plessis & Kildare		**Eastern Busway (Stage 2):** Exclusive Right-of-Way Stations Real-Time Schedule Displays Park and Ride Active Transportation Path
Quality Corridor	**Segment**	**Recommended Improvements**	
		Phase 1	**Phase 2**
St. Mary's Road	**St. Vital Centre – St. Anne's Road**	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps	
	St. Anne's - Tache	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps Coloured Diamond Lanes	
Portage Avenue	**Unicity Mall – Polo Park**	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps	
	Raglan Road – Spence	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Coloured Diamond Lanes	
Henderson Highway – Disraeli Freeway	**City Limit – Henderson & Springfield**	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps	
	Henderson & Springfield – Henderson & Talbot	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Coloured Diamond Lanes	
	Henderson & Talbot – Disraeli & Main	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps	
Main Street	**Red River Blvd – Jefferson Ave**	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps	
	Jefferson Ave – Sutherland Ave	**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Coloured Diamond Lanes	

St. Anne's Road	**Meadowood – St. Mary's**		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps
Quality Corridor	**Segment**	**Recommended Improvements**	
		Phase 1	**Phase 2**
McPhillips Street	**Leila – Jefferson**		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps
	Jefferson – Jarvis		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Coloured Diamond Lanes
	Jarvis – Notre Dame		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps
Notre Dame–Cumberland–Balmoral	**Red River College – Notre Dame & Dublin**		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps
	Notre Dame & Dublin – Cumberland & Sherbrook		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Coloured Diamond Lanes
	Cumberland & Sherbrook - Cumberland & Balmoral		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps
	Balmoral & Notre Dame – Balmoral & Ellice		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps
Marion-Goulet-Archibald	**Marion/Goulet & St. Mary's – Marion/Goulet & Des Meurons**		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Coloured Diamond Lanes
	Marion/Goulet & Des Meurons – Marion & Archibald		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps
	Archibald & Marion – Archibald & Elizabeth		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Coloured Diamond Lanes

Quality Corridor	Segment	Recommended Improvements	
		Phase 1	Phase 2
Kenaston Boulevard	McGillivray – Grant		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Queue Jumps
	Grant - Academy		**On-Street Improvements:** Upgrade Stops Real-Time Schedule Displays Transit Signal Priority Coloured Diamond Lanes

2. Task Force Recommendations and Council Policy on Transit

Council has approved two policy documents to guide the development of the transit system. These include the City's official plan, *Plan Winnipeg 2020 Vision* (adopted in December 2001) and the Transit Department's strategic plan, *Direction to the Future – The Guide to Better Transit for Winnipeg* (adopted in February 2000).

Since adoption of these policies, many of the transit improvements specified in the policies have been implemented. Illustrative examples include:

Category	Initiatives Implemented
Making Ongoing Improvements to Service	Ongoing Route Network Improvements Regular Bus Replacement (30 new buses each year) Assignment of Low-Floor Buses to Same Service Each Day Upgrades of Major Stops More Transit Shelters New Transit Terminals (Garden City Shopping Centre and University of Winnipeg)
Making Transit Service Easier to Use	Additional DART Services Expansion of Park and Ride program (11 lots) Map and Timetable Improvements Posted Route and Schedule Information at More Bus Stops Improved Transit Internet Site Internet Trip Planner (*Navigo*) Improved Telebus System
Making the Service More Affordable	Post-Secondary Monthly Pass Eco-Pass Program (Employer Subsidized Bus Passes) Reduced Ticket and Pass Fares for Senior Citizens
Making the Service More Productive	Additional Transit Priority Measures Alternative Fuels Testing
Making a Commitment to Affordable High Speed Transit	Additional express services in several sectors of the city

Many of the transit improvements specified in the policy documents, but remaining to be implemented, have been recommended by the Task Force. In this respect, the Task Force recommendations are very consistent with Council policy on transit.

The following table illustrates how the Task Force's recommendations compare with the *Plan Winnipeg* and *Direction to the Future* policies.

Task Force Recommendation	Referenced In:	
	Plan Winnipeg	***Direction to the Future***
Buses with Alternative Technology Propulsion Systems	5A-04: Encourage Energy Efficiency	5.4.5. Alternative Fuels
Upgrade Stops	1A-06: Encourage Accessibility To and Within the Downtown	5.1.4. Upgrades of Major Stops 5.1.5. More Transit Shelters 5.2.5. Posted Information at Stops
Intelligent Transportation Systems (ITS) Technology		5.4.3. Bus Radio/AVL System 5.2.10. Next Stop Displays on Buses 5.2.11. Real-Time Schedule Displays 5.2.12. New Fare Collection System
On-Street Traffic Priority for Transit (diamond lanes, transit signal priority)	3D-02: Invest Strategically in New Infrastructure 3D-03: Direct Transit Investment Policy Plate B Policy Plate C	5.4.1. Transit Priority Measures
Quality Corridors **Southwestern Busway** **Eastern Busway** **Park and Ride**	3D-02: Invest Strategically in New Infrastructure 3D-03: Direct Transit Investment Policy Plate B Policy Plate C	5.5.2. On-Street Rapid Bus 5.5.3. Rapid Transit 5.2.2. Park and Ride

3. Implementation of Task Force Recommendations

Overview

In general, the improvements recommended by the Rapid Transit Task Force are consistent with Council's policy direction for transit service in Winnipeg.

The fundamental objective of the Task Force's recommendations is to create a higher quality of transit service (in terms of speed, reliability, comfort, convenience, and accessibility) in the major travel corridors of the city through the application of specific combinations of measures appropriate to each corridor.

While the Task Force suggested particular combinations of strategies for each travel corridor, the recommendations are conceptual in nature. The treatments prescribed by the Task Force, therefore, necessarily require detailed analysis in the development of an implementation plan.

Since consideration of the Task Force's Final Report by Council, some of this detailed analysis has been completed and, for several initiatives, a course of action for implementation is outlined below. In other instances, however, additional work needs to be undertaken and the nature and costs of that work are also outlined.

The nature, scale, and timing of the transit improvements are dependent on the level of funding that is projected to be available to the City for transit initiatives over the next few years. The next section provides a summary of projected capital funding for transit in Winnipeg until 2011. Following that is a detailed discussion of each of the Task Force's recommendations and a recommended course of action for the City to follow.

Projected Capital Funding for Transit

Until 2006, the only source of funding for non-recurring transit capital projects (that is, those capital projects other than annual bus replacements) has been through borrowing in the City's capital program.

In 2005, the Federal Government undertook two initiatives to share federal gasoline tax revenues with municipalities through agreements with the Provinces:

- A five-year program to share up to $0.05/litre of federal gas tax revenue. Approximately 11% of the funds distributed to the City of Winnipeg over the term of the program, or $11.606 million, are to be used for transit purposes. This agreement was concluded between Canada and Manitoba on November 18th, 2005.

- A two-year program to share $0.01/litre of federal gas tax revenue. All of these funds are to be used for transit purposes. A total of $28.72 million is to be distributed to the City of Winnipeg during 2006 and 2007. While an official agreement remains to be finalized between Canada and Manitoba, the federal legislation (Bill C-66) authorizing the transfer received Royal Assent on November 25th, 2005.

Table 1 summarizes the funding from City and Federal sources that is projected to be available for non-recurring transit capital projects for the 2006 – 2011 time period.

Table 1: Projected Capital Funding for Non-Recurring Transit Projects 2006 – 2011 ($ millions)

	2006	2007	2008	2009	2010	2011	Total
Projected 2006-2011 Capital Program:							
Bus Radio/AVL System (completion)	1.659	-	-	-	-	-	1.659
Fare Collection System	-	-	6.000	2.500	2.500	2.500	13.500
Innovative Transit Program	0.700	0.700	0.700	0.700	0.800	0.800	4.400
Articulated Electric Hybrid Buses	10.243	6.471	-	-	-	-	16.714
Federal Gas Tax Funding (Transit Portion of $0.05/litre Funds)	-	2.443	3.054	6.109	-		11.606
Federal Gas Tax Funding (Bill C-66) ($0.01/litre dedicated for Transit)	14.360	14.360	-	-	-		28.720
Total	**26.962**	**23.974**	**9.754**	**9.309**	**3.300**	**3.300**	**76.599**

In the City's capital program, note that:

- Funding is projected for three specific projects: the completion of the Bus Radio/Automatic Vehicle Location system, the replacement of the existing fare collection system, and the acquisition of Articulated Electric Hybrid Buses. All of these initiatives were included in the Task Force's recommendations.

- Council approves a global amount each year for the Innovative Transit Program. The Standing Policy Committee on Infrastructure Renewal and Public Works subsequently approves specific projects funded under the program. The program is used to fund projects that provide direct benefits to passengers (eg. Transit terminals, bus stop upgrades, large heated shelters, Park & Ride, Telebus, *Navigo* trip planner) or that

improve the productivity of transit service (eg. Transit priority measures, automated scheduling system, Handi-Transit scheduling system).

In summary, both the City's existing Capital Program and the Federal gas tax funding provide funding sources to begin implementation of the Task Force's recommendations.

Analysis of Task Force Recommendations

An analysis of each of the major recommendations of the Rapid Transit Task Force (RTTF) follows. For each, a commentary on the feasibility of the recommendation is provided and a course of action (including a capital cost estimate, the sources of funding, and an implementation schedule) is recommended.

RTTF Recommendation: Acquisition of Articulated Electric Hybrid Buses

COMMENTARY:

Advantages of Articulated Electric Hybrid Buses

Compared to standard 12-metre diesel buses, 18-metre articulated electric hybrid buses:

- Have a 50% higher passenger carrying capacity. On high-frequency routes serving areas of growing ridership, articulated buses provide additional capacity in a cost-effective manner.

- Are much more fuel-efficient. Based on experience in other cities, the hybrid diesel electric propulsion technology improves fuel economy by up to 25%.

- Exhaust significantly fewer vehicle emissions. Compared to an equivalent number of standard diesel transit buses, articulated hybrid buses emit 85% less carbon monoxide, 47% less carbon dioxide, 21% less nitrogen oxide, 57% fewer hydrocarbons, and 54% less particulate matter.



Status of Application to Federation of Canadian Municipalities Green Municipal Funds Program for Funding Assistance

In the spring of 2004, the City initiated discussions with the Federation of Canadian Municipalities for funding assistance under the FCM's Green Municipal Funds program for the acquisition of 20 articulated diesel-electric buses. These high-capacity, alternative fuel vehicles would provide the following advantages:

- With growing enrolment at both the University of Manitoba and the University of Winnipeg, and with increasing development in the southwest area of the City, ridership is expected to continue to increase in the Pembina Highway corridor, resulting in a requirement for increased transit capacity. Other than significant improvements in operating speed, the use of higher-capacity articulated vehicles is the next most cost-effective means to increase transit service capacity. In particular, the articulated buses would permit more effective servicing of large passenger volumes associated with travel to/from the University of Manitoba.

- The acquisition of buses powered by alternative fuel technology is consistent with the City's environmental strategy.

- Over the next decade, diesel-electric hybrid propulsion systems are expected to be the most significant technology development to reduce bus emissions. It is important that the department's fleet maintenance staff develop expertise in this new technology. As one of the largest fleet operators in Manitoba, the Transit Department has close ties with provincial technical colleges through participation in apprenticeship training programs and by hosting Heavy Duty Equipment Certificate practicum candidates. The new technology buses would provide an excellent training opportunity for existing staff as well as for prospective future employees.

An "Intent to Apply" was subsequently submitted and on June 17th, 2004, the FCM requested the City to submit a detailed application.

After receiving direction in late July 2004, the Transit Department submitted a detailed application to the FCM on August 31st, 2004.

In a letter dated December 14th, 2004, the City received notification that the FCM's National Board of Directors had approved the application for a grant amount of up to $3 million, a savings-based loan in the amount of up to $2 million (in which principal and interest charges would be paid from fuel cost savings), and a low-interest loan in the amount of up to $10 million to acquire 20 articulated diesel-electric buses. The interest rate on these loans would be based on the Government of Canada bond rate, which is lower than the rate at which the City can otherwise borrow. This combination of grant and loans can be used to fund 50% of project costs.

In April 2005, FCM staff advised the City that, prior to contract documents being prepared, the City is required to provide confirmation that the City has committed funding to the City's share of the project.

RECOMMENDED COURSE OF ACTION:

Project to Implement

It is recommended that the City enter into a funding agreement with the FCM to acquire the high-capacity electric hybrid buses. The components of the project would include:

- Acquisition of 20 articulated electric hybrid buses, including vehicle-outfitting costs.
- Modification of the Fort Rouge maintenance facility and the acquisition of maintenance equipment required to service and maintain the articulated electric hybrid buses.

The total project costs are estimated as follows:

Table A1: Estimated Costs for Articulated Electric Hybrid Buses Project

Item	Unit Cost	Quantity	Total
Articulated Electric Hybrid Buses	$1,100,000	20	$22,000,000
Vehicle-Outfitting and Commissioning	$10,000	20	$200,000
Maintenance Facility and Equipment	$4,250,000	1	$4,250,000
Administration and Interim Financing			$488,500
Total Project Costs			**$26,938,500**

Proposed Timing of Project

The project would have the following major milestones:

Completion of FCM agreement	Spring 2006
Tendering for 20 Articulated Electric Hybrid Buses	Spring 2006
Modification of Fort Rouge Garage, Acquisition of Equipment	2006 – 2007
Delivery of New Vehicles	Fall 2007
Service Entry of New Vehicles	November 2007

Proposed Funding Sources

Of the $26,938,500 in total costs for the project, all costs other than the City's administration and interim financing charges are eligible program costs. Therefore, eligible project costs total $26,450,000 and the combined FCM grant and loans can be applied to 50% of this total.

It is recommended that the following approach be used for this project:

1. That the acquisition of 20 articulated electric hybrid transit buses and required garage improvements and equipment be approved as a new capital project in 2006 entitled "Articulated Electric Hybrid Buses."

2. That the "Articulated Electric Hybrid Buses" project be funded by combining the FCM grant/loans and a *Winsmart* grant with funding transferred from the "Regular Transit Buses" project proposed for 2006 and 2007 in the approved 2006 – 2010 Capital Forecast.

3. That, after transfer of the required 2006 and 2007 funding from the "Regular Transit Buses" project to the new "Articulated Electric Hybrid Buses" project, remaining 2006 and 2007 funding for "Regular Transit Buses" be used to purchase 24 standard 12-metre buses.

The 2006 – 2010 Capital Forecast, as approved by Council, included the following amounts for the "Regular Transit Buses" in 2006 and 2007:

Table A2: Planned Funding for Regular Transit Buses 2006 – 2010 Capital Forecast

Source	2006	2007
Equity in Capital Assets	$3,817,000	$3,417,000
Bus Replacement Reserve	$8,000,000	$8,400,000
Provincial Grant	$3,000,000	$3,000,000
Total	$14,817,000	$14,817,000

Since then, the plan is expected to be updated to reflect the Province's 2005 capital contribution of $3.84 million as ongoing in future years.

It is recommended that the "Articulated Electric Hybrid Buses" project be funded as follows:

Table A3: Recommended Funding for the Articulated Electric Hybrid Buses Project

Source	Amount	Comments
Grants: FCM GMF and *Winsmart*	$3,833,000	New funding to the City
2006 Bus Replacement Reserve	$6,409,500	To be reallocated from Regular Transit Buses project contained in 2006-2011 capital program
2007 Bus Replacement Reserve	$6,471,000	To be reallocated from Regular Transit Buses project contained in 2006-2011 capital program
Savings Based Loan: FCM GMF	$1,704,200	New external borrowing authority required
Low-Interest Loan: FCM GMF	$8,520,800	New external borrowing authority required
Total	**$26,938,500**	

This approach would result in the elimination of the amounts planned for "Equity in Capital Assets" for the "Regular Transit Buses" project in 2006 and 2007 and the addition of external borrowing authority to cover the savings-based and low-interest loans offered by the FCM for the "Articulated Electric Hybrid Buses" project.

After reallocation of Bus Replacement Reserve funding from the "Regular Transit Buses" project to the "Articulated Electric Hybrid Buses" project, funding would be available for the purchase of approximately 24 standard 12-metre buses in 2006 and 2007:

Table A4: Revised Funding for Regular Transit Buses

Source	2006	2007	Total
Equity in Capital Assets	$0	$0	$0
Bus Replacement Reserve	$750,000	$1,089,000	$1,839,000
Provincial Grant	$3,840,000	$3,840,000	$7,680,000
Total	$4,590,000	$4,929,000	$9,519,000

Instead of acquiring 60 standard diesel buses in 2006 and 2007 (30 buses per year), therefore, the implementation of the FCM agreement would result in 20 articulated electric hybrid buses and 24 standard diesel buses being acquired in those years.

Note that, should the *Winsmart* agreement not be successfully concluded with the Federal Government, the *Winsmart* grant of $833,000 would not be received by the City for the Articulated Electric Hybrid Buses project. In such a circumstance, an amount equal to the grant would be transferred from the Regular Transit Buses project to the Articulated Electric Hybrid Buses project. This would result in 22, rather than 24, standard diesel buses being acquired in 2006-07.

Impact of Proposed Funding Arrangement on the City's External Debt

The proposed agreement with the FCM includes a combination of a grant, a savings-based loan, and a low-interest loan. The savings-based and low-interest loans would take the form of 10-year external debt.

Since 1999, Council has approved capital budgets without the need for external tax-supported debt. The proposed FCM agreement would be a departure from this practice. The Net Present Value analysis for the project is positive. Consequently, it is in the City's interest to take advantage of the grant of $3 million and the attractive features of the loans offered by the FCM's Green Municipal Funds program.

The FCM agreements do include a provision to prepay the savings-based and low-interest loans prior to maturity. The penalty to exercise this option is calculated at 2% of the amount that is prepaid.

To eliminate the external debt and associated interest charges, therefore, it is recommended that the FCM loans be completely prepaid at the earliest opportunity after the FCM agreement is finalized and the loans are issued.

It is further recommended that $10,225,000 of the $28,720,000 in Federal Gasoline Tax (based on Bill C-66's $0.01/litre dedicated for transit) to be received by the City in 2006 and 2007 be used to prepay the FCM loans.

A Net Present Value analysis has been conducted for this project. The results of the NPV analysis show that, even under conservative assumptions, the net present value of the proposal over the expected life of the buses is positive.

RTTF Recommendation: Upgrade of Stops and Stations

COMMENTARY:

Bus stops and stations are the "store fronts" of transit systems. They must provide safe, accessible, and comfortable locations for passengers to board and alight buses.

Since the mid-1980's, the Transit Department has upgraded many major stops and stations throughout the city. These upgrades typically include such features as shelters (heated ones at busy stops), benches, landscaping, prominent signage, posted route and schedule information, waste receptacles, public telephones, and renewed sidewalk platforms.

These improvements have been very popular with transit users (due to improved waiting conditions at the stops) and with adjacent property owners (due to improved streetscapes).

The projects have typically been funded through the Innovative Transit Program or as part of other capital projects (eg. Graham Transit Mall, PortageScape) at the rate of 3 to 5 stops per year. They have been implemented at major downtown stops, in transit centres at the regional shopping centres, at major transfer locations (such as Osborne Exchange) and at post-secondary institutions, hospitals, activity centres, and park and ride sites.

As many of the upgraded stops have been in place for 10 to 20 years, several components (especially shelters and benches) are in need of refurbishment or replacement. In addition, there is a large backlog of stops in need of upgrading.

The Task Force recommended that major stops be upgraded in each of the following Quality Corridors in conjunction with other transit improvements in those corridors in two phases over a 12 year time period:

RTTF's Phase 1	RTTF's Phase 2
Donald/Osborne/Pembina	Downtown
Nairn/Regent	St. Anne's Road
St. Mary's Road	McPhillips Street
Portage Avenue	Notre Dame/Cumberland
Henderson Highway	Marion/Goulet
Main Street	Kenaston Boulevard

Given the benefits to passengers that the bus stop upgrades provide, it is recommended that **an accelerated program of bus stop improvements be undertaken in ALL of the Quality Corridors over 2006, 2007, 2008, and 2009**. In this way, the benefits of the bus stop upgrades can be extended throughout the city to as many passengers as possible in a timely manner.

It is recommended that a consistent design be used for all bus stop upgrades to foster a trademark image for transit in the Quality Corridors. As a general guideline, stops with at least 100 weekday boardings would be upgraded. Site conditions permitting, larger heated

shelters would be included in the upgrades to those stops that have at least 200 weekday boardings.

RECOMMENDED COURSE OF ACTION:

Projects to Implement

The recommended upgrading of stops and stations falls into two project categories: refurbishment of existing facilities and new upgrades.

Refurbishment Projects

For many prominent stops, upgradings have been in place for a lengthy period and, due to general wear, various components (especially shelters and benches) are in need of refurbishment or replacement. It is recommended that the refurbishment projects outlined in Table B1 be undertaken. Note that, where possible, salvageable shelters at these stops would be refurbished and placed at other stops in the city.

Table B1: Recommended Bus Stop/Station Refurbishment Projects

Project	Estimated Cost	Funding Source	Implementation
Portage Avenue - Downtown New heated shelters have already been approved under the 2005 Innovative Transit Program and will be installed at Portage bus stops between Spence Street and Main Street in Spring 2006. In conjunction with this initiative, additional funding would be used to install new signage, new route and schedule information displays, and new street furniture.	$180,000	2006 Innovative Transit Program	2006
Graham Transit Mall The Transit Mall is a major hub for transit service and is an integral part of the Quality Corridor network recommended by the Task Force. It was designed and constructed in the early 1990's prior to the introduction of the low-floor buses and universal design guidelines for accessibility. It is important that the bus stops and streetscape of the Graham Mall be retrofitted to incorporate the principles of universal design. Major new developments on the property adjacent to the Graham Mall (MTS Centre, Power House re-development, Manitoba Hydro head office) require that the Graham streetscape be updated to complement and support the private developments while preserving the transit identity of the mall. A refurbishment study was completed in Fall 2005 to identify existing accessibility, streetscape, and landscaping deficiencies. This project would remedy those issues and replace existing shelters, signage, and street furniture and improve the display of route and schedule information.	$1,225,000	2006 Federal Gas Tax Funds ($0.01/litre portion)	2006

Project	Estimated Cost	Funding Source	Implementation
Osborne Exchange New heated shelters have already been approved under the 2005 Innovative Transit Program and will be installed at the three bus stops located at the Osborne Exchange intersection in Spring 2006. In conjunction with this initiative, additional funding would be used to install new signage, new route and schedule information displays, new street furniture, and new plant material.	$55,000	2006 Innovative Transit Program	2006
University of Manitoba Transit Centre Built in 1994, the transit terminal area on the Fort Garry campus is in need of upgrading. The passenger facilities (shelters, benches, signs, and information displays) would be replaced.	$110,000	2006 Innovative Transit Program	2006
Polo Park Transit Centre Built in 1986, the transit centre at Polo Park was the first facility of that type to be built at a regional shopping centre in Winnipeg. The passenger facilities (shelters, benches, signage, and information displays) in the transit centre and at the adjacent stops on Portage Avenue in front of Polo Park would be replaced.	$625,000	2006 and 2007 Federal Gas Tax Funds ($0.01/litre portion)	2006 - 2007
Kildonan Place Transit Centre Built in 1995, the transit centre and the adjacent stop on Regent Avenue are in need of upgrading. The passenger facilities (shelters, benches, signs, and information displays) would be replaced.	$145,000	2007 Innovative Transit Program	2007
St. Vital Centre Transit Centre Built in 1997, the transit centre is in need of upgrading. The passenger facilities (shelters, benches, signs, and information displays) would be replaced.	$100,000	2007 Innovative Transit Program	2007

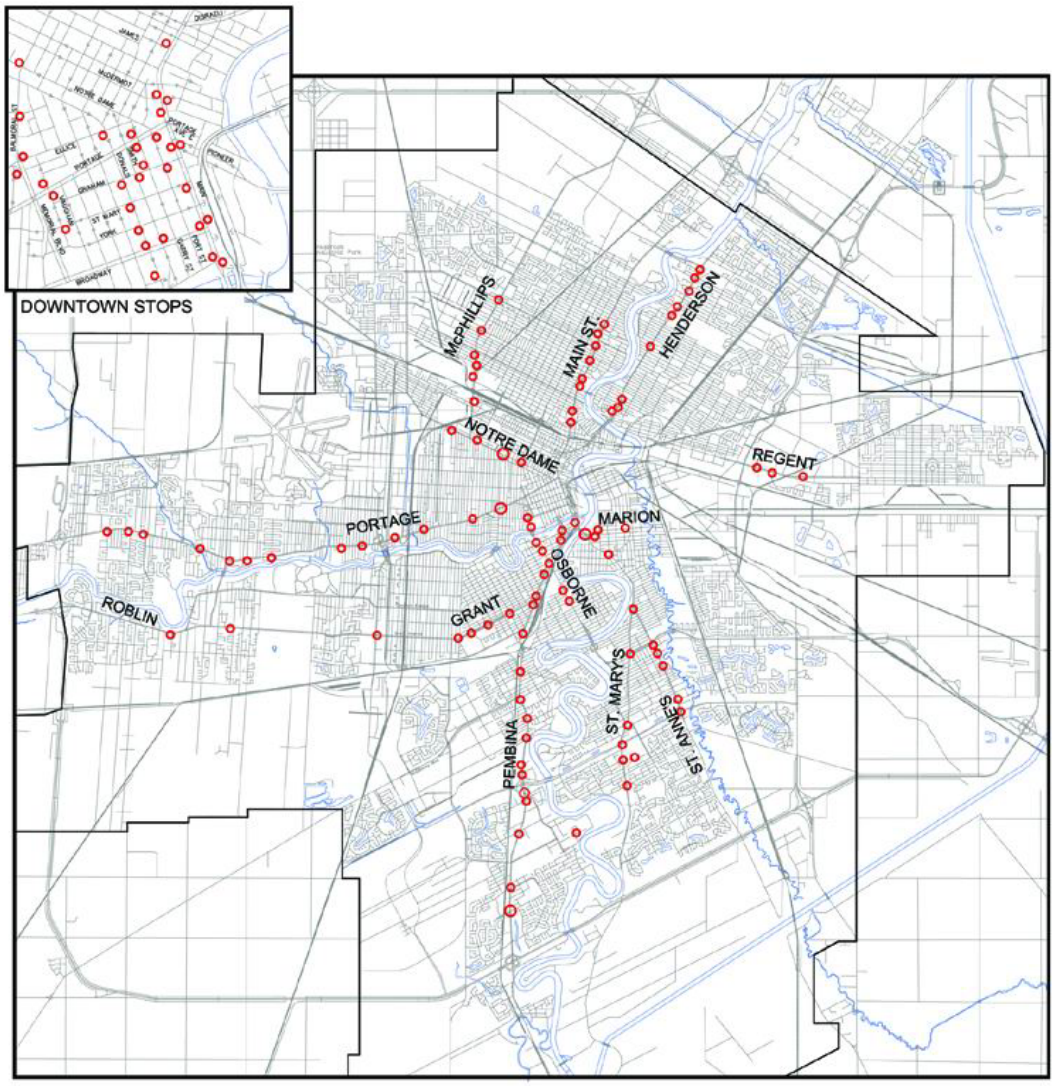
New Bus Stop Upgrade Projects

Approximately 160 transit stops have been identified in the Quality Corridors for upgrading. As shown in the concept drawings below, a consistent design approach would be used for these projects. Each project would include a new modern shelter, benches, landscaping, signage, waste receptacles, and service information. At the busiest stops (those with daily boardings of at least 200 passengers), a larger heated shelter would be installed (provided there is sufficient space to do so).





The following map shows the intersections at which the proposed new bus stop upgrade projects would be undertaken in the Quality Corridors.



NEW BUS STOP UPGRADE PROJECTS

It is recommended that these bus stop upgrade projects be undertaken in four stages during the years 2006, 2007, 2008, and 2009.

Table B2: Recommended New Bus Stop Upgrade Projects

Project	Estimated Cost	Funding Source
Quality Corridor Bus Stop Upgrades		
2006 ~ 30 stops	$1,300,000	2006 Federal Gas Tax Funds ($0.01/litre portion)
2007 ~ 30 stops	1,300,000	2007 Federal Gas Tax Funds ($0.05/litre portion)
2008 ~ 50 stops	2,100,000	2008 Federal Gas Tax Funds ($0.05/litre portion)
2009 ~ 50 stops	2,100,000	2009 Federal Gas Tax Funds ($0.05/litre portion)
	$6,800,000	

RTTF Recommendation: Intelligent Transportation Systems Technology

COMMENTARY:

Overview

Improvements in communications, sensing, and network technology during the past few years have made possible the development of new applications to improve the management of daily transit operations, to provide real-time service information to passengers before and during travel, to improve passenger security, and to modernize fare collection systems. These applications are called Intelligent Transportation Systems (ITS) and provide system-wide benefits to all passengers.

The Task Force recommended that the following ITS systems be implemented:

- Bus Radio/Automated Vehicle Location system for complete fleet
- Real-Time Schedule Information (via Telebus, transit website, wireless devices, at stops/stations)
- On-board "Next Stop" Displays/Enunciators for complete fleet
- Automated Fare Collection System (automatic transfer dispensers, smart cards, off-board fare dispensers)

While not specifically discussed in the Rapid Transit Task Force report, the Transit Department recommends that an on-board security camera system for the complete fleet be included in the ITS group of improvements to improve passenger safety and security.

Bus Radio/Automated Vehicle Location System

The existing bus radio communication system was implemented in 1982. The software component of the original radio communication system (CARC) was replaced by an internally developed system, CONTACT, between 1994 and 1999. This system manages all radio communication and incident management functions and interfaces with a variety of other operating systems to access or share information with respect to schedules, bus assignments, bus operator work assignments, and service delays/cancellations.

The existing system no longer meets current transit operating needs. The age, condition, and maintenance needs of the equipment (replacement parts are no longer available for many components) require that it be replaced. New technologies in radio communications, data management, and automatic vehicle location offer opportunities to improve the quality of on-street transit operations and to enhance customer service.

In particular, the addition of a real-time automatic vehicle location (AVL) capability to the fleet is critical. Not only does such a capability improve transit operations (improved monitoring and incident response, better service reliability, improved schedule adherence), but it permits the supply of real-time route and schedule information to passengers in a variety of environments (via the internet in homes, offices and schools; interactive voice

response systems via land line or cellular telephones; wireless information via Personal Digital Assistants (PDA's) and cellular telephones; platform displays at major bus stops; and next stop displays and enunciation on board buses).

In short, a new bus radio/AVL system is a key building block system that enables other ITS applications to improve customer service.

During 2004 and 2005, the Transit Department has been working with a supplier to develop a prototype system that, once tested and completed, can be deployed on the complete transit fleet at reasonable cost. When complete, the system will permit each bus to communicate with the Global Positioning Satellite (GPS) system, to automatically determine its adherence to schedule, and to transmit data automatically to the control centre when actual service deviates from planned service.

This project has been approved by Council and is funded through the capital program. A total of $5.960 million has been budgeted for the project with authorizations of $2.301 million in 2003, $2.000 million in 2005, and $1.659 million in 2006. Following completion of the prototype, the system is expected to be installed on the complete fleet of 535 buses during 2006 and 2007.

Real-Time Schedule Information

During the past few years, a comprehensive range of **scheduled** service information has been made available to passengers to plan their transit travel **before** a trip is taken. These include traditional paper based timetables and maps, route and schedule posters at major stops, an automated interactive telephone service (Telebus), internet-based route and schedule information, and an internet-based trip planner (*Navigo*).

As long as transit service operates according to the planned schedule, these types of information meet the needs of most passengers. However, transit service in Winnipeg operates in mixed traffic and, as a result, the operation of the service is subject to delays caused by traffic congestion, construction, parade detours, vehicular accidents, emergency response, weather events, and many other factors.

Customer service can be enhanced if **real-time** information (that communicates the actual time, rather than the scheduled time, that a bus will arrive at a stop) can be provided to passengers **before** and **during** travel on the transit system. The successful implementation of the new bus radio/AVL system will make it possible to provide real-time information to transit users.

To exploit the capabilities of the new bus radio/AVL system, the following investments in information technology are required to enable real-time transit information to be provided to passengers through commonly-accessed communications channels:

1. **Transit Control Centre/Transit Website** – To incorporate a capability to disseminate real-time transit information to passengers via the transit website (including *Navigo*), upgrades to the database management system, data communication protocols, and server/network architecture of the Control Centre's information systems is required. The estimated cost to implement these improvements is $200,000.

2. **Telebus** – To enable this system to provide real-time schedule information to passengers in a timely manner, the protocols and communications equipment used to exchange data between the Control Centre information systems and Telebus need to be upgraded. The estimated cost to implement these improvements is $350,000.

3. **Wireless Devices** – Wireless communication tools are pervasive and permit transit information to be transmitted anywhere at any time. A Wireless Application Protocol (WAP) capability (a secure specification that allows users to access information instantly via handheld wireless devices) is required to be added to the Transit Department's information systems. The estimated costs to implement the necessary protocols are $150,000.

4. **Electronic Bus Departure Displays** – Similar to flight information displays at airports, these signs can be installed at major stops or within major activity centres to provide passengers with real-time information on bus departures. It is recommended that a prototype project be developed at major locations in the Pembina Highway Quality Corridor. Upon successful development of the prototype, the initiative would then be expanded to other Quality Corridors in the transit system. The estimated cost of the prototype system is $300,000. The estimated cost to expand to other major stops in the Quality Corridors, including major transit terminals, is $1,700,000.



On Board "Next Stop" Enunciators/Displays

An impediment to transit use is the uncertainty many people have about where and when to alight from a bus. For new users, unfamiliarity with the transit network makes it difficult to know precisely when the bus arrives at the destination bus stop. On buses with standing passenger loads or during inclement weather when the bus windows are fogged, all passengers experience this uncertainty. The successful implementation of bus radio/AVL system (see above) permits the name of the next stop to be automatically announced and displayed to passengers on an on-board electronic display as a bus progresses along its route. This technology, common in European transit systems, reduces uncertainty for users and permits occasional and regular passengers alike to use transit with confidence.

In conjunction with the installation of the new bus radio/AVL system in 2006-2007, it is recommended that "next stop" enunciators/displays be installed on the complete transit fleet. The estimated cost of this project is $3,000,000.

On-Board Security Camera System

While not specifically recommended by the Rapid Transit Task Force, the Transit Department does recommend that, in conjunction with the other ITS systems proposed for installation on the buses (Bus Radio/AVL, "Next Stop" Enunciators/Displays), an on-board security camera system be installed to improve passenger safety and security.

The estimated cost of this project is $1,100,000. It is recommended that the system be installed in 2006-07 and coordinated with the implementation of the other on-board ITS systems.

Automated Fare Collection System

The existing fare collection system is over 60 years old. While the equipment is quite reliable, it is difficult to acquire replacement parts. The nature of the existing system limits the types of fares that can be offered and requires reliance on paper tickets, passes, and transfers for prepaid fares.

The Task Force recommended that, to speed passenger boarding, an off-board fare collection system be implemented at stations when the busways are built. It is important, though, that such an initiative be undertaken as a component of the overall replacement of the existing fare collection system.

The replacement of the fare collection system is included in the City's Capital Program. It would be undertaken in two stages:

1. The replacement of mechanical fareboxes with new ones and the replacement of manual transfer cutters with automatic transfer dispensers. These upgrades would permit more secure handling of cash fares and would provide for more consistent application of the Power Hour Transfer. The estimated cost for this stage is $6.0 million.

2. The replacement of the existing system of paper tickets and passes with a "smart card" system and a network of fare vending machines at major stops and stations. Such a system would permit more extensive use of prepaid fares, accommodate more complex fare systems, provide more efficient processing and reporting of fares, be more resistant to counterfeiting than existing paper fare media, and permit off-board fare collection at major stops and stations. The use of smart card technology for transit is developing in Canada with major initiatives for bus applications underway in Vancouver, Montreal, and Quebec City. The estimated cost to implement a smart card system in Winnipeg is $7.5 million. It is recommended that this initiative commence after new mechanical fareboxes and transfer issuing

machines are installed and after more experience with smart card systems has been gained by other Canadian transit systems.

RECOMMENDED COURSE OF ACTION:

It is recommended that the ITS projects listed in Table C1 be implemented.

Table C1: Recommended ITS Projects

ITS Project	Estimated Cost	Funding Source	Implementation
Bus Radio/AVL System	$5,960,000	Capital Budget: 2003, 2005, 2006	2006 – 2007
Real-Time Schedule Information: Control Centre/Website Upgrade Telebus Upgrade Wireless (WAP) Protocol Bus Departure Displays: Prototype Bus Departure Displays: Expansion Total	 $200,000 $350,000 $150,000 $300,000 $1,700,000 $2,700,000	2006 and 2007 Federal Gas Tax Funds ($0.01/litre portion)	2006 – 2008
On Board "Next Stop" Enunciators/Displays	$3,000,000	2006 Federal Gas Tax Funds ($0.01/litre portion)	2006 – 2007
On-Board Security Camera System	$1,100,000	2006 Federal Gas Tax Funds ($0.01/litre portion)	2006 – 2007
Fare Collection System: Fareboxes, Transfer Dispensers Transit Smart Card System Total	 $6,000,000 $7,500,000 $13,500,000	 Capital Budget: 2008, 2009 Capital Budget: 2010, 2011	 2008 – 2009 2010 – 2011

RTTF Recommendation: Traffic Priority for Transit

COMMENTARY:

Overview

Traffic priority for transit is one of the few strategies that can be used to attract passengers **and** control costs concurrently. The implementation of transit priority measures has two major impacts:

- Bus running times are reduced; this improves the speed of transit service.
- On-time performance of buses is improved; this improves the reliability of transit service.

Improvements in speed and reliability make transit travel more competitive with automobile travel and attract ridership. If bus running times can be decreased by using transit priority measures to attain higher operating speeds, then fewer buses are required to provide the same service frequency on the route. In other words, the same service level can be

provided at a lower cost. Alternatively, the same number of buses can be used to provide more frequent service in travel corridors with increasing ridership demand.

In most instances, isolated priority measures have only a limited impact on transit performance. If several transit priority initiatives can be arranged such that buses operating on a common routing can take advantage of the combined measures, then the potential impact on speed and reliability is much greater. For a particular routing pattern, therefore, it is important that buses have access to a series of transit priority measures. The Task Force's recommendation to establish Quality Corridors, therefore, is very consistent with this principle.

Transit priority measures have the greatest impact on those streets on which a large number of buses operate. Because transit vehicles carry a very large proportion of the person-movements on such streets, and because buses carry more people than other vehicles in relation to their use of road space, the efficiency of the overall transportation system is improved by providing traffic priority to transit.

There are different types of priority measures and several have been implemented in Winnipeg during the past decade. The different types include turn prohibition exemptions for buses, pulling away priority (where general traffic must yield to buses merging left or pulling out of a bus bay), transit-only signals (Kildonan Place, St. Vital Centre), transit-actuated signals (Osborne & River, Portage & Vaughan, Main & Logan, St. Mary's & Enfield), queue jumpers (Pembina & University Crescent), diamond lanes (St. Mary's Road, Main-Norwood Bridges, Main Street, Vaughan Street, Osborne Street), transit only streets (Graham Transit Mall), transit centres (such as those at the regional shopping centres), and reserved right-of-ways (busways, for example).

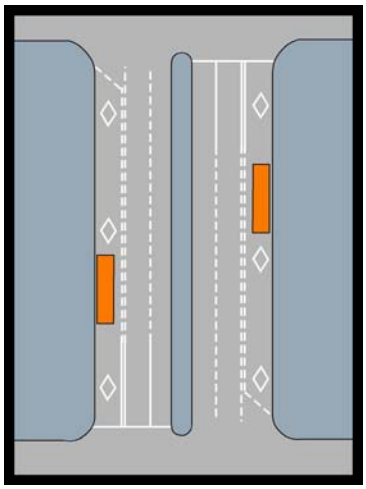
The Task Force recommended that new transit priority measures be combined with ones already in place to create a network of "Quality Corridors" throughout the city. While the specific measures to implement depend on the needs and characteristics of each Quality Corridor, the Task Force recommended that the following techniques be used:

- Diamond lanes and Queue jump lanes (on-street)
- Transit signal priority (on-street)
- Busways (separate road right-of-way for transit and emergency vehicles with integrated active transportation paths)

Diamond Lanes and Queue Jump Lanes

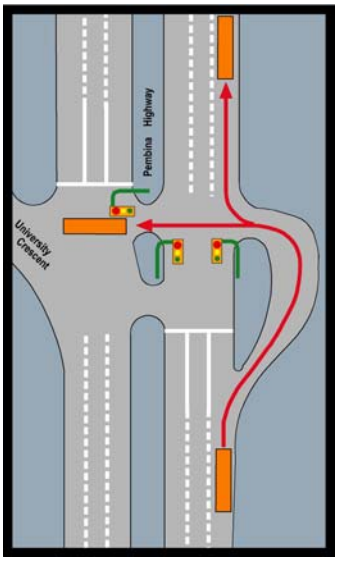
Definitions

Diamond lanes and queue jump lanes are members of the same family of transit priority measures. They can be used in combination or separately in the Quality Corridors to improve the speed and reliability of transit service.



Diamond lanes are traffic lanes designated for exclusive use by transit vehicles, cyclists, emergency vehicles, and right-turning vehicles. Depending on the needs of the application, a diamond lane can be in effect at all times or only during certain time periods (weekday peak periods, for example). Special signage, pavement markings, and/or coloured pavement are used to delineate diamond lanes. In certain instances, an existing traffic lane can be converted to a diamond lane. In other cases, a diamond lane can only be provided by building an additional lane. Periodic public education campaigns, police enforcement, and photo radar enforcement methods are used to keep the lanes clear for their intended use.





Queue jump lanes are short sections of roadway that are reserved for buses to provide direct access to or through an intersection. As the name implies, queue jump lanes allow buses to by-pass queues of traffic at congestion points on the road system.

The example at the left shows an existing queue jump at southbound Pembina Highway & University Crescent.

Factors to Consider for Diamond Lane Applications

The objectives of diamond lane and queue jump applications are:

1. To make the speed of transit service more competitive with the speed of automobile traffic in the same travel corridor. Where the average speed of transit is significantly lower than that of adjacent automobile traffic, diamond lanes and queue jumps can make transit service more attractive.

2. To reduce variability in bus running times. An indicator of service reliability, running time variability is measured by the standard deviation of transit operating speed across all transit trips operating along a street segment. A high standard deviation means that transit service along a street segment is highly susceptible to delays resulting from traffic congestion and other causes. High variations in trip running times result in unpredictable waiting times for passengers waiting at downstream stops and longer travel times and missed transfer connections for passengers already on board.

Because it is not possible to grade-separate them from the rest of the street, diamond lanes and queue jumps provide only limited speed advantages over operation of transit service in mixed traffic. Transit operating speeds in diamond lanes are limited by:

- The delay caused by signals at intersections
- The street's speed limit
- "Snow creep" during the winter (when snow banks creep into the roadway)
- Curb lane conditions (conditions that limit operating speeds, such as catch basins, utility cuts, and potholes, are concentrated in curb lanes)
- Illegal use of diamond lanes by other motorists (regular enforcement of diamond lane regulations is difficult)

Diamond lanes and queue jumps are quite effective, however, in reducing the variability of bus running times. Such improvements in service reliability are important to reduce waiting times, shorten travel times, and improve transfer connections for passengers.

It is difficult to implement diamond lanes on streets where there are no more than two traffic lanes in each direction. If one of two existing lanes is designated as a diamond lane, there is rarely sufficient capacity in the remaining lane to accommodate the non-transit traffic. In such instances, an additional lane is usually required to be built to accommodate a diamond lane. If there is insufficient space available, it is not possible to build such an extra lane.

Where a street has more than two lanes in each direction, it is often possible to convert the curb lane to a diamond lane or a queue jump. However, the impacts on traffic operations need to be carefully analyzed to ensure that a reorganization of the street space provides sufficient person-movement capacity.

In some instances, the conversion of a curb lane to a diamond lane will displace on-street parking spaces. Depending on the nature of the adjacent land use, diamond lane initiatives can be met with significant local opposition.

Next Steps: Diamond Lane Feasibility Studies

The Task Force recommended that diamond lanes and/or queue jumps be implemented on certain segments of the following Quality Corridors:

RTTF's Phase 1	RTTF's Phase 2
Donald/Osborne/Pembina	St. Anne's Road
Nairn/Regent	McPhillips Street
St. Mary's Road	Notre Dame/Cumberland
Portage Avenue	Marion/Goulet/Archibald
Henderson Highway	Kenaston Boulevard
Main Street	

It is necessary that detailed studies of the Task Force's recommendations on diamond lanes and queue jumps be undertaken and recommendations for implementation be prepared. A study team, composed of staff from the Transit and Public Works departments and consultant resources as required, would carry out this work.

For each Quality Corridor, a feasibility study would undertake the following:

- Analysis of current transit operations (service levels, average speeds, variability of bus running times, delays)
- Analysis of current traffic operations (traffic volumes, intersection capacity, traffic signal operations, turning movements, parking/stopping regulations)
- Generation of diamond lane/queue jump alternatives to improve transit speeds and reliability (including conversion of existing lanes or construction of new lanes)
- Analysis of alternatives (including improvements to transit operations, impact on other traffic, costs, ease of enforcement, impact on adjacent properties)
- Public consultation
- Preparation of functional design, property requirements, capital cost estimate, and implementation plan
- Preparation of a final report with recommendations

It is recommended that, at a total estimated cost of $600,000, studies for each of the following Quality Corridors be undertaken during 2006, 2007, and 2008:

Pembina Highway
St. Mary's Road/St. Anne's Road
Henderson Highway
McPhillips/Notre Dame/Cumberland
Portage Avenue
Main Street
Marion/Goulet/Archibald
Nairn/Regent

Upon completion, each study would be presented to the Standing Policy Committee on Infrastructure Renewal and Public Works for approval. Recommended projects would then proceed to detailed design and implementation and funded from a pool of $9.45 million reserved from the transit portion of Federal Gas Tax funds.

Transit Signal Priority

Definitions

Transit Signal Priority (TSP) provides buses with a short transit-only phase, a **few seconds** extra green time, or a **few seconds** less red time at traffic signals to reduce the time they are slowed down by traffic signals. The objectives of TSP include improved schedule adherence and faster transit travel time efficiency while minimizing impacts to normal traffic operations.



Several examples of **Actuated TSP** have been implemented in Winnipeg. When a bus leaves a near-side bus stop, for example, a bus can be provided with a special signal phase to permit it to merge left ahead of other traffic when the roadway narrows by a lane on the far-side of the intersection. At the transit centres at Kildonan Place and at St. Vital Centre, this technique is also used to allow buses to enter and exit the transit centre.

This type of TSP uses loop detectors imbedded in the roadway and connected to the traffic signal controller to detect the presence of a bus. If a bus is detected, then the software in the traffic signal controller introduces a special transit phase for 4 to 8 seconds (usually a white bar on a black background) to provide priority for the bus. During the priority phase, red signals are provided to all other traffic. If no bus is detected, then the traffic signals at the intersection operate in the usual green-amber-red sequence.

With the development of automated vehicle location (AVL) systems for transit, a new technology, **Active TSP**, has become available. While Actuated TSP can be used only when a bus is already stopped at a red signal, Active TSP **anticipates** the arrival of a bus at an intersection. By so doing, the system can lengthen the green phase or shorten the red phase by a **few seconds** prior to the bus's arrival to ensure that the bus travels through the intersection with minimal delay. In general, these systems work as follows:

- The on-board AVL system is used to determine when a bus passes a designated point upstream of the intersection.

- When the bus passes the designated upstream location, the AVL system on the bus sends a message to the traffic signal controller that the bus is approaching the intersection.

- Based on defined parameters, the software in the traffic signal controller determines whether priority is to be provided to the oncoming bus.

- If warranted, a **few seconds** of priority are provided (either a lengthening of an already-green phase, or a shortening of an already-red phase).

- When the bus clears the intersection, the AVL system sends a message to the traffic signal controller, and the controller **restores the normal signal timing** at the intersection.

Factors to Consider for Transit Signal Priority

During the past decade, the City has implemented Actuated TSP in several locations. The technology is proven, reliable, and, in combination with other transit priority measures, has improved transit operations. The costs to equip an intersection with Actuated TSP (electronic traffic signal controller, loop detectors, transit priority signal light, wiring, and software) are approximately $30,000.

Actuated TSP is typically applied at intersections where the roadway narrows by a lane on the far side of the intersection or at the downstream end of a queue jump lane where a bus must re-enter the traffic stream. A number of existing locations have been identified in the Quality Corridors for application of Actuated TSP. Depending on the results of the feasibility studies for diamond lanes/queue jumps, there may be opportunities for additional Actuated TSP as part of queue jump treatments recommended by those studies.

The implementation of Active TSP is dependent on successful completion of the bus radio/AVL system. With an AVL capability installed on the transit fleet, Active TSP can be employed at a series of successive intersections in a Quality Corridor to provide faster, more reliable transit travel throughout the length of the corridor.

As Active TSP is relatively new, it is recommended that a pilot project be implemented in one of the Quality Corridors to gain experience, to test the technology, and to refine the traffic signal control strategies to be used with it. Because it has a very high volume of transit service and a number of well-spaced signalized intersections, it is recommended that the pilot project be undertaken in the Pembina Highway corridor.

Next Steps: Expansion of Actuated TSP and Pilot Project for Active TSP

The Task Force recommended that transit signal priority be installed at signalized intersections in each of the Quality Corridors.

To achieve this objective, it is recommended that the Transit and Public Works departments undertake the following:

1. That, where warranted, Actuated TSP be implemented at specific intersections in the Quality Corridors at an estimated total cost of $600,000.

2. That additional installations of Actuated TSP be installed for queue jump applications recommended by the feasibility studies for diamond lanes/queue jumps described above.

3. That an Active TSP pilot project be implemented in the Pembina Highway corridor after the bus radio/AVL project has been successfully completed. The estimated cost of the pilot project is $500,000.

4. That, after successful completion of the pilot project, Active TSP be expanded to other Quality Corridors.

Busways

Overview

In the proposed Quality Corridors of Donald-Osborne-Pembina and Nairn-Regent, the Task Force recommended that Bus Rapid Transit (BRT) be implemented.

Bus Rapid Transit (BRT) integrates special infrastructure (grade-separated busways with stations, transit malls, on-street diamond lanes, and transit signal priority systems), advanced passenger information systems, rubber-tired vehicles, and flexible routings to provide high quality transit service that is rapid, reliable, frequent, comfortable, and minimizes the need to transfer.



The special infrastructure lets BRT vehicles bypass areas of high traffic congestion to increase speed and reliability. Since BRT vehicles are rubber-tired, they can operate both on and off the special infrastructure to provide very flexible routes that minimize door-to-door travel time. For example, a BRT route can operate on streets in a

neighbourhood to pick up passengers near their residences and then get on the busway to travel at high speed to downtown. Once downtown, BRT vehicles can then use existing transit priority measures, such as diamond lanes and the Graham Transit Mall.

In many highly congested areas, it is not possible to provide dedicated space for on-street diamond lanes. In these locations, the roadway is not wide enough and the adjacent land use precludes any street widening to accommodate a diamond lane. In such circumstances, busways are a cost-effective approach to bypass traffic congestion to improve transit performance. Average operating speeds on busways are typically 50% higher than what can be achieved by operation in on-street diamond lanes. These higher speeds have two major benefits. The faster service attracts ridership. Furthermore, the increased speeds permit each bus to operate more trips than it would in on-street operation. This combination of effects significantly improves transit service productivity.

Southwestern Transit Corridor

Background

The Task Force recommended that the Southwestern Transit Corridor be constructed between downtown and the southwest part of the city.

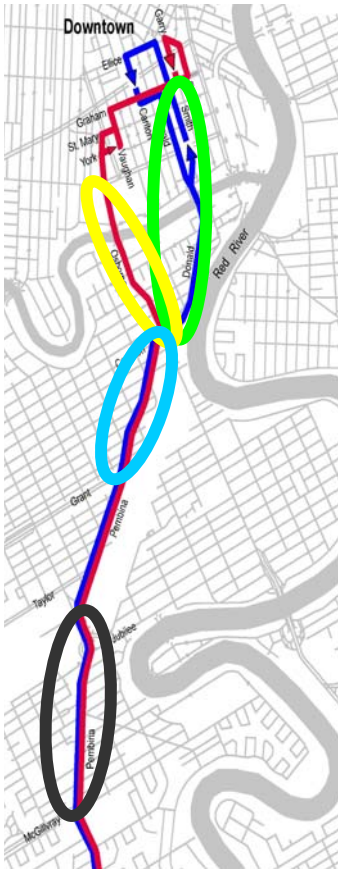
The Southwestern Transit Corridor has a lengthy history. The reasons identified by the initial planning and design study in the 1970's for the Southwestern Transit Corridor as the first priority for rapid transit are still valid today:

- It is one of the most intensely used travel corridors in Winnipeg.
- The major arterial road in the area, Pembina Highway, is very congested.
- It has major traffic generators at each end (downtown in the north; the University of Manitoba, Victoria General Hospital, and several industrial and commercial areas in the south).
- It continues to be a fast-growing area of Winnipeg.
- An existing right-of-way is available for a rapid transit corridor.

Even though expanded and new arterial roadway facilities have been constructed in southwest Winnipeg since the 1970's (Waverley Street, Bishop Grandin Boulevard, Kenaston Boulevard), Pembina Highway has become increasingly congested. Current average weekday daily traffic is about 44,000 vehicles. Approximately 20,000 passengers use the transit routes operating in the Pembina Highway corridor each day. The volume/capacity ratios at most major intersections are very high. Average travel speeds on Pembina have consistently declined over the past two decades. With the increased congestion, bus running times have increased by 25% to 30% for the same trip length.

Ten transit routes operate in the Pembina corridor. Because the service operates in mixed traffic on a very busy roadway, its service quality is very susceptible to traffic congestion.

The map at the right shows the two main route patterns Pembina Highway transit routes employ to travel into the downtown. For the red routing, buses operate via Pembina and then Osborne Street into downtown. For the blue routing, buses operate via Pembina and then Donald Street into the downtown.



The highlighted areas show where major congestion is encountered by the existing transit service:

- Osborne: Downtown to Pembina/Osborne (Yellow)
- Donald: Downtown to Pembina/Osborne (Green)
- Pembina: Between Grant and Osborne (Light Blue)
- Pembina: Between McGillivray and Jubilee (Black)

The affected sections of Osborne and Donald each contain two through lanes in each direction, are highly congested, and operate on bridges over the Assiniboine River. In both cases, there is insufficient space to widen the roadways and bridges or to designate additional diamond lanes for transit.

The two most congested areas of Pembina Highway are the Grant to Osborne section, on which lengthy traffic queues occur on the approach to the complicated Pembina/Osborne/Corydon interchange, and the McGillivray to Jubilee section, on which traffic queues develop on the approach to the narrow Jubilee railway underpass.

These operating conditions in the congested areas make it impossible to provide high speed, reliable service in mixed traffic. Experience in Winnipeg shows that, when trips between origin and destination can be made in 35 minutes or less by transit, the transit mode split is quite high. In the Pembina Highway corridor, however, the existing conditions do not permit transit service to be operated at the speeds necessary to be competitive with automobile travel.

Moreover, the existing conditions create reliability problems. Highly reliable service needs to be both punctual (arrive at bus stops on time) and consistent (minimal variation in bus travel times by time of day and by day of week). Unreliable service creates delays for passengers on board the vehicles and for downstream passengers waiting at bus stops (often exposed to the weather). Unreliable service also puts at risk downstream transfer connections with other routes.

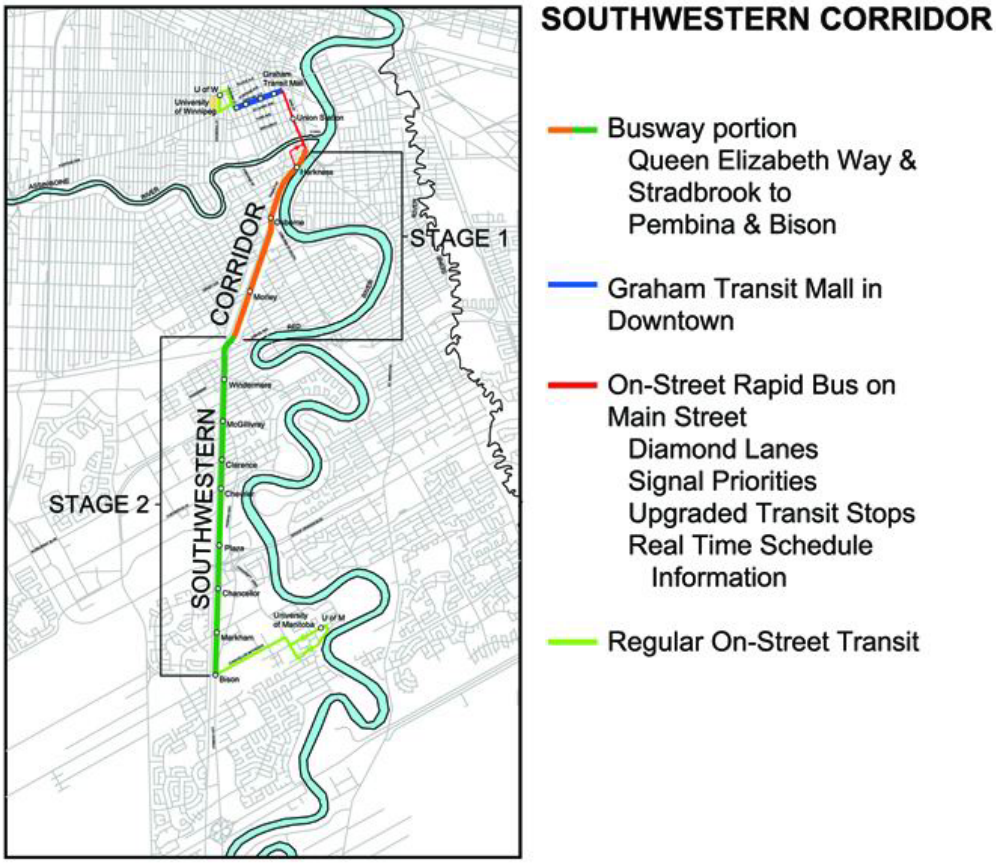
Project Description

As recommended by the Task Force, transit service operating in the Quality Corridor between downtown and southwest Winnipeg would utilize the following facilities:

- Graham Transit Mall
- Main Street Diamond Lanes (between Main & Graham and Queen Elizabeth Way & Stradbrook)
- Southwestern Busway (between Queen Elizabeth Way & Stradbrook and Bison & Pembina)

While the Graham Transit Mall and the Main Street diamond lanes already exist, the Southwestern Busway would be a new facility. Its construction can be staged as follows:

Stage 1 – Queen Elizabeth Way & Stradbrook to Pembina & Jubilee
Stage 2 – Pembina & Jubilee to Pembina & Bison



This project would result in significant improvements in the speed, reliability, ridership, and productivity of transit service. For an existing 40 to 45 minute transit trip between downtown and southwest Winnipeg, for example, the Stage 1 project

would save 10 minutes in travel time and Stage 2 would save a further 9 minutes. The speed advantages would enable a significant ridership increase to be accommodated by the existing number of buses operating in the Pembina Highway corridor.

Current Status of Project Design and Property Acquisition

The design process for major transportation infrastructure projects typically includes three sequential steps:

1. **Functional Design**
   Includes mapping and surveying; evaluation of alignment options; initial design of busway, station locations, structures, park and ride lots, access/egress connections, rail crossings; identification of general drainage, utility, and property requirements; capital cost estimate.

2. **Preliminary Design**
   Includes finalization of property requirements; design of busway, stations, and structures to 70% completion; refinement of capital cost estimate; development of construction staging plan; land drainage design; environmental assessment; public consultation.

3. **Detailed Design**
   Includes design of project to 100% completion; preparation of construction drawings; tender documents; final project budget; preparation of operations plan.

The current status of the **project design** for the Southwestern Transit Corridor is as follows:

Item	Completed?	
	Stage 1	Stage 2
Functional Design	Yes	Yes
Preliminary Design:		
Busway Design	Yes	No
Land Drainage Design	No	No
Environmental Assessment	No	No
Public Consultation	Yes	No
Detailed Design	No	No

The City has acquired the vast majority of the **property requirements** for the Southwestern Transit Corridor. Most of the land required is within the right-or-way of the CN main line and the CN Letellier subdivision. The City has already purchased the required land that is within the CN main line right-of-way and, in 1990, entered into a 99-year lease agreement with CN to use the lands within the CN Letellier subdivision for purposes of the transit corridor.

There are small portions of other properties required for the Southwestern busway:

Stage 1 – Of the 12 properties affected, agreements for 4 of them have been concluded.

Stage 2 – Small portions of non-railway property will be required for stations and park and ride lots. The detailed requirements will be determined when the Preliminary Design is undertaken.

Eastern Transit Corridor

Background

The Task Force recommended that the Eastern Transit Corridor be constructed between downtown and Elmwood/Transcona in two stages:

RTTF's Stage 1: Downtown to Grey Street
RTTF's Stage 2: Grey Street to CN Pine Falls at Plessis Road

After the Southwest Transit Corridor, the Eastern Transit Corridor is the second priority for rapid transit in Winnipeg for the following reasons:

- Ridership levels are high in the corridor.
- The major arterial roads and bridges connecting eastern Winnipeg to downtown (Regent, Nairn, Louise Bridge, Disraeli Bridge, Provencher Bridge) are very congested.
- Transit travel times between Elmwood/Transcona and downtown are lengthy as a result of congestion at the crossings of the Red River.
- It has major traffic generators at each end (downtown in the west; Kildonan Place/Crossroads Station shopping areas, St. Boniface and Transcona industrial and commercial areas, Concordia Hospital in the east).
- Significant residential development is planned in the area north of Kildonan Place and in eastern Transcona.
- Possible rights-of-way are available for a rapid transit corridor.

Eight transit routes operate in the catchment area of the Eastern Corridor. Because the service operates in mixed traffic on busy roadways and congested river crossings, its service quality is very susceptible to traffic congestion and delays.

Project Description

As recommended by the Task Force, transit service operating in the Quality Corridor between downtown and eastern Winnipeg would utilize the following facilities:

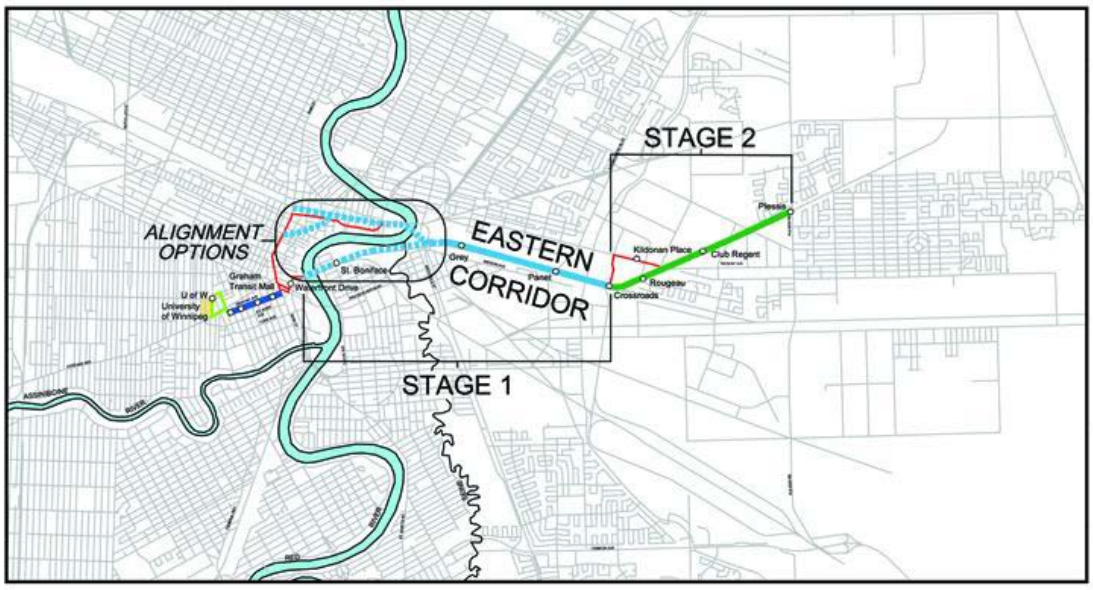
- Graham Transit Mall
- Local downtown streets to access/egress the Eastern Busway
- Eastern Busway (between Downtown and CN Pine Falls & Plessis)

While the Graham Transit Mall and diamond lanes on downtown streets already exist, the Eastern Busway would be a new facility.

The Task Force recommended that the eastern limit of the first stage be established at Grey Street. This staging, however, would result in rapid transit service being routed on-street via Nairn and Regent Avenues east of Grey Street until the second stage is built.

As this staging plan would subject the rapid transit service to significant on-street congestion (through the Regent & Lagimodiere intersection, as an example) until the second stage is built, and as the initial stage of the Eastern Busway could be extended to Crossroads Station/Kildonan Place from Grey Street at reasonable cost (as no additional structures would need to be constructed), it is instead recommended that the project be staged as follows:

Stage 1 – Downtown to Crossroads Station/Kildonan Place
Stage 2 – Crossroads Station/Kildonan Place to CN Pine Falls & Plessis



EASTERN CORRIDOR

- Busway portion
- Graham Transit Mall in Downtown
- On-Street Rapid Bus
  - Diamond Lanes
  - Signal Priorities
  - Upgraded Transit Stops
  - Real Time Schedule Information
- Regular On-Street Transit

Current Status of Project Design and Property Acquisition

A **Functional Design** study is currently underway and is expected to conclude in Spring 2006. During the functional design study, a number of alignment options are being assessed for Stage 1. The major options include:

- Through Whittier Park in north St. Boniface adjacent to the north side of the CN main line. This alignment requires new bridges across the Red River and across the Seine River and Archibald Street.

- Through the Point Douglas area adjacent to Higgins Avenue or the CP main line. This alignment requires a new bridge across the Red River and Archibald Street.

In summary, the current status of the **project design** for the Eastern Corridor is as follows:

Item	Completed?	
	Stage 1	Stage 2
Functional Design	Underway	Underway
Preliminary Design:		
Busway Design	No	No
Land Drainage Design	No	No
Environmental Assessment	No	No
Public Consultation	No	No
Detailed Design	No	No

With respect to **property requirements**, the City currently owns a right-of-way for the Eastern Corridor through north St. Boniface and on the south side of the Crossroads Station shopping complex. In addition, a small portion of a private landholding has been acquired in the vicinity of the Lagimodiere overpass of the CN main line. Until a final alignment has been chosen and the preliminary design has been completed, however, it is not possible to identify other precise property requirements for the project.

Next Steps: Busways

While the Task Force recommended that the complete Southwestern busway be constructed as part of the RTTF's Phase 1 improvements and that the Eastern busway be built over the RTTF's Phases 1 and 2, a funding commitment for either of these major projects has yet to be made.

If, at some future time, a funding commitment is made for busway construction, it is recommended that the implementation be phased in a manner that generates the greatest benefits (in terms of passenger travel time savings and operational efficiency) as the investments are made.

In this respect, it is important to phase the inner stages of the busways first. There are two major reasons for this:

1. Almost all passenger trips on the rapid transit service will travel over the inner portion of the busways while travelling to/from downtown. Only those passengers travelling to/from the outer areas will benefit from the outer stages of the busways. Per kilometre of busway, therefore, the inner stages provide the greatest aggregate savings in passenger travel time.

2. The inner stages of the busways will bypass higher levels of on-street traffic congestion than will the outer ones. Furthermore, the rapid transit route network will result in more routes converging on the inner stages of the busways and, as a consequence, a higher number of buses will operate on the inner stages than on the outer ones. This combination of effects (speed improvements and bus volumes) will result in high aggregate transit operational efficiencies on the inner stages of the busways.

For these reasons, it is recommended that, should they be priorized for implementation at some future time, the busway projects be phased as follows:

Phase	Busway Project
1	Southwestern Busway – Stage 1
2	Eastern Busway – Stage 1
3	Southwestern Busway – Stage 2
4	Eastern Busway – Stage 2

Until these projects become priorized for implementation, it is recommended that the next logical steps in the planning and design phase for these projects be undertaken. The reasons for this are as follows:

1. The completion of the Detailed Design for the highest priority busway project (Southwestern – Stage 1) would enable the City to respond in a timely manner to future funding opportunities that may occur from the other levels of government or from other sources.

2. For the next two recommended busway priorities (Eastern – Stage 1 and Southwestern – Stage 2), only functional designs have been or are being prepared to date. This level of design work does NOT provide sufficient detail to define precise property requirements, busway/station/structure designs, land drainage requirements, environmental impacts, and capital cost estimates required to meet the information needs of property owners and developers who might potentially be affected by the projects, of other utilities (water, sewer, hydro, telecommunications) whose facilities might be impacted, of the public and elected officials wishing to be informed of the costs and benefits of the projects, and of regulatory agencies responsible for environmental impact assessments. To accommodate these needs and to plan for the orderly acquisition of property, it is important that the Preliminary Design be completed for the Eastern – Stage 1 and Southwestern – Stage 2 projects.

In summary, then, it is recommended that:

1. The design activities be completed for Stage 1 of the Southwestern busway, including land drainage design, environmental assessment, and detailed design. The estimated cost for this work is $2,600,000, is recommended to be funded from Federal Gas Tax funds in 2007, and would be undertaken in 2007.

2. Following completion of the functional design currently underway and the selection of an alignment option for the Eastern busway, the preliminary design (including busway design, land drainage design, environmental assessment, and public consultation) be undertaken for Stage 1 of the Eastern busway. The estimated cost for this work is $1,300,000, is recommended to be funded from Federal Gas Tax funds in 2007, and would be undertaken during 2007-08. Note that detailed design would NOT be included in this work; it would be deferred to a later date.

3. The preliminary design (including busway design, land drainage design, environmental assessment, and public consultation) be completed for Stage 2 of the Southwestern busway. The estimated cost for this work is $800,000, is recommended to be funded from Federal Gas Tax funds in 2008, and would be undertaken in 2008-09. Note that detailed design would NOT be included in this work; it would be deferred to a later date.

4. The authorization provided by Council to the Director of Planning, Property, and Development on July 23rd, 2003 "*to negotiate such property acquisitions as the Transit Department through its Consultants may identify for completion of Stage 1 of the Southwestern Corridor and Stage 1 of the Eastern Corridor . . . and to report back with the results thereon*," be extended to include property acquisitions identified by the Transit Department for Stage 2 of the Southwestern Corridor and Stage 2 of the Eastern Corridor.

5. A feasibility study be conducted to identify the potential to attract alternative sources of funding for the busway projects. The estimated cost of the study is $100,000.

RECOMMENDED COURSE OF ACTION:

It is recommended that the transit priority projects listed in Table D1 be implemented.

Table D1: Recommended Transit Priority Projects

ITS Project	Estimated Cost	Funding Source	Implementation
Diamond Lanes/Queue Jump Lanes: Feasibility/Design Studies Diamond Lane Implementation	$600,000 $9,451,000 $10,051,000	Innovative Transit: 2006-08 2007 Federal Gas Tax Funds ($0.01/litre portion) 2007, 2008, 2009 Federal Gas Tax Funds ($0.05/litre portion)	2006 – 2008 2007 – 2009
Transit Signal Priority: Expansion of Actuated TSP program Pilot Project for Active TSP Expansion of Active TSP	$600,000 $500,000 $2,160,000 $3,260,000	2007 Federal Gas Tax Funds ($0.01/litre portion), Innovative Transit: 2007-11	2007 – 2008 2007 – 2008 2009 – 2011
Southwestern Busway – Stage 1: Drainage Design, Environmental Assessment, Detailed Design	$2,600,000	2007 Federal Gas Tax Funds ($0.01/litre portion)	2007
Eastern Busway – Stage 1: Preliminary Design	$1,300,000	2007 Federal Gas Tax Funds ($0.01/litre portion)	2007 – 2008
Southwestern Busway – Stage 2: Preliminary Design	$800,000	2008 Federal Gas Tax Funds ($0.05/litre portion)	2008 – 2009
Busways: Alternative Funding Study	$100,000	Innovative Transit: 2006	2006

RTTF Recommendation: Expansion of Park and Ride

COMMENTARY:

The Task Force recommended that Park and Ride facilities be strategically located on the busways adjacent to stations as determined by the functional design studies.

Busway-Oriented Park and Ride Facilities

Where there is sufficient space, the integration of a Park and Ride facility with a busway station provides an attractive option for passengers. In the functional design for the Southwestern busway, for example, the City has retained ownership of a former public works site bounded by Markham Road, Gull Lake Road, and the CN Letellier rail line for a Park and Ride lot as part of the proposed Markham Station.

The key design issues for the Park and Ride components of a rapid transit system include the use of sites that accommodate at least 200 vehicles in prominent and visible locations, attractive landscaping, the provision of convenient automobile access/egress to the regional street system, convenient on-site pedestrian access between automobile and transit, and efficient bus access/egress to the busway.

Park and Ride facilities are most beneficial when located in areas of lower development density where the automobile can provide convenient access to the rapid transit system. Consequently, Park and Ride facilities tend to be located at the outer ends of rapid transit lines rather than at stations closer to downtown in denser parts of the city.

With respect to the Southwestern busway, most of the stations are proposed for sites surrounded by lands that are already developed. Other than the proposed Park and Ride lot at the Markham Station, opportunities are limited for such facilities immediately adjacent to other stations. As the alignments under consideration for the Eastern busway include some lands that are not yet developed, there may be more opportunity to develop Park and Ride lots immediately adjacent to those stations.

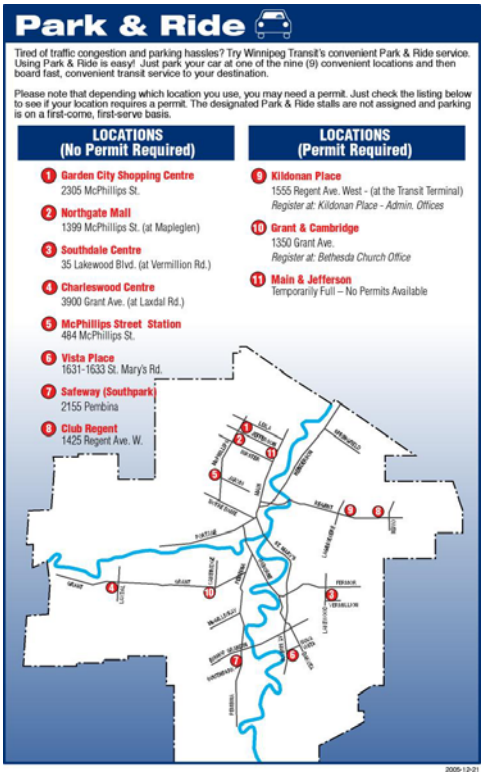
It is important to note, however, that a significant advantage of the BRT approach to rapid transit is that Park and Ride facilities need NOT necessarily be located immediately adjacent to a station on the busway. "Off-line" Park and Ride facilities can be constructed at sites with sufficient space and good access to the regional street system. Buses can use the regular street system to travel from these sites to the busway and then use the busway to operate at high speed to downtown.

As part of the design for each of the busway projects, opportunities for both "on-line" and "off-line" Park and Ride locations will be identified.

Existing "On-Street' Park and Ride Program

Over the past several years, the Transit Department has partnered with property owners to develop a network of eleven small Park and Ride lots adjacent to major thoroughfares throughout the city.

At each of these sites, an agreement has been made with a private sector partner. The parking lot owner makes available a number of parking spaces (usually 10 to 30 adjacent to an express bus stop) for use by transit passengers between 6:00 am and 6:00 pm on weekdays. The private partner agrees to maintain the parking lot, to clear the lot of snow during the winter, and, at the partner's discretion, to issue Park and Ride tags to passengers. The Transit Department is responsible for upgrading the adjacent bus stop (illuminated signage, bus stop platform improvements, route and schedule information, benches, and waste receptacles) and for installing signs on the parking lot that identify the designated parking spaces. The integration of the two major urban travel modes (automobile and transit) is an effective way to increase transit ridership.



The Transit Department has identified a number of potential new sites in the Quality Corridors that could be added to this Park and Ride program.

RECOMMENDED COURSE OF ACTION:

It is recommended that the following Park and Ride initiatives be undertaken:

- The Transit Department undertake negotiations with property owners to increase the number of parking lots in the existing "On-Street" Park and Ride program, and that the estimated costs of the identified projects, $350,000, be funded from the 2006, 2007, 2008, and 2009 Innovative Transit Programs.

- The Planning, Property, and Development Department be authorized to negotiate with property owners for the acquisition of properties identified by the Transit Department for Park and Ride purposes for the Southwestern and Eastern busways.

4. Integration of the Transit Improvements in the Quality Corridors

The Task Force recommended that an **integrated** set of transit improvements be implemented in the major travel corridors of Winnipeg. Within each of these **"Quality Corridors,"** a specific set of improvements tailored to the needs of each is to be employed to improve the *speed, reliability, comfort, convenience,* and *accessibility* of transit travel.

The preceding section outlined in detail a comprehensive set of transit improvements recommended for implementation over the next few years. Several of the initiatives are system-wide ones and will provide benefits to all transit users throughout the city. Others, however, are more specific in nature with each particular application dependent on the unique conditions of the Quality Corridor in which the initiative is to be applied.

During implementation, it is important that the combination of measures designed to improve transit service in each Quality Corridor be introduced in a coordinated and integrated manner.

For example, an integrated set of improvements for the Donald-Osborne-Pembina Quality Corridor is recommended as an initial priority. The major arterial streets used by the routes operating in this Quality Corridor include Graham Avenue, Osborne Street, Donald Street, and Pembina Highway. Consequently, it is important to focus improvements on these particular streets to enhance all aspects of transit travel throughout the travel corridor.

This particular Quality Corridor, like all others, will benefit from the recommended system-wide improvements (such as the bus radio/AVL system; real-time schedule information via Telebus, internet, and wireless devices; and on-board "next stop" displays). In addition, however, the following specific set of improvements would be implemented for the Donald-Osborne-Pembina corridor:

Year	Category	Improvement Project	Service Attributes Improved
2006	Stop Upgrades	University of Manitoba Transit Centre	Comfort Convenience Accessibility
		Stop Upgrades on Pembina Highway, Osborne St, and Donald St (as part of 1st phase of new Quality Corridor stop upgrades)	
		Osborne Exchange refurbishment	
		Graham Transit Mall refurbishment	
	Transit Priority	Pembina Highway - Diamond Lane Feasibility/Design Study	Speed Reliability
2007	Transit Priority	Pembina Highway – Diamond Lanes Implementation	Speed Reliability
	Vehicles	Articulated Electric Hybrid Buses (primary use on routes in Donald-Osborne-Pembina corridor)	Comfort Accessibility
2007-08	ITS	Bus Departure Displays: Prototype (implemented at major stops on Pembina Highway)	Convenience Accessibility
	ITS	Signal Priority: Active TSP Pilot Project (implemented at major intersections on Pembina Highway)	Speed Reliability

5. Summary of Implementation Plan

Recommended Implementation Plan

Table E1 summarizes the plan of implementation for the recommended initiatives. The projects are sorted by year of implementation.

Table E1: Implementation Summary for Recommended Projects

Category	Project	Allocation ($ millions)	Implementation Period
Stop Upgrades	Portage Avenue – Downtown	$0.180	2006
Stop Upgrades	Osborne Exchange	$0.055	2006
Stop Upgrades	Graham Transit Mall	$1.225	2006
Stop Upgrades	University of Manitoba Transit Centre	$0.110	2006
Stop Upgrades	New Quality Corridor Stop Upgrades (~30)	$1.300	2006
Transit Priority	Diamond Lane Feasibility Studies – Part 1	$0.200	2006
Park & Ride	Expansion of “On-Street” Park & Ride – Part 1	$0.055	2006
Stop Upgrades	Polo Park Transit Centre	$0.625	2006 - 2007
ITS	Bus Radio/AVL System (final phase)	$1.659	2006 – 2007
ITS	On Board “Next Stop” Enunciators/Displays	$3.000	2006 – 2007
ITS	Control Centre/Website Upgrade	$0.200	2006 – 2007
ITS	Telebus Upgrade	$0.350	2006 – 2007
ITS	Wireless (WAP) Protocol	$0.150	2006 – 2007
ITS	On Board Security Camera System	$1.100	2006 – 2007
Transit Priority	Busways – Alternative Funding Study	$0.100	2006 – 2007
Stop Upgrades	Kildonan Place Transit Centre	$0.145	2007
Stop Upgrades	St. Vital Centre Transit Centre	$0.100	2007
Stop Upgrades	New Quality Corridor Stop Upgrades (~30)	$1.300	2007
Vehicles	Articulated Electric Hybrid Buses	$26.939	2007
Transit Priority	Diamond Lane Feasibility Studies – Part 2	$0.200	2007
Park & Ride	Expansion of “On-Street” Park & Ride – Part 2	$0.055	2007
Transit Priority	Southwestern Busway – Stage 1 Detailed Design	$2.600	2007
ITS	Electronic Bus Departure Displays: Prototype	$0.300	2007 – 2008
Transit Priority	Signal Priority: Expansion of Actuated TSP	$0.600	2007 – 2008
Transit Priority	Signal Priority: Active TSP Pilot Project	$0.500	2007 – 2008
Transit Priority	Eastern Busway – Stage 1 Preliminary Design	$1.300	2007 – 2008
Transit Priority	Diamond Lanes - Implementation	$9.451	2007 – 2009
ITS	Electronic Bus Departure Displays: Expansion	$1.700	2008
Stop Upgrades	New Quality Corridor Stop Upgrades (~50)	$2.100	2008
Transit Priority	Diamond Lane Feasibility Studies – Part 3	$0.200	2008
Park & Ride	Expansion of “On-Street” Park & Ride – Part 3	$0.100	2008
ITS	New Fareboxes, Automatic Transfer Dispensers	$6.000	2008 – 2009
Transit Priority	Southwestern Busway – Stage 2 Prelim Design	$0.800	2008 – 2009
Stop Upgrades	New Quality Corridor Stop Upgrades (~50)	$2.100	2009
Park & Ride	Expansion of “On-Street” Park & Ride – Part 4	$0.140	2009
Transit Priority	Signal Priority: Expansion of Active TSP	$2.160	2009 – 2011
ITS	Transit Smart Card System	$7.500	2010 – 2011

Summary of Recommended Funding Authorizations

The projected capital funding available for non-recurring transit projects over the 2006 – 2011 time period totals $76.599 and is summarized in Table 1 on page 15. The sources of funding include:

1. Amounts planned in the City's 2006 – 2011 capital program for the following projects:
    - Completion of Bus Radio/AVL System ($1.659 million in 2006)
    - Fare Collection System ($13.5 million in 2008, 2009, 2010, 2011)
    - Innovative Transit Program ($4.4 million in 2006 – 2011)
    - Articulated Electric Hybrid Buses ($16.714 million in 2006 – 2007)

2. Transit portion of $0.05/litre Federal Gas Tax funds ($11.606 million in 2007, 2008, and 2009).

3. Federal Bill C-66 $0.01/litre Federal Gas Tax Funds dedicated for transit ($28.72 million in 2006, 2007).

Table E2 on page 54 summarizes the recommended funding authorizations for each of the projects recommended in this report. It is important to note the following:

- For the Bus Radio/AVL System, the amount shown in the table ($1.659 million) is only that portion of the project that would be funded from the City's 2006 capital budget to complete the project. The remainder of the project is already funded from the previously-approved 2003 and 2005 capital budgets.

- For the Articulated Electric Hybrid Buses project, the total project cost of $26.939 million would be funded by $3.833 million in grants (from the Federation of Canadian Municipalities Green Municipal Funds program and from the *Winsmart* Urban Transportation Showcase Program), $12.881 million from City sources, and $10.225 million in Federal Gas Tax funding.

Table A in the Appendix shows a complete summary of the funding authorizations for ALL transit capital projects currently proposed for 2006 – 2011. It includes projects in the City's projected 2006 – 2011 Capital Program, as well as projects recommended in this report that are not specifically itemized in the capital program.

Table A includes all of the projects listed in Table E2, plus the *Transit Buildings* and *Regular Transit Buses* projects included in the capital program.

6. Implications for Operating Costs

The implementation of the recommended projects will have some general impacts on the operating costs of the transit system:

- The ongoing costs for the cleaning and maintenance of shelters and street furniture will increase as a result of the higher number of upgraded stops and stations in the system.
- A higher standard of cleaning and maintenance recommended for the Quality Corridors requires a further increase in cleaning and maintenance costs for shelters, street furniture, and buses in the Quality Corridors.
- The installation of the ITS projects will increase the requirement for electronic technicians and systems analyst staff, and for the maintenance and support of software/hardware used in those systems.
- The electric hybrid buses will result in some increase in bus parts costs, but will result in some fuel cost savings.
- Although difficult to quantify at this time, the transit improvements are expected to result in some increase in ridership and passenger revenue.

Table E3 summarizes those costs that can be estimated at this time.

Table E3: Estimated Impacts of Recommended Projects on Annual Operating Costs

Project	Impacts	Annual Costs (Savings)	In Effect
Bus Stop Upgrades	Increased carpentry/shelter servicing staff and support equipment for additional upgraded stops	$110,000	2007
Higher Standard of Cleaning and Maintenance in Quality Corridors	Increased carpentry/shelter servicing staff and support equipment	$110,000	2008
	Increased bus cleaning staff	$250,000	2008
Bus Radio/AVL System Electronic Bus Departure Displays On-Board "Next Stop" Displays On-Board Security Camera System	Increased electronic technician staff	$216,000	2007
	Increased systems analyst staff and software/hardware maintenance	$200,000	2007
Articulated Electric Hybrid Buses	Increased bus parts costs	$200,000	2008
	Fuel savings	($500,000)	2008

In addition, it should be noted that the recommended prepayment of the FCM loans for the Articulated Electric Hybrid Buses in 2007 will result in the City incurring a prepayment penalty of 2% of the amount that is prepaid. The value of the penalty is estimated to be $204,500 and would be charged against the 2007 operating budget. In doing so, however, the Department will save approximately $1.2 million in debt servicing annually.

Table E2: Recommended Transit Improvement Projects
Proposed Funding Authorization: 2006 - 2011
(in $ millions)

		Proposed City of Winnipeg Capital Program: 2006 - 2011													Federal Gasoline Tax					Total
		Bus Radio/AVL	Innovative Transit Program						Artic Hybrids		Fare Collection System				$0.05/litre Funds - Transit Portion			C-66 Funds		
		2006	2006	2007	2008	2009	2010	2011	2006	2007	2008	2009	2010	2011	2007	2008	2009	2006	2007	
	Available Funding . . .	**1.659**	**0.700**	**0.700**	**0.700**	**0.700**	**0.800**	**0.800**	**10.243**	**6.471**	**6.000**	**2.500**	**2.500**	**2.500**	**2.443**	**3.054**	**6.109**	**14.360**	**14.360**	**76.599**
Category	Project																			
Vehicles	**Articulated Electric Hybrid Buses**								10.243	6.471								6.808	3.417	**26.939**
Stop Upgrades	**Bus Stop/Station Refurbishment Projects:**																			
	Portage Avenue - Downtown		0.180																	**0.180**
	Osborne Exchange		0.055																	**0.055**
	Graham Transit Mall																	1.225		**1.225**
	University of Manitoba Transit Centre		0.110																	**0.110**
	Polo Park Transit Centre																	0.227	0.398	**0.625**
	Kildonan Place Transit Centre			0.145																**0.145**
	St. Vital Centre Transit Centre			0.100																**0.100**
	New Bus Stop Upgrade Projects														1.300	2.100	2.100	1.300		**6.800**
Intelligent Transportation Systems (ITS)	**Bus Radio/AVL System**	1.659																		**1.659**
	Real Time Schedule Information:																			
	Control Centre/Website Upgrade																	0.200		**0.200**
	Telebus Upgrade																	0.350		**0.350**
	Wireless (WAP) Protocol																	0.150		**0.150**
	Electronic Bus Departure Displays: Prototype Project																		0.300	**0.300**
	Electronic Bus Departure Displays: Expansion																		1.700	**1.700**
	On-Board "Next Stop" Enunciators/Displays																	3.000		**3.000**
	On-Board Security Camera System																	1.100		**1.100**
	Fare Collection System Replacement:																			
	Fareboxes, Transfer Dispensers										6.000									**6.000**
	Transit Smart Card Fare System											2.500	2.500	2.500						**7.500**
Transit Priority	**Diamond Lanes/Queue Jump Lanes:**																			
	Feasibility/Design Studies		0.200	0.200	0.200															**0.600**
	Diamond Lanes/Queue Jump Lanes: Implementation														1.143	0.154	4.009		4.145	**9.451**
	Transit Signal Prioirty:																			
	Expansion of Actuated TSP			0.100															0.500	**0.600**
	Active TSP Pilot Project			0.100	0.400															**0.500**
	Expansion of Active TSP					0.560	0.800	0.800												**2.160**
	Busways:																			
	Southwestern Corridor: Stage 1 Detailed Design																		2.600	**2.600**
	Eastern Corridor: Stage 1 Preliminary Design																		1.300	**1.300**
	Southwestern Corridor: Stage 2 Preliminary Design															0.800				**0.800**
	Alternative Funding Study		0.100																	**0.100**
Park and Ride	**Expansion of "On-Street" Park and Ride Program**		0.055	0.055	0.100	0.140														**0.350**
	Total Funding Allocation	**1.659**	**0.700**	**0.700**	**0.700**	**0.700**	**0.800**	**0.800**	**10.243**	**6.471**	**6.000**	**2.500**	**2.500**	**2.500**	**2.443**	**3.054**	**6.109**	**14.360**	**14.360**	**76.599**

FINANCIAL IMPACT STATEMENT:

Project Name: Implementation Plan for Rapid Transit Task Force Recommendations
Date: January 30, 2006 First Year of Program: 2006

(In thousands of dollars)	2006	2007	2008	2009	2010	2011 and Beyond
Capital						
Capital Expenditures Required	$ 26,962	$ 23,974	$ 9,754	$ 9,309	$ 3,300	$ 3,300
Less: Existing Budgeted Costs	26,962	23,974	9,754	9,309	3,300	3,300
Additional Capital Budget Required	$ -	$ -	$ -	$ -	$ -	$ -
Funding Sources:						
Debt - Internal	$ 2,359	$ 700	$ 6,700	$ 3,200	$ 3,300	$ 3,300
Grants (Identify)						-
FCM - Green Municipal Funds	3,000	-	-	-	-	-
WinSmart - UTS Program	833	-	-	-	-	-
Federal Government - Bill C-66	14,360	14,360	-	-	-	-
Federal Government - Gas Tax	-	2,443	3,054	6,109	-	-
Transit Bus Replacement Reserve	6,410	6,471	-	-	-	-
Total Funding	$ 26,962	$ 23,974	$ 9,754	$ 9,309	$ 3,300	$ 3,300
Total Additional Capital Budget Required	$ -					
Total Additional Debt Required	$ -					
Current Expenditures/Revenues						
Direct Costs	$ 100	$ 831	$ 586	$ 586	$ 586	$ 586
Less: Incremental Revenue/Recovery	-	-	-	-	-	-
Net Cost/(Benefit)	$ 100	$ 831	$ 586	$ 586	$ 586	$ 586
Less: Existing Budget Amounts	100	(100)	906	906	906	906
Net Budget Adjustment Required	$ -	$ 931	$ (320)	$ (320)	$ (320)	$ (320)

Additional Comments: This financial impact statement has been prepared using those 2006 to 2011 Capital and 2006 to 2008 Current Budgets submitted by the Department as part of the current budget cycle. It considers those ongoing annual operating costs identified and considered as part of Table E3. It has not factored in any impact of increased ridership and/or operating savings associated with the implementation of all of this report's recommendations. The Current Budget impact is an estimate only and will be subject to change as the projects identified for implementation in this report develop.

All budget amounts are subject to Council approval. The Capital Budget amounts noted are based on proposed authorizations and not capital project cashflows. The Current Budget amounts for 2009 onwards assumes a budget equal to 2008.

Original Signed by P.D. Olafson

Manager of Finance & Administration

IN PREPARING THIS REPORT THERE WAS CONSULTATION WITH, AND CONCURRENCE BY:

Public Works Department
Planning, Property and Development Department

THIS REPORT SUBMITTED BY:

Department:	Transit
Division:	Planning and Schedules
Prepared by:	Bill Menzies, Manager of Planning and Schedules
File No.	0652-00

APPENDIX

Table A: All Transit Capital Projects
Proposed Funding Authorization: 2006 - 2011
(in $ millions)

		Proposed City of Winnipeg Capital Program: 2006 - 2011																						Federal Gasoline Tax					Total
		Bus Radio/AVL	Innovative Transit Program						Regular Transit Buses						Artic Hybrids		Fare Collection System				Transit Buildings			$0.05/litre Funds - Transit Portion			C-66 Funds		
		2006	2006	2007	2008	2009	2010	2011	2006	2007	2008	2009	2010	2011	2006	2007	2008	2009	2010	2011	2007	2010	2011	2007	2008	2009	2006	2007	
	Available Funding . . .	**1.659**	**0.700**	**0.700**	**0.700**	**0.700**	**0.800**	**0.800**	**4.590**	**4.929**	**12.989**	**13.607**	**14.262**	**14.947**	**10.243**	**6.471**	**6.000**	**2.500**	**2.500**	**2.500**	**0.100**	**1.000**	**1.000**	**2.443**	**3.054**	**6.109**	**14.360**	**14.360**	**144.023**
Category	Project																												
Garages	**Replacement of North Garage**																				0.100	1.000	1.000						**2.100**
Vehicles	**Regular Transit Buses**								4.590	4.929	12.989	13.607	14.262	14.947															**65.324**
	Articulated Electric Hybrid Buses														10.243	6.471											6.808	3.417	**26.939**
Stop Upgrades	**Bus Stop/Station Refurbishment Projects:**																												
	Portage Avenue - Downtown		0.180																										**0.180**
	Osborne Exchange		0.055																										**0.055**
	Graham Transit Mall																										1.225		**1.225**
	University of Manitoba Transit Centre		0.110																										**0.110**
	Polo Park Transit Centre																										0.227	0.398	**0.625**
	Kildonan Place Transit Centre			0.145																									**0.145**
	St. Vital Centre Transit Centre			0.100																									**0.100**
	New Bus Stop Upgrade Projects																							1.300	2.100	2.100	1.300		**6.800**
Intelligent Transportation Systems (ITS)	**Bus Radio/AVL System**	1.659																											**1.659**
	Real Time Schedule Information:																												
	Control Centre/Website Upgrade																										0.200		**0.200**
	Telebus Upgrade																										0.350		**0.350**
	Wireless (WAP) Protocol																										0.150		**0.150**
	Electronic Bus Departure Displays: Prototype Project																											0.300	**0.300**
	Electronic Bus Departure Displays: Expansion																											1.700	**1.700**
	On-Board "Next Stop" Enunciators/Displays																										3.000		**3.000**
	On-Board Security Camera System																										1.100		**1.100**
	Fare Collection System Replacement:																												
	Fareboxes, Transfer Dispensers																6.000												**6.000**
	Transit Smart Card Fare System																	2.500	2.500	2.500									**7.500**
Transit Priority	**Diamond Lanes/Queue Jump Lanes:**																												
	Feasibility/Design Studies		0.200	0.200	0.200																								**0.600**
	Diamond Lanes/Queue Jump Lanes: Implementation																							1.143	0.154	4.009		4.145	**9.451**
	Transit Signal Prioirty:																												
	Expansion of Actuated TSP			0.100																								0.500	**0.600**
	Active TSP Pilot Project			0.100	0.400																								**0.500**
	Expansion of Active TSP					0.560	0.800	0.800																					**2.160**
	Busways:																												
	Southwestern Corridor: Stage 1 Detailed Design																											2.600	**2.600**
	Eastern Corridor: Stage 1 Preliminary Design																											1.300	**1.300**
	Southwestern Corridor: Stage 2 Preliminary Design																												**0.800**
	Alternative Funding Study		0.100																										**0.100**
Park and Ride	**Expansion of "On-Street" Park and Ride Program**		0.055	0.055	0.100	0.140																							**0.350**
	Total Funding Allocation	**1.659**	**0.700**	**0.700**	**0.700**	**0.700**	**0.800**	**0.800**	**4.590**	**4.929**	**12.989**	**13.607**	**14.262**	**14.947**	**10.243**	**6.471**	**6.000**	**2.500**	**2.500**	**2.500**	**0.100**	**1.000**	**1.000**	**2.443**	**3.054**	**6.109**	**14.360**	**14.360**	**144.023**