

AUDITOR GENERAL

Halifax Regional Municipality

A Systems-Level Performance Review of Metro Transit's Service Delivery©

July 2013



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Glossary

Canadian Urban Transit Association (CUTA) - the collective and influential voice of public transportation in Canada, dedicated to being at the centre of urban mobility issues with all levels of government. CUTA strives to be the go-to organization for information, trends, networking and training, providing leadership for its members and all stakeholders.

Key Performance Indicator (KPI) - KPIs are key performance indicators which help an organization define and measure progress toward organizational goals.

System-Level Analysis - looks at the entire transit system as a whole; includes ferry and bus services.

Route-Level Analysis - looks at same service routes (ferry to ferry, bus to bus) in isolation, comparing them to other same service routes.

Stop-Level or Point-Level Analysis - looks at transit stops in isolation or points of entry to access the transit services provided, for example, bus stops, ferry terminal, bus terminal.

Government/Municipal Operating Contribution/Municipal Operating Subsidy - the contribution from the municipal and provincial tax base for transit service operations, also referred to in this report as the level of subsidy.

Revenue Vehicle Hours - refers to operating hours the transit vehicle is in-service, i.e. accepting passengers.

Fare Revenue - revenue from regular passenger services including cash, tickets and passes.

Fare Structure - fare amounts by rider categories (senior, student, etc.) indicating how much is to be paid by passengers using a transit system at any given time.

Average Fare - calculated by taking the total annual fare revenue, divided by the total annual ridership.

Elasticity - is the measurement of how changing one economic variable affects others, in the context of the report the elasticity of ridership is examined in regards to service changes and fare increases.

Automated Vehicle Location (AVL) - a means for automatically determining the geographic location of a vehicle and transmitting the information to a requestor. In Metro Transit's context, the AVL system will provide real-time arrival information to transit customers and operational managers and also give reliable information regarding schedule adherence.

Automatic Passenger Counter (APC) - is an electronic system which counts the number of passengers who board and disembark at every stop, the fare received and method of payment.

Preamble

The 2012-2013 work plan for the Office of the Auditor General (OAG) included a performance review of Metro Transit which contemplated commentary on the efficiency, effectiveness and economies with respect to a number of elements of Metro Transit's service delivery.

Metro Transit is the primary public transportation service provider in Halifax Regional Municipality (HRM) with approximately 96,000 daily trips taken by citizens and others along routes covering 250 square kilometers of the Municipality. Metro Transit describes their services as the following:

- Conventional Transit¹ - the core transit service with 60 routes
- Community Transit - the localized transit service which travels to communities outside the conventional service area
- MetroLink - the premium transit service providing direct routes with limited stops
- MetroX - a network of express routes linking outlying areas with key destinations in HRM
- Access-A-Bus - a door-to-door specialized transit service for passengers unable to access the conventional system due to a physical disability
- Ferry - a fully accessible ferry service providing service from Alderney, Halifax and Woodside Ferry Terminals, which is integrated with the bus services.

The OAG reviewed certain aspects of Metro Transit's overall service delivery system in relation to comparable municipal transit systems across Canada using Canadian Urban Transit Association (CUTA) Fact Books. Route-level analysis was completed for Metro Transit's conventional, ferry and community services using data provided by Metro Transit.

It is important to note all ridership data provided by Metro Transit is based on an annual passenger count program, taking place from September to November of every year.

The OAG reviewed the resources used to deliver services (costs associated with compensation, fuel, etc.) in relation to the consumption of these services (ridership). It is important to note all ridership data provided by Metro Transit is based on an annual

¹ Conventional Transit is the main transit bus system; MetroLink and MetroX are also combined in Metro Transit's reporting under the conventional umbrella.

This one-day count is then annualized and used by Metro Transit for analytical purposes.

A significant consideration in determining the focus of this review was the quality of available ridership data. Ridership represents how the services provided are consumed, and is the ultimate goal in any transit system.

Due to limited data available, the OAG therefore focused on a high-level systems analysis of the relationship among the amount of subsidy provided from the HRM tax base (input), the service hours delivered in a given year (output) and the annual ridership for conventional, community and ferry transit services (outcome).

passenger count program, taking place from September to November of every year. This program conducts a manual one-day passenger count for every trip in the schedule. This one-day count is then annualized and used by Metro Transit for analytical purposes.

In any performance review of a public transit system, there are a number of levels of analysis and measures of efficiency, effectiveness and economies which can be applied. A significant consideration in determining the focus of this review was the quality of available ridership data. Ridership represents how the services provided are consumed, and is the ultimate goal in any transit system.

Due to limited data available, the OAG therefore focused on a high-level systems analysis of the relationship among the amount of subsidy provided from the HRM tax base (input), the service hours delivered in a given year (output) and the annual ridership for conventional, community and ferry transit services (outcome). The OAG also chose to conduct a high-level route analysis using Metro Transit's service standards for weekday cost recovery and the annual ridership attributed to each route.

Objectives and Lines of Enquiry

The objectives and lines of enquiry of this review were:

1. Review certain aspects of efficiency of Metro Transit service delivery through benchmarking against internal and industry practices.
2. Review effectiveness and economies of service delivery against stated service standards, Council-approved strategies, key performance indicators (KPIs) and industry practices. In assessing effectiveness, actual outputs were reviewed against stated service standards. The stated service standards were also reviewed to determine if they are reasonable and designed to support the overall mission of Metro Transit and whether there was sufficient regard for economies.

Scope

This project reviewed Metro Transit's delivery of conventional, community and ferry services for fiscal years 2008/09 to 2011/12.

In order to complete this project, the OAG needed to deal with a number of data issues which resulted in some degree of scope limitation.

Divisional Reporting Prior to Becoming Separate Business Unit

- During the period under review, there was a restructuring which resulted in Metro Transit becoming its own business unit. Prior to becoming a separate operating unit, budget and cost information was, for the most part, included with Transportation and Public Works and truly not accounted for separately. The OAG is confident HRM began to more accurately capture the direct costs of operating Metro Transit only after the restructuring and consolidation of all costs of operating into a single budget.
- Depending on the source of information and the form it is presented in, it may appear Metro Transit's budget was increased more than in fact it was. This is at times reflected to some degree in the exhibits and information in this report.
- Even after several attempts, Metro Transit itself was not able to easily provide its total cost of operations with a high level of confidence for years when it was part of Transportation and Public Works. This is in part due to changes in how costs are captured in the SAP system and the likely manual adjustments made to SAP data used in reporting to CUTA in the past.

After discussions with Metro Transit, the CUTA source for municipal operating subsidy was identified as the best representation for the year over year change analysis as they believe this information would have been a reasonably accurate representation at the time it was submitted. Therefore, the OAG used the CUTA sourced

information for the analysis performed in this report, unless otherwise indicated.

The OAG was comfortable using the CUTA data, as the purpose of the report was not one of attestation of the financial information, rather, it was one of providing commentary around performance and to illustrate, by using benchmarks with the right characteristics, the types of elasticity analysis which can and should be completed. This will ensure taxpayers are receiving the most efficient and economic service at both a systems and route level with high consideration of the 'social aspect' of Metro Transit operations.

Concerns with respect to Reporting of Total Costs of Operating Metro Transit

- As explained extensively within Section 2.2, a significant concern arose with respect to total costs of operating Metro Transit. It is the view of the OAG, over the period under review, for a variety of reasons, costs did not always adequately consider, in the most meaningful way, the interest on debt associated with Metro Transit assets or amortization on assets. The OAG believes to properly report full costing, these costs should be included and reported as accurately as possible. Unfortunately, as explained, accurate information around these costs is not readily available, therefore essentially all references to costs in the report follow the CUTA reporting and the manner in which HRM has represented them in the vast majority of its reporting.

Unless noted otherwise, costs in this report follow the HRM methods of reporting for Metro Transit, which is unfortunately not always consistent in whether a provision for interest is included. For example, when Municipal Subsidy is reported in CUTA, it includes a provision, but when cost recoveries are reported to Regional Council, there is no inclusion, as generally only the direct operating costs are included. The OAG is unaware of much in the way of reporting or inclusions for amortization.

As noted in Section 2.2, if calculated based on full and accurate costing, the municipal operating subsidy would undoubtedly be higher than reported and the cost recoveries would be lower.

Approach to Use of Data

While the OAG does not support anything other than accurate and full costing as required in essentially all reports, it has used the reported costs throughout the report as the purpose was to illustrate the types of analysis which should be done to truly measure performance. The OAG did not verify the costs or spend considerable time engaged in searching out all assets related to the operations of Metro Transit to determine an appropriate provision for interest on the funding of assets when debenture funding is not specific to assets or a group of assets. Also, in any analysis for purposes of illustration, where amortization is referenced, the OAG accepted the estimates of Department of Finance and did not verify calculations, methods used or the assets and cost of assets on which the calculation was based.

As a result of limitations in the available data and the significant events Metro Transit faced over the period of review, as additional data became available, some analysis was extended to 2012/13 to provide more meaningful commentary.

Methodology Used to Allow Commentary with respect to Value for Money and why Efficiency is so Important

In determining the type of performance project to undertake and the level at which the analysis would be done, the following were considered by the OAG:

- Measurement around value for money can be applied to a number of concepts: efficiency, effectiveness or economies.
- While the OAG understands it is generally accepted all of the so-called three Es are important, depending on the project, one or more should likely be the focus with bridged commentary to the remaining two.
- Commentary around the measurements applied could take place from simply a costs (inputs) perspective, or some combination of costs and outputs or outcomes.
- Outputs can be defined in effectiveness terms, i.e. is a route in place and does it move people, or efficiency terms, which focuses on outcomes and if it moves the “planned” number of people, using a predetermined amount and dollar value of inputs.

In this particular project, the OAG felt it was essential to focus on efficiency as it was thought this approach would provide the highest value to HRM and its taxpayers.

The OAG also focused on HRM's overall program budgets and what the OAG firmly believes is in HRM's future: simply put, without more focus on efficiency, reductions in program delivery will result. Where the work of the OAG is focused on quality of stewardship, the possible elimination of, or simply greater understanding of, any unnecessary or unproductive inputs to any program is significant.

The overall concept of value for money as it relates to Metro Transit hinges on three critically important pieces of data:

- *Cost information*
- *Revenue information*
- *Ridership information.*

- Each of these measurements can be applied at a variety of levels – in the case of Metro Transit, at either an entire systems-wide basis or by route, for example.

The CICA defines efficiency as “the use of financial, human and physical resources such that output is maximized for any given set of resource inputs...”.² In this particular project, the OAG felt it was essential to focus on efficiency as it was thought this approach would provide the highest value to HRM and its taxpayers.

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As noted in other OAG reports, once a decision is made to write a report from an efficiency perspective and the scope is determined, the approach to commentary focuses on either:

- results only
- systems only, or
- some combination of both (the OAG's normal practise).

In this instance, the exhibits, analysis and discussions which follow are some combination of both approaches, but with a heavy emphasis on systems and the significant impact improvements in systems will have on HRM's value for money.

Once the approach to the project was determined, the OAG reviewed knowledge of business findings to determine integral data components for review. The overall concept of value for money as it relates to Metro Transit hinges on three critically important pieces of data:

- Cost information
- Revenue information
- Ridership information.

Depending on the detail and depth of the information available, commentary can become very specific, for example, at a route or

² CICA Section PS 5400 value-for-money-auditing in the public sector 5400.08(b)

Unfortunately, the OAG found much of the data needed to accurately allow for benchmarking in a true performance sense (inputs (costs) to outcomes (ridership and revenues)) is simply not available in the detail required or at all. The OAG would point to the lack of accurate revenue information as well as accurate ridership statistics on a route by route basis, as a limitation of the project.

stop level, or if not available, must be kept at a higher system-wide level. Unfortunately, the OAG found much of the data needed to accurately allow for benchmarking in a true performance sense (inputs (costs) to outcomes (ridership and revenues)) is simply not available in the detail required or at all. The OAG would point to the lack of accurate revenue information as well as accurate ridership statistics on a route by route basis, as a limitation of the project. With these limitations, the approach to the project was one of total systems analysis.

Executive Summary

Clearly, Metro Transit is a complex organization with a complex funding structure

It is this lack of understanding of exactly how complex the organization really is, which leads to many of the issues outlined in this report and how significant and meaningful a high emphasis on performance will need to be going forward.

The fundamental question is: has Regional Council deployed Metro Transit resources strategically in order to provide the most outputs (move the largest number of people) for the inputs applied. The answer to this, in the view of the OAG, is very likely no.

To understand this report, and the impact it could have on decision-making, a number of points must be considered in order for the reader to properly understand the limitations the OAG encountered, their impact and why the methodology was chosen, so the reader has the proper context for the report. Clearly, Metro Transit is a complex organization with a complex funding structure which contributes significantly to the difficulties in understanding the organization and its performance. It is this lack of understanding of exactly how complex the organization really is, which leads to many of the issues outlined in this report and how significant and meaningful a high emphasis on performance will need to be going forward.

From an effectiveness perspective, the OAG has concluded, for the most part, Metro Transit is effective in its delivery of service – it provides outputs (simply the movement of people) yet the fundamental question is: has Regional Council deployed Metro Transit resources strategically in order to provide the most outputs (move the largest number of people) for the inputs applied. The answer to this, in the view of the OAG, is very likely no.

After discussing various opinions with numerous interested and knowledgeable individuals, the OAG concluded there is clearly some basis of fact in the impressions developed; there is a need for far greater structure and understanding around the operations of Metro Transit.

As suggested earlier, there are a multitude of performance measures which could have been used to allow some level of commentary by the OAG. As expected, the commentary could range from almost base-level analysis (how efficiently buses are maintained as an example) to more high-level thoughts around the transit system as a whole.

After careful consideration, the OAG decided it would be appropriate at this time to perform a review at a higher level concentrating on three interrelated variables:

- the level of service being provided
- the level of municipal subsidy required for operations

- fare revenue generated by ridership.

The reasoning behind this decision was simply the perceived greater impact on quality of stewardship of public funds going forward and hopefully an improved and clearer framework to assist Regional Council in making more strategic funding and service decisions.

The OAG wishes to make clear, the focus of this report was not to suggest either Metro Transit or Regional Council were making poor decisions. The OAG would, however, respectfully suggest not all decisions have been made with proper regard for efficiencies, effectiveness or economies, and questions whether all of the concepts are clearly understood and whether the data has been available to truly and accurately measure certain aspects of performance.

The OAG wishes to make clear, the focus of this report was not to suggest either Metro Transit or Regional Council were making poor decisions. The OAG would, however, respectfully suggest not all decisions have been made with proper regard for efficiencies, effectiveness or economies, and questions whether all of the concepts are clearly understood and whether the data has been available to truly and accurately measure certain aspects of performance.

Much of the ridership data to allow commentary at a route level or stop level was simply not available. The information which was available, however, was not prepared with the degree of accuracy needed or on a timely basis.

In completing the analysis for this report, the OAG discovered Metro Transit operations are, for the most part, internally reported and discussed without a consistent or completely accurate provision for interest on debt or amortization, both critical to proper presentation of full costing. The OAG believes it is entirely possible if cost recovery and municipal operating subsidy numbers were re-calculated with these costs included, Management and in particular Regional Council may make difference decisions.

The OAG provides this commentary as much of the information which follows in this report suggests a number of concerns which point to a transit system which is unlikely to be fully efficient or run with the most economies of delivery in mind, and with perhaps a significant overemphasis on effectiveness – with effectiveness being defined as essentially whether a route is in place.

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It would appear decisions with respect to Metro Transit really are not made with specific route-level outcomes in mind. The OAG makes this commentary as it does not appear when a decision is made to start a new route, specific outcomes are clearly

anticipated. For example, Metro Transit often suggests to Regional Council it usually takes 18 to 24 months to build ridership. Rather than working to a defined and understood schedule, it appears whatever ridership takes place in any given year, is simply accepted.

Due to the limitation with route-level ridership data, Metro Transit must expend considerable resources to gather the necessary information to make valuable service delivery recommendations to Regional Council. For example, the process used to isolate and study the ridership on a particular route must first be initiated by a red flag of some sort, be it based on an instinct, observation or some other type of indicator. The resulting study of specific route ridership involves either a Counter (person) assigned to a route or the review of video footage from individual buses. The additional work required to present meaningful information is inefficient and restricts Metro Transit from monitoring all routes on an ongoing basis as well as having the information readily available.

The OAG would respectively suggest there is very likely an unintentional disconnect between the thoughts of Regional Council around the operations of Metro Transit and the existing degree of a coverage-based system (social benefit) versus a ridership-based system (more business-like). This possible disconnect likely affects how Regional Council may interpret or react to ridership information when presented by Metro Transit. The correct interpretation of the information presented is of critical importance in understanding the overall system and route-level operating models and hence the cost recovery measures in place and their usefulness.

The OAG would question the value of the route-level service delivery financial performance KPIs and benchmarks presented to Regional Council in Metro Transit's annual reports as the information represents past performance and the route-level KPIs are not based on reliable ridership information. Even if the information was reliable, the so-called benchmarks reported on are not timely or complete (and would not be unless significant additional resources were employed to verify and refine them) and do not provide for a clear picture of what value is being received for the amount of subsidy provided.

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To support this reasoning, the OAG would point to two important considerations; firstly, there are fundamental differences between simple comparisons and true benchmarks. Secondly, to be a true benchmark, the data or analysis must have all of the following characteristics:

- Reliable
- Timely
- Relevant
- Complete.

The OAG, after completing this project, is of the view much of what are often described as Metro Transit benchmarks really are nothing more than comparisons and do not meet the standards of reliability, timeliness or completeness.

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Metro Transit is by all accounts a 'business', yet in almost all aspects of its operations, it is not operated as a business. From a business perspective, Metro Transit accounts for various costs to deliver its product as well as the level of revenue generated overall. In fact, it appears to do a relatively good job of tracking significant costs at a systems level (wages, fuel, repairs and maintenance, etc.). It is at this point where it significantly stops functioning or reporting as would be expected of an organization operating in a business environment. This is due to the limitations in technologies required for this level of reporting and perhaps the coverage focus set by various Regional Councils.

For example, it would normally be expected a business would capture, analyze and manage almost all aspects of the business using up-to-date (often to the hour) revenue, reported by significant product lines, etc.. As noted earlier in some detail, Metro Transit really does not have the ability to accurately track its revenue or ridership on a route basis without expending significant resources to manually track the information. Also from a performance perspective, success is measured as a percentage of costs (cost recovery) and the acceptable or expected levels are determined on a somewhat arbitrary basis (in fact, on some routes and times, as low as 30% recovery). From a business perspective, cost recovery or partial cost recovery is almost never the focus. Clearly, one of the fundamentals by which business operations are measured is profitability – being gross revenue less expenses.

It is important to recognize Metro Transit Management give a clear impression they are serious in their efforts to be as efficient as possible and operate Metro Transit in a more business-like manner as is being suggested by the OAG.

Accepting the fact Metro Transit is not - and is not intended to be - operated as a 'business', it is understood it is to be operated as a social program with the percentage of costs not recovered as 'social costs'.

Yet the OAG cannot help but wonder if a 'business-like approach to providing social benefits' was more fully integrated into decision making by Regional Council, a higher level of accountability with better efficiencies and economies would result.

It would appear the development of the current Metro Transit system has taken place over an extended period of time and been the subject of a variety of Council focuses which were interpreted and implemented by a number of administrations.

It is important to recognize Metro Transit Management give a clear impression they are serious in their efforts to be as efficient as possible and operate Metro Transit in a more business-like manner as is being suggested by the OAG.

Accepting the fact Metro Transit is not - and is not intended to be - operated as a 'business', it is understood it is to be operated as a social program with the percentage of costs not recovered as 'social costs'. With this in mind, it might be concluded by many, due to the social costs of operations, Metro Transit should not be evaluated or held accountable based upon benchmarks or performance indicators similar to those used in business.

As noted earlier, the OAG would respectfully suggest, from the analysis completed for this report, Metro Transit is not managed on a 'business-like' model, which considers costs, revenues and ridership to predetermined amounts. Rather, it appears it simply, for the most part, manages costs with the largest cost (labour) being managed as a result of collective agreements.

Yet the OAG cannot help but wonder if a 'business-like approach to providing social benefits' was more fully integrated into decision making by Regional Council, a higher level of accountability with better efficiencies and economies would result.

It would appear the development of the current Metro Transit system has taken place over an extended period of time and been the subject of a variety of Council focuses which were interpreted and implemented by a number of administrations. The OAG feels this situation has resulted in the following:

1. The lack of a forward-looking service delivery strategy. Decisions by Regional Council do not appear to have the benefit of a strategy which clearly articulates present-state service delivery as well as what a desired future state might look like. For example, how does Regional Council know it has the 'right' service? It is highly likely a performance goal of reliable service is inappropriate if it measures the 'wrong' service.
2. As the report will show, essentially the only financial performance measures related to service delivery

The OAG was also unable to find Regional Council approved strategic linkages between increases in the municipal subsidy invested in the transit system to increase the level of service provided and desired ridership and cost recoveries.

performance reported to Regional Council are against what could be considered arbitrary cost recoveries. This limited performance reporting does not allow for the proper analysis of the subsidy required for the current transit system and the value being received for any additional service hours provided. The OAG was also unable to find Regional Council approved strategic linkages between increases in the municipal subsidy invested in the transit system to increase the level of service provided and desired ridership and cost recoveries. The OAG is fearful the level of subsidy is not being focused by Regional Council on either a coverage-based system or a ridership-based system as the information often requested or presented to Regional Council is inconsistent with the development of a specifically focused strategy. This focus is a critical component of a successful operating matrix for a public transit system as it dictates the value measurement for the subsidy invested. For example, if the focus of the transit system is one of coverage, then the value received from additional subsidy invested would be the increase in coverage; if ridership is the focus, then the value received is derived from increases in ridership and reduced municipal subsidy. The OAG sees a very real risk HRM is applying more financial resources to simply produce more hours of service. A clear focus is absolutely critical as it dictates how Metro Transit should be managed and ultimately sets the appropriate performance measures which should be used to evaluate Metro Transit's success and the efforts of management.

3. The current system has clearly been built with more capacity than is being used. It is the view of the OAG the definition of success for Metro Transit should be amended to focus on increased ridership which would result in additional revenue. The OAG is not able to see evidence of this as being a focus of Regional Council: to optimize value for money within the current system. Should this be the focus, as the OAG strongly suggests it should be, Regional Council would then be able to hold the Administration responsible for increased ridership and the value of this performance measure would be clear to all.
4. It would appear the development of the current system has

been based on an accepted (but very likely misunderstood) model of essentially allowing \$2 of municipal subsidy for each new dollar of expected revenue. Also, as in the past, very recoverable routes have been used to 'subsidize' less recoverable or newer routes. Should ridership ever drop on the highly 'profitable' routes (the number is limited), the financial impact on the system would be very significant and costly.

Without a service delivery strategy which is forward thinking, focused and defines a minimum acceptable level of efficiency for the current transit system, it is difficult to understand and measure how the system responds to changing inflows (subsidy, service hours). While it is clear from various sections of this report changes have taken place, they appear random, as the desired outcome (ridership) was not defined in relation to the value to be received, whether it be social (increasing ridership from a specific demographic) or financial (increasing fare revenue). Without a focus on coverage or ridership set by Regional Council, it is impossible, in the view of the OAG, to determine the value of the decision making and changes in service delivery for Metro Transit over the period of review.

With the above as background, the OAG suggests the elimination of any unnecessary activity is critical to long term sustainability of the transit system.

With the above as background, the OAG suggests the elimination of any unnecessary activity is critical to long term sustainability of the transit system. In order to achieve this, it is the clear view of the OAG there are a number of critical elements for Regional Council to more fully understand as they relate to Metro Transit including:

- Absolute clarity as to expected results for the significant budget allocation so that Metro Transit's effectiveness (is it doing the predetermined 'right' thing) can be measured.
- More focus on predetermined outcomes, not simply outputs. It must be remembered, without a clear strategy with clear and measurable outcomes, the result could very well be a highly effective system but with significant efficiency issues - highly effective at producing the wrong outcomes or with far too many inputs to produce the outcomes.
- Increased use of technology as this is essential to becoming a more efficient organization. This would allow for example:
 - A greater understanding of the system at route and stop levels.

- A far greater focus on innovation, for example, in route design and route design strategy. Also, greater understanding of ridership densities and how best to deliver services to new routes. (Economy decisions on equipment choices, alternative service delivery, etc.)
- The elimination of resources (inputs) which are producing non-essential or undesired outputs. What are the 'right things' for example?

Overarching Commentary

The following commentary is made most respectfully and in the spirit of constructively moving Metro Transit forward.

As noted numerous times in this report, the OAG has serious concerns with respect to the data and financial information generated relating to Metro Transit. For example, in the years prior to Metro Transit being a separate business unit, its budget and costs were part of Transportation and Public Works and perhaps other business units. When the OAG asked for total cost information for the period under review, we were advised the data was not readily available for all years. In fact, it took several attempts and significant time to provide the OAG with estimates of what Metro Transit felt its costs to operate were, prior to being separated as a business unit.

The same situation was true with respect to the municipal operating subsidy information presented by Metro Transit. The OAG received a number of versions of the information relating to the municipal operating subsidy and upon review of their own proffered numbers, Metro Transit staff advised they felt they were not correct, and made alterations.

The OAG is concerned about how subsidy decisions were made by Regional Council in the past, and as the report will indicate, the amounts which would have been, to some degree, impacted by questionable performance measures.

The exhibit below is included to show the different municipal operating subsidy numbers provided to the OAG.

Exhibit 1 Municipal Operating Subsidy – Differences in Source Information

Source/Fiscal Year	2008/09	2009/10	2010/11	2011/12
*CUTA	\$27,162,900	\$27,890,167	\$34,995,256	\$35,601,627
**SAP	\$27,737,819	\$28,932,439	\$33,192,508	\$41,017,921
Variance (CUTA-SAP)	(\$574,919)	(\$1,042,272)	\$1,802,748	(\$5,416,294)

*CUTA source data is reported to CUTA by Metro Transit before the fiscal year is complete and includes an element of

projections in the data. These numbers include a provision for interest but do not include amortization.

**SAP source data was compiled by Metro Transit at the OAG's request to identify, to the extent possible, the true subsidy; these numbers include a provision for interest but do not include amortization. These numbers were revised multiple times by Metro Transit.

Note: See also limitations in the Scope section.

The OAG felt the best data for analysis going forward was the CUTA sourced data, despite the element of inaccuracy due to included projections (estimates), because it was the most comparable information over the period of the review. Therefore, for the remainder of the review, unless otherwise indicated, the analysis was performed on the data as reported to CUTA by Metro Transit.

The above exhibit shows two different sources of data for the municipal operating subsidy as well as the variance between the two numbers. Metro Transit staff spent considerable time and effort attempting to compile the true municipal operating subsidy over the period of review, but was unable to provide auditable numbers from the SAP system because of the various 'buried costs' from prior years. The OAG felt the best data for analysis going forward was the CUTA sourced data, despite the element of inaccuracy due to included projections (estimates), because it was the most comparable information over the period of the review. Therefore, for the remainder of the review, unless otherwise indicated, the analysis was performed on the data as reported to CUTA by Metro Transit.

Overarching Recommendations

The OAG feels it is in the best interests of HRM taxpayers to recommend HRM Regional Council, through its Administration (likely the Director of Finance), create a working group of senior financial analysts to work with Metro Transit Senior Management to discuss the information being generated: how the information is developed and by whom, whether basic information around operations is understood, whether the SAP accounts which capture costs and revenues appear appropriate for proper management, etc.; Regional Council should assist, to the extent necessary, with outside expertise.

The OAG would strongly recommend Regional Council make the annual operating subsidy a focus for the immediate future. The OAG also recommends Regional Council request, through the Audit and Finance Committee, regular updates on implementation plans around information technology, what the resulting data can and will be used for and most importantly have as baseline information accurate analysis around total costs (including all debt charges, amortization, etc.) to operate Metro Transit. Costs should be broken down by significant categories and correlated with ridership

and other relevant information.

It is the view of the OAG, HRM presently has a transit system with a number of significant characteristics including:

- Engaged and knowledgeable management
- Modern equipment, for the most part
- A system recently focused on what would be described as a coverage basis
- Significant unused ridership capacity. Assuming statistics are correct and the system is used by 10-12% of the population:
 - This would suggest in the order of 40,000-50,000³ people presently use the system
 - The system has the capacity to move 73,000,000⁴ (seated) in the course of the year
 - The system has over 275 buses
 - The system has over 60 individual routes.
- The OAG senses Regional Council's recent emphasis has been to build a system with as much coverage as possible. It has likely accomplished this goal. It is the strong recommendation of the OAG, Regional Council place a far greater emphasis on growing ridership than it presently does. While the needed marketing and specific approaches to accomplish this are well beyond the expertise of the OAG, it would be useful to consider given the approximately 35 communications FTEs presently employed by HRM and its agencies, boards and commissions and perhaps along with outside expertise, a program to significantly increase ridership should be able to be developed.

³ Estimates provided by Metro Transit

⁴ Estimates provided by Metro Transit

Summary of Recommendations

Note: Please see Overarching Recommendations on Page 20

- 2.2.1 The OAG recommends Regional Council engage in discussions with Metro Transit as to the degree the system should be modelled as coverage(social) or results(more business-like) and what impacts this can have on funding. (Page 33)
- 2.2.2 The OAG recommends Metro Transit establish an improved framework to measure and report to Regional Council on the value being received for the level of subsidy being invested in Metro Transit operations. (Page 33)
- 2.2.3 The OAG recommends Regional Council set a maximum subsidy per rider on both a systems-wide and route-level basis and hold Metro Transit accountable for staying within these parameters. Metro Transit would therefore be responsible to attain the necessary levels of ridership or cost savings to maintain the accepted subsidy per rider. (Page 33)
- 3.2.1 The OAG recommends Metro Transit consider presenting to Regional Council an implementation plan demonstrating how the new technology will be used to provide more meaningful and timely information for route-level analysis. (Page 41)
- 3.2.2 The OAG recommends, until the technology becomes available, Metro Transit consider reporting a system-level cost recovery KPI in comparison to the industry using CUTA data. (Page 41)
- 6.0.1 The OAG recommends Metro Transit Management consider developing and including projections of ridership growth in relation to the expected increase in costs for any new service or service increase provided for in their annual service plans. From an efficiency perspective, this projection should show Regional Council what can be expected from the service adjustments being made and provide a greatly enhanced benchmark with which to measure results. (Page 61)
- 6.0.2 The OAG recommends Metro Transit consider reporting actual results against the projections mentioned in

Recommendation 6.0.1 as a part of their annual KPI reports and in the annual service plans presented to Regional Council. (Page 62)

6.0.3 The OAG recommends Metro Transit consider developing an implementation plan demonstrating how new technology will capture the required information to assess elasticity of ridership to fare increases and service increases/decreases on a go-forward basis. (Page 62)

6.0.4 The OAG recommends when Metro Transit has a proposed change in fare or service, this change be supported by a business plan submitted to Regional Council outlining the anticipated impact on ridership, fare revenue and municipal operating subsidy levels and over what growth period. These plans should include extensive elasticity calculations so Regional Council is made aware of various options which may be available to them. These impacts or changes should also be reviewed and reported to Regional Council on an annual basis in order to assist Council in increasing its understanding of the impacts of its decisions and assessing the effectiveness of Metro Transit's implementation. (Page 62)

7.0.1 The OAG recommends Metro Transit consider developing and incorporating, in conjunction with the route-level analysis plan from Recommendation 3.2.1, an implementation plan demonstrating how the new technology will be used to provide accurate stop-level analysis. This analysis will provide more meaningful and timely adjustments to increase service delivery efficiency and effectiveness which should be key components of the technology enhancement plan. (Page 64)

7.0.2 The OAG recommends Metro Transit consider developing and measuring route-level and stop-level KPIs for efficiency and effectiveness of service delivery as new technology is implemented and reporting these results to Regional Council. (Page 64)

Detailed Findings and Recommendations

1.0 Factors Affecting Metro Transit Service Delivery During Review Period and Initial Commentary with Respect to Municipal Subsidy

This report covers the period containing fiscal years 2008/09 to 2011/12. It is important to note, Metro Transit had three significant events affecting the period reviewed:

- A fare increase during fiscal 2009/10. Research indicates fare increases in a public transit system typically result in a decrease in ridership but an overall increase in fare revenue. As expected, Metro Transit experienced an increase in fare revenue and a resulting decrease in ridership for fiscal 2009/10.
- A labour dispute and work stoppage in the 2011/12 fiscal year. The work stoppage resulted in a reduction in ridership, fare revenue and service hours as would be expected.
- Internal restructuring causing Metro Transit to become its own business unit followed by the opening of a new transit facility. The internal restructuring caused the consolidation of all costs of operating into a single budget which were previously recorded in other divisions or business units, in order to capture the true cost of Metro Transit. This resulted in a drastic increase in the subsidy reported; although costs had been captured previously, they had not been independently reported as the true cost to operate Metro Transit. The new transit facility opened and operated for its first full year of service; clearly, increases in operating costs resulted.

The OAG recognizes these significant events affected Metro Transit's service delivery performance and have made the appropriate adjustments in the interpretations of the information received. For example, the OAG was able to use ridership estimates and expected service hours provided by Metro Transit to give high-level insight into what might have occurred had the work stoppage not taken place.

It is also important to note Metro Transit is coming to the end of a 5-year service plan and beginning plans for major technology enhancements and adjustments to the entire service delivery model. With the approach of these strategic changes, there is the opportunity to focus more on efficiency, effectiveness and economies of service delivery.

It is also important to note Metro Transit is coming to the end of a 5-year service plan and beginning plans for major technology enhancements and adjustments to the entire service delivery model. With the approach of these strategic changes, there is the opportunity to focus more on efficiency, effectiveness and economies of service delivery. The OAG recognizes these strategic changes are imminent and provides comments and recommendations with this in mind.

When observing Metro Transit's service delivery from a performance perspective, there are many different and often complex measures for efficiency, effectiveness and economies which could be considered. With the lack of available data, the OAG chose to focus on the relationship between the level of subsidy provided from the municipal tax base (input) to deliver the current system of service delivery(output) and ridership/fare revenue achieved as a result (outcome).

It is widely accepted a public transit system will require a level of subsidy for operations (service delivery) from the municipal tax base. With costs continuing to rise, transit systems are being asked to do more with fewer resources. The question of how much HRM should be subsidizing its transit system, and with what expected outcomes, is relevant when looking at value-for-money.

If a public transit system wants to lessen the burden on the municipal tax base, even as costs rise, there are essentially four ways to achieve this:

1. through a fare increase
2. through an increase in ridership
3. through a reduction in costs to deliver the services through service cuts or improved efficiencies in service delivery such as a more efficient fleet
4. assistance from other levels of government with grants or other types of funding.

There are no instant solutions or savings in a public transit system and each of the above actions will impact a transit system differently.

There must also be a balance between generating fare revenue and providing service to as many people as possible. Public transit

It is essential to ensure the level of municipal operating subsidy used to provide the public service does not overshadow the transit system's ability to sustain itself.

is often criticized for operating too much like a business when it is providing what some would call a 'public service'. While the OAG accepts this view, we are concerned, if costs continue to increase, it is essential to ensure the level of municipal operating subsidy used to provide the public service does not overshadow the transit system's ability to sustain itself.

2.0 Measuring Performance of a Social Business

Providing a cost efficient and effective transit system is the overriding goal which all public transit agencies strive to achieve. Public transit systems clearly provide a social benefit to the communities in which they serve. The operating models used are designed to subsidize the cost of transportation for the average rider and the fare structures put in place often support an additional subsidy for a targeted demographic. Metro Transit, for example, provides discounted transit to seniors, students and children, a common industry practice.

A transit system's performance can be divided into and measured from at least five different perspectives (levels):

1. System Level - entire system as a whole
2. Segment Level - by specific service (i.e. Conventional or Ferry in isolation)
3. Route Level - by route
4. Stop Level - by stop
5. Point Level - by destination point (focusing on terminals).

The most commonly used perspectives in the transit industry are system level and route level, but all provide a great deal of insight into how service is being delivered and consumed.

2.1 Municipal Operating Subsidy and Cost Recovery - An Overview

The municipal operating subsidy for Metro Transit is the primary input in the inputs and outcomes model used to measure performance.

The municipal operating subsidy for Metro Transit is the primary input in the inputs and outcomes model used to measure performance. This means when looking at the performance of Metro Transit's service delivery, the OAG focused on the value being received (outcomes) for the amount of subsidy being put into the transit system.

Two key financial measures when assessing transit performance are subsidy per rider and cost recovery.

Two key financial measures when assessing transit performance are subsidy per rider and cost recovery. Knowing and understanding the subsidy per rider along with cost recovery has important ramifications when it comes to measuring performance in a social business. Cost recovery looks at the revenue a system is generating over the cost to deliver the system's service, while subsidy per rider looks at the subsidized cost over the ridership generated. While the two measures influence each other,

comparing the two incorporates the effect of a differentiated fare structure, i.e. not all riders may pay the same fare. For example, if cost recovery is stable or increasing and subsidy per rider is falling, it shows the value of taxpayer money invested in the system is increasing. Any transit system providing a subsidized fare structure requires both measures in order to understand the value received from the subsidy investment.

2.2 Importance of Full Costing

As noted earlier, there are concerns with isolating data during the time Metro Transit was part of Transportation and Public Works, yet there is one other issue which is of greater importance. One of the most significant limitations to the scope of this project was the concept of full costing and the impact this could and should have had on decision making at the management level and more importantly at Regional Council.

To be truly effective when used in benchmarks, costing needs to represent the total cost of operations and users need to be comfortable Metro Transit is being reported at some point on a 'full' or 'true cost' model. The majority of reporting done with respect to Metro Transit appears to be limited to the direct costs of operations (fuel, wages and maintenance). The more indirect costs (amortization⁵ and more specifically interest on long-term debt) tend not to be included when cost recoveries are calculated.

Two significant costs related to the full cost of Metro Transit operations – amortization and interest on debt– are not included in the majority of reports prepared by or on behalf of Metro Transit. There are various reasons why these costs are not necessarily included in transit systems' KPIs and in the case of HRM, it appears as though the following are factors:

1. Capital assets can be funded from either revenue or long-term debt (debentures). If an asset is funded directly from

⁵ The cost, less any residual value, of a tangible capital asset with a limited life should be amortized over its useful life in a rational and systematic manner appropriate to its nature and use by the government. When a government reports expenses in its financial statements, the amortization of the costs of tangible capital assets should be accounted for as expenses in the statement of operations. PS 3150 Tangible capital assets (.22,.23) ©CICA

- the general tax rate, no interest is applicable. Rather than apportioning interest on debt annually to assets acquired in the year the debt was incurred, HRM tends to report interest as a separate non-allocated expense and if it is included in a report, it is done on some non-defined basis.
2. Until recently, amortization was not reported by the Municipality. With the changes which took place in Public Sector Accounting Standards in the Tangible Capital Asset section, amortization is now calculated and reported in the financial statements. Unfortunately, HRM does not have total assets used by Metro Transit identified separately in the asset system. This does not allow for an accurate inclusion of amortization (the costs of the assets expiring or being used) in the total costing model.
 3. The thought being amortization and interest on long-term debt are not controllable by Metro Transit Management, therefore they should not be held accountable and the information does not necessarily need to be accurately calculated or reported in financial information.

While the OAG could agree in some instances certain reports to Metro Transit Management might not include expenses they cannot control, the OAG strongly believes these costs should be included in any costing model so that when Regional Council sets cost recovery percentages or reviews the cost/benefits of Metro Transit operations, they are on a fully costed basis.

As noted in the opening sections of this report, it was not the objective of the OAG to perform an attest function on the financial information. Rather, the purpose was to illustrate the need and value of accurate reporting and the impact these properly prepared and understood KPIs can have on Regional Council's decision making.

Exhibits 2, 3 and 4 have information for some years (prepared by HRM staff on a best efforts basis) as to an allocation of interest and amortization to show the possible impact these costs can have on KPIs and the total amount of municipal subsidy.

Exhibit 2 Metro Transit's System-Level Cost Recovery and Subsidy per Passenger

Performance Measure	2009/10	2010/11	2011/12	2011/12 Estimated- Without Work Stoppage	2012/13
*System Cost Recovery	53%	48%	40%	48%	39%
**System Subsidy Per Rider	\$1.44	\$1.84	\$2.20	\$1.82	\$2.30

*System cost recovery as calculated when this KPI is reported to CUTA. Does not include interest or amortization.

**System subsidy per rider is not a KPI normally reported to Regional Council but is a common KPI for the industry.

Note: The OAG used the data reported to CUTA by Metro Transit for the estimates and the subsidy figure provided includes a provision for interest but not amortization. As indicated in the Scope of this report, 2012/13 information was included to provide more meaningful commentary. See also limitations in Scope section.

This trend is concerning to the OAG as it appears for the additional taxpayer dollars invested in the system, no additional value has been added from a financial performance perspective.

Exhibit 2 shows Metro Transit's cost recovery falling and subsidy per rider rising over the period under review. This trend is concerning to the OAG as it appears for the additional taxpayer dollars invested in the system, no additional value has been added from a financial performance perspective (see Exhibit 4 below).

The OAG estimated for 2012/13 the system-level cost recovery using the numbers provided by Metro Transit and Finance for interest and amortization, to illustrate the effect full costing would have on key transit performance measures.

Exhibit 3 Metro Transit's Estimated System Cost Recovery 2012/13 Including a Provision for Interest and Amortization

	2012/13
System Cost Recovery Including Interest and Amortization	34%

Note: The analysis represented by Exhibit 3 was performed using the data reported to CUTA by Metro Transit, with the exception of the interest and amortization numbers, for these purposes, the interest and amortization charges were provided by Finance. See also limitations in Scope section.

The OAG included Exhibit 3 to further illustrate the effect incorporating the full cost of Metro Transit has on KPIs. Clearly representing the full costs associated with Metro Transit shows a significant difference in the amount the system is recovering.

Exhibit 4 Metro Transit's Operating Revenue, Municipal Subsidies and Ridership

	2009/10	2010/11	2011/12*	2012/13
Operating Revenue	\$30,935,533	\$31,526,844	\$27,067,688	\$31,428,759
Ridership	19,346,370	19,055,407	16,206,433	19,236,471
Municipal Operating Subsidy (Including Interest)	\$27,890,167	\$34,995,256	\$35,601,627	\$44,192,010
Municipal Debt Service Contribution (Including Principal)	\$5,950,900	\$5,121,802	\$5,575,422	\$5,734,494
Municipal Capital Contribution	\$448,199	\$15,696,600	\$13,126,915	\$19,018,084

*2011/12 fiscal year included a work stoppage which affected the data for this period.

Note: The OAG used the data reported to CUTA by Metro Transit for the above exhibit. As indicated in the Scope of the report, the 2012/13 information was included to provide more meaningful commentary. See also limitations in Scope section.

Exhibit 4 shows the changes in three important performance aspects for Metro Transit's service delivery over the period of

review (extended to include the most recent fiscal year's information):

- operating revenue increasing by \$493,226⁶
- municipal operating contribution increasing by \$16,301,843⁷
- ridership decreasing by 109,899⁸ riders.

The above information is concerning to the OAG, as it reinforces an earlier comment on the value being received for the amount of municipal subsidy invested in the system. While the OAG acknowledges there have been extensive service delivery increases, new service delivery modes introduced and infrastructure improvements over the period being reviewed, all which attributed to the increase in costs, the ridership is still decreasing.

The OAG included the municipal contribution towards debt and capital to illustrate the additional funds contributed towards Metro Transit operations which are not currently being consistently reported as operating costs or used in cost recovery KPIs. It is clear to the OAG these contributions are significant and could potentially affect funding decisions made by Regional Council.

Recommendations

- 2.2.1 The OAG recommends Regional Council engage in discussions with Metro Transit as to the degree the system should be modelled as coverage (social) or results (more business-like) and what impacts this can have on funding.
- 2.2.2 The OAG recommends Metro Transit establish an improved framework to measure and report to Regional Council on the value being received for the level of subsidy being invested in Metro Transit operations.
- 2.2.3 The OAG recommends Regional Council set a maximum subsidy per rider on both a systems-wide and route-level basis and hold Metro Transit accountable for staying within

⁶ Calculation: 2012/13 Operating Revenue \$31,428,759-2009/10 Operating Revenue \$30,935,533

⁷ Calculation: 2012/13 Municipal Operating Subsidy \$44,192,010 – 2009/10 Municipal Operating Subsidy \$27,890,167

⁸ Calculation: 2012/13 Ridership 19,236,471 – 2009/10 Ridership 19,346,370

these parameters. Metro Transit would therefore be responsible to attain the necessary levels of ridership or cost savings to maintain the accepted subsidy per rider.

3.0 Systems and Route-Level Key Performance Indicators

The OAG questions whether Regional Council fully understands the basis on which the calculations are made and how unreliable the resulting measurements are as a management and funding tool.

As was previously mentioned, a key performance indicator (KPI) in essentially any transit system is cost recovery. This is a measure of how much of its cost a service or route is covering from the revenue being generated by the service. It is accepted in the industry, routes will not cover 100% of their costs and a level of subsidy is expected.

Metro Transit has developed service standards by route classification for peak, off-peak, weekday daytime and evenings/weekend service. These standards, approved by Regional Council in 2009, set out expected passengers per hour, cost recovery and vehicle loadings⁹ for the various route classifications mentioned. The OAG questions whether Regional Council fully understands the basis on which the calculations are made and how unreliable the resulting measurements are as a management and funding tool.

Clearly, the cost recovery KPI is significant in the minds of both Metro Transit and Regional Council in terms of the reporting of results and funding, as this is the only financial route-level KPI consistently calculated.

Exhibit 5 below lists the current Metro Transit service standards for weekday cost recovery. The exhibit outlines the minimum percentage of operating costs the routes are expected to cover through fare revenue.

Exhibit 5 Service Standards

Service Type	Conventional Core Route	Conventional Local Route	MetroLink/Express	MetroX	Community Urban	Community Rural
Cost Recovery	55%	40%	50%	50%	30%	30%

The above cost recovery standards become the KPI benchmark against which actual results are compared and on which management and funding decisions are made.

Metro Transit reports a reasonably accurate system-level direct

⁹ Vehicle loadings refers to the capacity at which each bus or ferry is filled.

cost recovery for the transit system to Regional Council; the system-level cost recovery calculation uses total fare revenue over total direct operating costs; this recovery is reported at 45%. This KPI shows the cost recovery of the transit system as a whole; however, it ignores the route-level ridership component which has specific service standards as mentioned above. Metro Transit attempts to provide this route-level information to Regional Council; however, there are significant issues with the reporting as a KPI.

3.1 Characteristics of Meaningful Benchmarks

For any benchmark or KPI to be meaningful and assist with ensuring efficiency of operations, it must have the following four characteristics:

- Reliability
- Timeliness
- Relevance
- Completeness.

Based on the analysis, the OAG concludes while efforts are made to provide the KPIs to Regional Council and also to manage the system, the route-level cost recovery is truly not an adequate KPI as, for example, the ridership information used in the calculation does not meet at least three of the stated criteria.

The OAG assessed the cost recovery KPI used by Metro Transit against the above criteria. Based on the analysis, the OAG concludes while efforts are made to provide the KPIs to Regional Council and also to manage the system, the route-level cost recovery is truly not an adequate KPI as, for example, the ridership information used in the calculation does not meet at least three of the stated criteria. The OAG is of the view, the only criteria possibly met is relevance, yet it is questionable if three criteria are not met how relevant the data could be.

3.2 Effects of Limited Information on Performance Measurement and Decision Making

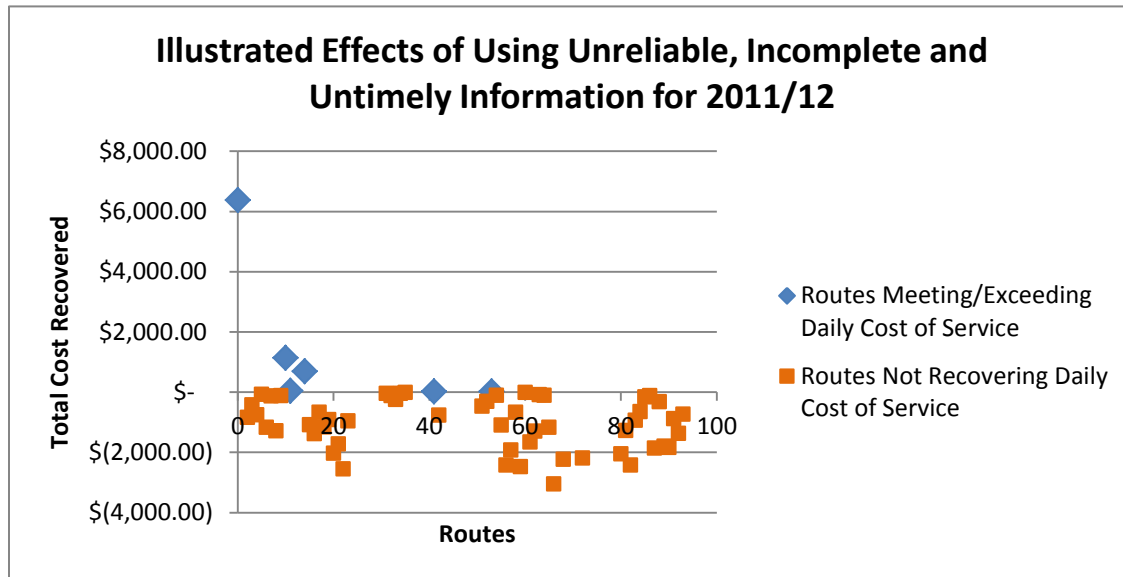
The OAG analyzed (essentially using the same calculations as Metro Transit) route-level cost recovery for Conventional Transit in a simplified manner based on average fare, service hours and the reported ridership count, in essence the only information available. The cost recovery KPI reported to Regional Council is calculated and reported using only direct operating expenses, which do not include a provision for interest or amortization. For the following analysis, the OAG included a provision for interest in the cost recovery calculations for illustrative purposes.

The OAG clearly understood because the only data available on ridership was likely inaccurate and not timely, the analysis prepared would not be particularly useful as a management or funding tool. The OAG however, still completed the analysis as it was felt it would serve a very important function in helping to make the OAG's point around the critical importance of route-level performance measures.

Exhibit 6 illustrates in a graphic representation the results of the estimates and the significant failings of the KPI as a management tool. The OAG supports this conclusion based upon the following:

- Information must be extrapolated from a once per year manual ridership count
- The exhibit potentially represents a 'best case' scenario as the collection of the ridership information used in the KPI calculation is performed in the Fall when ridership is likely in a favourable position
- For the most part, the analysis uses data (ridership) with likely a high error rate as it is simply a manual count.

Exhibit 6 Metro Transit Estimated Weekday Cost Recovery by Conventional Transit Route Using the Only Information Available



Note: costs include a provision for interest but not amortization. See also limitations in Scope section.

If the KPI was calculated using the route-level performance data reported to Regional

It is important to remember, Metro Transit can only report accurately the overall system recovery; however, the standards approved by Regional Council are at a route level. If the KPI was calculated using the route-level performance data reported to

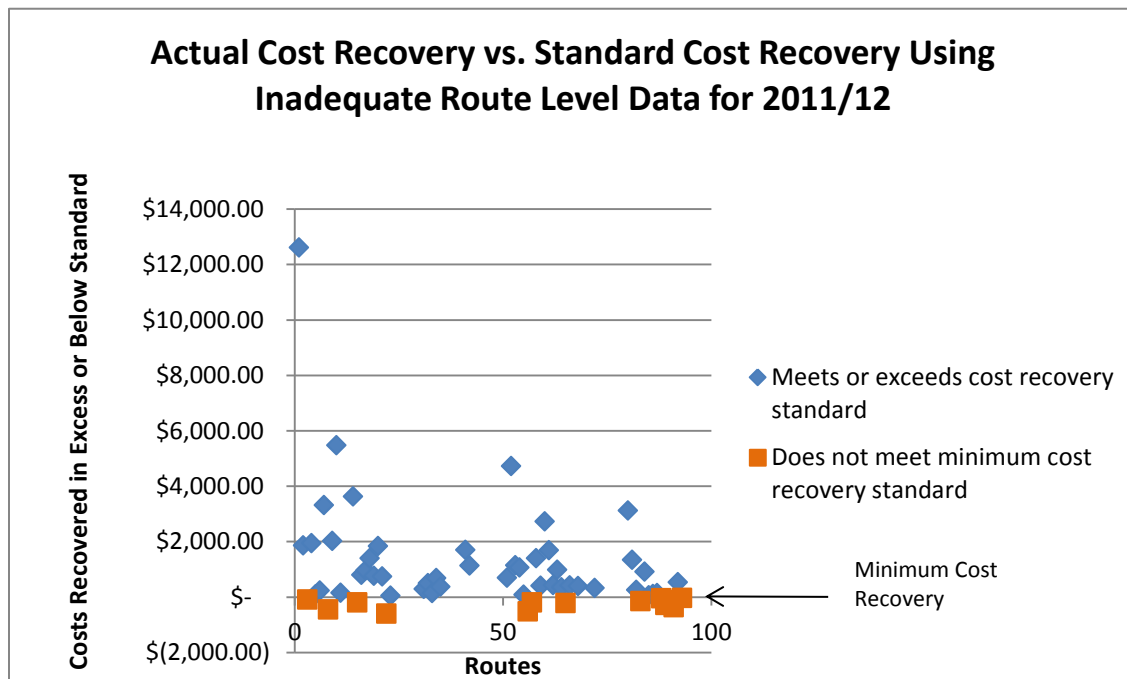
Council, it would indicate a weekday conventional transit system cost recovery in the order of 70% which is significantly higher than what is reported.

Regional Council, it would indicate a weekday conventional transit system cost recovery in the order of 70% which is significantly higher than what is reported. This concerns the OAG as it is clear from the analysis the route-level KPI can potentially indicate a higher performing transit system than actually exists.

Even with the data issues as noted above, Exhibit 6 shows only six of the conventional transit bus routes reviewed recover their daily cost of providing service (including a provision for some interest but no amortization); this suggests only six conventional transit routes are 'profitable'. In fact, it must be remembered, should the true route-level data become available, many of the routes would show a far 'worse' situation.

The OAG also compared each conventional route to the standard minimum cost recovery for each classification and determined whether or not routes were meeting the standard. Exhibit 7 below shows the cost recovery for fiscal year 2011/12 using the same simplified calculation. Conventional routes meeting or exceeding their cost recovery standard are above the \$0 line and those not meeting the standard fall below the line.

Exhibit 7 Conventional Transit 2011/12 Actual Cost Recoveries vs. Standard Cost Recoveries



Note: costs include a provision for interest but not amortization. See also limitations in Scope section.

According to the 2011/12 data, there were 13 conventional routes not meeting the minimum cost recovery standard as approved by Regional Council. Three of the 13 routes highlighted were not yet required to meet the service standards as they had been in service for less than 24 months. Metro Transit allows new routes a 24-month period before being required to meet service standards.

Clearly, the service standards are designed to be applied on a route-level basis and the OAG accepts routes are diverse and may have been implemented with different goals, i.e. providing access to transit service for seniors. Knowing these facts, it could be acceptable for the subsidy to be high and the cost recovery to be low on certain routes but without business cases, explanations and data or monitoring in place to support decisions, it is difficult to see the usefulness of these service standards for any comprehensive route-level analysis. Unfortunately, the OAG cannot provide any further commentary as to the value being received on an individual route basis from the high level of subsidy being invested.

The OAG is pleased to note, Metro Transit does perform additional analysis to improve the quality of information before any drastic service delivery adjustments are suggested, but these processes are inefficient, time consuming and the information is not readily available for analysis.

Metro Transit has informed the OAG alternate methods may be used to collect ridership data for specific purposes, such as monitoring a new route or a route of interest. These exception practices have associated costs to implement and can only be performed on a limited number of routes for specific periods of time. While these practices provide insight, they do not give Metro Transit consistent, historical, route-level data on how transit services are being consumed.

Another area of concern for the OAG is the impact of the 'profitable' routes (see Exhibit 6) in further subsidizing the 'unprofitable' routes. It is the view of the OAG there is a risk associated with this as the 'profitable' routes can only cover so much of the operating costs of the less profitable or new routes for so long. If operating costs continue to increase, the ability of

Without business cases, explanations and data or monitoring in place to support decisions, it is difficult to see the usefulness of these service standards for any comprehensive route-level analysis.

Another area of concern for the OAG is the impact of the 'profitable' routes (see Exhibit 6) in further subsidizing the 'unprofitable' routes.

'profitable' routes to subsidize the 'unprofitable' ones will plateau and then decline. If the only meaningful KPI for cost recovery is at a systems level, the routes which actually bring in revenue exceeding their costs overshadow the 'unprofitable' routes, and could hide additional inefficiencies in the system. There is the potential this would not be reflected in the system-level cost recovery KPI, until the system was losing a significant amount of revenue.

It is also important to note, if all conventional transit routes were meeting their weekday cost recovery standards, conventional transit would be recovering only 46% of the cost to provide the service.

It is also important to note, if all conventional transit routes were meeting their weekday cost recovery standards, conventional transit would be recovering only 46% of the cost to provide the service. This means the expectation, approved by Regional Council through the adoption of the service standards, is the conventional transit system (90% of Metro Transit service delivery) will automatically be over 50% subsidized. There are no additional financial performance requirements for Metro Transit services. This is concerning to the OAG, as service could dramatically increase, causing costs to rise with the 50% subsidy becoming a much larger number, even if services were to meet their current cost recovery standards.

Ridership is the key to a transit system but without an understanding of how services are being consumed, and by whom, it is difficult to make meaningful adjustments which satisfy the 'social business' aspect.

To truly comment on and measure efficiencies and economies, a far more robust reporting structure needs to be developed. Regional Council needs to be aware of the true subsidy per rider and cost recovery on a route-level basis in order for them to make informed decisions regarding transit planning and route adjustments. This information should be supported by rider demographics to support the performance measurement of the 'social business'. Ridership is the key to a transit system but without an understanding of how services are being consumed, and by whom, it is difficult to make meaningful adjustments which satisfy the 'social business' aspect.

Metro Transit is currently conducting a review of their service standards and is looking at a significant investment in technology to provide accurate ridership data. The technology enhancements being proposed can be implemented to archive route-level and stop-level ridership information.

Metro Transit is currently conducting a review of their service standards and is looking at a significant investment in technology to provide accurate ridership data. The technology enhancements being proposed can be implemented to archive route-level and stop-level ridership information. This level of data would give Metro Transit the capability to look at a specific route or routes, review the ridership against service standards, make meaningful

The OAG applauds this initiative and is excited by the prospects of highly enhanced information which Regional Council will have available to them in order to support funding and service decisions.

and timely adjustments and measure the success of these changes over time.

The OAG applauds this initiative and is excited by the prospects of highly enhanced information which Regional Council will have available to them in order to support funding and service decisions.

Recommendations

- 3.2.1 The OAG recommends Metro Transit consider presenting to Regional Council an implementation plan demonstrating how the new technology will be used to provide more meaningful and timely information for route-level analysis.
- 3.2.2 The OAG recommends, until the technology becomes available, Metro Transit consider reporting a system-level cost recovery KPI in comparison to the industry using CUTA data.

4.0 System-Level Analysis: CUTA Benchmarks

Public transit service delivery varies greatly across the country. Provinces and municipalities choose to deliver unique public transit systems across a wide variety of landscapes to vastly different populations. With such variations in transit systems, it is difficult to directly compare one system to another.

The Canadian Urban Transit Association (CUTA) gathers operating statistics from 109 CUTA member systems providing transit services to the public. The association strives to be the 'go-to' organization for information and trends, and provides standardized industry benchmarks for public transit systems across Canada.

For this review, 11 transit systems were chosen to use as peer benchmarks, based on service area size, population served and annual ridership.

For this review, 11 transit systems were chosen to use as peer benchmarks, based on service area size, population served and annual ridership. These were then compared to Metro Transit's system over a period of four fiscal years (2008/09, 2009/10, 2010/11 and 2011/12).

Using the operating statistics provided by CUTA, the OAG was able to compare the 11 peer transit systems to HRM's on the following basis:

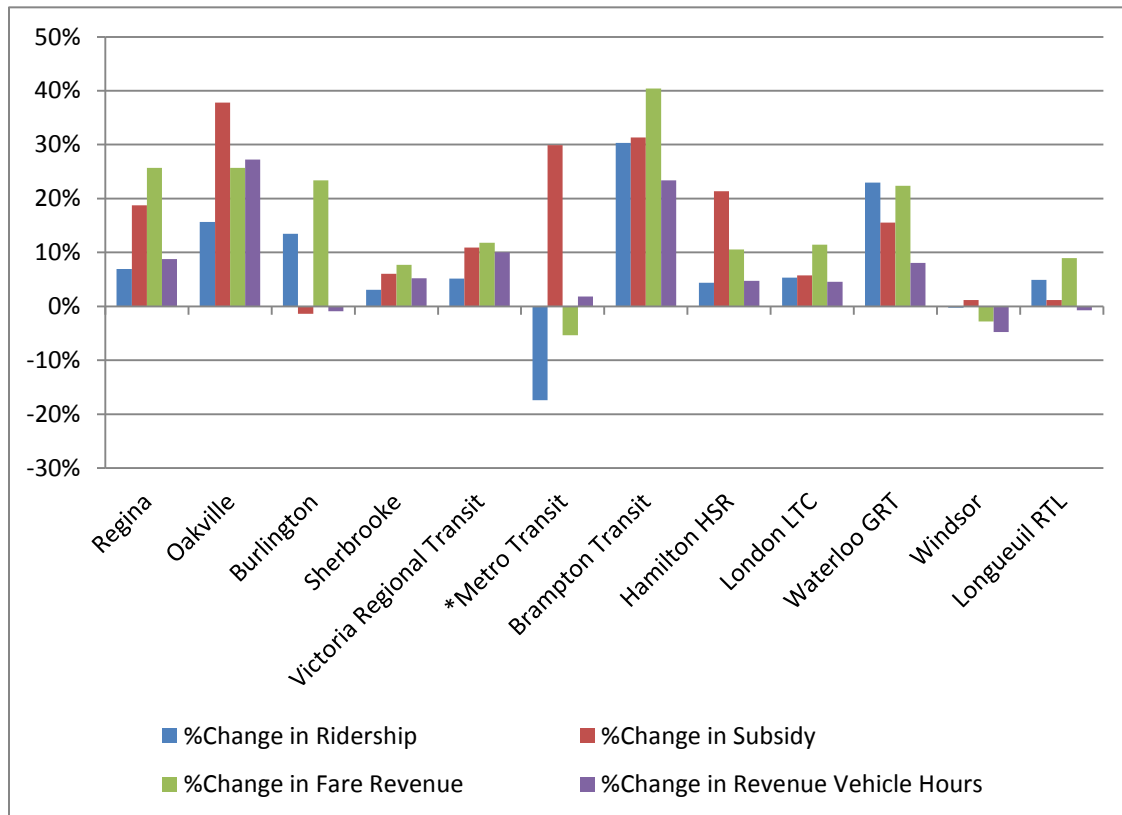
- growth in government operating subsidy¹⁰
- growth in revenue vehicle hours¹¹
- growth in fare revenue
- growth in ridership.

Exhibit 8 below shows a summary of the overall percent change in growth for government operating subsidy, revenue vehicle hours, fare revenue and ridership for the period of review.

¹⁰ Government operating subsidy refers to the total contribution towards a public transit system's operating costs from the municipal and provincial tax base (i.e. not from fare revenue) and is also referred to as the level of 'subsidy'. Metro Transit's subsidy is strictly from the municipal tax base.

¹¹ Revenue vehicle hours refers to in-service hours.

Exhibit 8 Peer Transit System Benchmark Summary of Overall % Changes from 2008/09 to 2011/12



*Metro Transit experienced a work stoppage during the 2011/12 period under review.

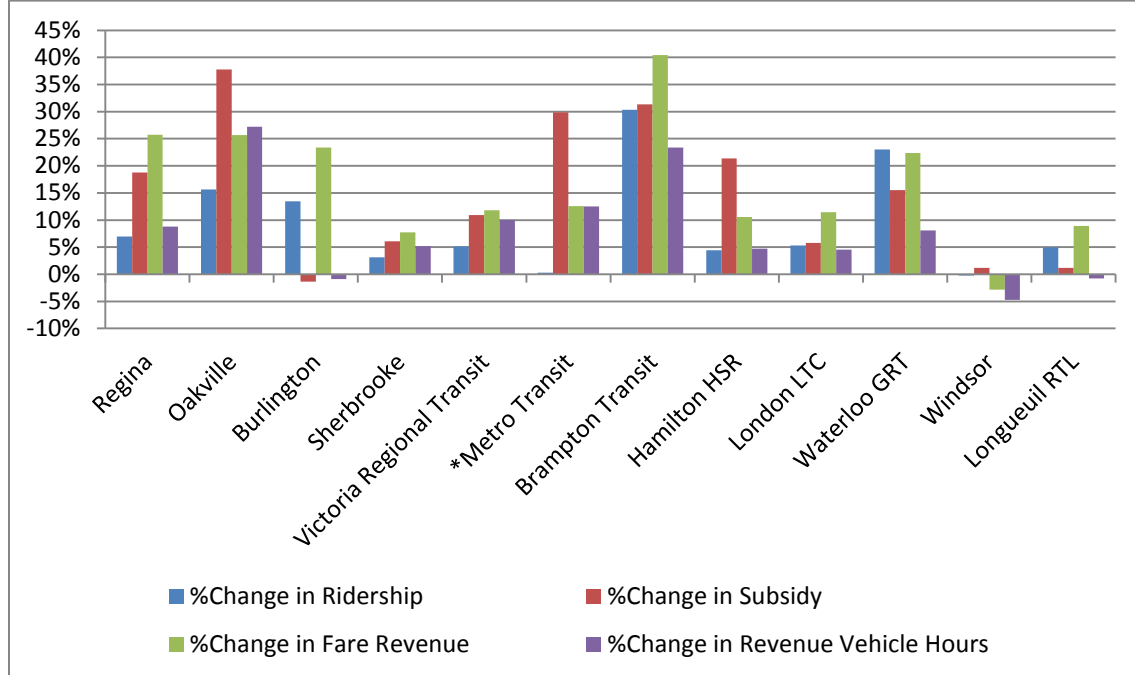
Note: The analysis (estimates) represented by Exhibit 8 was performed using the data reported to CUTA by Metro Transit and other transit systems. Some variations in what is included in subsidy (for example, interest or amortization) may well exist. See also limitations in Scope section.

The above exhibit continues to show the same concerning trend: Metro Transit has, over the review period, one of the largest increases in government operating subsidy (as defined for CUTA reporting) and the largest overall decrease in ridership.

The above exhibit continues to show the same concerning trend: Metro Transit has, over the review period, one of the largest increases in government operating subsidy (as defined for CUTA reporting) and the largest overall decrease in ridership. The OAG acknowledges the 2011/12 work stoppage affected the period under review.

Exhibit 9 below shows the same relationship of change between ridership, fare revenue, operating subsidy and service, but uses estimates to normalize the information had a work stoppage not occurred.

Exhibit 9 Peer Transit System Benchmark Summary of Overall % Changes from 2008/09 to 2011/12 had HRM Work Stoppage not Occurred (Estimated)



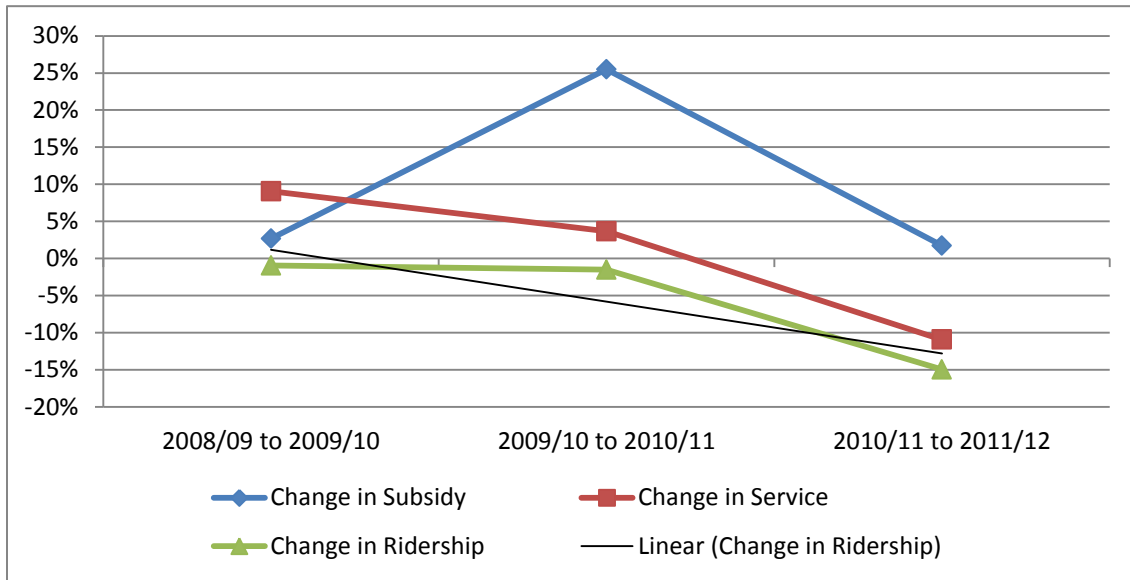
* The OAG extrapolated the Metro Transit data to estimate the change had there not been a work stoppage in 2011/12.

Note: The OAG used the data reported to CUTA by Metro Transit and other transit systems for the above analysis. Some variations in what is included in subsidy (for example, interest or amortization) may well exist. See also limitations in Scope section.

Exhibit 9 shows Metro Transit having a small projected increase in ridership had the work stoppage not occurred but is still one of the lowest of the peer transit systems for growth in ridership and one of the highest for growth in government operating subsidy.

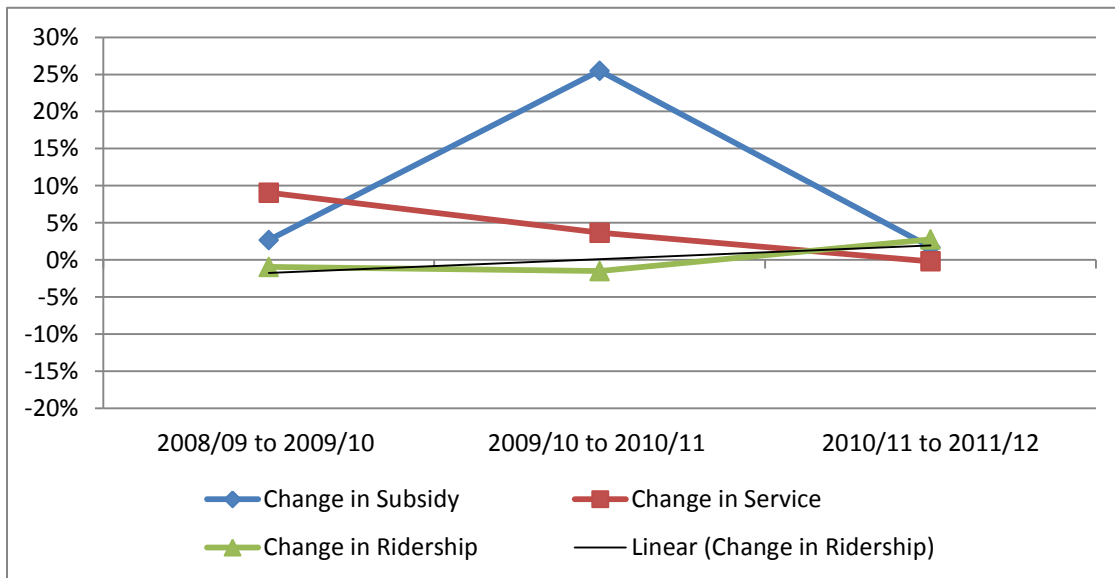
The following two exhibits (Exhibit 10 and Exhibit 12) show the growth in government operating subsidy, service hours and ridership for Metro Transit from 2008/09 to 2011/12 and the average for the peer transit benchmarks represented in the exhibit above. Exhibit 11 shows the growth relationship using the estimated figures for ridership, fare revenue and service had the work stoppage not occurred.

Exhibit 10 Year Over Year Change for Metro Transit 2008/09 to 2011/12



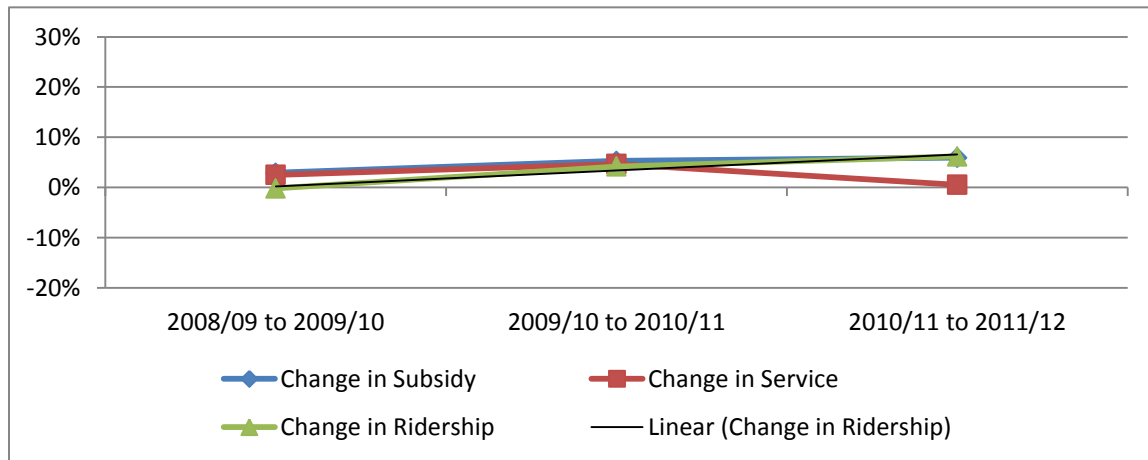
Note: See commentary with respect to limitations in Scope section.

Exhibit 11 Year Over Year Change for Metro Transit 2008/09 to 2011/12 Without Work Stoppage (Estimated)



Note: See commentary with respect to limitations in Scope section.

Exhibit 12 Average Year Over Year Change for Peer Transit System Benchmarks 2008/09 to 2011/12



Note: The analysis (estimates) represented by Exhibit 12 was performed using the data reported to CUTA by peer transit systems. Some variations in what is included in subsidy (for example, interest or amortization) may well exist. See also limitations in Scope section.

Exhibit 11 shows had the work stoppage not occurred there was the potential for ridership to have grown by 3% from 2010/11 to 2011/12. The OAG continues to question whether the Metro Transit increase in subsidy is an acceptable increase for the additional ridership and service generated.

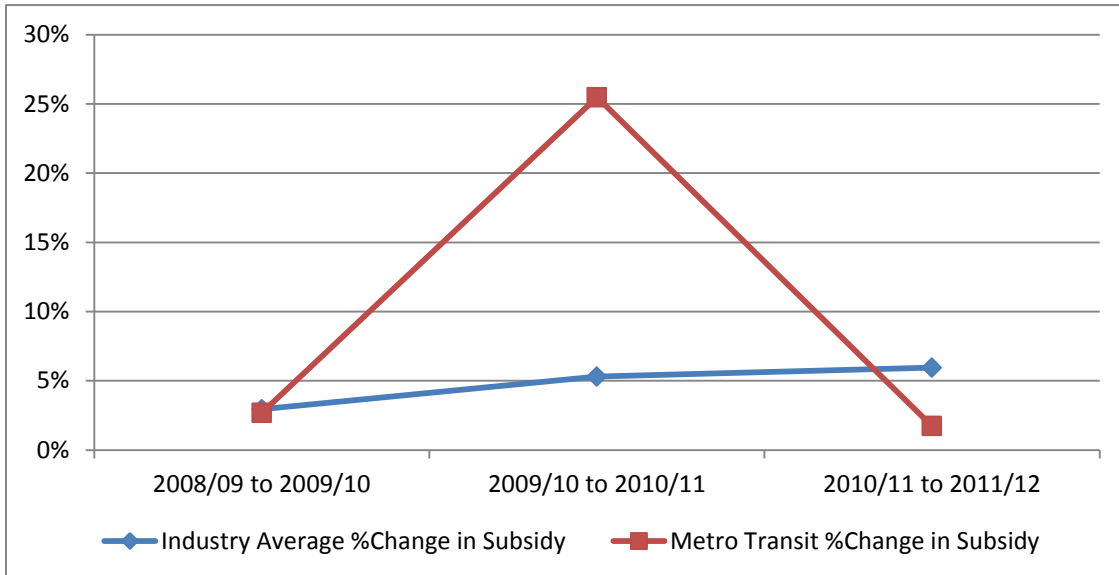
On average, the industry benchmarks generated more ridership from less percentage increase in government operating subsidy investment over the review period. Metro Transit required a larger government subsidy investment, and while this investment was used to support diverse service delivery and infrastructure improvements, it did not generate additional ridership.

The greatest change in Metro Transit's government subsidy level, for the period of review, was over the 2009/10 to 2010/11 period at 25%, while the industry benchmark average for change in subsidy level peaked at 6% during 2010/11 to 2011/12. Metro Transit experienced the greatest increase in service hours during the 2008/09 to 2009/10 period at 9%. The average increase in service hours and ridership for the industry benchmarks was 3% over the period of the review, while Metro Transit's ridership continued to decrease over the period of the review. Exhibit 11 shows had the work stoppage not occurred there was the potential for ridership to have grown by 3% from 2010/11 to 2011/12. The OAG continues to question whether the Metro Transit increase in subsidy is an acceptable increase for the additional ridership and service generated.

On average, the industry benchmarks generated more ridership from less percentage increase in government operating subsidy investment over the review period. Metro Transit required a larger percent increase in government subsidy investment, and while this investment was used to support diverse service delivery and infrastructure improvements, it did not generate additional ridership. Metro Transit in fact experienced a loss in ridership over the entire period under review despite a continuing increase in the government operating subsidy.

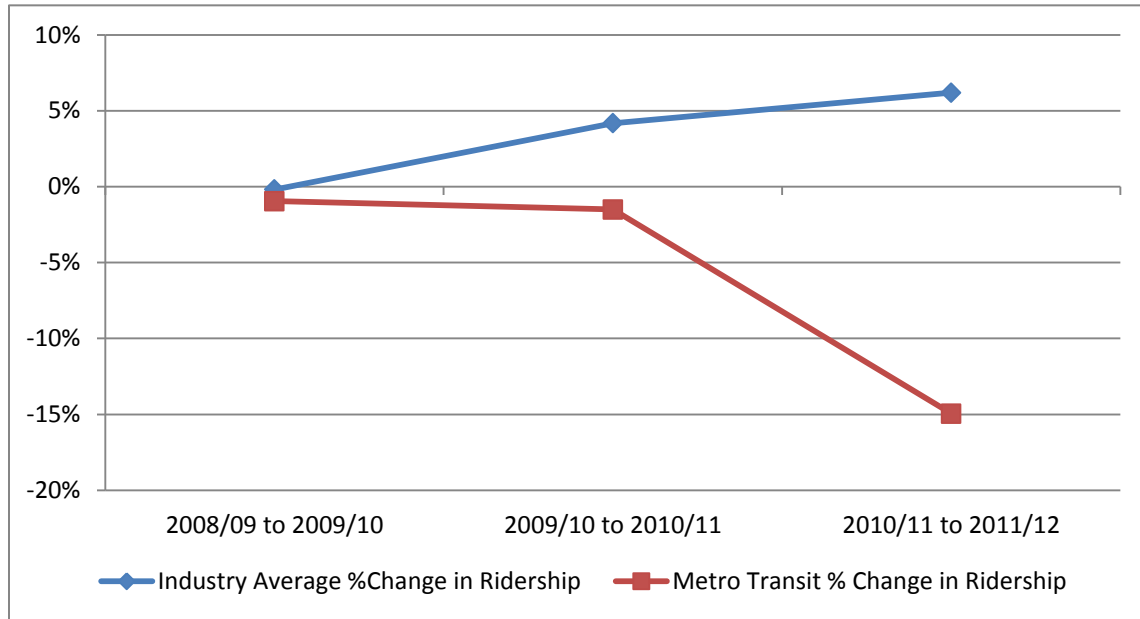
Exhibits 13 and 14 below isolate changes in subsidy and ridership, comparing Metro Transit to the benchmark peer industry average for the period of review.

Exhibit 13 Year Over Year Change in Subsidy for Metro Transit Compared to the Benchmark Peer Industry Average



Note: The analysis (estimates) represented by Exhibit 13 was performed using the data reported to CUTA by Metro Transit and other transit systems. Some variations in what is included in subsidy (for example, interest or amortization) may well exist. See also limitations in Scope section.

Exhibit 14 Year Over Year Change in Ridership for Metro Transit Compared to the Benchmark Peer Industry Average

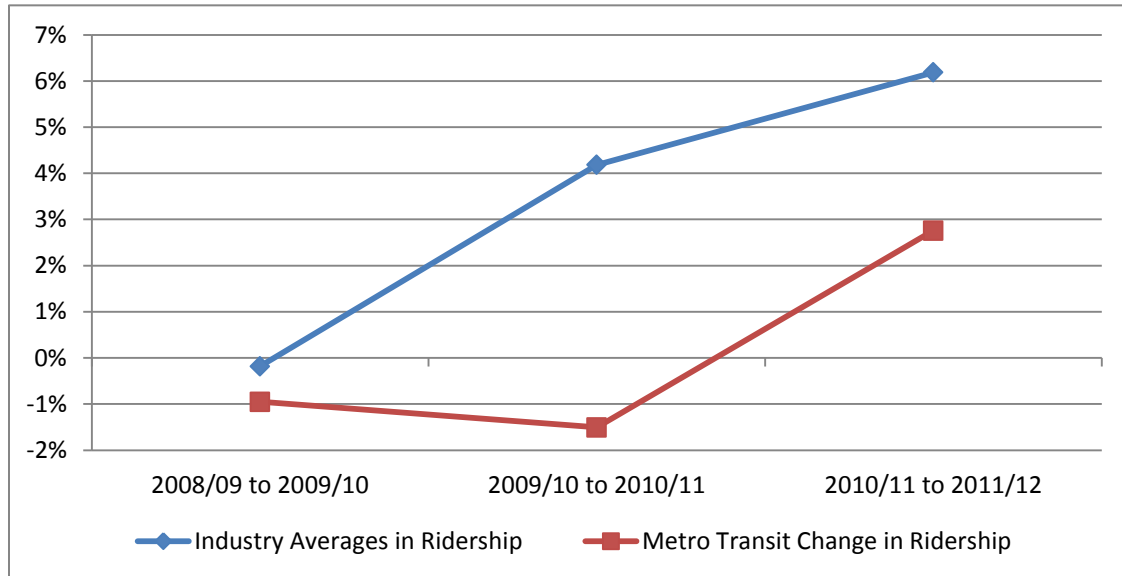


Note: The analysis (estimates) represented by Exhibit 14 was performed using the data reported to CUTA by Metro Transit and other transit systems. Some variations in what is included in subsidy (for example, interest or amortization) may well exist. See also limitations in Scope section.

The above exhibits further highlight the OAG's concern around the amount of subsidy being invested in the transit system for the small amount of additional ridership generated.

As previously noted, the 2010/11 to 2011/12 period for Metro Transit includes a work stoppage which caused service hours and ridership to decrease. Exhibit 15 shows the estimated isolated comparison for ridership had the work stoppage not occurred.

Exhibit 15 Year Over Year Change in Ridership for Metro Transit Compared to Benchmark Peer Industry Average had Work Stoppage not Occurred (Estimated)



Note: The OAG used the data reported to CUTA by Metro Transit for the above analysis. The OAG extrapolated the data to estimate the change had there not been a work stoppage in 2011/12. See also limitations in Scope section.

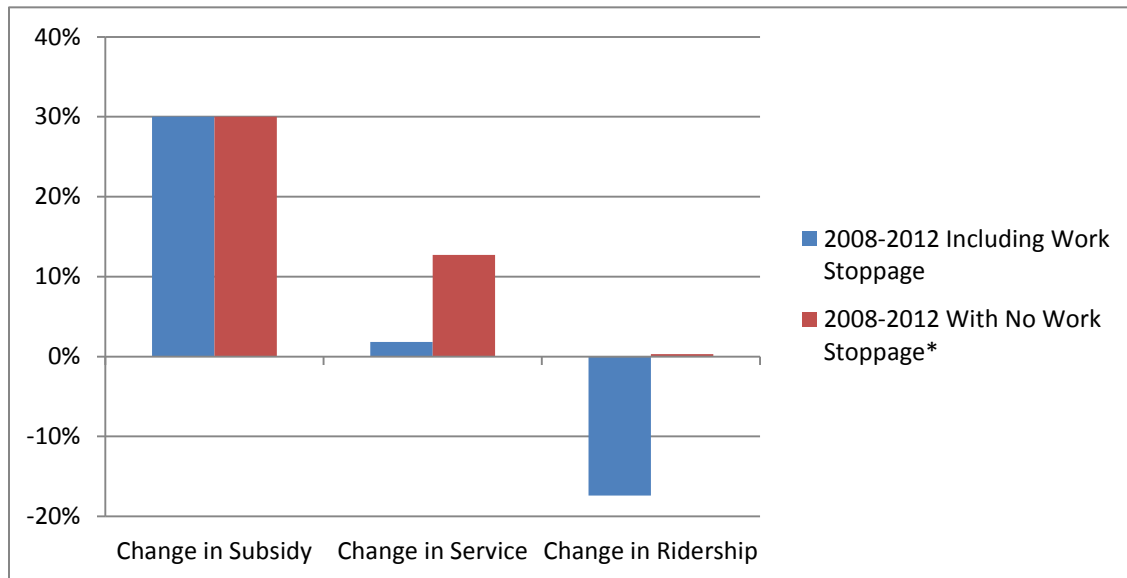
The above exhibit indicates Metro Transit could have possibly generated growth in ridership had the work stoppage not occurred but well below the benchmark peer industry average of 6%.

The above exhibit indicates Metro Transit could have possibly generated growth in ridership had the work stoppage not occurred but well below the benchmark peer industry average of 6%.

The OAG reviewed the reported ridership generated for the 2012/13 fiscal year (see Exhibit 4). The reported ridership for the 2012/13 fiscal year shows a 19% increase over the 2011/12 period in which the work stoppage took place. However, when compared to the last year of regular service (2010/11), it only represents a 1% increase in ridership.

Exhibit 16 explores further the relationship of change between subsidy, service and ridership for Metro Transit, highlighting the impact of the aforementioned work stoppage.

Exhibit 16 Summary of Estimated Change in Subsidy, Service and Ridership for Metro Transit (with and without the Work Stoppage) from 2008/09 to 2011/12



*The OAG extrapolated the data to estimate the change had there not been a work stoppage in 2011/12.

Note: See also limitations in Scope section.

Exhibit 16 shows Metro Transit's service hours over the review period increased by 2%, the municipal operating subsidy being provided increased by 30% and ridership decreased by 17%.

The above exhibit suggests even without the work stoppage, the 30% increase in the amount invested in Metro Transit's operations from the general tax base (i.e. the municipal operating subsidy) would have created 13% more service hours but would have likely generated no additional ridership.

It is important for Regional Council and Metro Transit to define an acceptable relationship between the

Exhibit 16 shows Metro Transit's service hours over the review period increased by 2%, the municipal operating subsidy being provided increased by 30% and ridership decreased by 17%. Exhibit 16 also shows the extrapolated summary of change had there not been a work stoppage. The amount of municipal operating subsidy provided was left unchanged. It could be argued however, this number would have been higher had service been in place. To be conservative, the OAG chose to leave the municipal operating subsidy stable.

The above exhibit suggests even without the work stoppage, the 30% increase in the amount invested in Metro Transit's operations from the general tax base (i.e. the municipal operating subsidy) would have created 13% more service hours but would have likely generated no additional ridership. This trend is concerning to the OAG as there are no performance mechanisms in place to demonstrate to Regional Council if this is an acceptable level of municipal subsidy for the service hours delivered and ridership generated.

It is important for Regional Council and Metro Transit to define an acceptable relationship between the amount of municipal subsidy necessary for each service increase and how long it could take for

amount of municipal subsidy necessary for each service increase and how long it could take for the new service to recover its costs through ridership.

It is important when making strategic service adjustments to fully understand the impact, given costs begin to be incurred immediately and ridership taking at least 18 to 24 months to grow.

the new service to recover its costs through ridership. The OAG was advised by Metro Transit it takes a period of almost 24 months to grow ridership on a new route or new service. As ridership increases, more (fare) revenue is being generated so less investment should be required from the municipal tax base.

It is apparent from the exhibits above, Metro Transit's service hours can rise dramatically with no corresponding increase in ridership, or as happened over the review period, ridership can actually decline. When this occurs, the municipal subsidy must increase to cover the costs of providing these new service hours as fewer costs are being recovered from fare revenue. It is important when making strategic service adjustments to fully understand the impact, given costs begin to be incurred immediately and ridership taking at least 18 to 24 months to grow.

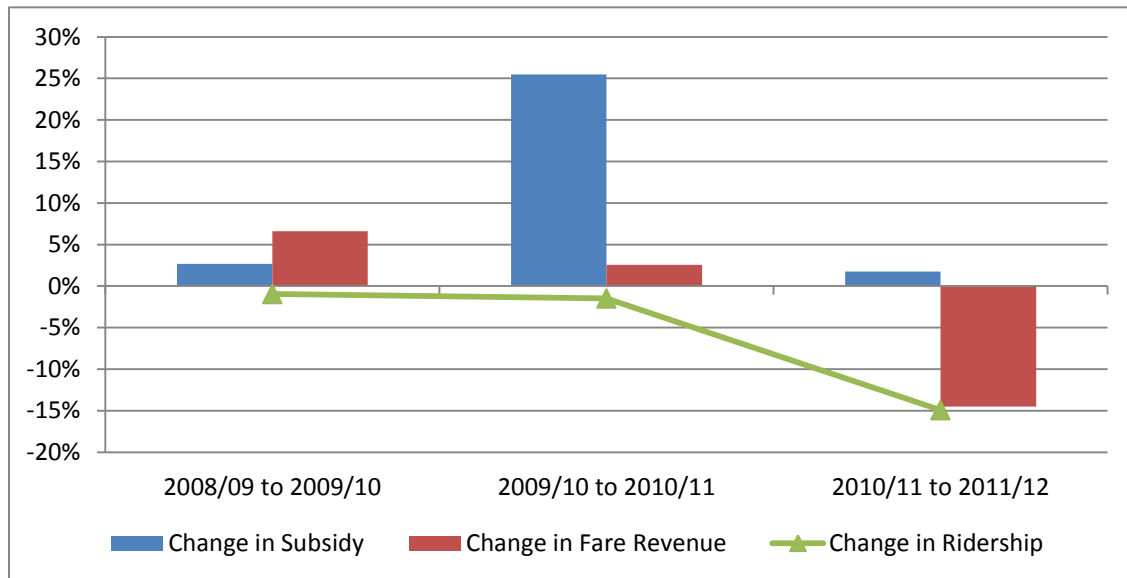
4.1 System-Level Analysis: Funding Sources and Effects of a Work Stoppage

Public transit systems across Canada receive funding for operations from two primary sources. The first and most obvious is fare revenue, which can come in a variety of forms depending on the transit system's fare structure¹². The second source would be the government operating contribution/subsidy discussed earlier, which comes from the tax base. The amount of government subsidy required for operations varies greatly across peer benchmark transit organizations and is based on the expected differences between estimated fare revenue and estimated cost. In simple terms, the more riders and fare revenue being received, the less government operating subsidy required, all things being equal.

Exhibit 17 below shows the year over year change in the two primary revenue sources (subsidy and fare revenue) for Metro Transit over the period of review.

¹² Fare Structure - fare amounts by rider categories (senior, student, etc.) indicating how much is to be paid by passengers using a transit system at any given time.

Exhibit 17 Percent Change Year over Year in Funding Sources for Metro Transit as Reported by CUTA for 2008/09 to 2011/12



Note: See commentary with respect to limitations in Scope section.

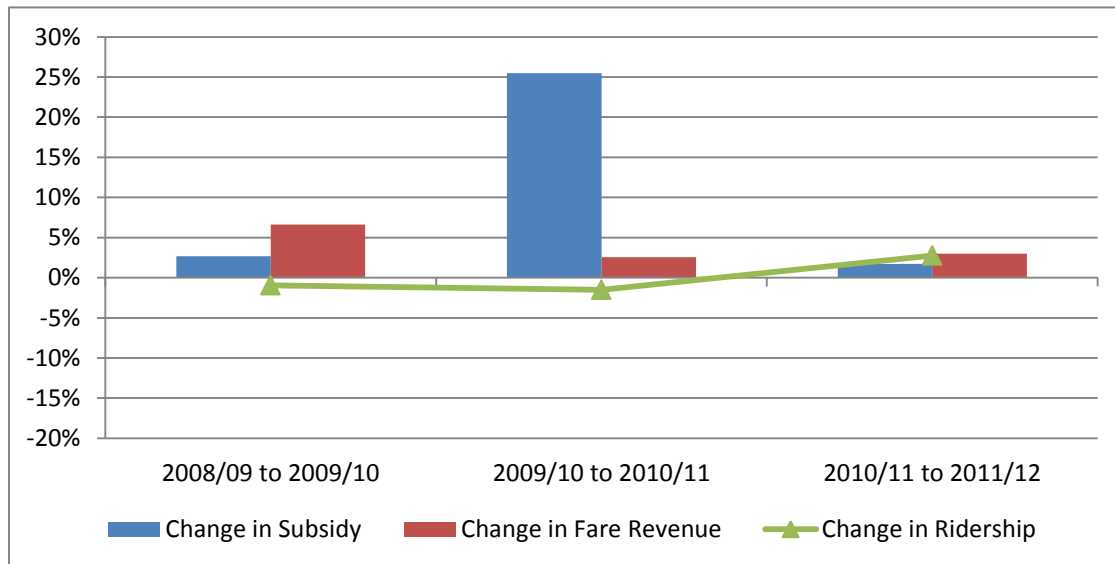
The above exhibit shows Metro Transit's growth in fare revenue peaking at 7% in the 2008/09 to 2009/10 period. During this period, there was a fare increase and an increase in service hours. The exhibit shows ridership for this period decreased by 1%, an anticipated response to a fare increase. It is positive to note even for a 1% loss in ridership, a 7% increase in fare revenue was achieved.

The fare and service hours increases implemented during the 2008/09 to 2009/10 period did not continue to raise overall revenues at the same rate as was experienced in the year of implementation. This resulted in a significant increase in the municipal subsidy required for operations as it must be remembered, when service hours are increased with no corresponding increase in fare revenue (either through a fare increase or increased ridership), the burden on the municipal tax rate increases.

The 2010/11 to 2011/12 period in Exhibit 17 includes the period of time during the work stoppage. As was expected, Metro Transit's fare revenue and ridership decreased, in fact by 14% and 15% respectively.

Exhibit 18 below uses an estimate based on historical ridership and the average fare for Metro Transit (as reported to CUTA) to calculate the expected fare revenue had the work stoppage not occurred.

Exhibit 18 Estimated Percent Change Year over Year in Funding Sources had Work Stoppage not Occurred 2008/09 to 2011/12

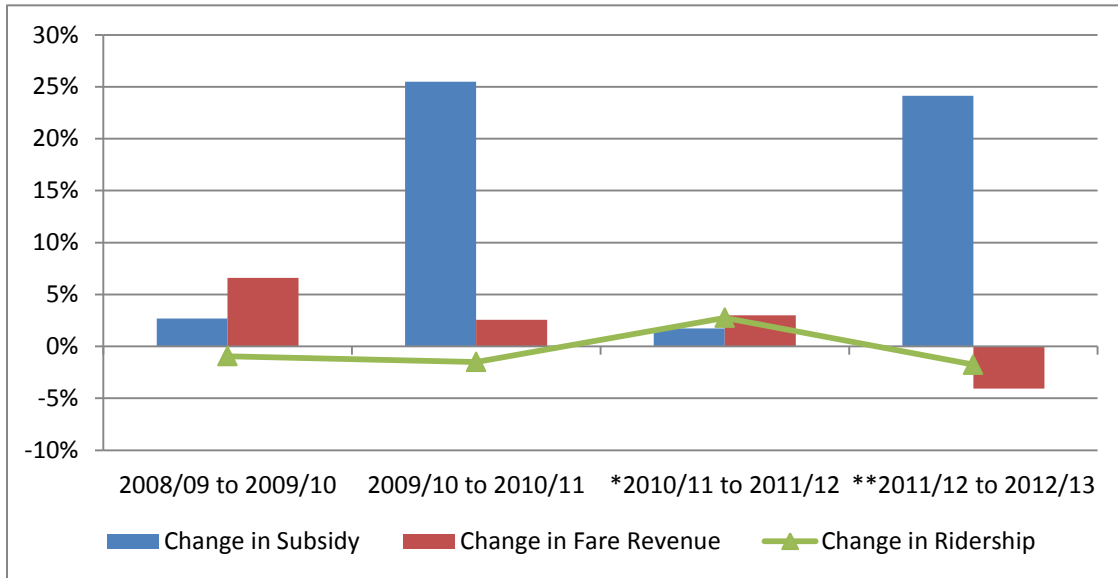


Note: The OAG extrapolated the data to estimate the change had there not been a work stoppage in 2011/12. See also limitations in Scope section.

Exhibit 18 shows had the work stoppage not occurred and the OAG's estimates realized, Metro Transit was likely to have had a 3% increase in fare revenue and ridership for the 2010/11 to 2011/12 period. It would appear Metro Transit was on track to realize some of the benefits from their earlier service adjustments and fare increase.

Due to the dramatic effect the work stoppage had on Metro Transit, the OAG performed additional analysis on the normalized information and brought in the 2012/13 fiscal year for comparative purposes. Exhibit 19 shows the estimated relationship between subsidy, fare revenue and ridership had the work stoppage not occurred prior to 2012/13.

Exhibit 19 Estimated Percent Change Year over Year in Funding Sources had Work Stoppage not Occurred 2008/09 to 2012/13



*2010/11 to 2011/12 data is based on estimated ridership and fare revenue information had the work stoppage not occurred.

**2011/12 to 2012/13 data is based on data reported to CUTA by Metro Transit.

Note: As indicated in the Scope section of the report, the 2012/13 information was included to provide more meaningful commentary. See also limitations in Scope section.

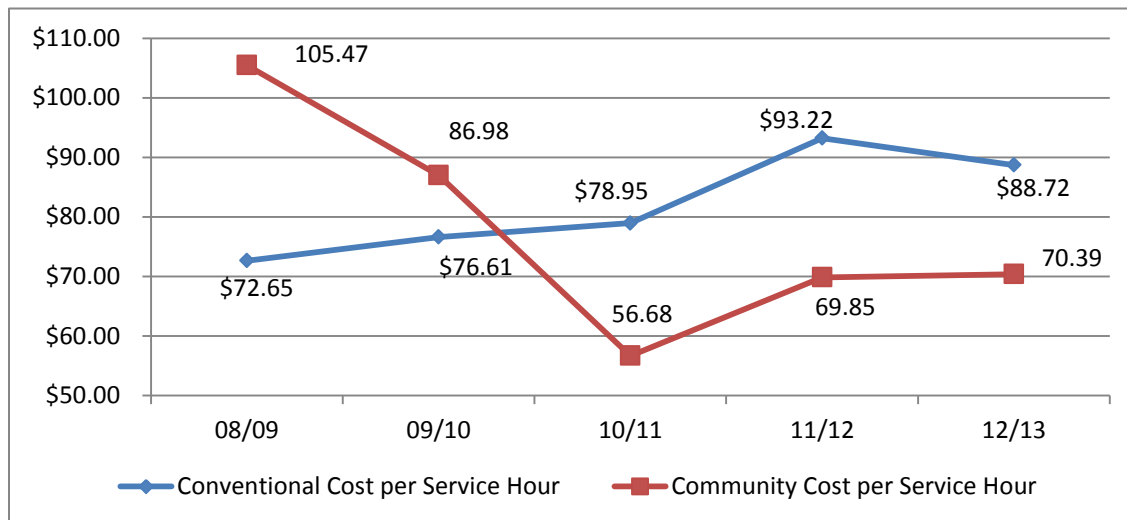
The above exhibit is used to demonstrate the OAG's continuing concern of a trend in decreasing or plateaued ridership despite a continuing increase in subsidy.

The above exhibit is used to demonstrate the OAG's continuing concern of a trend in decreasing or plateaued ridership despite a continuing increase in subsidy.

5.0 Route-Level Analysis: Cost Per Hour

Metro Transit delivers a conventional (core) and community (rural) bus service of 63 routes. The costs to provide bus services for 2008/09 to 2012/13 (per hour) are shown in Exhibit 20 below. These costs are essentially fixed, regardless of ridership. The costs are made up of individual per hour costs for compensation, management and administration, bus maintenance, fuel and an estimate for interest. The OAG reviewed the costs per hour for conventional and community transit services for a period of five years; one year outside of the period of review was brought in for better comparatives.

Exhibit 20 Total Cost Per Hour* for Fiscal 2008/09 to 2012/13



*The cost per hour information was provided by Metro Transit

Per hour costing information for Metro Transit includes allocations of different cost elements across each transit service and as was previously mentioned, one of these cost elements is a provision for interest. Conventional Transit makes up over 90% of Metro Transit's overall service delivery and conventional costs have increased steadily since 2008/09. Community Transit, which amalgamated with Conventional Transit as of January 1st, 2013, made up just 1% of Metro Transit's overall service delivery during the period under review.

Exhibit 20 shows the 2012/13 cost per hour for conventional transit services is \$88.72, a 5% decrease from 2011/12. As was discussed earlier, cost reduction is one of the ways to reduce the

municipal operating subsidy required for service delivery. To gain any efficiency using cost management, Metro Transit would need to look at the largest costs which can be managed. For Metro Transit, this would be compensation charges. The reductions in the operator compensation costs in both conventional and community transit service delivery indicate Metro Transit appears to be attempting to manage the costs of their current services.

However, as was previously mentioned, some costs which are not under Metro Transit's control will continue to increase. If potential cost savings within Metro Transit's control are being realized, but costs outside of their control continue to increase, further cost reduction cannot be achieved without cutting service. The need for accurate elasticity models to assist with Management and Regional Council funding decisions are discussed at length in Section 6.0.

5.1 Route-Level Analysis: Ferry Services are Underutilized

Metro Transit offers ferry services from three different terminals: one in Halifax, one in Alderney and one in Woodside. For the 2011/12 fiscal year, 6,811 service hours were delivered out of the Alderney Ferry Terminal using two ferries and 1,543 service hours were delivered out of the Woodside Ferry Terminal using one ferry. There are routes which travel from Halifax to Alderney, Alderney to Halifax, Woodside to Halifax and Halifax to Woodside. Exhibit 21 shows the average 2011/12 annual ridership for the Halifax to Alderney route and the Alderney to Halifax route by hour for a weekday of service. Exhibit 22 shows the average 2011/12 annual ridership for the Woodside to Halifax and the Halifax to Woodside routes by hour for a weekday of service.

Exhibit 21 Average Weekday Ridership for Routes Operating from Alderney Ferry Terminal (Alderney to Halifax and vice versa) for 2011/12

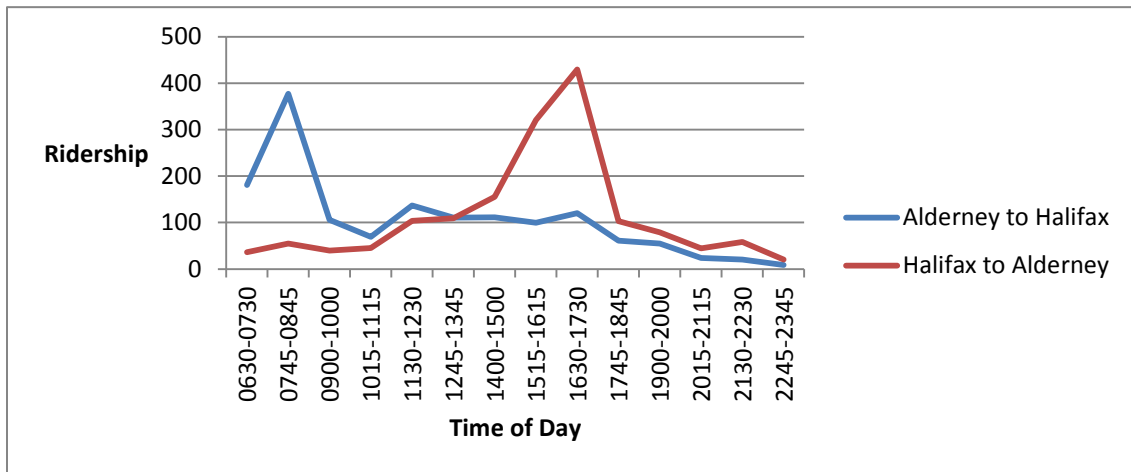
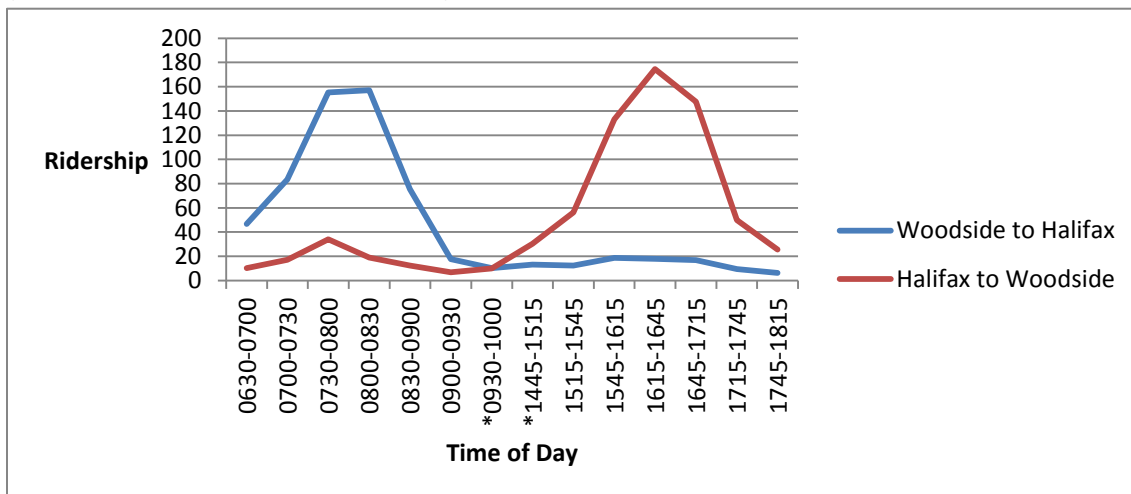


Exhibit 22 Average Weekday Ridership for Routes Operating from Woodside Terminal (Woodside to Halifax and vice versa) for 2011/12



*Note: the Woodside Ferry Terminal does not provide service after 10:00 a.m.; service resumes just before 3:00 p.m.

As Exhibit 21 indicates, ridership peaks for the Alderney to Halifax route early in the morning with a brief peak in the afternoon then falling below 30 passengers an hour from 8:00 p.m. onward. Ridership for the Halifax to Alderney route begins to climb during the late morning early afternoon service hours, peaking in the early evening (rush hour), and then falling steadily to below 30 passengers an hour for the last hour of service from 10:45 p.m. to 11:45 p.m. (off-peak travel time).

As Exhibit 22 indicates, ridership peaks for the Woodside to Halifax route in the early morning (rush hour) and then averages fewer than 20 riders for the remainder of its service (off-peak travel time). Ridership peaks for the Halifax to Woodside service in the late afternoon (rush hour), but averages fewer than 40 passengers during the morning service hours and last hour of evening service (off-peak travel time).

The service standards for ferry for cost recovery are 50% recovery for daytime on weekdays for the rush hour period only and 30% recovery for evenings and weekends.

The service standards for ferry for cost recovery are 50% recovery for daytime on weekdays for the rush hour period only and 30% recovery for evenings and weekends. Metro Transit reports the two routes which service between the Alderney Ferry Terminal and the Halifax Ferry Terminal as one and the two routes which service between Woodside Ferry Terminal and Halifax Ferry Terminal as one. Both the Alderney Ferry Terminal service and the Woodside Ferry Terminal service meet and exceed their cost recovery standards for weekdays.

While the ferry service provided by Metro Transit meets the overall current service standards for cost recovery, what is possibly being missed due to the use of an overall cost recovery, is a full understanding of the costs to run the ferries and the significant amount of capacity being underutilized.

While the ferry service provided by Metro Transit meets the overall current service standards for cost recovery, what is possibly being missed due to the use of an overall cost recovery, is a full understanding of the costs to run the ferries and the significant amount of capacity being underutilized. Ferry services are designed to be integrated into the conventional bus system, yet the ridership does not appear to support this. There is a considerable amount of capacity on the ferries, especially at off peak times. With the costs required to support this service, it is the view of the OAG there needs to be a significant effort to promote the use of ferry services.

There is a considerable amount of capacity on the ferries, especially at off peak times. With the costs required to support this service, it is the view of the OAG there needs to be a significant effort to promote the use of ferry services.

6.0 Value of Elasticity Calculations

The OAG is clearly concerned and is making many recommendations to assist with the development of far better management reporting systems.

As previously mentioned, Metro Transit has been impacted by significant challenges (fare increase, work stoppage and service changes) over the period of review. These changes and events make it difficult to comment, on a system level and particularly at a route level, as to how well inputs (municipal operating subsidy and costs) and outputs (service hours) are being used to achieve the desired outcomes (ridership/fare revenue). The OAG is clearly concerned and is making many recommendations to assist with the development of far better management reporting systems.

Much of the discussion to this point has focused on the value 'past results' can have on decision making. Certainly this is true, but what appear to be missing are more forward looking sensitivity projections, particularly as new routes or changes to existing routes are contemplated. For example, in the transit industry, it is typical with a service increase (more service hours provided) for additional costs to be incurred immediately, with ridership taking time to grow. It is also typical in the transit industry, as a fare increase is implemented a loss in ridership occurs relative to the amount of the increase with the subsequent rebuilding of ridership over time.

In order for Regional Council to make strategic service adjustments, the impact of contemplated changes on ridership, cost recoveries and municipal subsidy per rider should be able to be projected with a high level of accuracy within a number of different scenarios.

These relationships have been explored by the industry and elasticity¹³ calculations are critical in helping transit organizations plan for fare and service adjustments. An elasticity calculation, based on industry or internal historical trends and well understood costs, can help Metro Transit and Regional Council understand how an increase in fares and/or an increase in service will affect ridership, over what time period and most importantly how sensitive the outcomes are given the variables used around time, ridership, etc..

¹³ As an example, elasticity is a measure of a variable's (ridership) sensitivity to a change in another variable (fare increase, service increase).

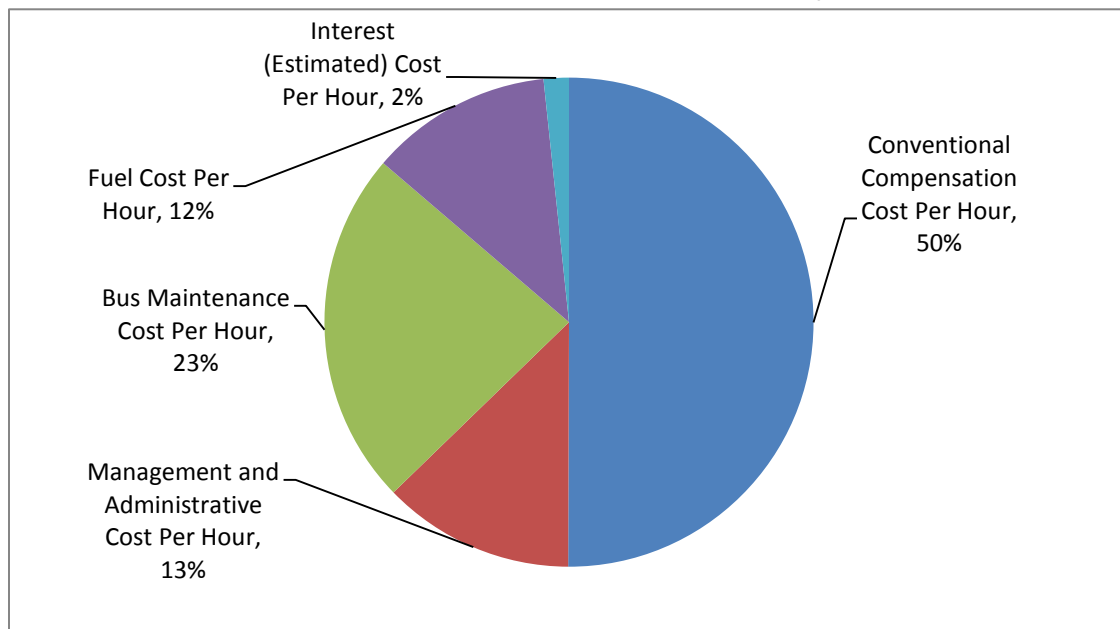
What the OAG is strongly suggesting is the need for elasticity models which are able to combine various elements of costing information with ridership and revenue projections.

What the OAG is strongly suggesting is the need for elasticity models which are able to combine various elements of costing information with ridership and revenue projections. It is critically important to understand costs from both a fixed and variable perspective within the modelling in order to make full use of the power of the elasticity calculations.

For example, information with respect to the cost per hour for the Conventional system is shown in Exhibit 23.

As can easily be seen, the single largest cost is wages and changes to this cost element have significant impact on cost recovery calculations.

Exhibit 23 Conventional Transit Cost Per Hour Breakdown for 2011/12



As noted earlier in Exhibit 20 the 2012/13 cost per hour for Conventional Transit services is \$88.72, a 5% decrease from 2011/12. This decrease can be primarily attributed to a reduction in conventional operator compensation charges per hour, decreasing by over \$3.00 per service hour, a result of the resolution to the labour dispute with contract efficiencies (scheduling and overtime reduction). In further discussion with Metro Transit, these compensation costs will continue to decrease over the next few years as a result of efficiencies negotiated in the current collective agreement.

As previous sections have shown, while Metro Transit Management is clearly desirous of more accurate and timely information, the systems and technology are simply not in place at the present time to accomplish this.

Unfortunately, while these types of calculations can provide some guidance, they are significantly restricted by the lack of accurate ridership or revenue data at the route level.

If Regional Council is not prepared to make the 'hard' decisions, it would be inefficient and ineffective for Metro Transit to expend the funds to track the necessary information in the detail required or prepare the initial elasticity estimates. If Regional Council does not make the 'hard' decisions, they in turn will not allow Metro Transit to manage the system within pre-determined parameters around ridership, revenue and level of subsidy.

This is critical information to have and use in elasticity calculations when decisions are being made about whether HRM can afford service changes in its transit system and the likelihood of various outcomes and their impact on budgets.

As previous sections have shown, while Metro Transit Management is clearly desirous of more accurate and timely information, the systems and technology are simply not in place at the present time to accomplish this. Metro Transit informed the OAG they use an accepted industry model combined with an adjustment based on historical ridership changes for the elasticity calculations associated with fare and service adjustments. Unfortunately, while these types of calculations can provide some guidance, they are significantly restricted by the lack of accurate ridership or revenue data at the route level.

Regional Council must have discussions around the type of data they would like to receive from Metro Transit in order to have meaningful discussion around route-level adjustments. Regional Council must decide if they will react to route-level performance on a financial basis and make 'hard' decisions such as eliminating an underperforming route. If Regional Council is not prepared to make the 'hard' decisions, it would be inefficient and ineffective for Metro Transit to expend the funds to track the necessary information in the detail required or prepare the initial elasticity estimates. If Regional Council does not make the 'hard' decisions, they in turn will not allow Metro Transit to manage the system within pre-determined parameters around ridership, revenue and level of subsidy.

Recommendations

- 6.0.1 The OAG recommends Metro Transit Management consider developing and including projections of ridership growth in relation to the expected increase in costs for any new service or service increase provided for in their annual service plans. From an efficiency perspective, this projection should show Regional Council what can be expected from the service adjustments being made and

provide a greatly enhanced benchmark with which to measure results.

- 6.0.2 The OAG recommends Metro Transit consider reporting actual results against the projections mentioned in Recommendation 6.0.1 as a part of their annual KPI reports and in the annual service plans presented to Regional Council.
- 6.0.3 The OAG recommends Metro Transit consider developing an implementation plan demonstrating how new technology will capture the required information to assess elasticity of ridership to fare increases and service increases/decreases on a go-forward basis.
- 6.0.4 The OAG recommends when Metro Transit has a proposed change in fare or service, this change be supported by a business plan submitted to Regional Council outlining the anticipated impact on ridership, fare revenue and municipal operating subsidy levels and over what growth period. These plans should include extensive elasticity calculations so Regional Council is made aware of various options which may be available to them. These impacts or changes should also be reviewed and reported to Regional Council on an annual basis in order to assist Council in increasing its understanding of the impacts of its decisions and assessing the effectiveness of Metro Transit's implementation.

7.0 Return on Investment in Technology

Metro Transit reported several KPIs used by the transit industry to measure efficiency and effectiveness in their 2012/13 Annual Service Plan. Exhibit 24 below outlines the measures reported and how they are calculated.

Exhibit 24

KPI	Calculation
Service Hours per Operator	Total In-Service Hours/Total Operators
Service Utilization (Passengers per Capita)	Total Ridership/Total Service Area Size Population
Service Utilization (Passengers per Service Hour)	Total Ridership/Total In-Service Hours
Amount of Service (Service Hours per Capita)	Total In-Service Hours/Total Service Area Population
Financial (Cost Recovery)	Total Fare Revenue + Other Revenue/Total Operating Costs(not including interest or amortization)
Cost Effectiveness (Operating Expense per Passenger)	Total Operating Costs/Total Ridership
Average Fare (Passenger Revenue per Passenger)	Total Fare Revenue/Total Ridership

In the calculation section of Exhibit 24, the total ridership figure is used frequently; however, as was previously mentioned, this number carries a high error rate at Metro Transit.

In the calculation section of Exhibit 24, the total ridership figure is used frequently; however, as was previously mentioned, this number carries a high error rate at Metro Transit. KPIs need to be timely, relevant, reliable and complete in order to be effective. Any of Metro Transit's KPIs which use ridership are not filling these requirements. While these measures can provide insight into the effectiveness and efficiency of Metro Transit's service delivery on a total system level, they do not provide Metro Transit with the information necessary to make specific adjustments to their service delivery model to improve efficiency and effectiveness.

In Metro Transit's Technical Solutions Roadmap, presented to Audit and Finance Committee during preliminary budget presentations for 2013/14, enhanced reporting and data-driven decision making are listed as priority initiatives. Two investments in technology Metro Transit plans to make are an Automated Vehicle Location (AVL) and an Automatic Passenger Counter (APC)

The investment in technology is significant, and the return on this investment is dependent on how well the technology is implemented and used on an ongoing basis.

Using the technology for accurate ridership, service consumption and other stop-level analysis can allow Metro Transit to make strategic decisions related to service standard adherence, leading to a more efficient service and a decrease in costs.

system. These systems have the capability to provide Metro Transit with accurate and timely information regarding schedule adherence and detailed ridership reports on a route and stop-level basis. Therefore, the KPIs mentioned in Exhibit 24 would become more accurate and meaningful and route-level KPIs could be implemented for increased measures of efficiency and effectiveness of service delivery as is being suggested by the OAG.

The investment in technology is significant, and the return on this investment is dependent on how well the technology is implemented and used on an ongoing basis. Using the technology for schedule adherence and other route-level analysis can allow Metro Transit to make strategic and informed decisions on service adjustments, leading to a more reliable, effective service and an increase in ridership. Using the technology for accurate ridership, service consumption and other stop-level analysis can allow Metro Transit to make strategic decisions related to service standard adherence, leading to a more efficient service and a decrease in costs.

In summary, the cost of efficiency is reflected in increased technology costs but the overall benefit and future savings which can be achieved through strategic implementation and monitoring should far outweigh the costs of technology.

Recommendations

7.0.1 The OAG recommends Metro Transit consider developing and incorporating, in conjunction with the route-level analysis plan from Recommendation 3.2.1, an implementation plan demonstrating how the new technology will be used to provide accurate stop-level analysis. This analysis will provide more meaningful and timely adjustments to increase service delivery efficiency and effectiveness which should be key components of the technology enhancement plan.

7.0.2 The OAG recommends Metro Transit consider developing and measuring route-level and stop-level KPIs for efficiency and effectiveness of service delivery as new technology is implemented and reporting these results to Regional Council.

Appendix: Management Response

August 20, 2013

Mr. Larry E. Munroe
Auditor General
Halifax Regional Municipality
Belmont House, Suite 620
33 Alderney Drive
Dartmouth, Nova Scotia
B3J 3A5

Re: A Systems Level Performance Review of Metro Transit's Service Delivery

Dear Mr. Munroe:

I have reviewed **A Systems Level Performance Review of Metro Transit's Service Delivery** and I am in general agreement with its content and overall direction proposed. Your audit confirmed that we are already making progress and, as you have noted, many of the initiatives you recommended are well underway. I am confident that the initiatives being implemented by transit will address your recommendations as several of the themes in the report are consistent with recent changes in Metro Transit. For example:

1. **Moving Forward Together – The Metro Transit Five Year Service Plan**

Metro Transit will be engaging residents to discuss topics related to public transit in HRM, why it is important, and how it should grow in the next five years. The results will be used to establish the community's goals and aspirations for the future of transit in the region, and will direct the strategic development of Metro Transit's Five Year Service Plan. It is important to note that the concept of "Ridership vs. Coverage" presented in the report is a theme of said consultations.

The consultations will also provide a comprehensive review of Metro Transit's council approved service standards, and will provide recommendations on future standards to Halifax Regional Council.

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Chief Administrative Office
PO Box 1749, 1841 Argyle Street, Halifax, NS B3J 3A5
Tel: (902) 490-4026 Fax: (902) 490-4044

2. Technology Road Map

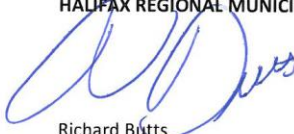
Metro Transit has recently completed, and received funding for, a comprehensive five year technology roadmap that will address identified technology, service delivery, and expectation gaps.

An objective of the technological implementation is to maintain good productivity and cost-effectiveness with improved scheduling and dispatch functions, in addition to offering more accurate fare collection capabilities and increasing ridership.

In keeping with past practice, HRM administration will continue to work to ensure the range of recommendations made by your office are addressed in a coordinated and appropriate manner, while maintaining a high level of transparency and accountability in reporting.

Sincerely,

HALIFAX REGIONAL MUNICIPALITY



Richard Butts
Chief Administrative Officer

Chief Administrative Office

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