
Transportation Planning Branch Audit

May 19, 2006

This page is intentionally blank.

Table of Contents

Executive Summary	i
Transportation Planning Branch Audit	1
1. Introduction	1
2. Background	1
2.1. General	1
2.2. Transportation Strategic Deliverables	2
3. Audit Objective.....	3
3.1. Audit Criteria	3
4. Scope	3
5. Methodology.....	4
6. Observations and Analysis	4
6.1. Transportation System – The Transportation Master Plan.....	4
6.1.1. TMP Update.....	4
6.1.2. Transportation Policy within the TMP	7
6.1.3. TMP Priorities List.....	11
6.1.4. Management Response to TMP Update (Recommendations 1-4)	12
6.2. Governance of Transportation Planning	15
6.2.1. Transportation System – Strategic Goals	15
6.2.2. Role Clarity	17
6.2.3. Transportation Priority Setting	20
6.2.4. Public Involvement.....	21
6.2.5. Management Response to Governance of Transportation Planning (Recommendations 5-9).....	22
6.3. Managing Corporate Projects	24
6.3.1. Integration of Transportation Planning.....	24
6.3.2. Management Response.....	25
6.3.3. Illustrative Example – South Edmonton Common.....	26
7. Conclusions.....	29
Appendix A: Comparison of Transportation System Goals	32

This page is intentionally blank.

Executive Summary

The Transportation Department is responsible for the development and implementation of transportation plans and programs including roadways, public transit services, cycling paths and walkways. The Transportation Planning Branch of this department serves as the key strategic force to guide the department and City in transportation-related matters. The objective of this branch audit was to assess the Transportation Planning Branch's capability to develop and implement an effective transportation strategy for the City of Edmonton.

The Transportation Planning Branch, with an operating budget of \$4 million dollars, has a significant role in directing and influencing a large portion of the City's capital and operating expenditures. Implementation of the Branch's plans requires significant investments as demonstrated by the requirements of the Transportation Department's budget. In 2006, the total capital and operating expenditures for the Transportation Department are budgeted at \$582 million, representing approximately one-third of total City expenditures. The Branch's primary planning document is the Transportation Master Plan (TMP). The TMP identifies an investment of \$10 billion dollars in capital and operating expenditures over the next twenty years. The OCA believes that this estimate is outdated and actual costs are likely to exceed \$15 billion dollars.

The majority of the work completed in this audit focused on the strategic planning and governance that supports transportation planning for the City of Edmonton. Key observations include:

Transportation Master Plan Update:

At the heart of the transportation system is the Transportation Master Plan (TMP). The TMP is a legislated requirement under the provincial *City Transportation Act*. The current TMP took 6 years to develop and was approved by Council in 1999 as part of the City Transportation System Bylaw. The OCA believes that the TMP requires updating to reflect the changing needs of the City. During the original TMP development, resources were assigned for a defined period of time and then the team was disbanded. The OCA believes the Transportation Planning Branch should assign resources for continual update of the TMP to ensure that the TMP remains relevant to the City's changing needs.

Updating the TMP will require significant time, resources, and statutory public hearings. The current TMP includes a list of transportation priorities based upon the anticipated requirements of the City as forecast in 1999. Currently, the City Transportation Systems Bylaw requires that statutory public hearings be held as a part of the process to make any changes to the TMP. The OCA recommends that the list of transportation priorities be removed from within the TMP and a separate framework for priority setting be developed.

Clear transportation policy should be developed within the TMP to establish the parameters Council wants Transportation to operate within. Specific policies should be developed to provide guidance in the areas of: a) people movement, b) goods movement, c) congestion levels d) allocation of capital resources, e) project decision criteria, f) performance reporting, and g) transit land use integration.

A formal policy is required to provide direction to the Administration related to the proportion of spending for roadways versus transit. The OCA completed an analysis that contrasted capital investment in the transit system with the capital investment in roadways. The results indicate that for every dollar spent on capital expenditures for transit, an additional dollar will be required for operating expenditures over a twenty year period. Comparatively, for every dollar spent on capital expenditures for roadways, an additional 50 cents will be required for operating expenditures over a twenty year period. The OCA's analysis of financial trends shows an increase in expenditures towards transit versus roadways with the average spending for transit expected to double over the next five years. The OCA believes these observations demonstrate the need for Council to review transportation policy on a regular basis.

The 1994 Edmonton Household Travel Survey indicated that 9% of citizens use transit, 77% use roadways, and 14% use other modes (e.g., walk or bike). The recent 2005 Household Travel Survey results indicate very little change has occurred in modal split. The disproportionate capital allocation to transit over roadways should be evaluated in the context of the overall goals of the TMP. The capital allocation decisions should be directly related to the overall transportation strategy that moves the City forward in a cost-effective manner.

Over time, the dynamics and characteristics of the City change with corresponding shifts in demand for different modes of transportation. The OCA believes that a major TMP rewrite every ten years and supplementary three-year reviews would be sufficient to keep the plan current. The three-year review cycle would allow each newly-elected Council to understand what the TMP contains and provide Council an opportunity to influence the TMP and set policy direction. To ensure that the TMP reflects the needs of all Edmontonians, the update process should include input from key stakeholders such as communities, business organizations and dialogue with regional partners. This could provide a more integrated transportation system to ensure effective and efficient movement of both freight and people.

Governance of Transportation Planning:

The OCA believes that the current governance structure does not adequately support the effective and efficient development and implementation of the City's transportation system. The role of the Transportation and Public Works Committee (TPW) and its relationship with Transportation and Council needs to be enhanced.

A systematic approach to transportation priority setting during the transportation planning process is required by TPW/Council and would add needed rigor and transparency to the current decision-making process. The OCA believes that a transportation-based decision model that includes decision criteria endorsed by Council

and TPW would benefit the organization. This transportation decision model and criteria would serve as the basis for annual reprioritization of transportation projects. The OCA also believes that a ten-year plan of transportation projects should be developed and prioritized for approval every three years and reviewed annually by Council prior to budget deliberations.

The reporting of results for strategic transportation goals needs to be enhanced through the development of effective targets and measures. Progress towards achieving these goals need to be regularly reported to TPW and Council so that they can fulfill their oversight and monitoring roles.

The OCA also believes the City needs to improve its communication with the public regarding the City's transportation network and related strategic goals and accomplishments. The OCA met with internal and external stakeholders to gather their perceptions of the City's achievement of the goals stated in the TMP. External stakeholders rated the quality of results consistently lower than did internal stakeholders and expressed a desire to understand how transportation projects are prioritized. The OCA believes more effective public communication is needed to resolve these matters.

Corporate Projects:

Corporate projects are programs and projects that require a high level of integration between various departments and branches in response to growth and development. The OCA assessed the level of integration between the Transportation Planning Branch and other City departments and branches. The results showed that the various parties are more integrated at an operational level than at a strategic level.

The challenges facing the City related to the South Edmonton Common (23 Avenue and Gateway Boulevard Interchange) presented the OCA with the opportunity to study a corporate project. Several key learnings were identified including the need for the organization to better identify and manage the risks related to corporate projects. Also, the organization needs better processes to compare transportation projects and engage Council in the priority setting of transportation projects.

Conclusion:

The OCA believes that the Transportation Planning Branch has demonstrated the ability to develop and implement a transportation strategy for the City of Edmonton; however an improved governance framework is needed. This governance framework between Council and the Administration needs to include improved role clarity, policy development, an effective decision-making framework, and increased measurement and communication of strategic results. The OCA believes that this improved governance framework will lead to greater trust between the Administration and Council, and ultimately to a more effective, efficient and economical transportation system.

Transportation Planning Branch Audit

1. Introduction

Based upon its risk assessment of all City Branches, the Office of the City Auditor (OCA) selected the Transportation Planning Branch for a branch audit in 2005. Branch audits are planned for all City of Edmonton branches over an eight-year cycle. These audits entail a comprehensive review of branch operations.

The Transportation Department is responsible for the development and implementation of transportation plans and programs including roadways, public transit services, cycling paths and walkways. The Transportation Planning Branch of this department serves as the key strategic force to guide the department and the City in transportation related matters.

2. Background

2.1. General

The Transportation Planning Branch is divided into five business units. These business units and their associated functions are described as follows:

- Development Review Services (12 staff) - reviews land use and development plans for transportation compatibility, undertakes concept planning for roadway networks, conducts cost estimating on projects, and provides public consultation.
- Evaluation and Monitoring (23 staff) - develops transportation forecasting models, forecasts traffic volumes, analyzes results for transportation project planning, and monitors travel demand and network performance.
- Major Projects Planning (8 staff) - undertakes conceptual planning for development of major projects (roadways and transit improvement), estimates capital costs and cash flows for multi-year projects, and undertakes public participation on major projects.
- Community Transportation Planning (10 staff) - develops and implements strategic plans to encourage active transit modes, assesses future and existing needs for traffic and pedestrian controls, develops concept plans for community traffic and noise management, and undertakes public participation on projects.
- Right-of-Way Management (5 staff) – manages public right-of-way occupation by utilities and other users, negotiates terms of agreements, and manages utility line assignment approval and permitting.

The approved 2006 operating budget for the Transportation Planning Branch is \$4.6 million. The Branch also directly allocates approximately \$0.8M in capital funds to

planning for capital projects, bringing the total Branch budget for 2006 to \$5.4M. The Branch's projected revenues for 2006 are \$0.6 million from Right-of-Way agreements.

Although the Transportation Planning Branch is relatively small, its work directly impacts the entire Transportation Department budget. Table 1 illustrates the Transportation Department budget expenditures from 2003 to 2006. The percentage of Transportation Planning Branch relative to the Total Transportation Department expenditures has remained at just over 1% from 2003 to 2005 and with increased overall transportation spending in 2006 this percentage is less than 1%.

Table 1- Transportation Department Expenditures
(Dollars in Millions)

	2003 Actual	2004 Actual	2005 Actual	2006 Budget
Operating expenditures	\$218.1	\$248.6	\$261.8	\$291.6
Capital expenditures	\$140.1	\$152.8	\$153.7	\$290.7
Total Capital and Operating Expenditure	\$358.2	\$401.4	\$415.5	\$582.3
TP Branch	\$3.99	\$4.38	\$5.00	\$5.37
% of TP Branch to Total	1.11%	1.09%	1.20%	0.92%

Source: 2004 to 2006 Budget Summaries and Actuals

2.2. Transportation Strategic Deliverables

A list of the Transportation Planning Branch's key strategic events includes:

- April 28, 1992 – The Bicycle Transportation Plan approved by Council with the intent of providing a safe and convenient bicycling environment for cyclists.
- April 14, 1999 – The Transportation Master Plan (TMP) was approved, following extensive public consultation and in accordance with the goals identified in Plan Edmonton. Plan Edmonton established the framework for how the City of Edmonton will address its future transportation needs to the year 2020.
- August 29, 2000 – The Intelligent Transportation System Plan was approved by Council with the goal of contributing to the TMP's goal of providing an effective and efficient use of transportation infrastructure.
- November 21, 2000 - Council approved the Concept Plan for the South LRT extension from University Station to Health Sciences Station.
- June, 2001 – A TMP Implementation Status report was presented to Council.

- March 05, 2002 – The Multi-Use Trail Corridor Study was approved by Council. This study was intended to provide an innovative ten-year multi-use trail network plan and implementation strategy.
- April 27, 2004 – The High Speed Transit (HST) Strategic Plan was approved by Council. The purpose of this study was to undertake technical and strategic-level analyses, including high-level stakeholder involvement, to identify proposed technology, alignments, costs, and right of way for HST routes to serve West, North/Northwest, and Southeast Edmonton.
- June, 2004 – A TMP Implementation Status report was presented to Council.
- July 05, 2005 to September, 2005 – The Managed Congestion Study resulted in a report on the current state of congestion on the transportation network and proposed updated ten-year transportation priorities.
- 2005 – A Household Survey of travel patterns of the Edmonton region was initiated (completed May 2006).

3. Audit Objective

The objective of this branch audit was to assess the ability of the Transportation Planning Branch to develop and implement an effective transportation strategy for the City of Edmonton.

3.1. Audit Criteria

Predefined audit criteria are developed to guide the audit work and provide a framework for the gathering and assessment of evidence to support the achievement of the audit objective. Audit criteria are expressed as ideal conditions. The criteria that were used to satisfy the audit objective stated above were:

- The Branch has clear strategic direction which is measurable and clearly communicated to various stakeholders.
- The City's corporate business planning and transportation planning requirements are effectively integrated.
- An effective governance structure exists to implement transportation strategy and plans in a timely manner.
- Financial cost-effectiveness is demonstrated through formal analysis and evaluation.

4. Scope

All business units within the Transportation Planning Branch were included within the branch audit. Given that this branch performs the majority of strategic planning related to the City of Edmonton transportation system, many of the observations also relate to departmental or corporate levels of the organization.

5. Methodology

The methodology for this branch audit included three phases:

Planning: The first phase included information gathering and the development of expected project results. The audit objective was formulated based upon the results of our preliminary assessment.

Fieldwork: The second phase included conducting the OCA's audit program in order to meet the audit objective. The fieldwork phase included more detailed testing, benchmarking and gathering of evidence to support observations and recommendations.

Reporting: The third phase included disclosure and discussion of the audit results to management and coordinating management's response to the recommended improvements.

6. Observations and Analysis

The results presented in this report represent the significant observations and analysis resulting from the fieldwork.

6.1. Transportation System – The Transportation Master Plan

The TMP was developed over a six-year period by the Transportation Planning Branch and was approved by Council in 1999. The TMP was developed in tandem with Edmonton's Municipal Development Plan which was approved by Council in August 1998. Legislative requirements under the provincial City Transportation Act require that the City develop a plan for a transportation system to serve citizens. The legislation does not regulate the timing for new or updated transportation plans.

6.1.1. *TMP Update*

6.1.1.1 Household Travel Survey

The TMP is intended to be the strategic direction setting document for our transportation system and as such should accurately reflect how it addresses the evolving transportation needs for the City of Edmonton. A TMP that is not updated periodically to reflect changes in the environment is putting the City at risk of not meeting the transportation needs of the community.

Conditions that affect the City are always changing. Indicators that a TMP update is required include:

- Significant changes in the demographic mix within our region such as age, lifestyle, and wealth.
- The stronger than expected Edmonton regional economy has increased prices for commodities required for transportation systems.

- The economic boom the Edmonton region is experiencing makes the need for regional transportation planning more apparent.
- New financial sharing arrangements with other orders of government (e.g., investing in expansion of the LRT and the Province's investment in Anthony Henday Drive) will have significant impact on the current inter-relationships between the regional transportation network and land use. The significant planned investment in roadways by the Province (i.e., the outer ring road project) may further impair growth in housing and business development in the inner city.
- New initiatives (e.g., High Speed Transit and Smart Choices), new revenue streams (e.g., off-site road levies), strong municipal / provincial economic growth, strengthened ties with the north (e.g., freight and goods movement) demonstrate the need to revisit fundamental plan assumptions.
- Advances in technology and practices are impacting the development of Intelligent Transportation Systems and may positively impact travel both within the City and regionally. Also, new issues, standards, and practices in planning and transportation engineering are emerging.

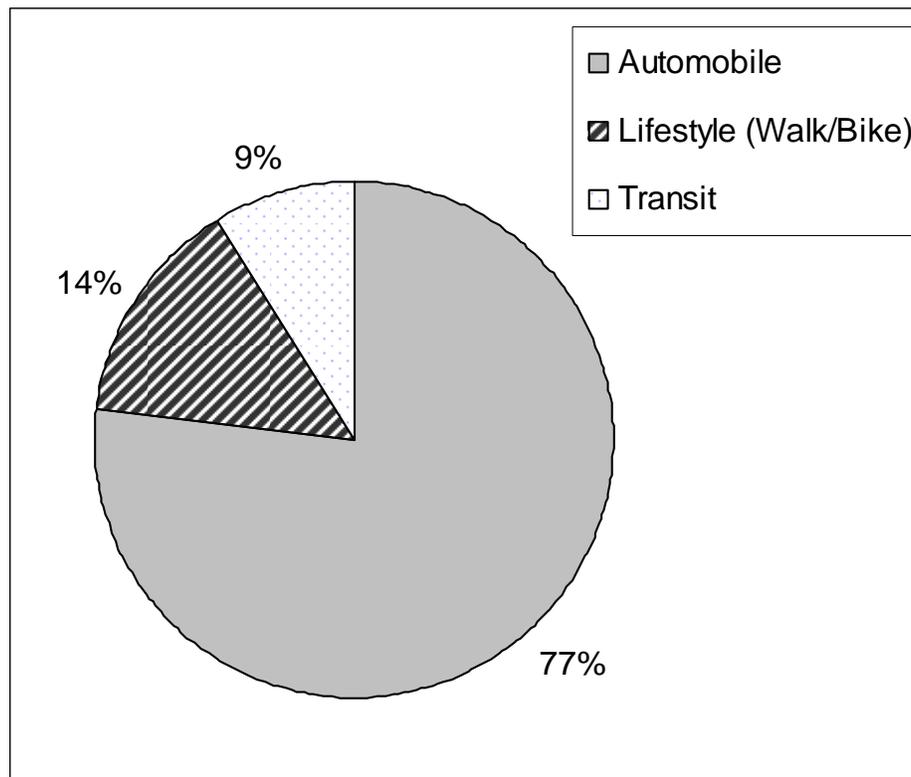
The Household Travel Survey is an integral part of the TMP planning process and is necessary to assess the changing environment, needs for products/services, and emerging trends. In 1994 a Household Travel Survey was completed which included the identification and assessment of the transportation modes and choices that citizens use to move around the Edmonton region. Figure 1 illustrates that 9% of citizens in 1994 made daily use of transit and 77% cited automobiles as their primary transportation choice. Since the relevance of the survey data diminishes over time, it must be regularly updated to maintain its accuracy and utility. In 2005 another Household Travel survey was conducted and the results released in May of 2006. The recent results indicate very little change in the mode split. The use of automobiles for daily trips has risen slightly to 77.5% and transit use is at 8.6%. A significant change is that average trip distance has increased from 1994 to 2005 with the average trip length increasing from 6.7 km to 7.5km (12%).

The City of Calgary has also recognized the need for up-to-date survey data. They last conducted a similar household survey in 2001. Calgary is now considering a smaller annual household survey (e.g., 1/10 sample size in each year) to ensure ongoing relevance of the plan by more frequently updating travel pattern data.

The Branch relies on transportation mode data to enhance and refine its transportation modeling and predictive capabilities. Strategically, it is paramount that as we invest billions of dollars in future transportation infrastructure (roads, transit, and other), that we have current survey data to understand how this investment supports the needs of the citizens of Edmonton.

The OCA believes that for effective governance, the administration must regularly measure and communicate strategic results like these to the governing bodies of Council and the Transportation and Public Works Committee.

Figure 1 – Percentage of Daily Trips by Modes (1994)



Recommendation 1

The OCA recommends that the Transportation Planning Branch undertake more frequent monitoring of travel patterns in addition to the major household travel survey conducted every ten years.

6.1.1.2 Updating the TMP

The TMP provides guidance for updating the plan as follows: *“In order for this plan to remain current and of value, it must be updated periodically to take into account changes that occur over time. ... From time to time, it may be appropriate and necessary to change portions of the TMP and / or related bylaw in response to changing conditions.”* This guidance has not been acted upon to date, and is too generic to independently trigger a review, major update, or initiate the development of a brand new plan.

In comparison, Calgary has the following guidance regarding their transportation plan: (a) a major update of the Calgary Transportation Plan (CTP) be carried out every five years, and (b) a new CTP be prepared every 10 years in conjunction with the development of a new Municipal Development Plan. The five-year update would include: progress toward vision, trend analysis, program updates, new issues, and new standards, technologies and practices. In a recent report, the City of Calgary stated that the frequency of plan reviews and updates for cities in Canada and the USA range from one to five years.

The OCA believes that a major TMP rewrite every ten years and supplementary three-year priority reviews would be sufficient to keep the plan current. The three-year review cycle would allow each newly-elected Council to understand what the TMP contains and validate its content and priority during their term of oversight.

How the TMP is updated is as important as the timeliness of the updates. The OCA's research suggests that project prioritization within the TMP is not well-understood. External stakeholders suggested that they would like more involvement than just participating in strategic goal development and encourage the City to be more transparent in the prioritization of transportation projects. Business groups suggested that the current TMP is primarily focused on movement of people and less so on the transport of freight. External stakeholders also suggested that the plan does not have a regional focus. Overall, these comments suggest more input from community and business groups is required.

The Branch has not assigned any resources to update the TMP on an ongoing basis. In contrast, the City of Calgary has assigned the equivalent of a Director and 4 staff to maintain the Calgary Transportation Plan. The City of Edmonton assigned significant resources leading up to 1999, but since then almost no resources have been assigned to maintaining the TMP. The OCA believes that the TMP is one of the Branch's core functions and requires an ongoing staffing commitment.

Recommendation 2

The OCA recommends that the Transportation Planning Branch update the Transportation Master Plan within the next two years, and develop the process for continual review and update that includes both Council and stakeholder input.

6.1.2. Transportation Policy within the TMP

The effectiveness of City Council's governance over the Transportation Master Plan (TMP) programs and activities can be improved by the establishment of a limited set of Transportation Policies which would be regularly reviewed. The regular review of these policies will ensure realignment of the transportation system strategy as necessary by the governing body of Council.

6.1.2.1 Current Policy Framework

The TMP identifies seven strategic goals together with 42 initiatives as the foundation for transportation program delivery in Edmonton. The only related policies are City Policy C401A – *Edmonton Transit Fare-box Recovery (1988)* and City Policy C451C - *Edmonton Transit Tariff Structure (1992)*, both of which are outdated.

6.1.2.2 Transportation Policy Requirements

The OCA believes specific areas that would benefit from City Policy development are: (a) people movement, (b) goods movement, (c) congestion levels, (d) allocation of capital resources, (e) project decision criteria, (f) performance reporting, and (g) transit land use integration.

(a) People Movement

A people movement policy would establish the City's targets for movement of people and provide strategic direction to the Transportation Department. To provide such guidance, Council should establish goals for movement of high volumes of people on our Bus and Light Rail Transit (LRT) systems and on future High Speed Transit and Bus Rapid Transit systems. Although the City is planning to invest billions of dollars in expansion of the transit system, the current TMP is virtually silent on Council's expectations regarding transit usage patterns. Currently, the TMP forecasts that the transit share of daily trips to all destinations will be approximately nine percent. This share is not expected to change over the long term. One key outcome of an effective strategic transit policy is that it can focus management on operational strategies to increase ridership with a corresponding increase in revenues.

(b) Goods Movement

A goods movement policy would establish specific and clear policy direction from Council regarding the movement of goods and services throughout Edmonton (e.g., truck routes and dangerous goods routes). Efficient movement of goods is vital to the economic health and competitiveness of the City. The OCA's consultation with external stakeholders confirmed the importance and need for efficient and effective freight movement within the City, and between centers in the Province. This policy framework should promote inter-modal (train/truck) and inter-line connections (truck/truck), consistent with what is advocated by the Transportation Association of Canada.

(c) Congestion Levels

A congestion level policy would establish specific and clear policy direction from Council regarding acceptable congestion levels for all modes of transportation within Edmonton. Through their policy framework, some other cities have established acceptable levels of congestion for each mode of transportation. A congestion level policy will serve to establish standards for conducting traffic impact assessment reports and designing enhancements to Edmonton's transportation network.

(d) Allocation of Capital Resources

A capital resource allocation policy would establish guiding principles to the Transportation Department for determining allocation of capital funds towards the transit and roadway systems.

Figure 2 illustrates the TMP planned long-term capital and operating expenditures for various modes of travel.

Figure 2 - Long-term Expenditures Outlook (1998-2020)

(Figures in Billions)

Mode of Travel (estimated % of total trip travel)	Capital Expenses	Operating Expenses	Total Expenses
Roads; automobile drivers (54%) and passengers (23%)	\$3.2 to \$3.5	\$1.2	\$4.4 to \$4.8
Public Transit: Bus/LRT/DATS (9%)	\$1.1 to \$1.3	\$3.3	\$4.4 to \$4.5
Lifestyle; Walking (12%), Bike (2%)	\$0.037	\$0.202	\$0.239
TOTAL	\$4.3 to \$4.8	\$4.7	\$9.1 to \$9.5

Notes:

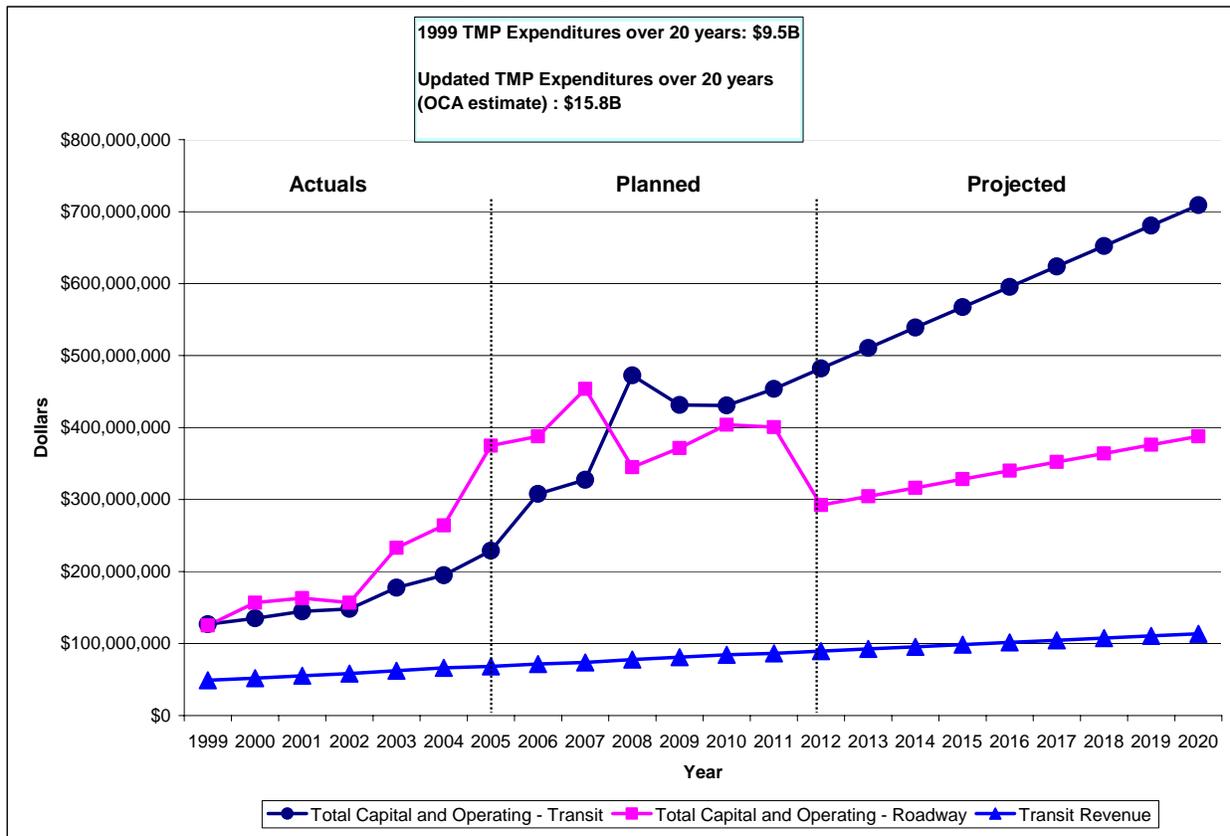
1. The data source is the Transportation Master Plan, Page 84, estimates based on 1998 equivalent dollars.
2. Capital work includes new construction and planned rehabilitation and safety work.

Key observations from these TMP planned expenditures are:

- Planned capital investment in public transit (\$1.1 to \$1.3 billion) will require three times as much in operating expenditures (\$3.3 billion)
- Planned capital investment in roads (\$3.2 to \$3.5 billion) will require one-third as much in operating expenditures (\$1.2 billion).

The OCA conducted its own high level financial analysis of capital and operating expenditures for transit and roadways to assess the economy of the City's transportation investment. Central to the OCA's analysis was the comparison of total capital and operating expenditures for transit and roadways with the usage patterns for each mode. The result of the analysis was a comparison of the cost per trip between transit and roadways. Figure 3 illustrates the actual expenditures (1997 to 2005), planned expenditures (2006-2011), and OCA projected expenditures (2012 to 2020). The projected expenditures (2012 to 2020) are based on a straight line trend of the actual and planned expenditure values. The OCA believes this projection is conservative because the planned expenditures include approved capital budget expenditures but does not include unfunded requirements.

Figure 3– Transit and Roadway Total Expenditure Patterns



Cost per Trip*	Year 2000	Year 2005	Year 2010	Year 2020
Transit	\$1.89	\$3.23	\$6.34	\$9.37
Roadways	\$0.34	\$0.71	\$0.70	\$0.56

*Note: Cost per trip includes capital and operating costs and includes grants for Transit and Anthony Henday Capital Funding.

The OCA’s analysis highlights the following:

- Projections illustrate a widening gap between transit and roadway expenditures. With significant capital investment planned and forecast, the cost per trip for transit will increase towards Year 2020. The cost of trip for roadways is not expected to increase as significantly towards Year 2020.
- The 1998 to 2020 capital and operating expenditures in the 1999 TMP may be significantly underestimated (\$9.5 billion in the current TMP to OCA projected estimate of \$15.8 billion).

A Transportation Policy is needed to provide direction on the allocation of Capital funds for transit and roadways that considers ongoing associated operating costs.

(e) Project Decision Criteria

The purpose of the Project Decision Criteria Policy would be to establish criteria for major transportation investment decisions and to facilitate project prioritization. A Policy

framework is required to ensure that major transportation investment decisions are based upon financial metrics. Typical financial metrics may include targets for: net present value, internal rate of return, break-even time-frame, total costs, future economic benefits, and discounted benefit cost ratio, etc. This must be performed at the initial project proposal and on an ongoing basis as conditions change.

(f) Performance Reporting

The purpose of the Performance Reporting Policy would be to establish a framework for strategic performance reporting, including identification of targets, performance measures, and frequency.

Currently a 3-year status report is provided on the progress of projects within the TMP. In the OCA's opinion, the reporting of individual transportation capital projects does not provide meaningful information to the governing body on the effects of the TMP.

(g) Transit Land Use Integration

A transit land use integration policy would establish direction for land use around transit areas (bus and LRT) to coordinate and support the City's investment in transit infrastructure.

The City's investment in the transit system requires improved alignment and coordination around land use and transit planning to maximize the potential ridership and minimize the amount of tax levy subsidy required. The policy framework should address the use of development incentives, land intensification, integration of bus and LRT infrastructure and neighborhood station plans to support mass people movement.

Recommendation 3

The OCA recommends that the Transportation Planning Branch, in consultation with City Council and other stakeholders develop formal transportation policy within the TMP that addresses the following areas: (a) people movement (b) goods movement (c) congestion levels (d) allocation of capital resources (e) project decision criteria (f) performance reporting and (g) transit land use integration.

6.1.3. TMP Priorities List

The recent "2005 Managed Congestion Review" conducted by the Transportation Planning Branch highlighted the need to revisit the ten-year priorities currently included in the TMP. Since a statutory public hearing is required in order to update the TMP, the Branch is unable to easily update these transportation priorities. The Law Branch has advised that a change in the TMP to address the issues raised in the *Priorities in the Next Ten Years* report would require a bylaw amendment and a public hearing. Although Council recently received an information report on new priorities, the report was only received as an information item, so in fact the approved transportation priorities have not changed.

Maintaining the transportation projects apart from the TMP will allow the Administration and Council the opportunity to re-prioritize the transportation projects every three years

and annually provide an update to ensure that the priorities match the current needs of the City.

Comparatively, Calgary's GoPlan list of priorities can be updated outside the formal Plan and is updated annually through the corporate Transportation Infrastructure Investment Plan (TIIP: 2005 - 2015) process. Calgary's priorities are presented as a separate information item to their Council prior to the beginning of their annual budget approval process.

Recommendation 4

The OCA recommends that the Transportation Planning Branch work with the Law Branch to ensure that the transportation priorities list be maintained apart from the Transportation Master Plan.

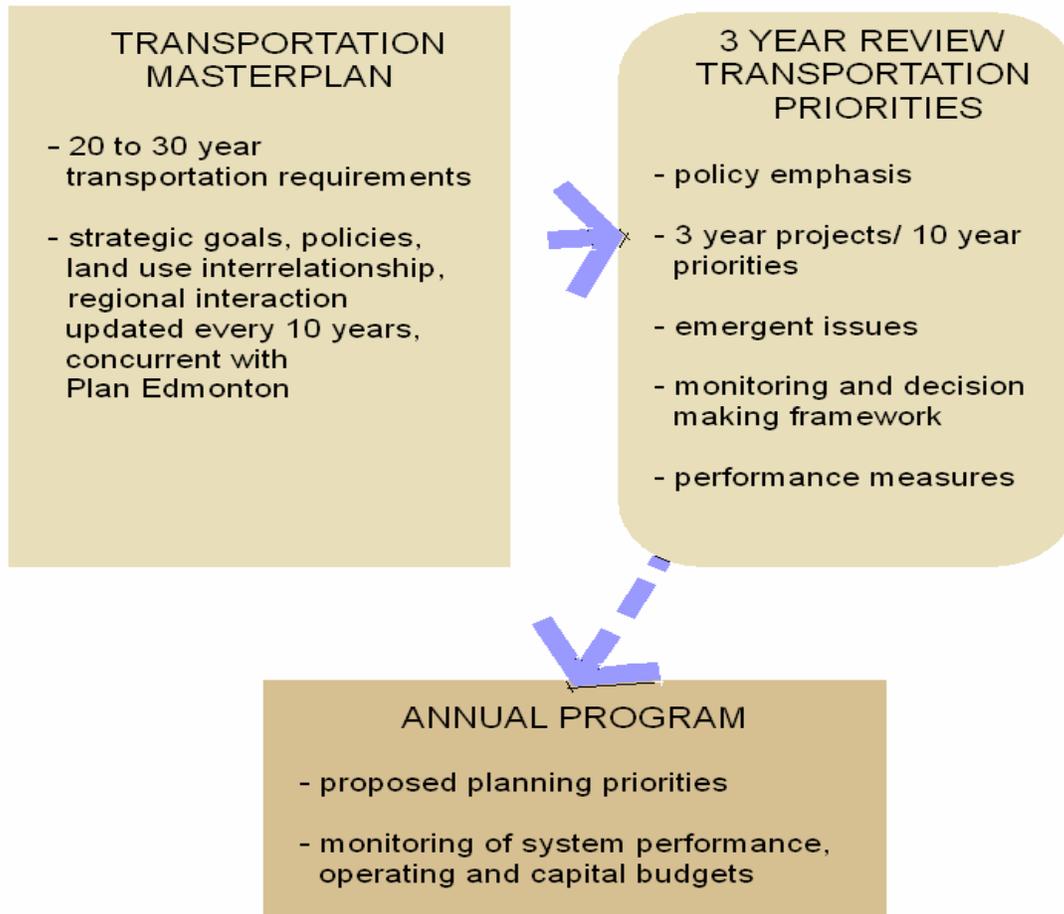
6.1.4. Management Response to TMP Update (Recommendations 1-4)

The Transportation Department concurs with these recommendations, and proposes the following mechanism to respond to the recommendations:

Diagram 1 outlines a proposed framework to be incorporated in the Transportation Master Plan update process that would ensure that, while the Plan is updated approximately every 10 years (concurrently with a major household travel survey and an update of Plan Edmonton), that there is an opportunity every 3 years, in advance of the Council direction setting, to review the implementation priorities of the plan, review the monitoring and performance framework, review the decision making framework, and review the policy emphasis for such questions as the emphasis on investment in transit vs roads, and rehabilitation vs growth. This would also allow an opportunity to address emergent issues (such as new funding programs from other orders of government) as part of this direction setting. To have the TMP update concurrent with Plan Edmonton, and to ensure that the plan is approved prior to the 3-year direction setting by City Council in 2008, the update must be completed within the next 2 years, and mechanisms to engage both Council and other stakeholders must be put in place to ensure that the update can be completed within this time period.

The Household Travel Survey results were reported in May, 2006 and form an important technical component of the plan update. The Transportation Master Plan update will address how more frequent monitoring of travel patterns will be undertaken in order to ensure the tracking of system performance.

For the mechanism outlined in Diagram 1 to be effective, the 10 years priorities list must be outside of the Transportation Master Plan, as revisions to the TMP itself require a Statutory Public Hearing with the potential to result in a reopening of the overall plan.

Diagram 1 - Proposed Decision Making Framework

It is noted that, in addition to the 3 year direction setting, an annual monitoring of the performance of the system, the achievement of 3 year goals, and the priorities for planning studies would be undertaken.

In order for the Planning framework shown in Diagram 1 to be effective, additional resources above the base workforce of the Transportation Planning Branch will be necessary. Due to the high workloads resulting from the current growth cycle and high levels of investment in transportation infrastructure, reallocation of existing staff is not possible. Moreover, this framework addresses a need for an ongoing set of resources to maintain, monitor and report on performance, as well as undertake the required technical

assessments to support the decision making framework. The Transportation Planning Branch has identified the need for additional resources for development and maintenance of the Plan, and accompanying policy and priority framework, additional modeling work, and additional monitoring of the performance of the transportation system. To ensure that resources are in place to allow the planned TMP update to proceed, additional resources are being recruited in 2006.

With respect to mechanisms to address stakeholder involvement (both in identifying issues, and in reporting outcomes), the public involvement framework of involve Edmonton is being applied in the design of the stakeholder process for the TMP. This is intended to ensure that mechanisms are put in place not only for the plan development, but also for the ongoing communication of results.

Overall, the four recommendations outlined in this section are being addressed directly through incorporating them into the TMP update process, so the timeline to address these recommendations is within the next 6 months to 2 years as this will be the timelines over which the Transportation Master Plan Update is being developed.

From a corporate perspective, the Transportation Master Plan is an important document in planning and guiding the evolution of Transportation for the City. With its greater than 20 year time horizon, its role is to survey and understand emerging challenges and opportunities and anticipate growth and development within the City for the purpose of determining appropriate Transportation direction. This will include predicting and considering various scenarios and growth trends (residential and non-residential) and related impacts.

The TMP is informed by the broader Municipal Development Plan (MDP or Plan Edmonton) and provides direction to shorter-term plans such as the LRFP (Long Range Financial Plan), the three-year department/corporate Business Plans, Capital Project Profiles, Capital Priorities Plan and the annual (and eventually 3-year budget).

The TMP should assess alternatives for the evolution of the community and related transportation requirements, establish high-level policy related to key results areas (KRA's) to drive future decision making and propose key performance indicators (KPI's) to reflect on the performance of the transportation systems. This will support prioritization of shorter term projects.

The TMP should not include a prioritized list of projects, nor should it pose performance measures or targets of performance. Prioritized project lists will emerge from a shorter-term, more corporate-wide review of investment needs and the situation in the community, including Transportation, with identification and prioritization of initiatives based on the 3-5 year Council Strategy and set of Council-approved Outcomes. Performance Measures or targets can only be effectively applied with the imminent approval of a program and associated budget.

6.2. Governance of Transportation Planning

Governance is defined as, “The combination of processes and structures implemented by the governing body in order to inform, direct, manage, and monitor the activities of an organization towards the achievement of its objectives.”¹ Governance can also be described as a relationship model between a governing body and an empowered administration. An integral part of any governance model is the accountability of the administration. Accountability is accomplished by delivering and communicating both plans and achieved results to the governing body. Governance models include the governing body’s oversight role in providing assurance that the organization is achieving its intended goals and that the organization is operating in a manner that best serves its stakeholders. Within effective governance models, policies serve as guiding mechanisms designed to ensure that intended goals are being accomplished.

6.2.1. Transportation System – Strategic Goals

The Transportation Planning Branch does not have a branch business plan, strategic goals, targets, or performance measures. The Branch uses the goals defined in the Transportation Master Plan to guide its strategic direction. The Transportation Department business plan also uses the seven goals defined in TMP as its strategic goals. The OCA observed that these strategic goals are consistent with the urban transportation goals defined by the Transportation Association of Canada.

As part of this audit, the OCA conducted a qualitative assessment by surveying eleven internal stakeholders (City staff) within the Transportation department and eleven external stakeholder groups that were familiar with the TMP. Both internal and external stakeholders were asked to rate the quality of results achieved for each of the TMP goals using a four-point scale and provide rationale for their ratings.

The results of this assessment are illustrated in Figure 4 (following page). The OCA observed that a significant gap exists between the ratings provided by internal and external stakeholders. The OCA believes that these results signify that the Transportation Planning Branch has a communication gap in its interactions with external stakeholders.

Appendix A is a comparison of the Strategic Goals within Calgary and Edmonton’s Transportation Master Plans. As shown in Appendix A, Calgary’s TMP defines measures and targets for many but not all of the goals in its TMP.

¹ Definition of Governance: Institute of Internal Auditors, The Professional Practices Framework, Jan 2004, p 28.

Figure 4 – Internal vs. External Assessment of TMP Results

Ratings: A= Excellent (4) B = Good (3), C=Fair (2), D=Poor (1)

Strategic Goal	4.0	3.5	3.0	2.5	2.0	1.5	1.0	NOTES
	A		B		C		D	
A – Integrated Transportation System		●	◆					Internal 3.6 External 2.8 Gap = 0.8
B – Enhance Edmonton Economy			●	◆				Internal 3.1 External 2.3 Gap = 0.8
C- Effective and Efficient Transportation System			●	◆				Internal 3.2 External 2.3 Gap = 0.9
D – Management of Community Impacts		●	◆					Internal 3.6 External 2.8 Gap = 0.8
E – Environmental Stewards		●	◆					Internal 3.5 External 2.8 Gap = 0.7
F – Safe and Serviceable Transportation System		●	◆					Internal 3.5 External 2.7 Gap = 0.8
G – Monitoring and Responsive Planning		●	◆					Internal 3.5 External 2.4 Gap = 1.1
AVERAGE		3.4	2.6					Average Gap = 0.8



For effective governance to take place management must demonstrate that the organization is moving towards established strategic goals and targets. The OCA observed that management has communicated project results, but not targets and measures to Council and the Transportation & Public Works Committee. The OCA believes that communicating project level results does not replace the reporting of strategic results, and may overload and distract the governing body from its oversight role.

Recommendation 5

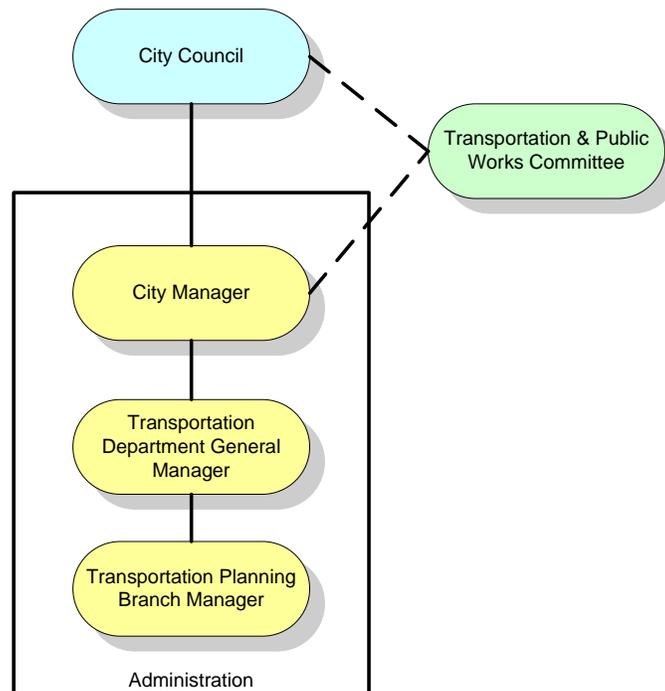
The OCA recommends that the Transportation Planning Branch develop strategic targets and performance measures and communicates them on a regular basis to the governing bodies (Transportation & Public Works Committee and City Council) as well as to external stakeholders upon approval.

6.2.2. Role Clarity

The OCA believes that improved role clarity in the City's current transportation governance framework is required.

The City of Edmonton's transportation governance framework includes an Administrative body and two governing bodies. The Transportation Department reports through the City Manager to the Transportation and Public Works Committee and through to Council (see Figure 5).

Figure 5 – Transportation Governance Framework



The Administration is responsible for developing and implementing an effective transportation system. The Administration provided TMP progress updates to Council in 2001, and 2004. Although these status updates have provided an indication of project results and intentions (priorities), the OCA does not believe that they demonstrated that the strategic goals of the TMP are being achieved.

The OCA observed that much of the project level information provided to the Transportation & Public Works Committee and Council generates further project level inquiries by Councilors, which may indicate a lack of comfort with the current decision-making process. The Transportation & Public Works Committee and Council have limited involvement in the prioritization of projects during the planning process, causing them to focus on project prioritization during the budget approval process.

The Structure:

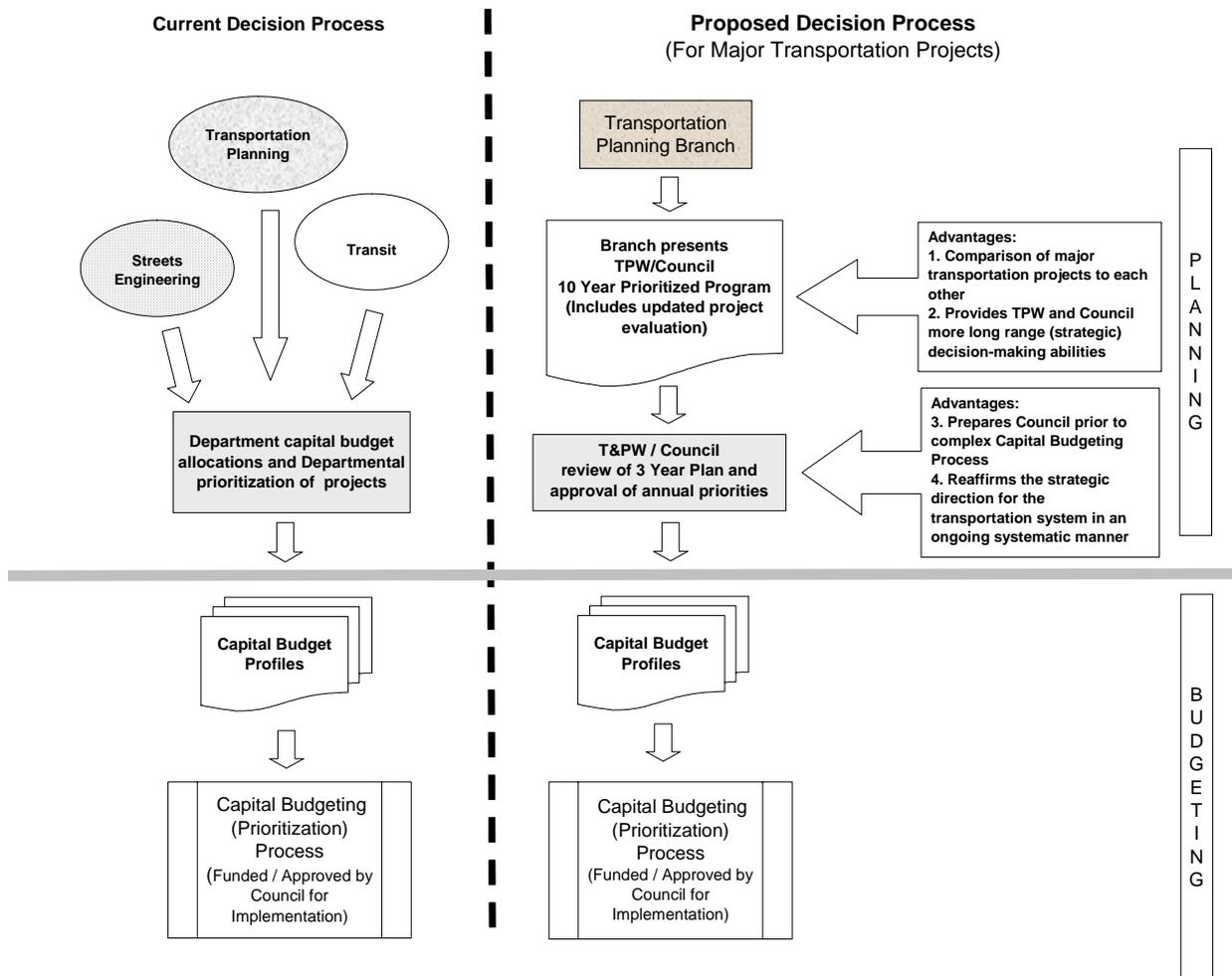
An effective governance framework helps the highest governing body focus on strategic direction and accomplishments of the organization. Increased definition and clarity is

required on how transportation decisions are made by the Administration, Transportation & Public Works Committee and Council. The OCA believes that changes in role definition and the interactions between the Administration and the Transportation & Public Works Committee will improve the current governance structure.

Decision-Making Framework:

The left side of Figure 6 illustrates the current framework in which transportation decisions are made. Under the current process, the responsibility for prioritization and decision making lies within the departments. The Administration’s priorities are then submitted to Council during the budget process for approval. The OCA believes that the Transportation & Public Works Committee and Council need to serve a larger role during the planning stage.

Figure 6 – Proposed Role Changes to Decision Process



The right side of Figure 6 illustrates the OCA’s proposed change in the decision-making process. The primary advantage of the proposed decision process model is that it would provide a framework that would allow Transportation & Public Works Committee and Council to understand and participate in prioritizing transportation related projects

during the planning stage – well in advance of the budget approval process. The OCA believes this process change would provide the governing bodies with more direction-setting ability, build trust in decisions made, and allow the Administration to move forward with a reasonable level of assurance that prioritized projects will be supported during budget approval.

Proposed Future Roles:

Table 2 describes the proposed roles framework for the Administration and the governing bodies (TPW / Council).

Table 2 – Proposed Roles Framework

ACTIVITY	ADMINISTRATION	TPW COMMITTEE	COUNCIL
1. Transportation Master Plan	<ul style="list-style-type: none"> Update the current transportation plan Develop transportation policies for presentation to TPW and Council Promote a forum for continual TMP development Communicate approved TMP changes to public 	<ul style="list-style-type: none"> In depth review and discussion of TMP development and changes. 	<ul style="list-style-type: none"> Approve development and changes to the TMP
2. Prioritization of Transportation Projects (Planning Stage)	<ul style="list-style-type: none"> Develop a 10 year program and major project listing (includes decision analysis details of projects and identification of required planning studies) 	<ul style="list-style-type: none"> Receive, review, and discuss information presented. Recommend project priorities to Council 	<ul style="list-style-type: none"> Adjust and approve prioritized listing of transportation projects (10 Year Plan and Annual Plan)
3. Public Input & Communication	<ul style="list-style-type: none"> Communicate project and strategic results to citizens Consult with citizens regarding transportation system expectations 	<ul style="list-style-type: none"> Receive and review public input 	<ul style="list-style-type: none"> Receive and review public input
4. Performance Monitoring and Reporting	<ul style="list-style-type: none"> Provide annual reports on strategic and project level results 	<ul style="list-style-type: none"> Review and evaluate project and strategic results using approved performance measures Make recommendations for improvement 	<ul style="list-style-type: none"> Review and evaluate project and strategic results

Strategic transportation planning and implementing a long term transportation plan is a complex process that requires significant investment in time to understand the problems and potential solutions. Strategic transportation planning has significant impacts on the

City's overall expenditures. Ineffective transportation planning and implementation would compromise the City's approach to the movement of people and goods, which is a strategic priority in Plan Edmonton.

Recommendation 6

The OCA recommends that the Transportation Planning Branch develop a formal City policy for Council approval to define Administration, Transportation & Public Works Committee and Council roles in transportation planning.

6.2.3. Transportation Priority Setting

6.2.3.1 Transportation Decision Model

Organizations continually make decisions that determine the prioritization of projects and the allocation of resources to those projects. A less than optimal project prioritization will reduce the organization's efficient and effective use of resources. In this report, the OCA has already identified the need for the transportation priorities list to be maintained apart from the Transportation Master Plan. This change will give the City needed flexibility in the decision-making of transportation projects.

The OCA met with management and staff to discuss methodologies related to decision-making for transportation infrastructure projects. In 2002, the Transportation Planning Branch developed a transportation based economic model which was used to provide justification for incurring debt for six potential major transportation projects. This transportation decision model facilitates benefit-cost analysis and considers both economic and social factors. The model incorporates net present valuation so that projects with differing time frames and capital requirements can be compared on relatively equal footing. The OCA reviewed the model and considers it robust but believes the model should be enhanced to include legal risks.

The OCA also believes that the organization needs approved decision criteria to provide guidance on project prioritization. Examples of decision criteria include financial ratios such as minimum benefit-cost ratios, targeted payback periods, and targeted rate of return. These decision criteria will need to be vetted and confirmed by the governing bodies. The OCA strongly believes that the establishment and use of decision criteria will serve to provide a common understanding of how projects are compared and selected.

Recommendation 7

The OCA recommends that the Transportation Planning Branch formally present a transportation decision model with appropriate criteria to Transportation & Public Works Committee and Council for approval.

6.2.3.2 Project Prioritization

Since proposed project costs and benefits change significantly from year to year, project-related information should be updated on an annual basis. This updating process will result in a shifting of the priority of projects. The reprioritized project list should then be submitted to the TPW Committee and Council for review and discussion

in sufficient time to ensure that the approved projects can be included in the department’s budget submissions. This reprioritization will also heavily engage TPW and Council during the planning stage and build strategic direction for the Transportation Planning Branch.

The OCA has provided an illustrative example shown in Table 3 of what this prioritized listing may look like. The exact details of information requirements would have to be agreed to by the administration and the governing bodies of Council and TPW. This would provide a transparent demonstration that the approved transportation projects meet predetermined thresholds for investment.

Table 3 Example of Transportation Prioritized Listing for Year 2006-2016

Project Name	Priority	Approval	Capital Cost	Net Present Value	Internal Rate of Return	Break-Even Time-Frame	Discounted Benefit / Cost Ratio
				Targets:	(Minimum 10%)	(Maximum 20 years)	(Minimum 1.5)
Project A	1	Yes	\$48 Million	\$62 Million	15%	8 years	3.0
Project B	2	Yes	\$12Million	\$20 Million	14%	11 Years	2.6
Project C	3	Yes	\$84 Million	\$90 Million	11%	10 years	2.0
Project D	4	No	\$18 Million	\$22 Million	11%	21 years*	1.8
Project E	5	No	\$34 Million	\$36 Million	5%*	22 years*	1.2*

*Would not meet minimum criteria thresholds for project approval

Recommendation 8

The OCA recommends that the Transportation Planning Branch present every three years a reprioritized list of major transportation projects and planning studies to the Transportation and Public Works Committee and Council for approval and that this list be reviewed annually.

6.2.4. Public Involvement

The Transportation Planning Branch uses an extensive public involvement process in the planning of community and major transportation projects. Public involvement in community transportation projects such as traffic calming and noise abatement are prescribed by the *Public Participation Guidelines for the Community Traffic Management Process*. This process seeks public input through active community involvement. Representatives of stakeholder groups are invited to sit as members on a Community Transportation Committee that is facilitated by a consultant. Typical means of communication used in the public involvement process include community newsletters, open houses, and questionnaires.

The City of Edmonton’s *Public Involvement Framework* is a recently-established corporate standard for public involvement and is currently being adopted by the Transportation Planning Branch. It defines a strategic approach to achieve consistency for public involvement on projects. The Public Involvement Framework does not prescribe specific methods to be used in the public involvement process, but identifies various methodologies that can be used.

During this audit the OCA attended open house sessions hosted by the Transportation Department. Overall the sessions were well attended and facilitated by the department. However, the OCA observed that a consistent and coordinated approach to public involvement does not exist across the department. As a project moves through initiation to the completion phase, different approaches are used to inform and engage the public by the different branches who take project ownership.

The OCA did observe some frustration and anxiety with the public involvement process by the citizens in attendance. Citizens have different levels of knowledge of transportation projects and about the transportation planning process. By considering the differing knowledge levels of the participants, sessions should be designed to inform citizens on project background, project progress, decisions made, and future plans. Sessions could also include ways to actively engage citizens in providing meaningful input into projects.

Recommendation 9

The OCA recommends that the Transportation department enhance its public involvement process to provide a consistent and coordinated approach through all phases of transportation projects.

6.2.5. Management Response to Governance of Transportation Planning (Recommendations 5-9)

With respect to recommendations 5 through 8, the department is in agreement with these recommendations, and we believe that they build on the directions set out in recommendations 1 through 4 of the previous section, and outlined in Diagram 1. In particular, the following comments are provided to indicate how these recommendations could be addressed:

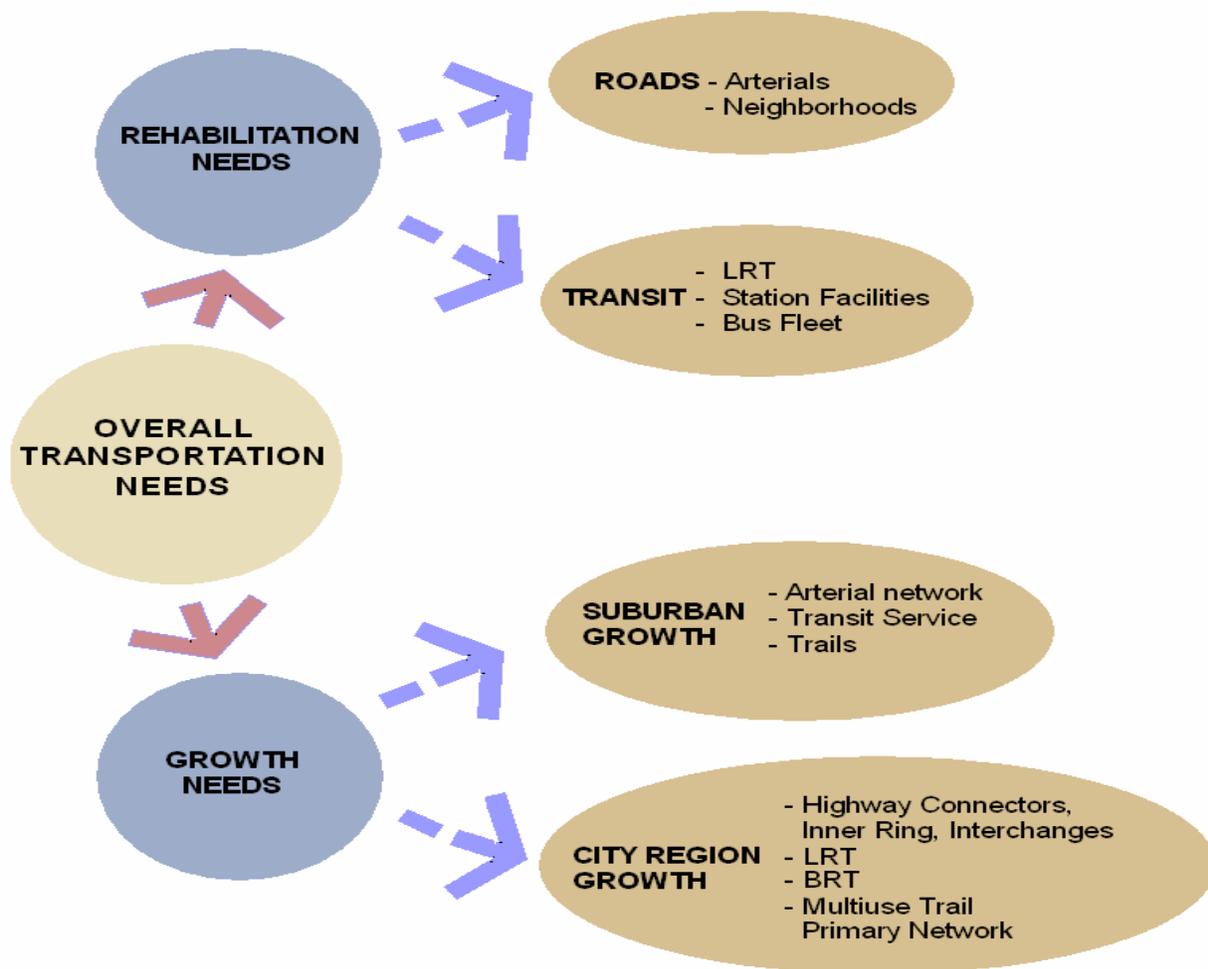
Targets, system performance measures result areas and indicators, and strategies for the communication of these are seen to be an important part of both the three year direction setting and annual budget review process. It is noted that, to date, the plan monitoring process has been limited to reporting every 3 years on the progress in implementing projects, but has not addressed trends in the operating of the transportation system. These indicators are also seen as important in the annual department business plan. Enhanced measurement and reporting of performance will require additional resources, and supports the findings of the previous sections with respect to the need for dedicated resources. The previous response also outlined that the stakeholder process for the TMP update should address ongoing communications as one of the plan outcomes. Overall timelines to respond to recommendation 5 will be through the next 6 months to 2 years.

Approval of a formal policy defining Council's role in Transportation Planning is supported to ensure that effective use of resources is undertaken, and that the role of Council in outlining priorities, and the role of the Administration in determining how these priorities are carried out is clarified. At the present time, inconsistencies exist between the degree of direction provided by Council or committee with respect to both

priorities and how the priorities are achieved. This policy will also formalize how TPW committee is afforded an opportunity to be involved in determining planning priorities before resources are committed. A decision model is considered to be a part of this policy. It is intended that this direction would be addressed in stages, with the first step being the consideration with the new Transportation and Public Works Committee, in October, 2006, as to the priority planning projects to be undertaken through fall, 2007 by the Transportation Planning Branch. It is also noted that the Transportation Department will work with the Corporate Business Planning Department and City Clerk to ensure that this work reflects the overall directions for 3 year direction setting and consistency in governance.

It is noted that a transportation decision model needs to address a number of broad categories of transportation expenditures, and also respect that a framework needs to be developed to directly compare investments in these categories (for example, roads vs transit, or rehab vs growth). Broad categories that need to be addressed in this decision model are outlined in Diagram 2.

Diagram 2 - Major Project/Program Investment Categories



Rehabilitation: arterial roads, neighborhoods, major transit system

Growth: roadways and transit routing and centres to support ongoing development

Major System Investments: highway connectors, inner ring, interchanges; LRT and BRT

Non Motorized modes: (trails, paths, sidewalks)

The decision model and performance/governance framework then allow for an annual decision making by Transportation and Public Works Committee. In some instances, this review may also highlight areas where more detailed technical work may be necessary in support of transportation policy (for example – Transportation Demand Management). It is intended that recommendation 7 will be addressed overall through the next 6 months to 2 years as part of the TMP update.

With respect to recommendation 9, the Department agrees with the recommendation, but notes that the establishment of the Public Involvement Office and the “involving Edmonton” framework will provide the mechanism to address this recommendation. The department is working with the Office to ensure that required adjustments to processes in use in the department take place. Anticipated timelines for this adjustment and consistent application of the Involve Edmonton framework would be within the next 6 months.

6.3. Managing Corporate Projects

Corporate projects require a high level of integration between City departments and branches in response to growth and development. Effective alignment and integration of various city planning functions is required to develop an effective transportation system and also to ensure that the City’s interests are represented in a collective manner.

6.3.1. Integration of Transportation Planning

The integration of planning with the Transportation Planning Branch and other City branches occurs at three levels: at a strategic planning level, at a project level, and at a day-to-day operational level.

This integration is strongest within the Transportation Department itself and occurs at the strategic and project level. With respect to planning areas in other City departments, the level of integration is strongest at the day-to-day operational level. The level of integration between Transportation Planning Branch and other planning areas at the project level varies in response to the overlapping of corporate projects.

To increase the level of integration, the OCA believes the Administration needs a process to identify major corporate projects and ensure that the City is protected from

risks of a corporate nature. Within the current Administrative framework each department individually represents its own interests but the collective interests of the City are not well represented. The impact of this observation is that one department may benefit from improved revenues, while another department may be faced with significant expenses, resulting in a net loss for the corporation. The example of South Edmonton Common (23 Avenue – Gateway Boulevard Interchange) is presented to illustrate the need for a corporate approach to managing risks of a corporate nature.

Recommendation 10

The OCA recommends that the City Manager implement a corporate approach to identify and manage risks relating to corporate level projects.

6.3.2. Management Response

Management concurs that there are opportunities to identify and manage risks related to corporate-level projects more effectively.

The Corporate Business Planning department will seek to achieve stronger alignment throughout the corporation by ensuring a single Council Strategy and set of Council-approved Outcomes drive operational priorities and initiatives. This is expected to contribute stronger integration of administrative effort across departmental boundaries.

Currently, risks associated with operating costs are assessed as part of the "value management" tool used to review and prioritize administrative investments. Capital projects are put forward by departments using a capital project screening template which assesses (i) level of importance, (ii) the business case, (iii) partnership funding, (iv) project risk and (iv) interrelationship with other projects. In the future, consideration will be given to merging these processes to ensure one set of criteria are used to drive prioritization of initiatives. The last two capital project screening template dimensions, ((iv) & (v)) have, for the most part, been used to (a) ensure that operational and project level risks are managed and (b) that projects that are related each achieve funding within the same timeframe. In the future, this information will be used to further connect these department-level service packages for consideration as corporate-level projects. This linkage will go beyond simply assessing individual sub-project initiative risks and ensuring implementation during a consistent time horizon to include a corporate-level assessment of risk to protect from unforeseen costs, and limit the cross-impact of one sub-project in one department on others and the corporation overall.

Related to this approach, Business Planning Leader positions established within Corporate Business Planning will work within departments to ensure risks are appropriately reflected within department business plans and the service packages advanced for consideration by senior management. These resources will help to enable the linkages between interrelated projects from different departments.

In addition, in order to ensure corporate-level risks are being identified, quantified and

managed, a 2007 Service Package entitled "Enterprise Risk Management" is under development for consideration by Council.

6.3.3. Illustrative Example – South Edmonton Common

The challenges facing the City related to the South Edmonton Common (23 Avenue and Gateway Boulevard) presented the OCA with the opportunity to study a corporate project and understand how transportation issues evolve. This section provides a history of the development of this area and presents learnings that relate to transportation planning issues.

The South Edmonton Common development is located at the intersection of 23 Avenue with Calgary Trail and Gateway Boulevard. When completed, the site will feature over 2 million square feet of building development and cover 262 hectares of land, making it Canada's largest "big box store" complex. The 23 Avenue intersection will be upgraded so that 23 Avenue goes over Gateway Boulevard and Calgary Trail. The 19 Avenue eastbound intersection will be replaced by a ramp that goes under Calgary Trail. Total project costs for the intersections are currently estimated at \$125,075,000.

Several key events transpired during the 1980s and 1990s that had significant implications for the City of Edmonton as it reacted to the challenges of the development of South Edmonton Common.

In the early 1980's, the City approved an Area Structure Plan to accommodate the Edmonton Research & Development Park. The area was primarily zoned for Industrial use.

In the early 1990's the City of Edmonton, Province of Alberta and CP Rail entered into a series of agreements for the transfer of land among the parties. These agreements led to relocating the CP Rail tracks south of 23 Avenue. This created an isolated triangle-shaped parcel of land bounded by the CP Rail line, Calgary Trail, and the transportation and utility corridor. One of the conditions of the land transfers was provision of access to Calgary Trail between 23 Avenue and Anthony Henday Drive (i.e., 19 Avenue access).

In the mid 1990's, the Area Structure Plan for the Research and Development Park was amended to accommodate the first phase of the proposed South Edmonton Common development. Council was advised that a zoning change from industrial to commercial land use would ultimately require an interchange to replace the existing intersection. Full development was expected to be reached in about 25 years (2020).

Learning #1: When the zoning changed from the industrial to commercial use, the City was exposed to significant risks associated with this corporate project. The project presented the City with significant development opportunities but also corresponding transportation challenges. An integrated approach did not exist to manage corporate projects risks and optimize the City's interests.

During the period of 1993 to 1999, the Transportation Planning Branch was developing the City's TMP. The TMP was approved in 1999 and identified the strategic need for free-flowing traffic movement for northbound and southbound traffic at 23 Avenue. To accomplish this goal, free flowing northbound and southbound traffic at the 19 Avenue intersection was also required.

Learning #2: The TMP did not incorporate a means to effectively respond to emerging corporate projects and their impact on other transportation projects. The TMP provided strategic direction regarding the need for free flowing roads, but did not provide a means to compare this project's needs against other transportation projects within the City.

In the late 1990's, an increase in the amount of commercial land for the development was approved by Council. As the development pace picked up, numerous Traffic Impact Assessments were completed by various transportation consultants on behalf of the developer (see Table 4). All Traffic Impact Assessments were reviewed by the Transportation Planning Branch.

Table 4 – Pace of Development at South Edmonton Common

Development Pace Over Time	Consultant "A" 1996	Consultant "B" 1998	Consultant "C" 2004 ²
Expected Year of Completion	2020	2020	2010
Time Frame To Full Build	25 Years	20 – 25 Years	5 – 10 Years

The expected time frame for full development was significantly reduced over a span of 8 to 9 years. This began to place significant pressure on the City to address the transportation issues emerging around South Edmonton Common.

Learning #3: The pace of this development accelerated at a rate exceeding the City's capacity to plan for a major interchange at 23 Avenue. The City needed to manage and control the pace of development (planned growth) to mitigate the impacts on the transportation system.

During the period of 2001 to 2003, the Transportation Planning Branch undertook the *23 Avenue – Gateway Boulevard / Calgary Trail; Interchange Concept Planning Study* to develop and evaluate feasible interchange concepts and estimate the costs of construction.

During this same period, Council raised the issue of the transportation impacts associated with increased traffic around the development. Between June 2001 and June 2004, the Transportation and Public Works Committee requested and received five follow-up reports from the Branch on this same topic.

² **Note:** As of December 2004, the development had grown to more than 1.5M square feet of commercial/retail space in less than 5 years. By 2010, the consultant expected the full development to be at 2.25 million square feet.

In the fall of 2002, the Branch undertook a social benefit-cost analysis for each of the six transportation growth projects identified for debt financing, one of which was the South Edmonton Common interchange. At this time the Branch reported a benefit-cost ratio of 2.9.

In the fall of 2003, the results of the concept planning study were provided to the Transportation and Public Works Committee and Council. The recommended interchange concept was approved (split diamond configuration at the 23 Avenue intersection and a free flowing ramp at 19 Avenue). As seen in Table 5, the total project costs were estimated at \$75,000,000.

Table 5 – Project Costs (\$2003 Millions)

Element	23 Avenue	19 Avenue
Earthwork	\$4.9	\$0.9
Bridges / Retaining Walls	9.6	3.5
Drainage	6.9	6.8
Roads (pavement, curbs, detours, signals, utilities and lighting)	12.0	3.5
Property, Landscaping, Signing, Noise Walls, Multi-Use Trail and Sidewalks	5.1	2.5
Engineering, Administration, General (30%)	11.5	5.3
GST (City Share)	1.7	0.8
Total (By Location):	51.7	23.3
Project Grand Total Costs:	\$75.0	

In late 2003, during a Special Council Meeting on the capital budget, Council asked the Branch to provide information on advancing project funding, benefit-cost analysis, and information on developer contributions. The Branch reported the same benefit-cost ratio of 2.9 that was calculated in 2002.

Learning #4: In response to increased public awareness regarding increases in congestion, the governing bodies requested more information about the development and its impacts on transportation. Several detailed reports were prepared and presented to Transportation and Public Works Committee and Council in response to these requests. The effect was a shift from a strategic focus for the governing bodies to a detailed project focus.

In April 2005, the Transportation & Public Works Committee was informed of new project costs that were emerging and potential alternatives. The project conceptual cost estimate of \$75M (2003\$) was updated based on preliminary engineering work and were reported to be \$107M (2004\$) primarily due to factors relating to pipeline relocation, land acquisition, retaining walls, and inflation.

Table 6 illustrates the OCA’s analysis of the total project costs as recorded on approved Capital Project Profile Summary Sheets. The OCA found that the total project costs are expected to be at least \$125,075,000. This estimate does not include capital costs incurred by the Branch in completing the concept study.

Table 6 – Total Capital Project Costs: 23 Avenue and Gateway Boulevard Project

Project Profile Summary Sheet Reference Number	Cost Estimate
#06-66-1482 23 Avenue / Gateway Interchange – Alberta Municipal Infrastructure Program, Land (\$5,000,000), Detailed Design (\$5,000,000) and Construction (\$99,750,000) September 2005	\$109,750,000
#04-66-9579 23 Avenue-Gateway Blvd Drainage Construction (\$5,952,000) & Design (\$3,848,000) September 2004	\$9,800,000
#04-66-1483 23 Avenue/Gateway Blvd Preliminary Design (\$2,000,000) / Land Acquisition (\$3,525,000). January 2006	\$5,525,000
OCA's estimated total capital project cost:	\$125,075,000

As part of its analysis, the OCA requested that the Transportation Planning Branch re-run the benefit-cost model using the current expectation of total cost. Table 7 provides a comparison with the original 2002 results, showing a decrease in the benefit-cost ratio and an extension of the break-even time frame.

Table 7 – 23 Avenue Interchange – Social Benefit / Cost Analysis

Financial Attributes	Branch's Analysis in 2002	City Auditor's Requested Analysis in February 2006
Capital Cost	\$74,000,000	\$125,075,000
Net Present Value	\$80 - \$100 Million	\$45 - \$55 Million
Internal Rate of Return	11% - 12%	6% - 7%
Break-Even Time-Frame	10 – 12 years	18 – 22 years
Discounted Benefit / Cost Ratio	3.0 (Range of 2.7 – 3.3)	1.6 (Range of 1.4 – 1.8)

In early 2006, City Council was briefed on concerns regarding Section 534 of the Municipal Government Act. Section 534 states that any person having an interest in land that is adjacent to land upon which a municipality has constructed or erected public work or structure is entitled to compensation from the municipality for loss of use or permanent decrease in value. This emerging risk has the potential for large claims that could significantly increase the final costs of the 23 Avenue interchange.

Learning #5: The Transportation Planning Branch has a methodology, but does not have a formal process to initiate a benefit- cost analysis. Lack of such a process limits City Council's ability to make effective choices relating to prioritizing transportation projects as circumstances change.

7. Conclusions

The objective of this audit was to assess the ability of the Transportation Planning Branch to develop and implement an effective transportation strategy for the City of Edmonton. To meet this audit objective, the OCA identified four audit criteria to guide our review and provide recommendations for improvement.

Audit Criteria 3.1.1: The Branch has clear strategic direction which is measurable and clearly communicated to various stakeholders.

The OCA concluded that the Transportation Planning Branch has established a strategic direction, but further work is needed to build clarity into the transportation

strategic direction. The OCA recommended that the Branch assign resources to the immediate and continual update of the Transportation Master Plan.

The OCA also concluded that strategic direction is not stated in a manner that is measurable nor is it communicated to stakeholders as effectively as it should be. The OCA recommended that the Branch develop targets and performance measures that are reported on a regular basis to the governing bodies and that the Branch engage and communicate with stakeholders on the accomplishment of its strategic results.

Audit Criteria 3.1.2: The City's corporate business planning and transportation planning requirements are effectively integrated.

The OCA concluded that corporate business planning and transportation requirements need to be more effectively integrated. High level risks related to corporate projects such as South Edmonton Common were not identified in advance, were not managed at a corporate level, and resulted in the Corporation having to work in a reactive mode. The OCA recommends that the City Manager implement a corporate approach to identifying and managing risks relating to corporate level projects.

Audit Criteria 3.1.3: An effective governance structure exists for implementing transportation strategy and plans in a timely manner.

The OCA concluded that the current governance structure does not adequately support implementation of the transportation system. The OCA recommends that the Transportation Planning Branch develop a formal City policy for Council approval to define its role in working with the Transportation & Public Works Committee. The OCA also recommended that the Branch work with City Council and other stakeholders to develop transportation policies, within the TMP, that would provide improved strategic direction to the organization.

Audit Criteria 3.1.4: Financial cost-effectiveness is demonstrated through formal analysis and evaluation.

The OCA concluded that financial cost-effectiveness in implementing City's transportation system has not been demonstrated through formal analysis and evaluation. The OCA recommended that the Branch work with its governing bodies to formalize a transportation decision model and also to develop criteria upon which to base transportation decisions. Additionally, the OCA recommended that the Branch use this model to create a prioritized list of transportation projects for approval by the governing bodies on an annual basis. The OCA believes this approach will add needed transparency and assurance to the decision-making process during transportation project planning stages.

Finally, the OCA believes the Transportation Planning Branch has demonstrated the ability to develop and implement a transportation strategy for the City of Edmonton. However, the OCA also believes that significant changes are needed for the Branch to function at its potential. In particular, the Branch must work to improve the governance

framework that will help demonstrate that the transportation system is effective. This governance framework needs to focus on role clarity, policy development, a decision framework, and increased communication for clarity and transparency in decision-making. The OCA believes that this improved governance framework will lead to greater trust between the Administration and Council and ultimately to a more effective transportation system.

The Office of the City Auditor thanks the management team of the Transportation Planning Branch for their cooperation and assistance during this audit.

Appendix A: Comparison of Transportation System Goals

Edmonton Transportation System*	
Strategic Goals	Measure / Targets
Integrated System / Choices	Transit Mode Split / No targets
Enhance Economy	None.
Effective and Efficient	Not specific (40 – 45% recovery of costs from transit fare box revenues – Policy C401A, 1988)
Manage Community Impacts	Annual citizen feedback / Targets exist
Environmental Stewardship	Emission monitored
Safe and Serviceable System	Accidents reported / Collisions
Monitor and Responsive Planning	Recent congestion study completed
Calgary Transportation System**	
Safe and secure travel	Collision rates / Pavement quality index / targets exist
Choices in travel modes	Travel Mode choices (downtown and non-downtown split), and targets exist
Reasonable access to transportation for citizens	Coverage (% City within 400 metres), Operating hours per capita, targets exist
Facilitate movement of goods and services	Percentage of selected goods and services routes, better than traffic jam condition – no targets
Develop TMP through on-going consultation	Customer satisfaction surveys – No targets
Compatible decisions about use and transportation systems	Density of new suburbs (units per hectare), distribution of jobs, targets exist
Respect of the community and environment	Air quality index (targets exist), Noise attenuation (no targets)
Effective and affordable transportation	Road paving costs per km, transit operating costs (No targets)
Provide transportation in a manner that promotes user pay concepts	Development assessment fees (no targets), transit fare rates, Operating recovery rates (55% target and current level)
Serve both individual and collective interests	Established communities with completed community traffic plans (No targets)

* Source: Edmonton Transportation Master Plan

** Source: Calgary Go Plan (TMP) and June 2002 Status Report