



City of Greater Sudbury

TRANSIT AND FLEET SERVICES ORGANIZATIONAL/OPERATIONAL REVIEW

FINAL REPORT

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1. INTRODUCTION

As part of a new municipal services review process, the City established an independent auditor's office, the Auditor General, to undertake a systematic program audit of each of the municipality's departments. One of the first departments to be reviewed was the Transit Division of the Infrastructure Services Department. In the Auditor's report, "2010 Audit of Greater Sudbury Transit Services Conventional Transit" dated August 2, 2011, the Auditor identified a number of opportunities to improve the operations of the Division. In considering the Auditor General's report, City Council further directed that an operational review of the Transit Division be undertaken to ensure that it has the necessary resources and is appropriately organized to meet the transit needs of the municipality. The review was also intended to respond to the Auditor General's comments.

Independent of the operational review process, the City decided to merge the City vehicle and transit vehicle fleet maintenance sections to create the Transit and Fleet Services Division under the direction of the Director of Transit and Fleet Services. This change is being undertaken on the basis of previous reviews and assessments that identified this approach as an opportunity for synergies and value-added resources for the combined maintenance activity of the transit and City vehicle fleets.

Accordingly, an operational and organization review is timely to ensure that the integration of the two vehicle maintenance sections is achieved efficiently and effectively, to respond to Council's request that an operational review be undertaken and to respond to the recommendations in the Auditor General's report.

This report presents the results of the comprehensive review of the City's Transit and Fleet Services Division internal operations (not including a review of the transit route network or service levels), organization structure and staffing levels. It provides recommendations for effectively integrating the Fleet Services and Transit Vehicle maintenance sections including a recommended organization structure with reporting relationships and staffing levels to more effectively deliver services by the Division and recommended performance measures and benchmarking guidelines. A response to key findings of the Auditor General's report is included as well.

1.1 Study purpose

This study has the following key objectives with respect to the City's Transit and Fleet Services Division:

1. Respond to the key findings of the Auditor Generals' report;
2. Conduct an operational review of the Division and identify opportunities for improvement, determine an appropriate organization structure and identify appropriate staffing levels to undertake the merged divisional functions;
3. To determine the most effective way to merge all vehicle maintenance functions, programs and activities including appropriate reporting relationships and staffing levels to support the integrated maintenance functions; and
4. Determine the most appropriate performances measures for the integrated vehicle maintenance section as well as the other functional sections within the Transit and Fleet Services Division.

1.2 Work Plan

To address these objectives, the work plan for this assignment involved the following activities:

1. Confirm with the City the issues within the Auditor General's report to be addressed;
2. Confirm with the City the key objectives for the operational review;
3. Review and confirm the existing transit and fleet services organization structures, staffing levels and position responsibilities;
4. Review and confirm the existing staffing and reporting relationships related to vehicle maintenance and stock-keeping/inventory practices for both sections being merged;
5. Interview key personnel within the Transit and Fleet Services sections;
6. Conduct a peer review of similar-sized municipalities to identify best practices with regard to organization structure, staffing levels, maintenance programs and procedures, and approaches to inventory control;
7. Conduct an operational assessment of the transit organization including all functional areas such as administration, operations and customer service to identify areas for improvement;
8. Prepare a report summarizing the results of the operational and organizational review with recommendations regarding the most appropriate organization structure, staffing levels and vehicle maintenance strategy. Identify appropriate maintenance programs and practices, stock-keeping and inventory controls and practices, and performance indicators and benchmarks necessary to effectively and efficiently integrate and measure the performance of the transit and City fleet maintenance functions; and
9. Respond to the key findings of the Auditor General's report.

The approach to this assignment has involved working closely with City staff, particularly those from transit and fleet, to develop effective and efficient solutions for integrating the two vehicle maintenance sections and related functions such as inventory control and parts-stock-keeping and re-aligning the Transit and Fleet Services Division organization structure.

Disclaimer

It is to be noted that evaluation of the performance of individuals was not within the scope of this assignment. Opinions expressed in this report with regard to transit staff are based on discussions and observations only.

1.3 Persons Interviewed

During the course of the study, the following transit and fleet personnel were interviewed:

Roger Sauve - Director of Transit and Fleet Services

Robert Gauthier - Manager of Operations

Todd St. Louis - Relief Garage Supervisor/Acting Manager, Transit Fleet & Facilities

Eric Bertrand - Manager of Fleet Services

Lisa Church - Transit Services Administrator

Cindy Jalbert, Frances Deminon - Administrative Assistant to Director

Dave Barrett - Material Controller/Buyer

Brent Whalen - Fleet Parts Expeditor
Jim Davies - Fleet Parts Expeditor
Bruno Lafortune - Driver Certification Co-ordinator
Mark Michel - Driver Trainer/Transit Inspector
Colette Lariviere - Energy Clerk
Anita Paul - Maintenance Clerk
Michel Legault, Michael Coen - Transit Inspectors
Rick Leroux, Cathy Donelly, Fred Posdowski - CUPE Executive

Fleet Services Customers:

Joseph Nicholls - Deputy Chief, Emergency Services Division
John Royer - Foreperson, Water/Waste Water Services Division
Rick LeBouthillier - Assistant Manager of Arenas, Parks and Recreation Division
Dan Laakso - Section Superintendent, Roads and Transportation Services Division

2. BACKGROUND

This chapter provides an overview of the Transit Division and Fleet Services section including a summary of the key statistics for each group as background for the operational and organizational review. A summary of the key comments from the Auditor General's report is also included.

2.1 Sudbury Transit

The City of Greater Sudbury provides both conventional and specialized public transit services. The conventional transit service, Sudbury Transit, is operated directly by City employees while the specialized transit service, Handi-Transit, is contracted to a private operator, Leuschen Brothers. Responsibility for the delivery of transit services rests with the Transit and Fleet Services Division of the City's Infrastructure Services Department. Reporting to the General Manager of Infrastructure Services, the Director of Transit and Fleet Services has divisional responsibility for public transit and fleet maintenance services within the City.

Sudbury Transit operates 44 individual routes across the municipality with a fleet of 60 buses and 153 full and part-time employees. In 2011, 4.5 million trips were taken on the transit system by the City's population of 129,000 residents (out of the total population of 165,200) located within the transit service area, an annual rate of 35 trips per capita. A total of 162,000 revenue-hours and 4.0 million revenue-kilometres of service were delivered. Total operating expenditures were \$18,101,211, revenue from all sources was \$7,271,460, resulting in a net

municipal investment of \$9,178,355 after provincial gas tax funding of \$1,651,395.

Sudbury Handi-Transit provides specialized transit service for persons who are unable to use the conventional transit service. Handi-Transit has 14 vehicles in its fleet and 28 full-time and 15 part-time employees. In 2011, it provided 48,000 revenue-hours and 1.0 million revenue-kilometres of service and provided 125,400 trips. Operating expenditures totalled \$2,824,131 and revenues from fares were \$262,269. The net municipal investment for this service was \$2,420,630 net after provincial gas tax funding.

The Transit Division is responsible for all key functions associated with the delivery of the conventional transit service including administration, budgeting, operations, vehicle maintenance and servicing and maintenance of the transit facility, downtown terminal, 1,371 bus stops and 83 bus shelters. It is also responsible for the administration of the Handi-Transit service contract.



The City's transit facility on 1700 Kingsway Street. Photo, IBI Group.



Sudbury Transit 783, a 2008 NovaBus LFS. Photo courtesy of L. Olszewski.

Other City departments provide support services to the transit division in the areas of finance, accounting, purchasing, human resources and legal.

It is significant to note that the transit service area is extremely large at 3,267 square kilometres, as much as ten times that of comparable municipalities.

The conventional transit fleet consists of the following units.

Exhibit 2.1: Transit Vehicle Fleet

Fleet #	Qty	Manuf.	Model	Year	Notes
740-745	6	New Flyer	D40LF	2004	
751-753	3	NovaBus	LFS	2005	
761-765	5	NovaBus	LFS	2006	
766-767	2	NovaBus	LFS Suburban	2006	
770-775	6	NovaBus	LFS	2007	
781-785	5	NovaBus	LFS	2008	
791-795	5	NovaBus	LFS	2009	
801-808	8	NovaBus	LFS	2010	
811-817	7	NovaBus	LFS	2011	
951-953	3	New Flyer	D40LF	1995	
954	1	New Flyer	D40LF	1995	Ex Rayside-Balfour 61
971-975	5	NovaBus	LFS	1997	
981-985	4	OBI	06.501	1999	Less 984
Total		60 units			

2.2 Fleet Services

The City of Greater Sudbury provides a wide range of public services in addition to public transit including road maintenance and construction, parks and recreation, and emergency medical and public safety (police, fire and medical/ambulance). Each of these divisions has its own vehicle fleet. The Fleet Services section of the Infrastructure Services Department is responsible for the maintenance of some 650 vehicles and equipment for the public works (roads and water/waste water), parks and recreation and Emergency Services (not including Fire) departments. The City has recently decided to consolidate all vehicle maintenance functions within the Transit & Fleet Services Division and is



Equipment maintained by Fleet Services includes road graders and front-end loaders. Photo, IBI Group.

presently finalizing the design for a new transit operations and fleet maintenance facility which will serve as the City's centralized vehicle maintenance facility and bring together vehicle maintenance and related inventory-control/stock-keeping functions. The new facility will also serve as the operations and administrative centre for the transit section of the division and will include space for transit vehicle servicing (fuelling, cleaning) and indoor storage. The current Manager of Fleet Services now reports to the Director of Transit and Fleet Services.

Maintenance of the City vehicles is undertaken at the central depot, St. Clair, as well as at two outlying depots, Frobisher and Chelmsford. The new transit and central fleet maintenance facility at 1160 Lorne Street is anticipated to replace the St. Clair and Frobisher facilities and be commissioned in 2013.

The items maintained by Fleet Services include heavy and light duty vehicles, garbage collection vehicles, ice resurfacing machines and winter road maintenance equipment (graders, ploughs) as summarized in Exhibit 2.2.



City Depot on Frobisher Street. Photo, IBI Group.

Exhibit 2.2: Vehicles and Equipment Maintained by Fleet Services

Light duty vehicles	140
Medium duty vehicles	118
Heavy duty vehicles	12
Heavy duty winter control (ploughs, graders)	48
Specialty equipment	99
Garbage packers	7
Heavy duty equipment	23
Ice resurfacing machine	18
Trailers and portable sign boards	49
Retired vehicle pool	60
Small equipment and tools	-
EMS Supervisor SUVs	15
Type 3 Ambulances	23
All-terrain vehicle, command unit/ESU truck/trailer	3

Total Equipment 615

2.3 Auditor General's Report on Transit Operations

The Auditor General's report provided the following four findings, or areas for response, regarding Sudbury Transit's operations applicable to this operational review and which are addressed herein.

1. Parts Inventory:

- a. An annual parts inventory count should be performed with the assistance of CGS Finance staff;
- b. (City) Management needs to establish count policies and procedures; and

- c. Rebuilt or used parts should have a separate inventory part number and also be valued at the lower of the cost of rebuild, salvage, or net realizable value.

2. Commercial Vehicle Operator Record (CVOR) and Work Orders:

- a. Work orders should be completed for all work performed by fleet mechanics to facilitate cost and productivity management and the achievement of value for money in operations;
- b. Work orders should be entered accurately and in a timely manner by the mechanics;
- c. Additional training is required for those responsible for ensuring all defects from the waybills are reported on the Daily Vehicle Defect Report; and
- d. The Manager of Transit Fleet and Facilities needs to ensure that the semi-annual safety inspections and the annual inspections are completed in the timeframe as regulated under the Ontario Highway traffic Act R.R.O. 1990, Regulation 611.

3. Ridership Growth and Route Analysis:

- a. The needs of citizens must be considered in future route planning and analysis; and
- b. A formal program of route analysis activities, route planning policies and standards considering such things as ridership demographics, citizen needs and minimum ridership by route need to be established.

4. Management of Customer Feedback:

Consolidated management of citizen feedback similar to the 311 system's Active Citizen Request System should be developed in order to identify opportunities for continuous improvement in satisfaction and value for money.

3. ORGANIZATIONAL/OPERATIONAL ASSESSMENT

In this section, the organization, reporting relationships, staffing levels and overall functionality of the Transit Division and Fleet Services section are reviewed and assessed. The assessment and conclusions are based on the expertise of the consulting team which includes knowledge and experience with municipal governance, municipal transit services and the organizational and management practices in similar sized transit and fleet services organizations.

Research for this assessment involved the following activities:

- Interviews with senior personnel in each section;
- Interviews with "Fleet Customers" - departments that have their vehicles serviced by "Fleet" - EMS, Water/Wastewater, Arenas and Roads;
- Interviews with the CUPE Executive representing the transit and fleet services employees;
- A review of position descriptions and responsibilities with the incumbents;
- A review of forms, records, reports and other applicable documents used for relevance and completeness;
- A review of the vehicle maintenance programs, work order system, parts inventory, purchasing and control process, data collection and performance measurement activities; and
- Site visits to the transit facility, downtown transit centre, the central and outlying Fleet Services yards and the new transit/central maintenance facility on Lorne Street to understand the work environment as well as observe many of the functions being undertaken.

The operation and organization were assessed against the principles of:

- Clarity of organization structure and reporting relationships with respect to responsibilities;
- Alignment with Division functions and service delivery;
- Scope of individual position descriptions and emphasis on core responsibility of the position and Division;
- Use of performance measurement data and information technology; and
- Staffing levels to fulfill the needs of the organization and meet public responsibility.

Recommended maintenance and performance measurement forms and reports are included in Appendix A.

3.1 Transit Division

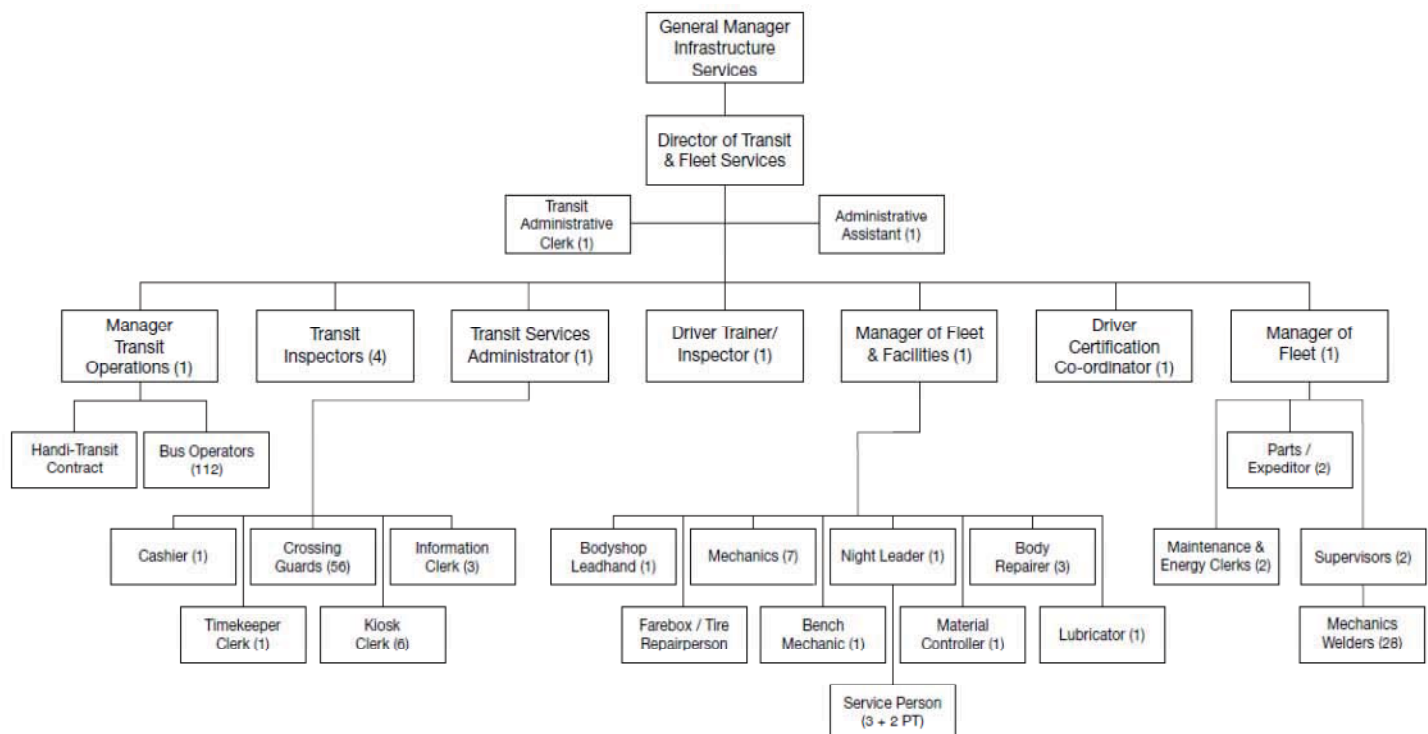
The transit division has 164 employees grouped into the following general functional areas:

- Operations/Transportation – 118, including 74 full and 38 part-time bus operators, and four full and two part-time supervisors;
- Transit Inspectors and Driver Training – seven, including five full time and two part-time employees;
- Transit Vehicle Maintenance and Servicing - 24 including eight mechanics and 5 (3 FT, 2 PT) service persons for vehicle cleaning and fuelling;
- General and Administration - 15 personnel including driver training and driver certification; and
- Fleet – 39 personnel including 32 mechanics, welders and Lead Hands.

In addition to the 164 transit-related employees, the City's crossing guard unit (42 part-time people) is positioned within the Division reporting to the Transit Services Administrator.

With the Fleet Services section functions having been combined with the Transit Division, the organization structure has been modified on an interim basis subject to the conclusions from this study as illustrated in Exhibit 2.3 below. In order to reflect the broadened mandate of the larger division, the title of the Director of Transit has been changed to "Director of Transit and Fleet Services".

Exhibit 2.3: Current Transit and Fleet Services Division Organization Structure



3.1.1 ASSESSMENT OF DIVISION

The following assessment of the Transit and Fleet Services Division reviews the organization structure, reporting relationships and position descriptions, and identifies opportunities for

improvement. It is presented on the basis of the organization as a whole followed by an assessment of each of the senior positions and functional areas and was undertaken with the objectives of:

1. Determining the functionality of the section through a review of the organization structure, a review of individual key position descriptions and interviews with key staff;
2. Reviewing key functional areas and staffing levels; and
3. Reviewing performance measurement practices.

As noted earlier, the division as a whole receives support and direction from other City departments in the areas of human resource management, labour relations, finance and accounting, procurement and legal.

Overall Performance

Through interviews with employees, site visits and observations of the activities of Sudbury Transit in the delivery of transit services, the consulting team has been impressed with the level of dedication and commitment to the provision of a quality public transit service amongst employees at all levels. Several unusual operating practices were noted which have served to minimize transit costs including the absence of a “spare board” of bus operators and the cross-utilization of staff members to handle various functions (shelter cleaning and repair). It is common in the transit industry among larger systems (>25 buses), to have bus operators with unassigned work available particularly in the morning to replace bus operators who are either late for work or book off sick at the last minute. This approach allows service to be operated without interruption. In the case of Sudbury, transit staff (Inspectors and bus operators) flexibly work together to ensure transit service operates without interruption until sufficient staff resources are available.

Other examples of cost efficiency measures include the assignment of varied responsibilities to the Manager, Transit Operations which are beyond the normal scope for this position of supervising and monitoring the on-road service and performance of the bus operators. These additional duties include administration of the Handi-Transit contract, co-ordination of bus shelter maintenance, reviewing and determining bus stop locations, co-ordinating tenders for contracts, administering various contracts and attending accident investigations.

It was also noted that transit service delivery is monitored by a team of four Inspectors who carry out their work from a single location at the transit terminal rather than providing an on-street presence to customers and support for bus operators. The Inspectors additionally handle bus operator work assignments, respond to customer complaints and maintain detailed reports respecting operator hours of work, particularly administration of overtime. It is accepted transit practice to have on-road supervision in order to confirm that transit services are being delivered as expected and to provide support to bus operators in the event of customer issues, service delays and accidents. It is difficult to effectively supervise a dynamic transit service from an office location. While this approach does place a high level of accountability and responsibility on the bus operators, there should be, nevertheless, an on-street presence to protect the interests of both the municipality and the public to minimize risk.

Vehicle maintenance personnel who normally clean and service the transit buses are utilized on an as-needed basis to repair stops and repair or clean shelters instead of the more normal practice of either contracting the cleaning to a private firm or having dedicated personnel who routinely clean and repair shelters.

In view of the foregoing characteristics, it can be concluded that Sudbury Transit's operating costs and staffing levels have been minimized to a significant extent. However, current practices and staffing levels present responsibility and risk challenges that should be addressed.

Transit Service Standards

The Auditor General indicated in his report that Sudbury Transit should have goals, objectives, service standards and related policies to guide the management of transit operations. The City undertook a transit review in 2008 and the final report included a comprehensive set of goals, objectives and service standards for the transit system. These are generally used by transit staff to guide the planning and operation of the service. However, annual budget priorities City-wide, and Council priorities, must also be considered when setting transit service priorities.

Organization Structure

Overall, the organization structure and reporting relationships lack definition and clarity. There are a high number of positions (9) reporting to the Director of Transit. General organizational guidelines suggest no more than five. Even if the two parallel positions of Manager of Fleet and Facilities (Transit) and Manager of Fleet Services, which are a major subject of this study, were merged, this would only reduce the overall number of reports to eight, still a high number.

Within the current structure, there are examples of dispersed responsibilities and reporting relationships. At the same time, the senior positions have responsibilities that detract from their core functions. This characteristic negatively impacts employee accountability and responsibility as well as the overall efficient functionality of the transit organization. Additionally, with the four transit Inspectors and the two similar positions of Driver Trainer/Inspector and Driver Certification Co-ordinator and the Transit Administrative Clerk and the Administrative Assistant also reporting to the Director, the actual number of reports totals 12.

The transit Inspector function is normally an Operations responsibility and these individuals should report to the Manager, Transit Operations. Similarly, the related positions of Driver Trainer/Inspector and Driver Certification Co-ordinator (the latter having recently been transferred to the Transit Division as part of the Fleet Services section) should be grouped together to form a driver training and certification unit.

The various clerical, information services and statistical positions are distributed throughout the organization each reporting to different individuals. For synergies and to align the related functions, these positions should be grouped together to form a single "administrative" section within the Transit Division.

Within the maintenance area, a large number of individuals, 24, report directly to the Manager, Fleet and Facilities. Available supervision resources are restricted to the Manager, Fleet and Facilities who is generally only present during weekday daytime hours, although on-call during other hours. Nevertheless, this situation makes it difficult to monitor the performance of the workforce either during the daytime because of the number of employees involved or particularly during the evening and night-time. The staff who service and clean the transit buses until 3 a.m. have no supervision.

With regard to Parts Inventory and control, one person (Material Controller) is responsible for ordering, stocking and issuing parts as well as recording parts usage and recording costs on work orders. There is limited backup as a cost-savings measure. During evenings and on weekends, mechanics have access to the parts stockroom and leave information about parts usage as well as details about work completed including hours. When the Material Controller is on vacation or absent for personal reasons, the mechanics have access to the stockroom in the same way as in the evening and on weekends. Additional resources are required to more effectively manage this

function and this will be achieved through the integration of the Fleet Services section within Transit.

A new position, Transit Planner/Scheduler, has recently been approved and will report, on an interim basis subject to the conclusions from this study, to the Manager of Operations. The consulting team provided comment and input into the duties and description for this position to ensure consistency with the results of this study.

From a financial perspective, on an individual division basis, Transit has one of the largest operating budgets in the municipality. Responsibility for developing and administering this budget rests with the Director of Transit. While there is some clerical support to assist with this responsibility and the Manager positions also contribute to the management of the budget, there is a need for a specific financial resource within the Division to assist the Director.

Review of Key Positions

Director of Transit and Fleet Services

Reporting to the General Manager, Infrastructure Services, the Director has delegated responsibility for the delivery of transit services including maintenance of the transit infrastructure and maintenance of the City Fleet. With the assistance of the Finance Department, the Director develops the annual and long range transit operating and capital budgets and administers the budget together with the senior managers of the division. The position also responds to requests from the Mayor and members of Council, members of the public and liaises with other municipal divisions and departments to ensure the effective delivery of transit service. The Director is also responsible for planning and managing the transit division and for the administration of the collection agreement with the support of the finance, legal and human resource departments. In order to ensure all functions with the division are effectively managed, the Director delegates responsibility for each functional area to section managers.

Manager, Transit Operations

This position has significant responsibilities within the organization pertaining to the on-road delivery of transit services. As noted previously, this position has a wide range of responsibilities. While this arrangement makes use of the skills of the incumbent and helps to broaden this position's sphere of influence within the organization, the added responsibilities detract from the core responsibility of this position that of managing the on-road service delivery and managing the performance of the bus operators. The position responsibilities should be re-structured to focus on these two areas and other functions, such as administering the Handi-Transit contract, establishing and maintaining cash handling controls, administering agreements and co-ordinating shelter maintenance should be moved to more appropriate functional areas within the organization.

Manager, Fleet and Facilities

This position has been responsible for managing the staff and work program involved in maintaining the transit bus and transit support vehicle fleets as well as the transit infrastructure (garage and offices, bus stops, shelters and downtown transit centre). A key responsibility of this position has been the preparation of a preventative maintenance and repair program as well as supervising and managing the parts inventory function. In the absence of the Material Controller, the Manager may often handle the parts stock keeping function which, in turn, detracts from the person's core responsibility of supervising the maintenance staff and vehicle maintenance program. With the integration of the Fleet Service section into Transit, the added resources will allow for an improved administration and staffing of the parts inventory function.

However, additional resources are required to provide appropriate employee supervision and to effectively manage the vehicle maintenance program.

Transit Services Administrator

This position is responsible for a broad range of functions within the transit division primarily focused on the school crossing guard program and transit administrative staff. The school crossing guard responsibility is not a transit-related function but has been included within the Transit Division as a result of past organizational changes within the municipality. While the responsibilities involved with the crossing guards is not high due to the part-time and seasonal nature of the activity, it does, nevertheless, detract from the transit-specific functions assigned to this position. This position should be re-structured to have wider responsibility for the various clerical and administrative functions within Transit. Consideration should be given to transferring the Crossing Guard function to another department within the City.

Review of Functional Areas

Operations

The Operations/transportation section is responsible for delivering the transit service each day, both the conventional and specialized transit service, the latter by contract. For the conventional service, this section develops the route network in response to changing conditions, Council directives, new development, and customer and bus operator feedback, then develops bus operator work schedules, assigns operators to the work, ensures operators report on time and ensures the service operates according to the public commitment. They also investigate and respond to customer feedback (commendations, complaints, service requests) and attend to accidents or incidents involving transit vehicles and users. However, these responsibilities have been distributed amongst several individuals, in particular the Manager, Transit Operations and there is no defined "Operations" group within the transit organization. Of particular note is that the Transit Inspectors, who are a key element in delivering the transit service, do not report to the Manager, Transit Operations but report, instead, to the Director.

Of special concern is the absence of any on-road supervision of the transit service. Supervision of the transit service occurs remotely from a central office at either the downtown transit centre or the transit garage. Given the scope of transit operations, with up to 54 buses in service during peak hours and almost 5 million trips being taken on transit annually (12-14,000 per weekday), it is important that there be a visible presence to the general public and transit users demonstrating the municipality's care and custody of this important public service. At the same time, an on-road presence would assist bus operators in handling customer issues and responding to accidents or incidents involving transit buses and transit users in support of the bus operators. It would also provide a closer contact with users and help to translate their needs into transit service improvements. But, more importantly, on-road supervision would protect the interests of the municipality in the event of legal proceedings. This issue was raised and supported by the transit union.

In addition to the above, it was observed that the Transit Inspectors spend a significant amount of their time tracking and allocating work assignments for the bus operators due either to absenteeism or "open shifts" (no regularly assigned work). The paperwork involved is complex. While a review of the need for this degree of work tracking should be undertaken to identify opportunities to simplify the required work, computer software programs could also be employed to track and record this work. Brampton, Hamilton and London have developed programs that simplify this process. Also, consideration should be given to either establishing a separate "dispatch" function or a clerical function, at a lower rate of pay, to handle this work thereby relieving the Inspectors to attend to more important duties such as providing on-road supervision.

Further, with a contractual arrangement and responsibility for the Handi-Transit, there should be a means for monitoring the performance of this service.

With regard to operations and bus operator performance management, there is no formal comprehensive data resource for tracking the performance of the bus operators or transit operations. The existing data sources should be broadened to include details and trends regarding all operations-related issues.

Organizationally, there should be a defined "Operations" section within the transit division which should include the Transit Inspectors. Supervisory resources should be added to provide on-road supervision, as a minimum, during peak and daytime hours. The Planner/Scheduler can be part of this section.

General and Administration

The general/administrative section is responsible for a variety of functions related to administration and includes customer information, coin counting (fare revenues), marketing and communications. As with other areas within the Transit Division, the administrative functions are distributed throughout the organization. In particular, the coin counting function, which reports to the Transit Services Administrator, is listed as the responsibility of the Manager, Transit Operations.

Aligning the various clerical, customer information and communications functions within an "administration" section would consolidate resources, reduce duplication of effort and make more effective use of information technology. At the same time, a defined administrative section could also handle a number of related functions, such as administration of the Handi-Transit and other contracts, co-ordinate tenders as well oversee the payroll approval process.

Vehicle Maintenance

The vehicle fleet is maintained according to maintenance programs on both a predictive as well as a reactive basis together with feedback from bus operators. They also maintain the transit infrastructure of bus stops and shelters and administer the maintenance contract for the downtown transit centre.

Although the transit staff appear highly capable and knowledgeable and the fleet generally appears in good condition, it was found that there is no formalized (written, documented) vehicle maintenance program and related forms in place for either the vehicle fleet or the transit infrastructure or any quality control process to ensure that work undertaken has been completed satisfactorily. This latter situation is a by-product of limited supervisory resources. It was also noted from staff comments that there appear to be a very high number of road calls and vehicle change offs each day in the order of 15 to 25 but there is no formal tracking of this activity which is important for measuring maintenance performance. This unusually high number can be indicative of either an ineffective maintenance program or reflect an insufficient staffing level and maintenance area space (too few maintenance bays - 5) which causes staff to effect quick rather than thorough repairs.

A documented vehicle maintenance program with appropriate forms and records helps to both guide the technical staff in completing their work as well as to demonstrate, through evidence of a recorded and signed inspection sheet, that the work was completed. This latter condition can be very important in any legal proceeding and to the Province when it inspects the vehicle fleet. It is also required under the terms of the CVOR (Commercial Vehicle Operator Record).

Existing vehicle maintenance activities involve inspections every 6 months in accordance with provincial standards as well as a bi-weekly brake check. Vehicle inspections including oil changes and related work are undertaken every 15,000 miles which is a high interval. At the same time, because all buses have either disc brakes or automatic slack adjusters, the bi-weekly brake inspection is no longer necessary. Similarly, there is a weekly check of fire extinguishers. This frequency is high and could be adequately handled during a regular vehicle inspection check. Overall, the fleet is maintained on a reactive, rather than a pro-active or "preventative", basis.



A New Flyer low-floor bus at the downtown transit centre. Photo courtesy, R. Oldfield.

A formalized vehicle maintenance program should be adopted based on detailed inspections every 10,000 kilometres. This approach would also serve to both identify emerging or potential maintenance issues as well as achieve the objective of a preventative maintenance program.

With regard to vehicle cleaning, there should be a formal program for regularly completing an intensive cleaning of the bus fleet in addition to routine light cleaning each night as part of the night fuelling and washing process. An intensive vehicle cleaning program involves a thorough cleaning of the vehicle interior and exterior on a regular basis, typically every 2 or 3 months. This program is important for not only keeping the vehicle fleet clean and appealing to the user but also for ensuring the vehicles are sanitary. The absence of a formal cleaning program is a product of limited staff resources.

With regard to other transit infrastructure, notably shelters at bus stops, these should be cleaned on a regular basis rather than on a reactive basis - as and when necessary. The reactive nature of the shelter cleaning program is a result of limited staff resources to clean and maintain shelters. The staff who are responsible for this work also maintain the transit garage and offices and clean the bus fleet. There should be a regular program for cleaning and sanitizing shelters on a weekly or bi-weekly basis.

Maintenance documentation including completion of work orders is limited. The introduction of IT systems and software and training of mechanics to complete work orders, as has been done within the Fleet Service section, would improve the documentation process and keep the information records timely.

Transit does use the Computrol fuel management system to record fuel and fluids consumption and vehicle kilometres but does not use the system to develop preventative maintenance schedules.

Inventory Control

With regard to inventory control and purchasing of parts, Transit uses the People Soft program which best suits its needs for inventory control as it incorporates a purchasing and invoice tracking function as well as parts control and scanning component. As noted under the Fleet Services review, the Transit software program is being integrated with the On Command Management System to provide a full range of functionality suited to both Transit and Fleet.

3.1.2 BENCHMARKING AND PERFORMANCE MEASUREMENT

The Transit Division collects extensive data on transit operations, ridership and financial performance which is recorded and used to prepare the annual operating and capital budget. This

information, in turn, is provided to Council as part of the annual budget submission. This information is also provided to the province and the national transit association for inclusion in the databases and fact books.

This same data together with the development of benchmarks can be used by transit staff to monitor and manage the performance of the transit system. Ridership is closely monitored today as is the budget performance. Other statistical data related to bus maintenance costs, operations performance (service delay, bus change-offs, missed trips, driver performance) can be collected and utilized as well. The introduction of new IT systems and software, such as the People Soft or On Command Management System as used by Fleet Services, will facilitate the availability of useful information to help more effectively manage the transit system.

Benchmarking, or the development of benchmarks to measure performance, occurs over a period of time as management staff monitor the performance of their various activities or deliverables (transit service, vehicle maintenance) and progressively set new targets for improving performance. Initial benchmarks can be established based on general industry statistics then modified to reflect local conditions.

The Transit Division should make more extensive use of statistical data and benchmarking to measure the performance of all aspects of the transit system. The addition of the new Planner/Scheduler position will strengthen the Transit Division's resources and abilities in this area.

3.1.3 OPPORTUNITIES FOR IMPROVEMENT

A re-structuring of the Transit Division organization as well as revisions to and realignment of position responsibilities would improve the functionality and operational performance of the transit system by consolidating resources and reducing duplication.

Adding on-street supervision to monitor transit operations and provide a resource for responding to customer and employee needs should be a priority and would also benefit the municipality from a risk-management standpoint.

Simplifying the Transit Inspector duties pertaining to filling and tracking bus operator work assignments, utilizing computer software technology and adding either a dispatch or clerical support resource would allow the Inspectors to be more effectively utilized for more important functions such as on-road supervision.

Additional staff within the maintenance section is necessary for improving vehicle maintenance, inventory control and providing needed supervision of employees in the evenings and at night.

The integration of the Fleet Services section within Transit will provide important resources as well as technical expertise for improved maintenance of the transit fleet and improved inventory control.

3.2 Fleet Services

The section is directed by the Manager of Fleet Services and has 39 staff in the following general areas:

- Management/Supervision - 3
- Administration - 4
- Mechanics/Mechanics Helpers – 29 (22 mechanics, 3 Helpers, 4 Lead Hands)

- Welders - 3

Organizationally, there are five positions reporting to the Manager of Fleet: two supervisors, one at each of the facilities, two clerks and a delivery person although this person has recently been transferred to the Clerks department. There are two Lead Hand mechanics reporting to each of the supervisors. The mechanics and other tradespersons report to the Supervisors.

Currently, Fleet operates five (5) repair locations which are staffed as follows:

1) St.Clair Depot (South Section):

- Two Technician Lead Hands
- 12 Technician II
- Two Mechanic Helpers
- Two Licensed Welders

2) Frobisher Depot (South East Section):

- Two Technician II. Report daily to this depot.

3) Black Lake Depot (South West Section):

- One Technician II - Mobile. Reports daily to this depot.

4) Suez Depot (North East Section):

- One Technician II - Mobile. Reports daily to this depot.

5) Chelmsford Depot (North West Section):

- Two Technician Lead hands
- Six Technicians II
- One Mechanic Helper
- One Licensed Welder - Mobile

3.2.1 ASSESSMENT OF FLEET SERVICES

Fleet Services maintains the City fleet based on a program of preventive and corrective maintenance practices based on both time and distance to account for the wide variations in vehicle utilization within the City fleet. The process also includes inter-active feedback between the vehicle users (drivers/operators) and the technicians (mechanics) and supervisors in order to ensure that the fleet is available when required.

To assist in assessing the performance of Fleet, four departments (customers who are served by Fleet) were selected and interviewed. The following questions were asked:

- What does fleet do for you?

- How many vehicles?
- At what location is the work performed?
- Is the work performed on a timely basis?
- In case of urgency, how quickly does fleet respond to your needs
- Are you receiving satisfactory service for your money?
- What improvements would you like to see?
- Overall - are you satisfied with the work performed by fleet? How would you rate the service on a scale from 1-10 (10 being excellent)

All of the above respondents were very satisfied with the service and the response time that Fleet provides to them. Minor concerns were raised with regard to the additional vehicle movement that will occur when fleet moves into the new maintenance facility. However, all respondents indicated that the problem is being discussed and will be able to be managed.

In general, the Fleet Services section is well-organized with good maintenance programs, policies and documentation in place. The section is also on top of and introducing the latest technology for vehicle maintenance, for recording and analyzing data and for performance measurement.

Vehicle Maintenance Program

A review of the Fleet Services vehicle maintenance program and related data collection, work order documentation and inventory control indicated that it was well organized with clear policies in place and compiled into handbooks for use by employees. Record keeping and work order documentation was complete with care taken, through the presence of the Maintenance Clerk, to ensure consistency in reporting practices and wording on work orders.

While the number of vehicles the department is responsible for is large, many of the vehicles are used seasonally while others are small and require minimal maintenance and time resources. The staffing level for the department appears sufficient with staff utilization high, based on a review of statistical data and discussions with the Manager, Fleet.

The maintenance programs for each vehicle group are well laid out and copies of the inspection forms and required work are appended to the work orders. The vehicle maintenance programs depend on vehicle utilization and are a mix of distance and time-based intervals. Vehicles, such as seasonal equipment, that are used infrequently and accumulate low kilometres follow a time-based program.



*Heavy duty truck used for road maintenance.
Photo, IBI Group.*

Parts Stock-Keeping/Inventory Control

There is a main stockroom, or central stores, at the St. Clair facility staffed by an inventory clerk (Parts Expeditor) and a second storeroom at the Chelmsford facility also staffed by an inventory clerk. The inventory is bar-coded and well-organized. Parts are issued by the inventory staff during daytime hours. The Lead Hand mechanics have access to the stock room during evening and weekend hours to obtain the necessary parts for vehicle repairs. With the move to the new transit/Fleet facility, the inventory/purchasing resources of the two divisions will be combined and provide sufficient resources to adequately staff the combined parts stockroom.

3.2.2 BENCHMARKING AND PERFORMANCE MEASUREMENT

The division maintains a detailed information base relative to all aspects of its operation, including work orders, vehicle maintenance costs, tracking of recurring maintenance issues, fuel and energy consumption and parts utilization. Reports are available on-line as well as in hard copy form.

Fleet uses the “On Command Management System” (formerly known as “Diamond Solution”) software for inventory control and vehicle maintenance including the issuance of work orders. The system can also issue useful reports. This system is different than the one used by Transit (“People Soft”) and does not have the parts purchasing, tracking and invoicing features of People Soft. However, the two systems could be integrated and Transit is moving forward with the City’s IT department to integrate the two systems. Once implemented, this will reduce the level of work involved in purchasing and inventory control including a reduction in the duplication of documentation.

Fleet uses the “Computrol” system for fuel dispensing and record-keeping. This system records the fuel consumed, the vehicle kilometres and is used by the maintenance staff to prepare the preventative maintenance schedules for the vehicles.

Fleet has tested a wireless GPS-based system, part of the “Computrol - COBI” software, which automatically downloads information related to kilometres, engine and transmission performance from the vehicle as it passes by a receiver at the facility. The system is similar to an Automated Vehicle Location (AVL) system. No further action has occurred in this area as the City decides whether or not to adopt it for all vehicles. This system is now being widely adopted in other municipalities and should be adopted by Sudbury. It will ensure accurate and timely collection of data for both transit and fleet vehicles.

Accident Reporting

An accident reporting policy has been in place but it has not been used in the past by the departments using the vehicles with the result that reporting and documentation of accidents involving damage to City vehicles has not been regularly recorded.

3.2.3 OPPORTUNITIES FOR IMPROVEMENT

Combining the Fleet Services section with the Transit fleet maintenance section will provide important and necessary combined resources in the areas of fleet management, record-keeping and documentation, the use of IT systems and for stock purchasing and inventory control.

Further improvements and efficiencies will be forthcoming when the Division moves into its new location. The majority of repairs and scheduled preventative maintenance will then be performed under one roof with supervisory staff available for at least 16 hours per weekday.

Under the proposed division restructuring and opening of the new facility, all employees would be re-located to the new maintenance facility. This arrangement can be expected to result in improved supervision and utilization of all technicians.

Further budget savings could be achieved by reducing the amount of work being out-sourced, which is currently being reviewed, although further reductions in out-sourcing would require an increase in staff. The impact of reducing the level of out-sourcing would need to be carefully assessed as much of this work is seasonal or is of a type, such as fuelling, oil changes, minor repairs, may be more cost-effective to out-source compared to performing the work in-house.

However, one area where more work could potentially be undertaken in-house pertains to the body and paint shop at the transit facility. This area operates one shift and consideration should be given to introducing a second work shift to allow more body repairs to be performed on the overall fleet and reducing the outsourcing body/accident budget. By way of example, it was noted in the interview process that more work on city vehicles, particularly for police and fire, had been undertaken in the past but that this work had been scaled back in recent years. This situation should be reviewed with the objective of bringing this work back in-house if cost-effective.

With regard to reporting and documentation of vehicle accidents, this is an important issue and must be supported corporately both to both protect the Corporation's interests as well as to ensure accountability and reduce the incidences of damage to vehicles.

4. PEER REVIEW

A peer review of municipal transit and fleet organizations was conducted with the following objectives:

1. To identify the organization structure and management approach for integrating transit vehicle and fleet maintenance functions in other municipalities within Sudbury's peer group;
2. Identify staffing levels;
3. Identify maintenance practices and programs; and
4. Identify any key issues experienced by organizations where combined maintenance of transit and fleet vehicles occurs.

4.1 Overview

The following municipal fleet services and transit departments or agencies were contacted to gather information related to fleet size, staffing, organization, sharing of resources between transit and fleet, inventory control and maintenance practices:

City of Kingston - Transit and Fleet services
City of Guelph - Transit and Fleet Services
St. Catharines Transit Commission - Transit
City of Oakville - Transit and Fleet Services
City of Red Deer - Transit and Fleet Services
City of Burlington - Transit and Fleet Services
City of Thunder Bay - Transit and Fleet Services

Each of the foregoing municipalities has a transit fleet and operation which is comparable in size (~60 buses) to Sudbury. In St. Catharines, only the transit agency was contacted as it is governed by a separate commission. In the other municipalities, transit is a municipal department. In Kingston, Guelph, Burlington and Thunder Bay, transit vehicle maintenance is the responsibility of a corporate Fleet services department. However, only in Red Deer are the transit and fleet vehicles maintained in the same building. There are no other known examples in comparable sized municipalities where transit and fleet vehicles are maintained in the same building. In Regina (population 220,000, 108 vehicle bus fleet), Brantford (30 buses) and Woodstock (10 buses) Ontario, the transit vehicles are maintained in the same building as City fleet vehicles.

For the purpose of assessing the staffing levels within the operations and maintenance functional areas of Sudbury Transit, a separate analysis was conducted based on Canadian Urban Transit Association statistics for 2010.

Key observations from the city and transit maintenance peer review are:

- For transit, total staff per transit vehicle is higher for municipalities where the city and transit maintenance divisions are joined. The higher value may be the result of shared resources.
 - Where transit maintenance is separate, this value is between 0.21 and 0.28.
 - Where maintenance divisions are joined, this value is between 0.34 and 0.7.
 - These values include total staff (i.e. manager, supervisors, cleaners, etc.) specifically dedicated to transit maintenance, although it does not include the

manager in cases where the manager is a shared position for both transit and city fleet maintenance.

- The same trend, that is, higher employee/vehicle ratios for separate divisions, was found where only transit mechanics, technicians and service staff are included: 0.17-0.23 for separate divisions; 0.2-0.35 for joined divisions.
- Guelph Transit is the only municipality where supervisors are split between transit and city fleet maintenance operations. In this case, a lead-hand mechanic is assigned for transit to make sure operations have enough buses.
- For Kingston and Thunder Bay, one manager oversees both the city and transit maintenance operations, with a supervisor assigned to each division (one for transit, one for fleet).
- In Thunder Bay, the Manager and accounting clerk are shared within the “Facilities and Fleet Department” and are not solely dedicated to transit and/or general fleet maintenance.
- Due to the wide ranging number of vehicles associated with the municipal fleet operation, it was not possible to establish a vehicle/staff guideline or average.

With regard to facilities, Exhibit 4.1 summarizes the situation regarding the number and location of facilities for transit and fleet in each surveyed municipality:

Exhibit 4.1: Summary of Building for Transit and Fleet Maintenance

Municipality/Agency	Facilities	Notes
City of Burlington	1 Transit 1 City Fleet	Located next to each other
City of Guelph	1 Transit 1 City Fleet	Separate, across town
City of Kingston	1 Transit 1 Central/Public Works 1 Utilities	Transit and Utilities garage are on same property, different building. Central is at separate location
City of Thunder Bay	1 Transit 2 General Fleet Other facilities	General Fleet maintenance facilities are on opposite sides of City (North and South operations). Transit has own facility
St. Catharines Transit	1 Transit	-
Town of Oakville	1 Transit	-
City of Red Deer	1 Transit + City Fleet	Combined facility

In terms of work shifts, most maintenance divisions have mechanics working 5 days a week (Monday-Friday), with limited work on weekends.

- None of the municipalities surveyed had Fleet mechanics working on the weekend. Burlington has city fleet mechanics on an on-call basis during evenings and weekends;

- Transit maintenance is generally reduced on the weekends, with the exception of Oakville where there is no transit maintenance on weekends; and
- In Thunder Bay, mechanics only work weekdays, but service technicians have 7-day, 24-hour work shifts.

Most maintenance divisions have a stockroom that is generally open Monday-Friday, 8:00 a.m. to 4:30 p.m. The exceptions are:

- Burlington city fleet maintenance does not have a staffed stockroom, and all stockroom parts are “self-served” by mechanics;
- St. Catharines Transit does not have a separately staffed stockroom. Supervisors are responsible for stock and parts;
- Oakville Transit has 3 stockroom staff, and is operated 7 days a week. It was noted that although mechanics have access to stockroom through an access card and can access parts and log into the inventory system, it is rare – stockroom is generally always staffed;
- In Thunder Bay, the stockrooms for both the City and Transit maintenance divisions are managed by the City’s Purchasing Department (e.g. there is one dedicated staff at Transit stockroom, but is under the Purchasing Department’s payroll); and
- Red Deer’s stockroom is open 7:30 a.m. to 4:30 p.m. Monday to Friday, with access outside those hours by calling in a person on standby or through the Garage Supervisor.

Most maintenance divisions interviewed do not have formal reporting of performance measures or indicators although a number of them reported they are currently looking into it and/or have the data to do so.

- Guelph Transit has performance measures such as meeting daily transit service requirements, and reasonable expectations for preventive maintenance job completion;
- Thunder Bay does not have formal maintenance performance benchmarks, but have data for vehicle performance (fuel consumption, change-out of components on a per-mile basis, etc.); and
- Oakville reported having key performance indicators (e.g. breakdowns, on-time PMs, etc.), with others in development, noting they have recently upgraded to a new fleet management system.

Common challenges or issues reported by the municipalities surveyed with regard to integrating transit and city fleet maintenance operations:

- Mechanics are in different unions which makes amalgamation not possible;
- Skill sets for transit and fleet mechanics are very different and each is specialized to meet the needs of the vehicles they maintain; and
- There is a skills shortage of mechanics: fewer mechanics available, aging workforce. In addition, buses and fleet vehicles are becoming more and more sophisticated and complex.

Exhibit 4.2: City Fleet and Transit Peer Review

Burlington Transit Separate divisions	Guelpoh Transit Joined divisions	Kingston Transit Joined divisions	Thunder Bay Transit	Transit
vehicles + equipment	City ~838 (300 vehicles)	City 370 vehicles + equipment	City ~606 vehicles + equipment	City 60 conventional 4 articulated
100 20 10 23 370	164 8 164 427 56 19	75 67 13 101 113 - -	157 7 8 98 221 40 43 32	1,1152 Shelters
Unknown.	n/a	n/a	n/a	
1 Next to City Maintenance	2 (1 Public Works, 1 Transit)	3 (1 Transit, 1 Central/Public Works, 1 Utilities) Transit facility in same property as Utilities facility	3 (1 Transit, 2 General Fleet, plus others) Facilities department is in charge of 3 terminals: 1 interchange in North part of town (heated facility), 1 terminal hub at City Hall (no heated), and 1 terminal at City Hall (heated)	-
16 1 1 10 7 4 1 1 3	25 1 10 13 3 2 2 1 1 3	12 1 1 9 6.5	1 1 1 10 2	38
two shifts: AM (7am-3pm), PM (3-7pm) No Saturday Sunday, 7am-3:30pm (1 mechanic, 1 helper) • 2-3 staff in the evening • Supervisor only in day shift. No afternoon/night • Service lane: one "transit" staff (farebox), 4 contracted out cleaning staff (interior and exterior) M-F, 7:30am-4:30pm	Mechanics: M-F, 24 hrs (3 shifts): Summer: 6am-6pm Winter: 1 person on-call 4:00am • Supervisors – 3 shifts, 1 each shift, split time between facilities. Have 3rd-in (make sure operations have enough buses). • Sometimes have operators on "modified duties" helping out. * The 3 supervisors split time between Transit and City	Mechanics: M-F, 2 shifts, 5am-Winter - Change to M-F, 3 shifts, 24-10pm; Sat, 10-hrs; Sun, 8-hrs General helpers: 7 day/wk, 24-hrs 6-month shift pick. Mechanics on 4 day/10 hour shifts to cover weekends (rotating schedule)	M-F, 8am-4:30pm 1 accounting clerk M-F, 8am-4:30pm Mechanics: M-F, 8am-4:30pm General helpers: 365 days, 12-hour shifts 10 mechanics, 1 supervisor (for both operations), 2 lead-hands (one at each location, one at the other location, maintenance, more hands-on) Shared within the Facilities & Fleet Department, and are not solely dedicated to Transit and/or General Fleet Maintenance: 1 Manager	Mechanics: M-F, 8am-4:30pm General helpers: 365 days, 12-hour shifts 10 mechanics, 1 supervisor (for both operations), 2 lead-hands (one at each location, one at the other location, maintenance, more hands-on) Shared within the Facilities & Fleet Department, and are not solely dedicated to Transit and/or General Fleet Maintenance: 1 Manager
staff. All self-serve.	M-F, 8am-10:30pm.	M-F, 8am-4pm	M-F 8am-4:30pm	M-F 8am-4:30pm
During closed hours, mechanics have ID card for access to parts. Mechanics have 3 approaches to check-out: paper work-order, log-sheet, computer inventory	2 stockkeepers	Between the supervisor and admin. Might look to change hours. During closed-hours, stockroom is on call. Mechanics and fog into system. (M4 system).	Purchasing/stockroom is managed by the City's Purchasing Department. 1 staff at Transit stockroom (under Purchasing Department). After hours: certain materials are available outside of stockroom. For emergencies, stockroom clerk is 1 every 2 months	Purchasing/stockroom is managed by the City's Purchasing Department. 1 staff at Transit stockroom (under Purchasing Department). After hours: certain materials are available outside of stockroom. For emergencies, stockroom clerk is 1 every 2 months
Daily cleaning every night, Monday-Friday Detailed cleaning: every week.	Bodywork, paint, other if busy. Bodywork painting a bit of transmission, warranty work. Emission testing	Daily light cleaning. Complete/special clean: ~1/month (1 of 7 cleaners is dedicated to bodywork painting a bit of transmission, warranty work. Emission testing)	Daily light cleaning. Complete/special clean: 1/month (considering going to 2/mo. w/ major collisions / body works; major, heavy work on engine and transmissions (try to do rest in-house), sandblasting. Maybe transmission, rarely engine changes house)	Daily light cleaning. Complete/special clean: 1/month (considering going to 2/mo. w/ major collisions / body works; major, heavy work on engine and transmissions (try to do rest in-house), sandblasting. Maybe transmission, rarely engine changes house)
bodywork, alignments, Engine/transmission major work, Tires (on-site), Cleaning*	Yes. - Reasonable expectation for PM work: complete routine w/in 8 hours, up to 25% more (+2 hrs.)	Yes. - Meeting daily service requirement. Reasonable expectation for PM work: complete routine w/in 8 hours, up to 25% more (+2 hrs.)	Yes. - Reasonable expectation for PM work: complete routine w/in 8 hours, up to 25% more (+2 hrs.)	Yes. - Reasonable expectation for PM work: complete routine w/in 8 hours, up to 25% more (+2 hrs.)
transit used to be merged (+Transit), but a long time ago	Transit and Public Works maintenance facilities cannot be amalgamated because of two different bargaining units. The two unions are probably the biggest challenge to joining.	The mechanics are interchangeable between garages if necessary. They do not rotate, but can easily change shops if required. The maintenance systems are all the same and the pm sheet formats are very similar. It's a relatively seamless transition.	No night or weekend shifts on fleet maintenance (no mechanics in maintenance area in different unions. Increase in staff – each shift would require staff, mechanics, stockroom, etc. Have on-call mechanism/procedures in place (e.g. winter control) for on-needed basis. Do not see need for overtime. Work with operations to avoid on-call demands (i.e. if vehicle is out of service, try to find another in fleet) Tow truck is by contract (reducing on-road service)	Transit staff and General Fleet maintenance are in different unions. Complicated, while General Fleet maintenance have more opportunities to move around
maintenance building right next to transit.	In 2004, when B Barr began work, tried to look into joining maintenance work together. However at that time there was no capital funding, and the unions would not be able to amalgamate.	Keep about \$80k in stockroom parts PM based on hours (because of idling) – every 500 hours. (vs. \$18k at Utilities, and \$800k at Transit)	Challenges: Skills shortage in mechanics – fewer mechanics available; aging workforce Buses becoming more sophisticated – hard to keep up, especially older mechanics	Challenges: Skills shortage in mechanics – fewer mechanics available; aging workforce Buses becoming more sophisticated – hard to keep up, especially older mechanics
mechanics and maintenance	Similar operations at Utilities	Similar operations at Utilities	Computer-based systems have	Computer-based systems have

Town of Oakville staff advised that in 2007 the Town reviewed the potential to integrate stores/inventory control for the city and transit fleets but found the key issue against merging was the different procurement procedures and priorities between City and Transit vehicle parts.

Exhibit 4.2 presents the detailed results of the City fleet and transit peer review.

4.2 Staffing Levels - Transit

As identified in Chapter 3 and the operational assessment of the Transit section of the Division, there is a need for additional staff in the operations and vehicle maintenance areas. A second peer review was conducted to identify general experience and guidelines for staffing levels within each of the transit functional areas. Exhibit 4.3 presents the results of this peer review which included the following municipal transit systems: Burlington, Oakville, Regina, Red Deer, Saint John, Kingston and Thunder Bay.

This review indicated the following relative to staffing levels and potential needs for Sudbury Transit:

- **Operations Supervision.** In this category, Sudbury has four full-time and two part-time positions or FTE of 5. Compared to its peers, Sudbury supervisory staff level is below that of its peers in the order of 21% to 29%, depending on the measure used (revenue-hours, vehicles, operators). This indicates a need for a minimum of one additional supervisory person. However, considering the unusually large area served by Sudbury Transit, a further additional staff person would be warranted in order to provide adequate coverage and response time.
- **Bus Operators.** Sudbury has more revenue hours/operator and fewer bus operators per vehicle compared to the peer average. These ratios indicate that Sudbury's bus operators are utilized to a higher degree than the peers. This is consistent with the lack of a spare board in Sudbury.
- **Vehicle maintenance staff.** The number of vehicles, revenue-hours and revenue-kilometres per vehicle maintenance employee are all higher than the peer average at 7.5 vehicles/employee compared to 6.5. This implies that vehicle maintenance staff is highly utilized compared with their counterparts at peer transit systems but can also indicate less resources for vehicle maintenance activities. Analysis of *total* maintenance staff (vehicle maintenance, servicing, plant and other) are all close to the peer average. This implies that either the proportion of maintenance staff allocated by Sudbury for vehicle maintenance is too low, or their classification for reporting to CUTA is different from their peers. It is also noted that Sudbury vehicle servicing staff are also responsible for bus shelter cleaning and maintenance which further reduces the available staff for vehicle servicing and cleaning. In the critical vehicle maintenance classification of mechanic, a ratio of 7.5 buses per mechanic is high particularly considering the fact that Sudbury Transit staff undertake all vehicle repair work including engine, transmission and other component overhaul in-house. General vehicle/mechanic ratios are 5.5 to 6 which is supported by the peer review. At a medium ratio of 6 vehicles per mechanic, Sudbury should have 10 mechanics compared to the existing 8, an increase of two.

4.3 Staffing Levels – Fleet

The peer review of Fleet vehicle maintenance practices did not provide any clear conclusions pertaining to staffing levels or vehicle maintenance practices primarily due to the wide variations in fleet size and mix between municipalities. However, the review did indicate that, where the transit and fleet vehicle maintenance is combined in one division, the two fleets should be maintained by

Exhibit 4.3: Municipal Transit Peer Review										
	Sudbury	Burlington	Kingston	Oakville	Red Deer	Regina	Saint John	Thunder Bay	Non-Sudbury Average	% difference
	160,000	174,300	119,700	180,500	90,084	206,700	122,389	110,000	143,382	12%
	129,600	170,435	112,088	180,500	90,084	179,246	122,389	109,000	137,677	-6%
	3,627.0	97.8	131.7	103.5	71.0	122.0	316.0	256.0	156.9	2212%
FT	74	70	74	110	78	173	68	104	97	
PT	38	24	30	36	31	-	4	10	19	
FTE	93	82	89	128	94	173	70	109	106	-13%
FT	4	4	7	11	9	6	5	8	7	
PT	2	-	-	-	-	-	-	-	-	
FTE	5	4	7	11	9	6	5	8	7	-30%
FT	8	11	7	10	-	17	18	6	10	
PT	-	-	-	-	-	-	-	-	-	
FTE	8	11	7	10	-	17	18	6	10	-19%
FT	9	4	5	13	10	14	4	18	10	
PT	4	-	6	3	-	-	2	-	2	
FTE	11	4	8	15	10	14	5	18	11	5%
FT	12	14	5	9	6	17	5	3	8	
PT	2	2	-	1	-	2	-	-	1	
FTE	13	15	5	10	6	18	5	3	9	48%
Total Employees (FT)	107	103	98	153	103	227	100	139	132	-19%
Total Employees (PT)	46	26	36	40	31	2	6	10	22	113%
Total Employees (FTE)	130	116	116	173	119	228	103	144	143	-9%
FTE per 1,000 capita	1.00	0.68	1.03	0.96	1.32	1.27	0.84	1.32	1.06	-5%
FTE per Active Veh.	2.17	2.23	2.27	1.94	2.37	2.11	1.72	2.94	2.23	-3%
Total Active Vehicles	60	52	51	89	50	108	60	49	66	-8%
Low Floor Buses	55	45	45	82	42	74	28	49	52	5%
	4,265,928	1,960,205	3,478,610	2,633,166	3,626,937	7,080,010	2,683,305	3,465,012	3,561,035	20%
	3,959,100	3,343,731	3,043,969	4,671,532	3,134,545	6,424,000	2,371,008	3,242,379	3,747,309	6%
	161,292	144,706	150,622	230,118	143,978	292,000	119,457	151,025	175,987	-8%
Rev hours / capita	1.24	0.85	1.34	1.27	1.60	1.63	0.98	1.39	1.29	-4%
Annual ridership / capita	32.92	11.50	31.03	14.59	40.26	39.50	21.92	31.79	27.23	21%
Riders / Rev hour	26.45	13.55	23.09	11.44	25.19	24.25	22.46	22.94	20.42	30%
hours / other operations staff	32,258	36,177	21,517	20,920	15,998	48,667	23,891	18,878	26,578	21%
per operations staff / vehicle	0.083	0.077	0.137	0.124	0.180	0.056	0.083	0.163	0.117	-29%
operators / other ops. staff	18.6	20.5	12.7	11.6	10.4	28.8	14.0	13.6	16.0	17%
Revenue hours / bus operator	1,734	1,765	1,692	1,798	1,540	1,688	1,707	1,386	1,654	5%
Bus operators / vehicle	1.55	1.58	1.75	1.44	1.87	1.60	1.17	2.22	1.66	-7%
\$/veh maintenance employee	7.5	4.7	7.3	8.9	-	6.4	3.3	8.2	6.5	16%
/veh maintenance employee	20,162	13,155	21,517	23,012	313,455	17,176	6,637	25,171	17,778.02	13%
/veh maintenance employee	494,888	303,976	434,853	467,153	14,398	377,882	131,723	540,397	375,997.16	32%
ss / all maintenance employee	3.2	3.5	3.4	3.6	5.0	3.5	2.6	2.0	3.4	-6%
ur / all maintenance employee	208,374	222,915	202,931	190,675	313,455	207,226	103,087	135,099	196,484.03	6%
m / all maintenance employee	8,489	9,647	10,041	9,393	14,398	9,419	5,194	6,293	9,197.82	-8%
G&A staff / all staff	10.0%	12.9%	4.3%	5.5%	5.1%	7.9%	4.9%	2.1%	6.1%	64%
G&A staff / vehicle	0.22	0.29	0.10	0.11	0.12	0.17	0.08	0.06	0.13	64%
ss hours / G&A employee	12,407	9,647	20,124	24,222	22,606	16,222	22,904	50,242	25,402	54%

separate dedicated staff along with separate supervision in view of the different characteristics and maintenance requirements of the fleets. However, the overall function of vehicle maintenance could be consolidated under one section manager.

4.4 Summary

Based on the peer review of transit and fleet maintenance and facility arrangements, the following was learned:

- Other than Red Deer, the transit and city fleet functions are located in separate buildings;
- Where the transit and city fleet functions are within one department, there is one manager responsible with separate supervisors for the transit and fleet maintenance activities;
- There was no regular sharing of maintenance staff, primarily mechanics, between transit and fleet maintenance activities;
- There are no examples where city fleet vehicle maintenance is part of the transit department;
- Other than in Red Deer, each fleet maintenance group (transit and fleet) had its own separate stockroom; and
- Generally, stockrooms are staffed by inventory control personnel during daytime, weekday hours. Mechanics and/or supervisors have access to the stockroom outside of these hours using a control card system.

The peer review indicates that Sudbury's transit staffing levels in the areas of operations and vehicle maintenance are below average. A minimum of one additional operations supervisory position would appear to be warranted as well as two additional mechanics and additional resources for vehicle servicing and cleaning. Additional clerical resources would also be appropriate within the Operations/Transit Inspector area to relieve the supervisory staff of routine clerical and analytical functions. This is consistent with the observations of the consulting team and the operational analysis.

Responsibility for maintenance of the two vehicle fleets should have separate staff and supervisors but under the direction of one section manager.

5. CONCLUSIONS

Sudbury's transit system performs cost-effectively with minimum levels of staff and employs some innovative, if unusual, operating practices to minimize operating costs. Staff appear capable, knowledgeable and dedicated to their work. At the same time, the emphasis on cost containment has resulted in limited staff resources in the areas of operations and vehicle maintenance with limited supervision of staff as evidenced by no on-road supervision of the transit service, no supervision of evening and night staff, and the vehicle maintenance program being reactionary, not proactive. From an operations perspective, while Sudbury Transit does have an automated vehicle location (AVL) system in place which is intended for use by the Inspectors to monitor transit operations, its value, in effect, is limited by the high volume of work handled by the Inspectors in the Control Centre. As a result of competing demands, they are not able to take full advantage of the system. Overall, the organization can be characterized as requiring staff to do other than what they should be doing.

Specific conclusions from the organizational and operational assessment are:

- Transit achieves very good results with minimum levels of staffing;
- Additional resources are required in the critical areas of operations, vehicle and facilities maintenance and finance;
- Priority of the Transit Director has been to provide transit service with costs directly related to providing on-road service being the priority. With tight fiscal constraints as dictated by Council and senior management, all opportunities to minimize overhead and other staffing costs have taken precedent. All perceived ancillary costs related to supervision, technical and clerical support, on-road supervision, etc have been minimized. This has resulted in internal conditions such as multiple tasks being undertaken by a limited number of individuals, no on-road supervision, limited stock-keeping/inventory control resources, Inspectors handling routine clerical functions, no evening and night supervision of vehicle maintenance and cleaning activities;
- Combining the transit and city fleet vehicle maintenance sections is a good strategy;
- Organizationally, key personnel, especially the Manager of Transit Operations, have a wide range of responsibilities which is likely the result of a history of consolidation. However, the current responsibility matrix detracts from the important core functions of managing transit operations and performance of bus operators, and applying a formal preventive vehicle maintenance program. The organization needs to be re-structured to focus on the core functions of Administration, operations and vehicle and facilities maintenance;
- There is no on-road supervision. Serious consideration should be given to adding on-road supervision both to minimize risk to the corporation in the event of passenger incidents or vehicular accidents as well as to more effectively manage the workforce, provide support to staff, respond to customer needs and ensure that service commitments are being consistently met;
- There is no bus operator spareboard to ensure service continuity in the event of service issues or employee absences;
- Routine/clerical activities are being handled by supervisory staff which reduces their effectiveness and detracts from their ability to fulfill their core responsibilities;

- The crossing guard function is included in the transit division but is not a related function. Consideration should be given to transferring this responsibility to another department, such as traffic;
- The transit vehicle maintenance schedule should be revised to increase the frequency of maintenance and a regular quality control (audit) program conducted by supervisory staff introduced. This would assist in ensuring vehicles are both maintained to high standards as well as to protect the interests of the municipality and employees;
- There is a need for additional transit vehicle maintenance staff in order to more effectively maintain the transit fleet and reduce the incidence of change-offs. Two additional mechanic positions would be appropriate;
- More detailed data should be collected on a daily basis to better monitor transit operations including the frequency of vehicle change-offs, missed or late trips, incidents and accidents, and other operational issues;
- The statistical data collected and used for CUTA and provincial reports could be utilized to establish relevant performance measures and benchmarks; and
- Enhance current Information Technology systems to reduce work duplication in the areas of timekeeping and vehicle maintenance and to assist in preparing suitable reports for monitoring transit performance.

What is the most Effective Way to Integrate the Transit and City Fleet Maintenance Functions?

A key question within the Study Terms of reference was to address how best to merge the Transit and City Fleet maintenance sections. Based on an assessment of the two sections and the peer reviews, the optimum approach is to consolidate the two sections under one Manager, with two separate supervisors reporting to the manager on the weekday day and evening shifts, one each supervising the transit fleet maintenance and the other supervising the city fleet maintenance activities. This approach is recommended in view of both the number of staff and level of activity on both shifts, but also in view of the disparate nature of the vehicle fleets.

A single stockroom staffed by the combined resources of the transit and fleet divisions and employing up-to-date technology and information systems for purchasing, receiving, costing and tracking parts (such as bar coding) as well as for preparing, completing and costing work orders and preparing regular fleet performance reports, is feasible at the new facility once all functions are consolidated. The stockroom need only be staffed during the peak weekday time periods. Access to the stockroom can be controlled during the non-peak hours with staff permitted to access the area outside of these hours using electronic cards. The potential for parts loss or inaccurate tracking is likely to be minimal as evidenced by experience in other jurisdictions and with the combined stockroom staffing levels and introduction of electronic controls such as bar coding of parts and appropriate maintenance management systems.

To improve documentation and record keeping, mechanics can and should be able to fill out work orders, which was an issue identified by the City Auditor. This is now common practice in other jurisdictions.

As described within the above conclusions and this report, additional mechanical staff resources are required for the transit vehicle maintenance program in order to introduce a formalized and a more frequent preventative maintenance program to reduce the vehicle down time and the

frequency of road calls. In addition, a Quality Assurance program (audit) should be developed and be performed on a regular basis by supervisory staff.

6. RECOMMENDED DIVISION ORGANIZATION STRUCTURE

To address the organizational and operational needs of the Transit and Fleet Services Division identified in the previous sections, a change to the Division organization structure is required. The recommended organization structure is illustrated in Exhibit 6.1 and is based on the following key organization principles:

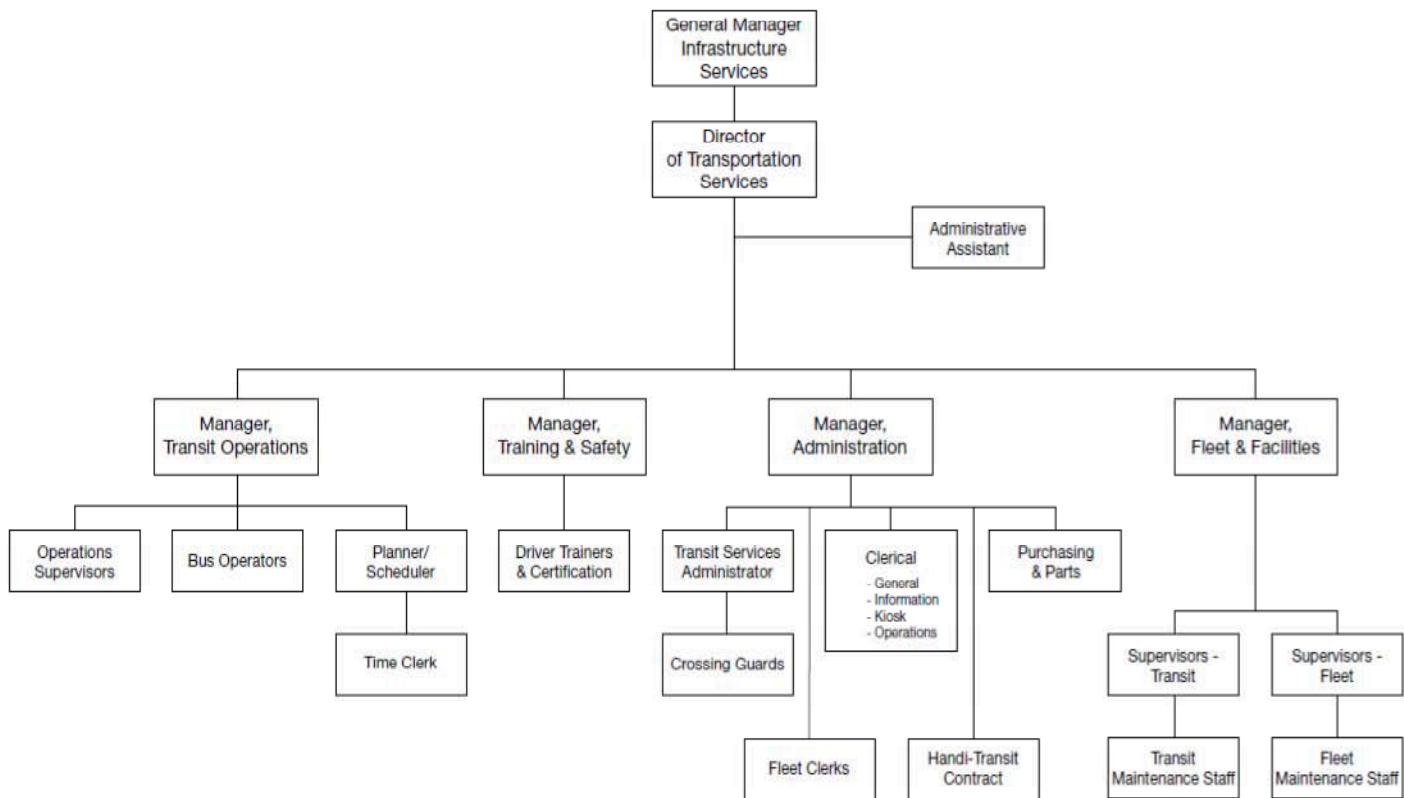
- Focus on the core functions of administration, transit operations and vehicle and facilities maintenance;
- Minimize the number of positions reporting directly to the Director of Transit and Fleet Services in order to improve accountability and management of the organization;
- Group related functions under a single functional lead;
- Align similar functions within the core functional sections to reduce duplication;
- Improving reporting relationships;
- Emphasize the important function within transit operations of managing the performance of the bus operators and on-street operations; and
- Implement a consolidated approach to transit and city fleet vehicle maintenance.

In view of the employee training and safety resources now available from both Transit and Fleet, a separate “training and safety” section is included which consolidates these resources, a step that has already been implemented. Although the primary focus of this section is on new employee training and retraining of existing employees, particularly for transit, the section should also take on increased responsibility in the area of attendance at and investigation of accidents, and monitoring and assessing employee driving skills and trends as a support to the front line supervisors of the transit bus operators. This section also provides training and driver certification resources to other City Departments.

The recommended organization structure emphasizes the core responsibilities of the Division through separate and identifiable managers for each of the key functional areas, provides for separate supervisors for maintenance of the transit and fleet vehicles and facilities under the Manager, Fleet & Facilities, and additional resources in the important areas of transit operations, vehicle and facilities maintenance, and administration and finance, the latter through the new position of Manager of Administration. The crossing guard function is retained within the administrative section although, as noted previously, consideration should be given to re-assigning this activity to a more appropriate department within the City.

In order to successfully implement the recommended organizational structure, additional staff resources are required based on the operational assessment of the Transit Division and the transit peer review. These additional resources are necessary within the transit operations and the fleet and facilities sections, specifically, the addition of a minimum of one Inspector (Operations Supervisor) to provide on-road support for transit operations, additional supervisory positions within the fleet and facilities section to provide needed supervision of afternoon/evening staff, and additional mechanic/technician positions for maintenance of the transit fleet.

Accordingly, it is recommended that the staffing level within the Transit and Fleet Division be increased by five in the areas of administration, operations and vehicle maintenance.

Exhibit 6.1: Recommended Organization Structure - Transit and Fleet Division

7. PERFORMANCE MEASUREMENT AND BENCHMARKING

“Unless you measure something you don't know if it is getting better or worse. You can't manage for improvement if you don't measure to see what is getting better and what isn't.”

(Management adage - attributable to W. Edwards Deming)

Performance measurement and benchmarking (the process of establishing reference points for performance measurement) is an important part of managing any business or activity as noted previously. The Transit and Fleet Division does collect and utilize key data for planning and budgeting purposes. To assist the Division in enhancing its collection and use of data, the following primary performance measures and preliminary benchmark examples are provided.

7.1 Performance Measures

Overall Transit System

- *Ridership - total and Per Capita*
- *Customer feedback/Complaints*
- *Route performance - ridership/revenue-hour, ridership, revenue, cost, R/C ratio*
- *Average Fare*
- *Km and Revenue-hours/capita*
- *Net Cost/capita*

Transit Operations

- *Accidents - number/100,000kms*
- *Productivity - drivers - platform-hours versus total paid hours*
- *Missed trips*
- *On-time performance*

Transit and Fleet Maintenance

Maintenance - Transit	Maintenance - Fleet
• <i>Number of defects/Km per defect</i> • <i>Change-offs per day/week</i> • <i>Average Km/vehicle</i> • <i>Defect by vehicle</i> • <i>Maintenance cost/vehicle</i> • <i>Fuel and oil consumption/vehicle</i> • <i>Repeat defects</i> • <i>Tire life</i> • <i>Brake life</i> • <i>Engine/transmission life</i> • <i>Employee (mechanic) productivity</i>	• <i>Brake life/vehicle</i> • <i>Tire life</i> • <i>Vehicle utilization</i> • <i>Engine/transmission life</i> • <i>Fuel and oil consumption</i> • <i>Defect by vehicle</i> • <i>Number of defects/km per defect</i> • <i>Repeat defects</i> • <i>Maintenance cost/vehicle</i> • <i>Employee (mechanic) productivity</i> • <i>Year over Year Outsourcing Dollars spent</i>

7.2 Benchmarking

The foregoing areas are recommended for measurement as the basis for determining how effectively the Transit and Fleet functions are performing. Determining performance and setting Benchmarks will take time once data is gathered and measured. Benchmarks, Metrics and Key Performance Indicators are then developed through the “measuring” process.

Some sample industry comparators for measuring transit system performance are:

- Rides per revenue-hour
- Average speed
- Bus operator productivity
- Bus stop spacing
- Bus shelters - % of bus stops
- Buses per capita
- Average km/bus per year
- Employees per vehicle
- Peak bus/off-peak bus ratio
- Accidents – per 160,000 kms
- Kms per change-off

The Canadian Urban Transit Association annual operating statistics can be utilized for comparative purposes.

7.3 Annual Reporting

As a guide to the preparation of suitable reports concerning the performance of the transit system, exhibit 7.1 presents an example of a report format which summarizes the performance of the transit routes and system as a whole. This can be produced using Excel spreadsheet tables and made available at regular intervals, either monthly or quarterly. The attached report illustrates a report format for a specific month but can be modified to include monthly budgeted targets (ie. ridership, kilometres and revenue-hours) and a Year-to-Date total.

[illegible]

In addition to the attached report concerning transit system performance, exhibit 7.2 presents a similar summary report for tracking the performance of the maintenance section. This report is intended to both summarize the work undertaken each month along with cost information but also compare the monthly performance against budget.

Exhibit 7.2: Sample Report - Vehicle Maintenance Performance

Period/ Month	Performance Measure																
	Fleet Size	Bus Kms	Fuel (L)	Km/L	Defects	Km/ Defect	Change Offs	Km/ Change off	Inspections Completed	# of Work Orders	# of Engine O/Hs	# of Trans O/Hs	Parts Costs	Labour Cost	Cost Per Km	Fuel Cost	Total Mltce Cost
Budgeted For Month																	
Actual For Month																	
YTD Budget																	
YTD Actual																	

8. RESPONSE TO AUDITOR GENERAL'S REPORT

The following comments are provided in response to the recommendations in the Auditor General's report.

1. Parts Inventory

The merging of the transit and City fleet vehicle maintenance sections will provide the necessary resources without additional cost, to improve the inventory control function. Based on practices in the peer municipalities as well as recognizing the reduced activities during the evening and weekend work periods as well as the limited potential for stock misappropriation, staffing of the stockroom to receive, issue and record stock use compared to cost of staffing, is unnecessary. With appropriate controls, maintenance staff can be permitted access to the stock room during outside hours. However, should the City corporately decide that staffing of the stockroom is necessary during all hours, then appropriate funding resources should be provided separate from the Transit budget to do so.

The City's Finance/Purchasing department should support the Transit Division in developing appropriate count policies and procedures.

An annual parts inventory count is advisable and should be undertaken. This, however, should be a corporate decision, not a Transit Division decision, and would apply to all similar inventory situations within the City.

With appropriate inventory control processes and resources available as a result of the combined maintenance sections and available information technology, rebuilt parts can be assigned separate part numbers. Also, the cost to rebuild the parts should be tracked to include the cost of labour and parts. In this way, the Division will be better able to determine the advisability of rebuilding parts.

2. Commercial Vehicle Operator Record and Work Orders

Work orders should be completed for all work undertaken for the reasons stated by the Auditor General. Transit Division personnel have been completing work orders for major tasks. With the combined fleet and city vehicle maintenance resources and availability of information technology, there will be an improved capability to prepare work orders including an ability for mechanics (technicians) to enter information into the work orders through the computer system.

The combined vehicle maintenance resources and particularly the availability of clerical staff and information technology within the transit area, will improve the Division's capability to track vehicle maintenance activities and trends. However, it is to be noted that the Division currently has a Class A maintenance certificate from the MTO which confirms the good safety rating for Sudbury Transit.

3. Ridership Growth and Route Analysis

While the Transit Division does consider citizen needs as input to the service planning process and service delivery, the establishment of the new Planner/Scheduler function will provide dedicated resources to enhance the ability of the Division to evaluate and respond to stakeholder needs. The preparation of an annual service plan based on recurring 5-year strategic plans will assist in this area.

4. Management of Customer Feedback

Establishing an administrative section in the recommended organizational structure and continued refinement of new information technology will better focus resources on preparing customer feedback reports, identifying trends and responding to issues.

9. RECOMMENDATIONS

Based on the findings and conclusions of the operational and organizational review of the City's Transit (now Transit and Fleet) Services Division of the Infrastructure Services Department, it is recommended that:

1. The organization structure illustrated in Exhibit 6.1 be adopted and, further, in recognition of the broader scope of responsibility for the new Division, the Division be re-titled "Transportation Services" within the Infrastructure Services Department and the "Director of Transit and Fleet Services" position be re-titled "Director of Transportation Services";
2. The transit and City vehicle fleet maintenance functions be merged into one section with the section responsibilities to include both vehicle and facility maintenance under a "Manager, Fleet & Facilities" reporting directly to the Director of Transportation Services with separate supervisors on the weekday day and afternoon shifts for the transit fleet and city vehicle fleet maintenance activities upon relocation of transit and fleet to the new facility on Lorne Street;
3. Five staff be added in order to effectively implement the recommended organization structure and operational improvements in the areas of administration, operations and fleet maintenance;
4. New descriptions for each position be prepared including re-naming the Transit Inspector position as "Operations Supervisor";
5. The revised transit vehicle maintenance schedule and cleaning programs identified in Appendix A to this report be implemented including implementation of a quality assurance audit process;
6. An enhanced budget for staff training be included within the annual operating budget for vehicle maintenance and transit operations staff;
7. Additional employee resources be provided during the organizational change transition period, particularly in the vehicle maintenance section to assist in implementing the changes;
8. Assistance be provided to fleet maintenance staff to implement the recommended preventative maintenance program and quality assurance audit process including developing appropriate forms to track performance and to include follow up at 3 and 6 month intervals after implementation;
9. Performance measures as outlined in Section 7 of this report be utilized along with benchmarks developed progressively over time to measure and improve the performance of the Transit and Fleet Services Division. The performance analysis of the Division should be provided to senior City staff and City Council on a regular basis;
10. Bi-annual reports as well as an annual report on the performance of the Transit Division be prepared for submission to City Council, City staff and stakeholder groups and that performance measurement data be included within the annual report; and
11. Comprehensive reviews of the transit system be undertaken every five years and that annual service plans based on the approved 5-year service plan be prepared.

APPENDIX A

RECOMMENDED MAINTENANCE AND PERFORMANCE MEASUREMENT FORMS

Sample- February 2012

Preventative Maintenance Program – 10,000 KM Inspection

Bus Number

Date: _____

Inspected By: (Print) _____

Signature: _____

Note: Circle –Yes- or- No- if service is required

Lube

Lube complete chassis
Lube Drive shaft
Lube Steering Shaft

Engine oil & filter

Change engine oil & all filters
Check level & adjust

Transmission oil & Filter

YES NO

Change transmission oil & filter
Check level & adjust
NOTE: Change interval depends on type of fluid & Vehicle type – see chart

Cooling System

YES NO

Filter change
Check level & adjust
Check pressure relief cap
Check reservoir tank fill door
Check latch mechanism
Warning decal in place

Fuel filters

YES NO

Change fuel filters

Power Steering

YES NO

Change fluid & filter

Hydraulic System

YES NO

Change fluid & filter
Check and adjust oil level

Air Dryer

YES NO

Change desiccant
Test heater for voltage

Air Cleaner

Visual check of system
Check air filter gauge
If gauge shows 18 to 20 H₂O – change filter

Differential **YES** **NO** Change oil
Note: change interval depends on vehicle type – see chart
Check level, fills as required
Check for leaks
Clean vent

Heater & Defroster Clean screens
Lube hinges & latches

Record Brake Stroke See Inspection Sheet

Brake Test Perform Bowmonk Test
Attach test results

Brake Pedal Lube brake valve plunger
Lube pedal

Codes Check vehicle for codes & record

Webasto Heater **YES** **NO** Change-Air & Fuel Filter (if equipped)
Check operation

Headlights Check Alignment

Bus Type

Fluids and Intervals

Bus Group	Engine Oil	Transmission Oil	Hydraulic Oil	Differential Oil	Power Steering Oil	Coolant Fluid Anti-Freeze
Classic New Look	HD 30 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
N.F.- Invero	15W-40 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
N.F.- D 40	15W-40 10,000km	Syntrans Two year cycle	Dexron Annual	80W-90 Annual	Dexron Annual	Nye Cool-Pink
Orion V	HD 30 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
Bluebird	15W-40 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
Elf	15W-40 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
Glaval	15W-40 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Zerex-Gold

INSPECTION CHECKLIST	√	Remarks
BODY		
1. Bumpers, mud flaps, moldings, etc. all securely mounted , no hazardous bends or protruding edges		
2. Flooring & Step wells – not cracked or loose to cause a tripping hazard		
3. Stanchions, grab rails, and seat backs – all secure with no missing bolts, Energy absorbing material-good condition		
4. Seats – all securely mounted, none cut or badly soiled		
5. Driver’s seat – full range adjustment, seat belt operational and all seat features operate Lube tracks – on safety inspections		
6. Sun visor operational		
7. License plate – on and in good condition		
8. Roof hatch – must have potential to operate, and signs in place		
9. Emergency windows – signs in place		
10. Check fire extinguisher and fire suppression system		
11. Check body exterior for accidents and condition		
12. Check for flares, check if shelf life date exceeds 20 years – 2 per bus		
13. Check first aid kit – seal and ownership, insurance, CVOR & bike rack permits		
MIRRORS		
1. All mirrors must be securely mounted, must maintain adjustment, no cracks or significant deterioration of silver. Check operation of power mirrors		
2. Destination sign heat grid winter only		
3. Defrost system (Heated Mirrors)		
WINDOWS		
1. No sharp edges, no cracks, cloud or fog to materially interfere with the operator’s vision		
2. No crack, chip, or star in area swept by driver’s wiper that interferes with operator’s vision		
3. Operator’s side window must readily open to permit hand signals		
4. Emergency push out signs must be in-place and release mechanisms operational		
5. Window latches shall operate as intended		
6. Window slides shall not be excessively loose		
HORN		
1. Horns shall be securely mounted and function as intended		
WIPERS		
1. Arms and blades in proper alignment and condition		
2. Washers shall work as intended		

HEATER, DEFROSTER AND AIR CONDITIONING		
1. Function as intended		
2. Hoses and pipes – no cracks, leaks or abrasions		
3. Check temperature in coach		
LIGHTS		
1. All exterior lights and signals must operate properly when activated		
2. All interior and step well lights must work		
3. Turn signal and flasher must work		
4. Lenses and reflectors must be in good condition		
BATTERIES		
1. Service batteries and check condition of tray		
2. Clean and tighten connections and check disconnect switch		
3. Lube sliders		
4. Ensure hold downs are secure		
DOORS		
1. Door hinge covers on and in good condition		
2. Sensitive edges and alarms, including “drunk alarm” (where applicable) must function		
3. Accelerator and brake interlocks work on rear door, and front door (if equipped)		
4. Compartment doors work and latch securely		
5. Check door speed sensor for proper operation (if so equipped)		
CHASSIS		
1. No visible cracks or rust perforation or loose joints		
2. No underbody rust holes for exhaust gases to enter		
3. Check walking beams for corrosion and cracks, check U bolts		
DRIVE SHAFT		
1. No missing, loose or damaged fasteners		
2. All guards or hanger brackets on and secure		
3. Check universal joints		
FUEL / EXHAUST SYSTEM		
1. Tank attachments and mountings are in good condition and secure		
2. No leaks and lines are secured and not rubbing		
3. Muffler, insulation and pipes are in good condition and secured		
4. Not located to allow heat damage to wiring, fuel, air lines		
5. Check fuel cap and gasket		
STEERING		
STEERING BOXES AND COLUMN		
1. Mounted securely and check for leaks		
2. No excessive spline or coupling play		
3. Check steering shaft U-joints and slip joint		
4. Check tilt and telescopic operation		
POWER STEERING		
1. Belt tight and in good condition		
2. Fluid level full and no leaks. Check lines and hoses for rubbing		
3. Must operate as intended		
STEERING LINKAGE		
1. Front wheels not visibly out of alignment		

2. Steering wheel free play 2.75 inches maximum		
3. No excessive play in any linkage joint		
4. No linkage damaged, loose or modified		
5. No nut, bolt, or key worn, loose or missing		
6. Check kingpins and bearings		
7. Wheels on ground – turn left and right to lock, no roughness Turn full left – check tire not rubbing or any component -Turn full right – check tire not rubbing or any component		
SUSPENSION		
1. Ball joints		
2. Check front and rear lateral rod bushings		
3. Front and rear air springs, radius rods, control arms, shock absorbers, stabilizers, equalizers, walking beams – none loose, bent, cracked, broken, disconnected, rust perforated or missing		
4. Air suspension must support body clear of axles with no excessive leaks		
5. When built up from 0 pressure, no air may flow to suspension before 55 psi reached in brake system		
6. McPherson – check struts and bushings		
ACCELERATOR		
1. Engine running, transmission in neutral, engine must readily return to idle when pedal released. Ensure engine only starts in “Neutral”		
2. Visually check accelerator, return spring and base pivot pins		
ENGINE AND COMPARTMENT		
1. Check operation of rad shutters – lubricate		
2. Check hydraulic fan for leaks		
3. Check engine & transmission mounts for condition		
4. Check cradle mounts for condition		
5. Check water pump for leaks		
6. Check condition and tension of all belts		
7. Check condition of sheaves and idlers		
8. Check hydraulic systems for leaks and tank mounts		
9. Check air conditioning operation		
10. Check for transmission leaks – check condition of lines		
11. Check muffler thermal blankets		
12. Record engine operation temperature while road testing (180 ° F) Degrees F:		
13. Check governed road speed – maximum 100 kph record _____		
WHEELS		
1. Torque wheel nuts to manufacturers specifications GMC/MCI/OBI V – 500 to 550 foot pounds Low Floor – Steel Wheels 475 foot pounds Low Floor – Aluminum Wheels 450 foot pounds		
2. No visible cracks, elongated bolts holes, no welding repairs, no bent wheels		
3. No mismatched wheel nuts allowed		
TIRES		
1. Front tires must have 3 mm tread on 2 adjacent major grooves		
2. No exposed cord, no sidewall or tread cuts or snags deep enough to expose cords		

3. No bulge, knot or visible bump		
4. Rear tires must have 3 mm tread depth on 2 adjacent major grooves		
5. Check and adjust tire pressure		
GMC/ MCI/ OrionV -- 110 psi		
Low Floor – Steel Wheels -- 120 psi		
Low Floor – Aluminum Wheels -- 120 psi		
AIR SYSTEM		
1. Governor cut out 125 psi. maximum on all models		
2. Drain all tanks completely, where possible. All valves shall work		
3. Air pressure build up from 50-90 psi in less than 3 minutes at engine governed speed		
4. Air pressure alarm must activate by 55 psi – check light and buzzer		
5. Air drop not to exceed 2 lb/minute – brake on or off		
PARKING AND EMERGENCY BRAKE		
1. When applied, must hold against momentary slight throttle application		
2. Must fully release when button released		
3. Must have more pedal reserve when applied		
4. Check retarder operation		
MISCELLANEOUS		
1. Test kneeling operation and alarm		
2. Test wheelchair ramp operation, warning lights, alarms and wheelchair restraining belts		
3. Check radio, driver's seat and destination sign alarms – advise control prior to testing		
4. Check destination sign operation – manual signs only		
5. Check bike rack operation and ensure it is secure		
6. Check speedometer operation (on hoist or on road test)		
7. Check engine fast idle – if equipped		
BRAKES		
1. Visually inspect all brake components: Spring, stack adjuster, inspect position of brake roller on cam ,seals		
2. Check condition of brake air line hoses – No wear / Rubbing		
3. Check brake chambers and pins and clevises – lube if necessary		
4. Record brake stroke measurements – after inspection is completed		
LR LR		
RF RR		
5. Check brake retarder operation – on road test		
6. No mismatched brake chambers allowed		

Sudbury Transit

Comments and Remarks:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

GREATER SUDBURY TRANSIT TOTAL FLEET KILOMETRES

VEHICLE NUMBER	2011 FLEET KM as of Jan. 01/11	JAN 2011	FEB 2011	MAR 2011	APR 2011	MAY 2011	JUNE 2011	JULY 2011	AUG 2011	SEP 2011	OCT 2011	NOV 2011	DEC 2011	2011 FLEET K.M.	TOTAL FLEET KM To Date
740	578,617	5,019	4,124	5,341	3,823	3,901	2,816	2,917	3,332	3,741	1,004	1,069	3,742	40,829	619,446
741	628,861	4,679	4,024	2,258	5,398	3,968	4,222	3,925	4,408	3,226	3,431	3,778	1,767	45,084	673,945
742	585,436	5,302	4,242	5,485	4,474	3,281	1,172	3,092	4,127	3,813	3,650	4,665	3,381	46,684	632,120
743	585,783	4,833	3,868	5,543	4,594	3,373	1,761	3,496	2,188	2,011	4,229	1,836	2,873	40,605	626,388
744	597,614	5,275	4,533	5,229	4,236	4,528	3,890	4,370	4,619	3,732	3,001	3,647	2,916	49,976	647,590
745	602,863	5,054	2,319	4,766	5,533	3,564	3,377	1,944	4,277	4,073	3,291	4,667	3,718	46,583	649,446
751	454,481	4,116	3,791	5,309	3,966	4,657	5,056	4,616	4,431	4,599	3,785	3,918	4,414	52,658	507,139
752	476,394	5,904	5,500	4,356	6,460	5,858	6,447	5,805	4,821	4,789	5,589	5,211	4,713	65,453	541,847
753	458,229	5,583	5,736	7,002	6,755	5,219	5,486	6,500	5,743	4,512	4,734	4,953	5,452	67,675	525,904
761	394,593	6,603	6,151	7,193	6,272	5,254	6,169	5,083	4,441	5,527	5,431	6,056	6,172	70,352	464,945
762	434,280	5,408	5,894	7,749	5,429	7,354	6,293	5,420	5,907	5,487	5,874	6,201	5,495	72,511	506,791
763	402,002	4,956	6,100	10,045	3,589	6,053	6,361	6,514	6,929	4,783	5,228	4,648	6,093	71,299	473,301
764	436,695	6,590	6,014	7,761	7,204	5,306	5,813	6,543	5,211	6,490	2,248	3,509	5,609	68,298	504,993
765	433,984	5,606	5,054	6,571	6,713	6,711	6,933	6,381	5,245	5,560	5,284	3,807	4,221	68,086	502,070
766	504,488	7,341	6,953	6,850	7,194	7,091	7,048	6,380	7,231	5,079	6,550	6,349	6,035	80,101	584,589
767	499,649	6,992	7,878	5,558	7,167	7,465	8,112	7,677	7,249	6,054	6,866	6,122	5,665	82,805	582,454
770	409,507	7,127	6,407	7,545	6,363	6,649	5,884	7,474	5,676	5,593	4,809	7,425	6,498	77,450	486,957
771	428,928	6,621	5,806	6,780	7,889	7,543	6,257	6,322	7,290	4,899	6,494	6,681	4,762	77,344	506,272
772	439,089	6,427	7,836	7,615	6,356	7,735	8,448	7,920	6,327	6,132	7,106	6,427	5,528	83,857	522,946
773	430,674	6,553	6,425	8,316	7,656	5,807	7,140	5,372	7,141	5,207	6,124	5,701	12,189	83,631	514,305
774	430,556	8,857	7,586	10,095	6,622	7,589	7,215	7,801	7,432	6,111	4,983	6,661	1,625	82,577	513,233
775	499,433	8,377	7,085	10,409	6,707	8,487	9,161	8,143	6,637	6,028	6,671	6,263	8,064	92,032	591,465
781	331,310	9,520	7,39	15,493	2,483	7,555	9,373	9,151	9,901	7,016	5,509	6,330	6,602	89,672	420,982
782	339,669	7,392	9,624	10,409	7,942	9,214	9,167	10,569	10,181	7,542	7,119	5,392	8,038	102,579	442,248
783	330,563	9,158	6,115	7,807	7,288	8,269	7,831	7,161	8,024	6,475	5,485	7,713	6,067	87,393	417,956
784	328,149	7,526	7,155	9,936	8,346	9,817	9,738	8,615	11,136	6,024	7,502	6,406	7,105	99,306	427,455
785	399,026	7,102	7,778	6,207	9,042	8,322	7,489	6,462	7,441	7,361	6,871	5,753	5,297	85,125	484,151
Sub Total	12,440,973	173,921	154,737	197,628	165,501	170,570	168,659	165,653	167,345	141,864	138,868	141,178	144,041	1,929,965	14,370,938

Inspection Schedule

Current PM Inspections Schedule

Sudbury is currently performing PM's every 15,000 km

Based on 61 conventional buses and 4,200,000km in 2011 the schedule is as follows

- 280 PM's per annum or 5.5 inspections per week (based on 52 wks.)
- 122 MTO inspection or 2.3 inspections per week

Combined total – 402 Inspections per annum

8 inspection per week

Proposed schedule and revised inspection procedure:

Perform an inspection every 10,000km or every eight (8) weeks, whichever comes first.

If based on Km's only, a fair number of buses would not be inspected for a period of up to 4 month

(see –2011 Yr. KM Summary)

Revised schedule:

- 8 buses – every 3 wks – 13%
- 7 buses – every 4 wks – 11%
- 16 buses – every 6 wks – 26%
- 30 buses – every 8 wks – 50%

-- 563 PM's per annum or 11 inspections per week (based on 52 wks.)

-- 122 MTO inspection or 2.3 inspections per week

The number MTO inspections will remain the same, however, due to the fact that the revised inspections include all of the MTO requirements, the total number of inspections will not increase and will remain at 536 per annum. In order for this to work, it is imperative that buses are scheduled to ensure an MTO and a PM inspection are combined.

Combined total 11 per week

22/01/2012



Sample- February 2012

Preventative Maintenance Program --- MTO – Annual Inspection

Bus Number

Date: _____

Inspected By: (Print) _____

Signature: _____

Note: Circle –Yes- or- No- if service is required

Lube

Lube complete chassis
Lube Drive shaft
Lube Steering Shaft

Engine oil & filter

Change engine oil & all filters
Check level & adjust

Transmission oil & Filter

YES NO

Change transmission oil & filter
Check level & adjust
NOTE: Change interval depends on type of fluid & Vehicle type – see chart

Cooling System

YES NO

Filter change
Check level & adjust
Check pressure relief cap
Check reservoir tank fill door
Check latch mechanism
Warning decal in place

Fuel filters

YES NO

Change fuel filters

Power Steering

YES NO

Change fluid & filter

Hydraulic System

YES NO

Change fluid & filter
Check and adjust oil level

Air Dryer

YES NO

Change desiccant
Test heater for voltage

Air Cleaner

Visual check of system
Check air filter gauge
If gauge shows 18 to 20 H₂O – change filter

Differential	YES	NO	Change oil Note: change interval depends on vehicle type – see chart Check level, fills as required Check for leaks Clean vent
Heater & Defroster			Clean screens Lube hinges & latches
Record Brake Stroke			See Inspection Sheet
Brake Test			Perform Bowmonk Test Attach test results
Brake Pedal			Lube brake valve plunger Lube pedal
Codes			Check vehicle for codes & record
Webasto Heater	YES	NO	Change-Air & Fuel Filter (if equipped) Check operation
Headlights			Check Alignment

Bus Type

Fluids and Intervals

Bus Group	Engine Oil	Transmission Oil	Hydraulic Oil	Differential Oil	Power Steering Oil	Coolant Fluid Anti-Freeze
Classic New Look	HD 30 <i>10,000km</i>	Dexron <i>Annual</i>	Dexron <i>Annual</i>	80W-90 <i>Annual</i>	Dexron <i>Annual</i>	Green
N.F.- Invero	15W-40 <i>10,000km</i>	Dexron <i>Annual</i>	Dexron <i>Annual</i>	80W-90 <i>Annual</i>	Dexron <i>Annual</i>	Green
N.F.- D 40	15W-40 <i>10,000km</i>	Syntrans <i>Two year cycle</i>	Dexron <i>Annual</i>	80W-90 <i>Annual</i>	Dexron <i>Annual</i>	Nye Cool-Pink
Orion V	HD 30 <i>10,000km</i>	Dexron <i>Annual</i>	Dexron <i>Annual</i>	80W-90 <i>Annual</i>	Dexron <i>Annual</i>	Green
Bluebird	15W-40 <i>10,000km</i>	Dexron <i>Annual</i>	Dexron <i>Annual</i>	80W-90 <i>Annual</i>	Dexron <i>Annual</i>	Green
Elf	15W-40 <i>10,000km</i>	Dexron <i>Annual</i>	Dexron <i>Annual</i>	80W-90 <i>Annual</i>	Dexron <i>Annual</i>	Green
Glaval	15W-40 <i>10,000km</i>	Dexron <i>Annual</i>	Dexron <i>Annual</i>	80W-90 <i>Annual</i>	Dexron <i>Annual</i>	Zerex-Gold

INSPECTION CHEKLIST

√

Remarks:

BODY		
1. Bumpers, mud flaps, moldings, etc. all securely mounted , no hazardous bends or protruding edges		
2. Flooring & Step wells – not cracked or loose to cause a tripping hazard		
3. Stanchions, grab rails, and seat backs – all secure with no missing bolts, Energy absorbing material-good condition		
4. Seats – all securely mounted, none cut or badly soiled		
5. Driver's seat – full range adjustment, seat belt operational and all seat features operate Lube tracks – on safety inspections		
6. Sun visor operational		
7. License plate – on and in good condition		
8. Roof hatch – must have potential to operate, and signs in place		
9. Emergency windows – signs in place		
10. Check fire extinguisher and fire suppression system		
11. Check body exterior for accidents and condition		
12. Check for flares, check if shelf life date exceeds 20 years – 2 per bus		
13. Check first aid kit – seal and ownership, insurance, CVOR & bike rack permits		
MIRRORS		
1. All mirrors must be securely mounted, must maintain adjustment, no cracks or significant deterioration of silver. Check operation of power mirrors		
2. Destination sign heat grid winter only		
3. Defrost system (Heated Mirrors)		
WINDOWS		
1. No sharp edges, no cracks, cloud or fog to materially interfere with the operator's vision		
2. No crack, chip, or star in area swept by driver's wiper that interferes with operator's vision		
3. Operator's side window must readily open to permit hand signals		
4. Emergency push out signs must be in-place and release mechanisms operational		
5. Window latches shall operate as intended		
6. Window slides shall not be excessively loose		
HORN		
1. Horns shall be securely mounted and function as intended		
WIPERS		
1. Arms and blades in proper alignment and condition		
2. Washers shall work as intended		
HEATER, DEFROSTER AND AIR CONDITIONING		
1. Function as intended		
2. Hoses and pipes – no cracks, leaks or abrasions		
3. Check temperature in coach		

LIGHTS	√	
1. All exterior lights and signals must operate properly when activated		
2. All interior and step well lights must work		
3. Turn signal and flasher must work		
4. Lenses and reflectors must be in good condition		
BATTERIES		
1. Service batteries and check condition of tray		
2. Clean and tighten connections and check disconnect switch		
3. Lube sliders		
4. Ensure hold downs are secure		
DOORS		
1. Door hinge covers on and in good condition		
2. Sensitive edges and alarms, including “drunk alarm” (where applicable) must function		
3. Accelerator and brake interlocks work on rear door, and front door (if equipped)		
4. Compartment doors work and latch securely		
5. Check door speed sensor for proper operation (if so equipped)		
CHASSIS		
1. No visible cracks or rust perforation or loose joints		
2. No underbody rust holes for exhaust gases to enter		
3. Check walking beams for corrosion and cracks, check U bolts		
DRIVE SHAFT		
1. No missing, loose or damaged fasteners		
2. All guards or hanger brackets on and secure		
3. Check universal joints		
FUEL / EXHAUST SYSTEM		
1. Tank attachments and mountings are in good condition and secure		
2. No leaks and lines are secured and not rubbing		
3. Muffler, insulation and pipes are in good condition and secured		
4. Not located to allow heat damage to wiring, fuel, air lines		
5. Check fuel cap and gasket		
STEERING		
<u>STEERING BOXES AND COLUMN</u>		
1. Mounted securely and check for leaks		
2. No excessive spline or coupling play		
3. Check steering shaft U-joints and slip joint		
4. Check tilt and telescopic operation		
<u>POWER STEERING</u>		
1. Belt tight and in good condition		
2. Fluid level full and no leaks. Check lines and hoses for rubbing		
3. Must operate as intended		
STEERING LINKAGE		
1. Front wheels not visibly out of alignment		
2. Steering wheel free play 2.75 inches maximum		

3. No excessive play in any linkage joint		
4. No linkage damaged, loose or modified		
5. No nut, bolt, or key worn, loose or missing		
6. Check kingpins and bearings		
7. Wheels on ground – turn left and right to lock, no roughness Turn full left – check tire not rubbing or any component -Turn full right – check tire not rubbing or any component		
SUSPENSION		
1. Ball joints		
2. Check front and rear lateral rod bushings		
3. Front and rear air springs, radius rods, control arms, shock absorbers, stabilizers, equalizers, walking beams – none loose, bent, cracked, broken, disconnected, rust perforated or missing		
4. Air suspension must support body clear of axles with no excessive leaks		
5. When built up from 0 pressure, no air may flow to suspension before 55 psi reached in brake system		
6. McPherson – check struts and bushings		
ACCELERATOR		
1. Engine running, transmission in neutral, engine must readily return to idle when pedal released. Ensure engine only starts in “Neutral”		
2. Visually check accelerator, return spring and base pivot pins		
ENGINE AND COMPARTMENT		
1. Check operation of rad shutters – lubricate		
2. Check hydraulic fan for leaks		
3. Check engine & transmission mounts for condition		
4. Check cradle mounts for condition		
5. Check water pump for leaks		
6. Check condition and tension of all belts		
7. Check condition of sheaves and idlers		
8. Check hydraulic systems for leaks and tank mounts		
9. Check air conditioning operation		
10. Check for transmission leaks – check condition of lines		
11. Check muffler thermal blankets		
12. Record engine operation temperature while road testing (180 ° F) Degrees F: _____		
13. Check governed road speed – maximum 100 kph record _____		
WHEELS		
1. Torque wheel nuts to manufacturers specifications GMC/MCI/OBI V – 500 to 550 foot pounds Low Floor – Steel Wheels 475 foot pounds Low Floor – Aluminum Wheels 450 foot pounds		
2. No visible cracks, elongated bolts holes, no welding repairs, no bent wheels		
3. No mismatched wheel nuts allowed		

TIRES			
1. Front tires must have 3 mm tread on 2 adjacent major grooves			
2. No exposed cord, no sidewall or tread cuts or snags deep enough to expose cords			
3. No bulge, knot or visible bump			
4. Rear tires must have 3 mm tread depth on 2 adjacent major grooves			
5. Check and adjust tire pressure			
GMC/ MCI/ OrionV -- 110 psi			
Low Floor – Steel Wheels -- 120 psi			
Low Floor – Aluminum Wheels -- 120 psi			
AIR SYSTEM			
1. Governor cut out 125 psi. maximum on all models			
2. Drain all tanks completely, where possible. All valves shall work			
3. Air pressure build up from 50-90 psi in less than 3 minutes at engine governed speed			
4. Air pressure alarm must activate by 55 psi – check light and buzzer			
5. Air drop not to exceed 2 lb/minute – brake on or off			
PARKING AND EMERGENCY BRAKE			
1. When applied, must hold against momentary slight throttle application			
2. Must fully release when button released			
3. Must have more pedal reserve when applied			
4. Check retarder operation			
MISCELLANEOUS			
1. Test kneeling operation and alarm			
2. Test wheelchair ramp operation, warning lights, alarms and wheelchair restraining belts			
3. Check radio, driver's seat and destination sign alarms – advise control prior to testing			
4. Check destination sign operation – manual signs only			
5. Check bike rack operation and ensure it is secure			
6. Check speedometer operation (on hoist or on road test)			
7. Check engine fast idle – if equipped			
BRAKES			
1. Visually inspect all brake components: Spring, stack adjuster, inspect position of brake roller on cam ,seals			
2. Check condition of brake air line hoses – No wear / Rubbing			
3. Check brake chambers and pins and clevises – lube if necessary			
4. Record brake stroke measurements – after inspection is completed			
LR LR			
RF RR			
5. Check brake retarder operation – on road test			
6. No mismatched brake chambers allowed			

Annual Brake Inspection

Bus No. _____ Inspection Date: _____		Condition	Good	Repairs Required
1	Check brake drums / rotors for cracks			
2	Check cooling fins			
3	Measure drum diameter / rotor thickness and record measurements L/F _____ R/F _____ L/R _____ R/R _____			
4	Check and re-pack wheel bearings and replace all wheel seals with new parts			
5	Check brake lining / pads thickness: (record actual thickness) minimum for bolted linings – 5/16" L/F _____ R/F _____ L/R _____ R/R _____			
6	After front wheel installation, check the following: - Wheel bearing proper adjustment – no signs of problems when rotating - Check king pins – maximum play 0.5 inches at outside of tire - Steering linkage – with wheels off the ground, not over 0.5 inches free play left and right at front and rear of tire			
7	Automatic slack adjusters must function properly			
8	Record push rod travel L/F _____ R/F _____ L/R _____ R/R _____			
9	Road test vehicle and perform brake test with Bowmonk of Tabley Meter Bowmonk test should be performed at 36 km/h (20 mph) Test: 20km/h – full pedal – rear wheel must slide (other then ABS equipped) Test: 30km/h – must stop without skidding All wheels must release immediately, no component failure No pulling – left or right			

Sudbury Transit

Comments and Remarks:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Sample- February 2012

Preventative Maintenance Program --- MTO – Semi Annual Inspection

Bus Number

Date: _____

Inspected By: (Print) _____

Signature: _____

Note: Circle –Yes- or- No- if service is required

Lube

Lube complete chassis
Lube Drive shaft
Lube Steering Shaft

Engine oil & filter

Change engine oil & all filters
Check level & adjust

Transmission oil & Filter

YES NO

Change transmission oil & filter
Check level & adjust
NOTE: Change interval depends on type of fluid & Vehicle type – see chart

Cooling System

YES NO

Filter change
Check level & adjust
Check pressure relief cap
Check reservoir tank fill door
Check latch mechanism
Warning decal in place

Fuel filters

YES NO

Change fuel filters

Power Steering

YES NO

Change fluid & filter

Hydraulic System

YES NO

Change fluid & filter
Check and adjust oil level

Air Dryer

YES NO

Change desiccant
Test heater for voltage

Air Cleaner

Visual check of system
Check air filter gauge
If gauge shows 18 to 20 H₂O – change filter

Differential	YES	NO	Change oil Note: change interval depends on vehicle type – see chart Check level, fills as required Check for leaks Clean vent
Heater & Defroster			Clean screens Lube hinges & latches
Record Brake Stroke			See Inspection Sheet
Brake Test			Perform Bowmonk Test Attach test results
Brake Pedal			Lube brake valve plunger Lube pedal
Codes			Check vehicle for codes & record
Webasto Heater	YES	NO	Change-Air & Fuel Filter (if equipped) Check operation
Headlights			Check Alignment

Bus Type

Fluids and Intervals

Bus Group	Engine Oil	Transmission Oil	Hydraulic Oil	Differential Oil	Power Steering Oil	Coolant Fluid Anti-Freeze
Classic New Look	HD 30 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
N.F.- Invero	15W-40 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
N.F.- D 40	15W-40 10,000km	Syntrans Two year cycle	Dexron Annual	80W-90 Annual	Dexron Annual	Nye Cool-Pink
Orion V	HD 30 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
Bluebird	15W-40 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
Elf	15W-40 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Green
Glaval	15W-40 10,000km	Dexron Annual	Dexron Annual	80W-90 Annual	Dexron Annual	Zerex-Gold

INSPECTION CHEKLIST

√

Remarks:

BODY		
1. Bumpers, mud flaps, moldings, etc. all securely mounted , no hazardous bends or protruding edges		
2. Flooring & Step wells – not cracked or loose to cause a tripping hazard		
3. Stanchions, grab rails, and seat backs – all secure with no missing bolts, Energy absorbing material-good condition		
4. Seats – all securely mounted, none cut or badly soiled		
5. Driver's seat – full range adjustment, seat belt operational and all seat features operate Lube tracks – on safety inspections		
6. Sun visor operational		
7. License plate – on and in good condition		
8. Roof hatch – must have potential to operate, and signs in place		
9. Emergency windows – signs in place		
10. Check fire extinguisher and fire suppression system		
11. Check body exterior for accidents and condition		
12. Check for flares, check if shelf life date exceeds 20 years – 2 per bus		
13. Check first aid kit – seal and ownership, insurance, CVOR & bike rack permits		
MIRRORS		
1. All mirrors must be securely mounted, must maintain adjustment, no cracks or significant deterioration of silver. Check operation of power mirrors		
2. Destination sign heat grid winter only		
3. Defrost system (Heated Mirrors)		
WINDOWS		
1. No sharp edges, no cracks, cloud or fog to materially interfere with the operator's vision		
2. No crack, chip, or star in area swept by driver's wiper that interferes with operator's vision		
3. Operator's side window must readily open to permit hand signals		
4. Emergency push out signs must be in-place and release mechanisms operational		
5. Window latches shall operate as intended		
6. Window slides shall not be excessively loose		
HORN		
1. Horns shall be securely mounted and function as intended		
WIPERS		
1. Arms and blades in proper alignment and condition		
2. Washers shall work as intended		
HEATER, DEFROSTER AND AIR CONDITIONING		
1. Function as intended		
2. Hoses and pipes – no cracks, leaks or abrasions		
3. Check temperature in coach		

LIGHTS	√	Remarks:
1. All exterior lights and signals must operate properly when activated		
2. All interior and step well lights must work		
3. Turn signal and flasher must work		
4. Lenses and reflectors must be in good condition		
BATTERIES		
1. Service batteries and check condition of tray		
2. Clean and tighten connections and check disconnect switch		
3. Lube sliders		
4. Ensure hold downs are secure		
DOORS		
1. Door hinge covers on and in good condition		
2. Sensitive edges and alarms, including “drunk alarm” (where applicable) must function		
3. Accelerator and brake interlocks work on rear door, and front door (if equipped)		
4. Compartment doors work and latch securely		
5. Check door speed sensor for proper operation (if so equipped)		
CHASSIS		
1. No visible cracks or rust perforation or loose joints		
2. No underbody rust holes for exhaust gases to enter		
3. Check walking beams for corrosion and cracks, check U bolts		
DRIVE SHAFT		
1. No missing, loose or damaged fasteners		
2. All guards or hanger brackets on and secure		
3. Check universal joints		
FUEL / EXHAUST SYSTEM		
1. Tank attachments and mountings are in good condition and secure		
2. No leaks and lines are secured and not rubbing		
3. Muffler, insulation and pipes are in good condition and secured		
4. Not located to allow heat damage to wiring, fuel, air lines		
5. Check fuel cap and gasket		
STEERING		
<u>STEERING BOXES AND COLUMN</u>		
1. Mounted securely and check for leaks		
2. No excessive spline or coupling play		
3. Check steering shaft U-joints and slip joint		
4. Check tilt and telescopic operation		
<u>POWER STEERING</u>		
1. Belt tight and in good condition		
2. Fluid level full and no leaks. Check lines and hoses for rubbing		
3. Must operate as intended		
STEERING LINKAGE		
1. Front wheels not visibly out of alignment		
2. Steering wheel free play 2.75 inches maximum		

3. No excessive play in any linkage joint		
4. No linkage damaged, loose or modified		
5. No nut, bolt, or key worn, loose or missing		
6. Check kingpins and bearings		
7. Wheels on ground – turn left and right to lock, no roughness Turn full left – check tire not rubbing or any component -Turn full right – check tire not rubbing or any component		
SUSPENSION		
1. Ball joints		
2. Check front and rear lateral rod bushings		
3. Front and rear air springs, radius rods, control arms, shock absorbers, stabilizers, equalizers, walking beams – none loose, bent, cracked, broken, disconnected, rust perforated or missing		
4. Air suspension must support body clear of axles with no excessive leaks		
5. When built up from 0 pressure, no air may flow to suspension before 55 psi reached in brake system		
6. McPherson – check struts and bushings		
ACCELERATOR		
1. Engine running, transmission in neutral, engine must readily return to idle when pedal released. Ensure engine only starts in “Neutral”		
2. Visually check accelerator, return spring and base pivot pins		
ENGINE AND COMPARTMENT		
1. Check operation of rad shutters – lubricate		
2. Check hydraulic fan for leaks		
3. Check engine & transmission mounts for condition		
4. Check cradle mounts for condition		
5. Check water pump for leaks		
6. Check condition and tension of all belts		
7. Check condition of sheaves and idlers		
8. Check hydraulic systems for leaks and tank mounts		
9. Check air conditioning operation		
10. Check for transmission leaks – check condition of lines		
11. Check muffler thermal blankets		
12. Record engine operation temperature while road testing (180 ° F) Degrees F: _____		
13. Check governed road speed – maximum 100 kph record _____		
WHEELS		
1. Torque wheel nuts to manufacturers specifications GMC/MCI/OBI V – 500 to 550 foot pounds Low Floor – Steel Wheels 475 foot pounds Low Floor – Aluminum Wheels 450 foot pounds		
2. No visible cracks, elongated bolts holes, no welding repairs, no bent wheels		
3. No mismatched wheel nuts allowed		

TIRES		
1. Front tires must have 3 mm tread on 2 adjacent major grooves		
2. No exposed cord, no sidewall or tread cuts or snags deep enough to expose cords		
3. No bulge, knot or visible bump		
4. Rear tires must have 3 mm tread depth on 2 adjacent major grooves		
5. Check and adjust tire pressure		
GMC/ MCI/ OrionV -- 110 psi		
Low Floor – Steel Wheels -- 120 psi		
Low Floor – Aluminum Wheels -- 120 psi		
AIR SYSTEM		
1. Governor cut out 125 psi. maximum on all models		
2. Drain all tanks completely, where possible. All valves shall work		
3. Air pressure build up from 50-90 psi in less than 3 minutes at engine governed speed		
4. Air pressure alarm must activate by 55 psi – check light and buzzer		
5. Air drop not to exceed 2 lb/minute – brake on or off		
PARKING AND EMERGENCY BRAKE		
1. When applied, must hold against momentary slight throttle application		
2. Must fully release when button released		
3. Must have more pedal reserve when applied		
4. Check retarder operation		
MISCELLANEOUS		
1. Test kneeling operation and alarm		
2. Test wheelchair ramp operation, warning lights, alarms and wheelchair restraining belts		
3. Check radio, driver's seat and destination sign alarms – advise control prior to testing		
4. Check destination sign operation – manual signs only		
5. Check bike rack operation and ensure it is secure		
6. Check speedometer operation (on hoist or on road test)		
7. Check engine fast idle – if equipped		
BRAKES		
1. Visually inspect all brake components: Spring, stack adjuster, inspect position of brake roller on cam ,seals		
2. Check condition of brake air line hoses – No wear / Rubbing		
3. Check brake chambers and pins and clevises – lube if necessary		
4. Record brake stroke measurements – after inspection is completed		
LR LR		
RF RR		
5. Check brake retarder operation – on road test		
6. No mismatched brake chambers allowed		

Sudbury Transit

Comments and Remarks:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Major Interior Bus Cleaning

Function: To perform a complete and thorough interior cleaning (minimum every 60 days)

- Position bus on ramps to allow water flow towards the front door
- Clean Ceiling with spray-on cleaner and wipe down (may need a long handled sponge mop with cover to wipe down, depending on the type of bus
- Clean side-walls down to floor with sponge and soapy water, rinse sponge often
- Clean all deck areas and interior air grills
- Clean all stanchions and grab rails
- Clean all door panels
- Clean all seats – Vinyl type can be washed with soapy water, VR type should be steam cleaned (using as little water as possible)
- Steam clean driver's seat (uses as little water as Possible) Clean all around seat base
- Wash floor with water hose and using a stiff long handle brush to loosen dirt and stains. Wash around drivers foot area to remove accumulated sand and salt.
Squeegee and mop excess water
- Clean all windows and windshields
- Clean dash and instrument panel area.
Caution: use damp cloth

Supplies:

Mop and bucket
 Long handled stiff scrub brush
 Long handled soft sponge mop- for ceiling
 Cleaning supplies e.g. windex, liquid spray cleaner,
 liquid soap, sponge, paper, cloth wipers & rubber gloves
 Floor squeegee, broom
 Steam cleaning machine
 Water hose
 Extension cord

Quality Assurance Inspection Check List

BODY	INITIAL INSPECTED
1. Bumpers, mud flaps, mouldings, etc. all securely mounted, no hazardous bends or protruding edges	
2. Flooring & Stepwells - not cracked or loose to cause a tripping hazard	
3. Stanchions, grab rails, energy absorbing m ll secure	
4. Seats all secure	
5. Driver's seat good condition. Seat belt operational. All Wheel Chair Securement Belts operational	
6. Sun visor operational	
7. License plate - on and in good condition	
8. Roof hatch operational and sign in place	
9. Emergency windows - signs in place	
10. Fire extinguisher in place and proper date	
11. Exterior body -- condition and no hazardous edges or protrutions	
12. Flares are in place (2)	
13. Check first aid kit - seal and ownership, insurance & CVOR permits	
MIRRORS	INITIAL INSPECTED
1. All mirrors are securely mounted and in good condition	
WINDOWS	INITIAL INSPECTED
1. No sharp edges, no cracks, cloud or fog to materially interfere with the operator's vision	
2. No crack, chip, or star in area swept by driver's wiper that interferes with operator's vision	
3. Operator's side window must readily open to permit hand signals	
4. Emergency push out signs must be in-place and release mechanisms operational	
5. Window latches shall operate as intended	
6. Window slides shall not be excessively loose	
HORN	INITIAL INSPECTED
1. Horn -- operational	
WIPERS	INITIAL INSPECTED
1. Wiper arms and blades are in good condition and operating	
2. Washers are operating properly	
HEATER, DEFROSTER AND AIR CONDITIONING	INITIAL INSPECTED
1. Function as intended	
2. Hoses and pipes - no cracks, leaks or abrasions	
LIGHTS	INITIAL INSPECTED
1. All exterior lights and signals must operate properly when activated	
2. All interior and step well lights must work	
3. Turn signal and flasher must work	
4. Lenses and reflectors must be in good condition	
BATTERIES	INITIAL INSPECTED
1. Service batteries and check condition of tray	
2. Clean and tighten connections and check disconnect switch	
3. Lube sliders	
4. Ensure hold downs are secure	
DOORS	INITIAL INSPECTED

1. Door hinge covers on and in good condition	
2. Sensitive edges and alarms , including "drunk alarm" (where applicable)	
3. Accelerator and brake interlocks work on rear door, and front door (if equipped)	
4. Compartment doors work and latch securely	
5. Check door speed sensor for proper operation (if so equipped)	
CHASSIS	INITIAL INSPECTED
1. No visible cracks or rust perforation or loose joints	
2. No underbody rust holes for exhaust gases to enter	
DRIVE SHAFT	INITIAL INSPECTED
1. No missing, loose or damaged fasteners	
2. All guards or hanger brackets on and secure	
3. Check universal joints	
Fuel / Exhaust System	INITIAL INSPECTED
1. Tank attachments and mountings are in good condition and secure	
2. No leaks and lines are secured and not rubbing	
3. Muffler and pipes are in good condition and secured	
3. Not located to allow heat damage to wiring, fuel, air lines	
STEERING	INITIAL INSPECTED
STEERING BOXES AND COLUMN	
1. Mounted securely and check for leaks	
2. No excessive spline or coupling play	
3. Check steering shaft U-joints and slip joint	
4. Check tilt and telescopic operation	
POWER STEERING	
1. Belt tight and in good condition	
2. Fluid level full and no leaks Check lines and hoses for rubbing	
3. Must operate as intended	
STEERING LINKAGE	INITIAL INSPECTED
1. Front wheels not visibly out of alignment	
2. Steering wheel free play 2.75 inches maximum	
3. No excessive play in any linkage joint	
4. No linkage damaged, loose or modified	
5. No nut, bolt, or key worn, loose or missing	
6. Wheels on ground - turn left and right to lock, no roughness in mechanism	
SUSPENSION	INITIAL INSPECTED
1. Ball joints	
2. Check all front and rear radius rod bushings	
3. Check front and rear lateral rod bushings	
4. Front and rear air springs, radius rods, control arms, shock absorbers, stabilizers, equalizers, walking beams - none loose, bent, cracked, broken, disconnected, rust perforated or missing	
5. Air suspension must support body clear of axles with no excessive leaks	
6. When built up from 0 pressure, no air may flow to suspension before 55 psi reached in brake system	
ACCELERATOR	INITIAL INSPECTED
1. Engine running, transmission in neutral, engine must readily return to idle when pedal released Ensure engine only starts in "Neutral"	
2. Visually check accelerator, return spring and base pivot pins	
ENGINE AND COMPARTMENT	INITIAL INSPECTED
1. Check operation of rad shutters - lubricate	
2. Check hydraulic fan for leaks	
3. Check engine & transmission mounts for condition	
4. Check cradle mounts for condition	
5. Check water pump for leaks	

6. Check condition and tension of all belts	
8. Check condition of sheaves and idlers	
9. Check hydraulic systems for leaks and tank mounts	
10. Check air conditioning operation	
11. Check for transmission leaks - check condition of lines	
14. Check muffler thermal blankets.	

WHEELS	INITIAL INSPECTED
1. Torque wheel nuts to manufacturers specifications GMC / MCI ? OBI V -- 500 to 550 foot pounds Low Floor -- Steel Wheels 475 foot pounds Low Floor -- Aluminium Wheels 450 foot pounds	
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TIRES	INITIAL INSPECTED
1. Front tires must have 3mm tread on 2 adjacent major grooves	
2. No exposed cord, no sidewall or tread cuts or snags deep enough to expose cords	
3. No bulge, knot or visible bump	
4. Rear tires must have 3mm tread depth on 2 adjacent major grooves.	
5. Check and adjust tire pressure GMC / MCI / OrionV -- 110 psi Low Floor -- Steel Wheels -- 120 psi Low Floor -- Aluminium Wheels -- 120 psi	

AIR SYSTEM	INITIAL INSPECTED
1. Governor cut out 125 psi. maximum on all models.	
2. Drain all tanks completely, where possible. All valves shall work	
3. Air pressure build up from 50-90 psi in less than 3 minutes at engine governed speed	
4. Air pressure alarm must activate by 55 psi - check light and buzzer	
5. Air drop not to exceed 2 lb/minute - brakes on or off	

PARKING AND EMERGENCY BRAKE	INITIAL INSPECTED
1. When applied, must hold against momentary slight throttle application	
2. Must fully release when button released	
3. Must have more pedal reserve when applied	
4. Check retarder operation	

MISCELLANEOUS	INITIAL INSPECTED
1. Test kneeling operation and alarm	
2. Test wheelchair ramp operation and alarm	
3. Check radio, driver's seat and destination sign alarms. -- advise control prior to testing	
5. Check destination sign operation - manual signs only	
6. Check bike rack	
7. Check speedometer operation (on hoist or on road test)	
8. Check engine fast idle --if equipped	

BRAKES	INITIAL INSPECTED
1. Check brake operation and linings -where possible	
2. Check condition of brake air line hoses	
3. Check brake chambers and pins and clevises --lube if necessary	
4. Record brake stroke measurements- when required	
RF LF	
RR LR	
5. Check brake retarder operation-- on road test	

Servicing & Cleaning Functions

Fueler: The function of this person is to remain in the fueling area and perform the following:

- Fuel the Vehicle – Record Vehicle Km's
- Record Fuel usage
- Check and top-up fluids
 - Engine Oil (record usage)
 - Transmission Oil (record usage)
 - Coolant Fluid (if more than 3 liters-report)
 - Windshield Washer Fluid
 - Thump Tires
 - Check exterior lights

Jockey: The function of this person is to move an un-serviced bus from the garage to the fuelling / service area and perform the following:

- Sweep- out the interior
- Pending on time of year and interior condition, mopping or spot flushing may be required.
- Probe & dump fare-box
- Move serviced bus through wash-rack
- (depending on the type of wash-rack, power washing of the front & rear & wheels may be required)
- Park bus in designated area and pick up next unit

Daily Cleaner: The function of this service attendant is to perform the “Daily Inside” cleaning which consists of the following:

- Clean driver's windshield
- Wipe dash area
- Clean driver's area – vacuum if necessary
- Wipe top of wheel well cover area (low floor)
- Wipe ledges and back seat ledge
- Wipe stanchions
- Check and clean wheel –well area
 - Spot clean side windows (check for grease marks from hair)
 - Wipe off passenger seats and areas re: shoe-marks
 - Report damaged or un-cleanable seats
 - Record bus number serviced