



Office of the Auditor General

**Follow-up to the 2011 Audit of the OC Transpo Scheduling
Process for Bus Operators**

Tabled at Audit Committee - October 8, 2015

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EXECUTIVE SUMMARY

Introduction

The follow-up to the 2011 Audit of the OC Transpo Scheduling Process for Bus Operators was included in the Auditor General's 2013 Audit Plan.

The key findings of the original 2011 audit included:

- An arbitration award after the 2008 transit strike has resulted in a new scheduling model that is less efficient and more expensive.
- Control over scheduling granted to management has not been able to offset the post strike arbitration-imposed constraints, therefore management is unable to realize expected annual operational savings from the strike in the range of \$3.1 million to \$4.5 million.
- The arbitration award after the strike did not create the expected "control of the day" operational model envisioned by management. The impact of the arbitration is a systemically inefficient scheduling model that nullified management's cost savings opportunities envisioned during collective bargaining negotiations and the strike.
- Additional cost savings, totaling approximately \$350,000 per year, could be obtained by using Internet-based scheduling sign-up software.
- The City should use the upcoming collective bargaining process to reduce the financial and operational deficiencies of the scheduling model.
- The City should perform monitoring and quality control reviews of scheduled work and pursuing automated alternatives to the manual scheduling process.

Summary of the Level of Completion

The table below outlines our assessment of the level of completion of each recommendation as of June 2014.

Table 1: OAG's assessment of level of completion of recommendations

Category	% Complete	Recommendations	Number of Recommendations	Percentage of Total Recommendations
Little or no action	0 to 24	n/a	n/a	n/a
Action Initiated	25 to 49	6, 8	2	22%
Partially Complete	50 to 74	n/a	n/a	n/a
Substantially Complete	75 to 99	2, 5, 7	3	33%
Complete	100	1, 3, 4, 9	4	45%
Total			9	100%

The table below outlines management's assessment of the level of completion of each recommendation as of November 2014 in response to the OAG's assessment. These assessments have not been audited.

Table 2: Management's assessment of level of completion of recommendations

Category	% Complete	Recommendations	Number of Recommendations	Percentage of Total Recommendations
Little or no action	0 to 24	n/a	n/a	n/a
Action Initiated	25 to 49	6, 8	2	22%
Partially Complete	50 to 74	n/a	n/a	n/a
Substantially Complete	75 to 99	5, 7	2	22%
Complete	100	1, 2, 3, 4, 9	5	56%
Total			9	100%

Conclusion

Management has substantially or completely implemented all but two of the original audit's recommendations.

Hastus is the work scheduling software package which OC Transpo uses. In relation to recommendation 2, quarterly Hastus reports generate qualitative (statistics that could affect operators' quality of work such as the composition of their shift for their work day) and quantitative statistics. The Hastus statistics reports are used to prepare OC Transpo's annual performance report. Management informed us that there are no cost simulations using Hastus done during negotiations as scheduling was not an issue during the last negotiation. Management indicated that a joint Working Group on Scheduling has been established which includes examining scheduling.

For recommendation 5 to be considered complete, non-unionized staff in the scheduling group, not part of ATU 1760, should be recruited with a view of optimum analytical, computer modeling and mathematical skills.

The completion of the implementation of recommendations 6 and 8 is dependent on the successful replacement of the manual booking system by an electronic booking system.

Lastly, for full implementation of recommendation 7, management would need to consider redoing the modelling to include the options of changing timetables to be the most optimal for districts.

Acknowledgement

We wish to express our appreciation for the cooperation and assistance afforded the audit team by management.

The following section is the detailed follow-up report.

Detailed Follow-up Audit Report

Introduction

The follow-up to the 2011 Audit of the OC Transpo Scheduling Process for Bus Operators was included in the Auditor General's 2013 Audit Plan.

Summary of Key Findings of the original 2011 Audit

Audit Objective Theme: Past Critical Path of Activities Impacting Cost Management

There are a series of inter-related activities that shape the past critical path timeline set out for cost management. These activities include:

1. Federal regulatory changes impacting the number of hours that drivers are allowed to work;
2. The milestones related to the arbitration of the strike including on-going negotiations post-arbitration grievances;
3. The quarterly changes to OC Transpo's bus schedules including the period to plan and book drivers to the schedules;
4. The process of signing-up drivers to the scheduled routes;
5. The upcoming negotiations and pending expiry of the current Collective Agreement; and,
6. Future implementation of new booking software.

Key observations taken from the critical path include the following:

1. The post-strike arbitration process has been long and drawn out with a January 2010 milestone but has not been concluded;
2. Latitude for management to secure bus operator scheduling related cost savings has been quite narrow - given the uncertainties of implementing decisive "control of the scheduling day" measures in an uncertain environment of arbitration related appeals;
3. Only four scheduling cycles are executed annually, with the summer cycle always characterized by unique diminished ridership and resourcing requirements. Rationalizing the scheduling process is therefore a multi-year undertaking;
4. The August 2010 Memorandum of Agreement (MoA) negotiated with the Union Executive represented a strategic acknowledgement by management that the content of the Keller arbitration reduced the probability of securing the scheduling cost savings once thought to be achievable during the strike; and,
5. Based on our review of management's communication to Council, it is our opinion that it was adequate and professional.

Audit Objective Theme: The Existing Situation Facing OC Transpo Today

Eroding Scheduling System Efficiency

We found on-going systemic inefficiencies associated with the bus operator scheduling process at OC Transpo. There has been escalating ratios of “Paid Hours to Total Vehicle Hours” and “Paid Hours to Revenue Vehicle Hours” from 2000 to 2009. The 2010 post-strike arbitration award will not reverse this eroding productivity trend.

Labour Intensive Approach for the Booking of Drivers to Routes

The booking of drivers to routes remains a highly labour intensive process which requires that all drivers go to the OC Transpo Booking Office four times a year to select the shifts and manually strike off their selections from a paper board, as shown on Figure ES-3 and Figure ES-4. Considering the scale and complexity of OC Transpo, there is a need to modernize this system.

Figure 1 : ES-3 Paper Booking Boards with Sunday Bus Runs

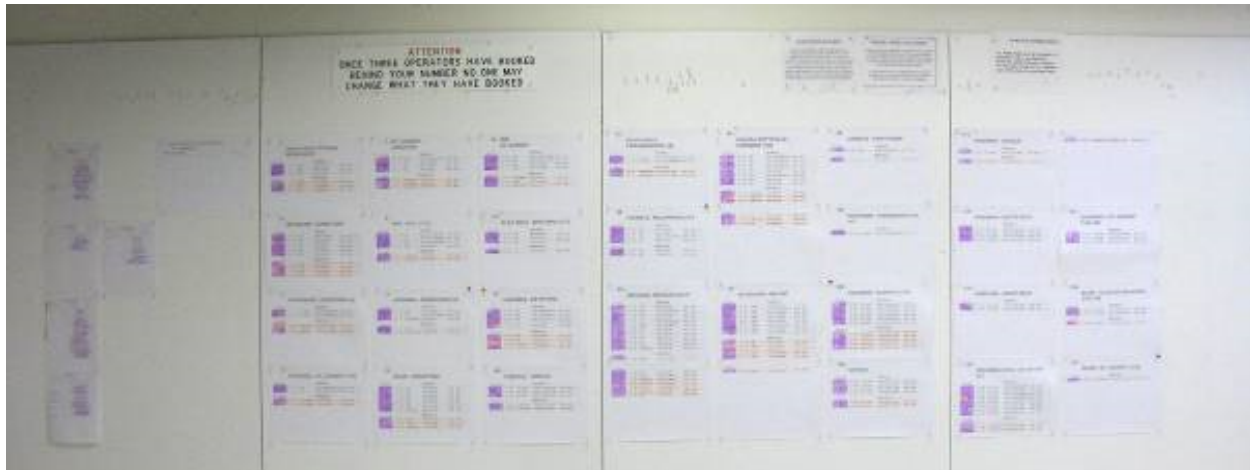


Figure 2: ES-4 Size of the Room Required for the Manual Booking System



Courval¹ Peer Review Conclusions

We corroborated Courval Scheduling's municipal Peer Review findings with other transit systems to ensure overall validity. Courval's Peer Review documented that OC Transpo was the only transit system in the sample allowing operators to combine pieces of work to create their scheduled day. Based on this research, there are no examples of a North American transit system which has delegated the ability to "control the day" to its unionized employees.

Keller Arbitration Panel Impacts and Financial Modeling

We are of the opinion that the 2009 Arbitration Panel may have gone beyond the federal legislation governing collective bargaining by awarding i) a maximum of three runs within a 12-hours spread, ii) an increase of the guarantee pay time from 6 to 7.5 hours and iii) that all rules should apply to all bus operators equally. Neither OC Transpo management nor the union was supportive of this award. OC Transpo management accepted the Award, but as already noted the Union has grieved its implementation.

We have conducted a summary of spreads and guarantees. A 12-hour spread is common and so it may appear that a 12-hour spread is appropriate, but when the demands of the transit system are considered – the transit rush hours start earlier and end later in Toronto and Ottawa than they do in Calgary, Edmonton, Winnipeg or Mississauga – this confirms our opinion that the 12-hour spread limitation imposed by the Keller arbitration award needs to be rectified.

Courval Scheduling was instructed by OC Transpo to subject the 2009 Arbitrator's Award to extensive financial modeling. The financial modelling strongly suggests that the work rules imposed by the Award materially impact OC Transpo cost of service, operational efficiency and effectiveness. The net result trends negatively, such that previously forecast cost savings of \$3.1 to \$4.5 million would not be realized. In support of this observation, our comparison of fall² 2008, 2009, and 2010 bus operator sign-ups show no material improvement of efficiency and productivity. Nor does the modeled data imply any go-forward probability of future process improvement to secure the previously modelled savings.

Modeling of August 2010 Tentative Agreement with Union Executive

Management and the Union Executive did undertake the negotiations in good faith, and arrived at a tentative revision to the Collective Agreement dated August 20, 2010. This revision agreement entailed the following pertinent aspects:

- Raise the arbitrator's imposed daily guarantee from 7.5 to 8 hours; and,
- Raise the arbitrator's imposed 12-hour spread to 12.5 hours.

¹ Courval Scheduling is a Montreal-based firm specializing in the application of the Hastus work-scheduling software package for municipal transit clients. On behalf of OC Transpo, it undertook the design and development of work assignment scenarios.

² The fall schedule for OC Transpo is from September to December.

Courval Scheduling was asked to project/model these newly negotiated rules by use of the Hastus scheduling software. We reviewed these Courval projections, and concluded that the August 2010 agreement would have resulted in more efficient work days for the drivers and cost savings for the City – but at the expense of increased guaranteed pay costs. This tentative agreement was rejected by the union membership comprising bus operators and mechanics. The proposal by management's position and strategic negotiation stance also implied that the original \$3.1 to 4.5 million cost savings forecast developed during the strike, was no longer a primary objective of post-arbitration negotiations.

We received and reviewed all of the pertinent scheduling and financial impact projections prepared by Courval Scheduling, and find them to be in keeping with established industry practice.

The tentative negotiated changes to the collective agreement from August 20, 2010, which were turned down by the union membership would have improved OC Transpo's ability to achieve operational efficiency. However the proposal would have failed to generate cost savings, since it increases the amount and cost of the daily guarantee. We acknowledge that OC Transpo management must manage the transit system within the constraints of the Arbitrator's Award, as opposed to the savings expectations that preceded the Award.

The impact/risk to OC Transpo is that any future required cost savings under the current 12-hour spread maximum and 7.5-hour guarantee must be found elsewhere than bus operator scheduling.

A work-piece is a subset of trips in the block, forming the unit of work for an operator. The most significant work-piece ridership and scheduling load on the OC Transpo system occurs roughly between 6:00 a.m. and 6:30 p.m. - representing a 12.5-hour spread. The Arbitrator's Award for a 12-hour spread – in very simplistic terms – means that the shift of on-duty operators that started work for the morning rush hour cannot remain on the job to service the approximately 600 runs between 6:00 p.m. and 6:30 p.m. during the late afternoon rush hour. In order for OC Transpo to manage the flow of daily service demand while also minimizing the amount of paid guarantee, the Hastus software's algorithms divides up the scheduled workday much differently than was the case during pre-strike conditions. The arbitrator-imposed shorter spread results in significant system scheduling inefficiency.

To those outside the industry, it may seem unusual/non-intuitive that sophisticated computer software such as Hastus would not be able to rationalize the schedule to create a more efficient system than the one currently in place. However, based on our research and discussions with other transit systems, the documented scheduling inefficiencies are in fact expected.

Audit Objective Theme: Go-Forward Strategies

Review of Go-Forward Financial Modeling (Hastus Simulations)

In terms of potential new work rules, management has recently made an attempt to negotiate an increase of the spread to 12.5 hours, and increase the guarantee to 8.0 hours. In this scenario, management would retain control of the day, but modify scheduled pieces of the workday to improve the work environment of its senior, intermediate and junior bus operators. This attempt to modify go-forward work rules was expressed in the Memorandum dated August 20, 2010 with the Union Executive, but was not accepted by the union membership comprising operators and mechanics.

New work rules are not being considered currently because management has limited ability to implement any changes at this time. The current Collective Agreement expired on March 31, 2011. As of April 2011, formal negotiations have not yet commenced.

This audit should not prejudice management's ability to bargain both strategically and in good faith. However, a strategic decision does need to be made soon as to whether the scheduling and booking issues should be managed internally or externally to the bargaining of the collective agreement. If the strategy is to manage scheduling within the collective bargaining process, then scheduling matters are exposed to all of the wider negotiated trade-offs across issues within the collective bargaining process. If scheduling is to be dealt with externally, management risks inconsistent application of scheduling provisions due to the actions of the union membership.

We reviewed the Hastus modelling assumptions and the anticipated outputs from the Hastus Software, and find them to be acceptable. Specifically, in terms of the current situation, and the August 2010 go-forward proposal, we note that:

The Arbitrator's Award using the 7.5-hour guarantee / 12-hour spread modelled by Hastus provides the expected result of fewer guaranteed hours, more 'broken up' pieces of work, and no improved future propensity for cost management, as compared to the pre-strike situation;

The August 2010 go-forward proposal using the 8.0-hour guarantee / 12.5 hour spread modelled using Hastus provides the expected result of more guaranteed hours, fewer 'broken-up' pieces of work, and is cost neutral, as compared to the current post-Arbitration working situation. There is no improved future propensity for cost management, as compared to the pre-strike situation; and,

The August 2010 go-forward proposal would have provided an improvement of drivers' work conditions, since drivers generally look to optimizing "straights" and minimizing splits - particularly multiple splits. Morale and operational culture improvement could well have resulted from adoption – and could still do so if adopted on a go-forward basis.

Go Forward Cost Savings Opportunities

There are three issues/activities that have the potential for future cost savings to be achieved, namely:

1. Upcoming Round of Collective Bargaining Negotiations;
2. Improvement of Morale and Reduction in Absenteeism; and,
3. Future Implementation of New Booking Software.

Collective Bargaining Negotiations

OC Transpo management has three basic alternatives in the approach to negotiations:

1. Attempt to negotiate its last pre-strike position (6 hour guarantee, maximum spread³);
2. Attempt to negotiate its August 2010 Memorandum of Agreement position (8 hour guarantee, 12.5 hour spread); or,
3. Attempt to negotiate an entirely new position of an unknown guarantee and spread - within the limits of the prevailing legislation.

It may be prudent and appropriate for management to attempt to negotiate back to its August 2010 Memorandum of Agreement position, since this package of scheduling changes was unanimously accepted by the Union Executive and provides better pieces of work for the drivers than those currently being offered. This scenario may be achievable due to the improved quality of life being offered for a small increase in the guarantee from 7.5 hours to 8 hours. It is also prudent, since it is reflective of the Union Nominee's comments in the Keller Award of October 9, 2009, which states, "...the daily guarantee will need to be moved to the more normative 8 hours."

Cost Savings via Reduced Absenteeism

The probability of improving unionized employee morale and reducing absenteeism can be assessed by considering past versus current levels of absenteeism as a proxy indicator of morale.

Since the proxy for morale in previous years was higher (i.e., absenteeism was lower) than it is currently, management should aim to improve morale and lower the incidence of absenteeism to at least pre-strike averages. The "Spare Board" is the roster of drivers that Management requires to have on stand-by to respond to difficult-to-predict operational needs, including driver illness, no-show, and the dispatch of a spare driver and vehicle in case of a vehicle breakdown. Fewer bus operators are required for the spare board when there is lower absenteeism, which translates into cost savings.

³ The spread has been constrained to 14 hours due to a change in federal regulations.

The estimated cost savings if absenteeism levels are improved to 2008 levels could be approximately \$1.1 million per year.

Cost Savings via Internet Based Scheduling Sign-up Software

Management has deemed it appropriate to investigate the investment into new booking software. This software would allow drivers the opportunity to request their blocks of work through an Internet-based portal, so drivers could complete the sign-up process without having to be on-site. This technology based booking process re-engineering opportunity should improve the efficiency of the driver sign-up process and shorten the sign-up turn-around period to less than the current six weeks.

This software is not in widespread use throughout the municipal transit industry, and the probability of management making the investment in this software is being determined through its current discussions with software providers to the transit industry, such as Hastus and Trapeze. Potential timing of this technology driven re-engineering opportunity is unclear.

Management indicates that a new Internet based booking software solution may also lead to some operational cost savings. The cost savings emanate from creating efficiencies in two elements of the sign-up process:

1. Reducing the number of clerks involved in the driver sign-up process; and,
2. Reducing the relief runs when on-duty drivers have to be called in to complete their booking based on their seniority.

Based on quarterly cost estimates provided by management, we estimate that the annual cost savings could be approximately \$350,000 per year; however, it should be recognized that this cost saving could be offset by the expense of the new software, and the true benefit to the system is a more efficient booking process.

Status of Implementation of 2011 Audit Recommendations

2011 Recommendation 1

That the upcoming collective bargaining process be considered by management as a strategic opportunity to reduce/remove the financial and operational deficiencies associated with the work scheduling model.

2011 Management Response

Management agrees with this recommendation.

Management will continue to plan the most efficient operation within scheduling/booking rules it now has at its disposal within the constraints of the final Keller decision of July 22, 2011. Future negotiations may provide opportunities should both parties wish to explore additional efficiencies. As a result of route optimization and the introduction of double-decker buses, our service curve and workforce needs are changing. Options to reduce the cost per hour of service will be incorporated based on service demands of the future.

Management Representation of Status of Implementation of Recommendation 1 as of July 1, 2013

Management has continued to plan the most efficient operation within the scheduling/booking rules set out in the Keller decision of July 22, 2011. A Joint Working Group (Management and Union representation) on Scheduling was established in May 2012. This Working Group continues to work on achieving scheduling efficiencies while maintaining and improving the quality of work for our employees at no additional cost. Options to improve efficiencies will continue to be pursued during future negotiations and through ongoing discussions with the Working Group.

Management considers implementation of this recommendation to be complete.

Management: % complete **100%**

OAG's Follow-up Audit Findings regarding Recommendation 1

Management has established a joint working group on scheduling in May 2012, one month after the new collective agreement was put in place. As such, the last collective bargaining process was not used as a strategic opportunity to reduce/remove the financial and operational deficiencies associated with the work scheduling model. ATU 279's present agreement is in effect until March 2016.

The joint working group on scheduling's mandate is "to develop and analyse various scheduling scenarios with a view to making a recommendation to the Transit department management team (DMT) to implement ideas/suggestions pertaining to Transit operations scheduling". Management informed us that the working group looks for solutions that are operationally feasible and at no additional cost to the City which improve the quality of work for operators.

Although the working group does not keep official minutes, we were able to review action items.

OAG: % complete **100%**

2011 Recommendation 2

That management utilize the Hastus scheduling software package for evaluating all proposals put forward during collective bargaining, including a background cost impact template and a "control of day" work design impact template.

2011 Management Response

Management agrees with this recommendation.

OC Transpo has been utilizing Hastus scheduling software for the purpose of evaluating scheduling-related proposals dating back to the 2008 collective bargaining process. This process includes a comparative cost template for different bargaining scenarios. Using Hastus software, bus runs are assembled into shifts to optimize paid work to the needs of the system while minimizing unpaid work.

Management will continue to leverage Hastus to improve our efficiency, taking full advantage of booking rule changes as a result of the on-going arbitration process, thereby maximizing management control of the day. This will be implemented during the next collective bargaining process.

Management Representation of Status of Implementation of Recommendation 2 as of July 1, 2013

Management will continue to utilize Hastus for the purpose of evaluating and developing scheduling-related proposals during the collective bargaining process. OC Transpo continues to keep current with the Hastus version upgrades. A comparative cost template is used to evaluate and develop bargaining scenarios.

Management considers implementation of this recommendation to be complete.

Management: % complete **100%**

OAG's Follow-up Audit Findings regarding Recommendation 2

ATU 279's present collective agreement came in effect in April 2012 and is effective to March 2016.

Management informed us that there are no cost simulation done during negotiations; however that they use Hastus to run scenarios. They further informed us that "since the 2008 / 2009 contract negotiations (these are the negotiations that resulted in the strike and the associated arbitration decisions on scheduling), the parties have not entered into detailed negotiations on matters pertaining to scheduling that required costing of scenarios. During the last round of negotiations the Union and the City agreed to create the Working Group on Scheduling which satisfied all discussions pertaining to scheduling."

Management could not demonstrate that Hastus scheduling software is used for evaluating all proposals put forward during collective bargaining, including a background cost impact template and a "control of day" work design impact template.

For this recommendation to be considered fully complete, Hastus will need to be used to evaluate all proposals put forward during by the Working Group on Scheduling.

OAG: % complete **90%**

Management Representation of Status of Implementation of Recommendation 2 as of November 27, 2014

Management agrees with the OAG's follow-up audit finding. As of December 2014, the Hastus scheduling software will be used to evaluate proposals put forward by the Working Group on Scheduling and will become part of the normal business process used to evaluate recommendations put forward for consideration.

Management: % complete **100%**

2011 Recommendation 3

That management apply due diligence to the construction of scheduled workdays that optimize driver hour efficiencies and minimize costs. Annual performance reports to the new Transit Commission should be required to demonstrate the impact of existing scheduling processes and rules on key transit system performance metrics – such as the ratio of Paid Operator Hours to Total Service Hours.

2011 Management Response

Management will examine which metrics can be extracted that would capture the effect of implemented changes in scheduling processes and rules on system performance. Selected performance measures will be incorporated into annual performance reports starting in 2011. Implementation will be complete by June 2012.

Management Representation of Status of Implementation of Recommendation 3 as of July 1, 2013

Management will continue to apply due diligence in the construction of scheduled workdays in order to optimize driver hour efficiencies and minimize costs. Key performance indicators that demonstrate the impact of existing scheduling procedures have been identified and will be reported annually beginning in the 2013 OC Transpo Annual Performance Report to be reported to the Transit Commission in Q1 of 2014.

Management: % complete **75%**

OAG's Follow-up Audit Findings regarding Recommendation 3

The OC Transpo Annual Performance Report for 2013 was received by Council on June 25, 2014. When compared to the OC Transpo Annual Performance Report for 2012 received by Council on April 24, 2013, we noted that the performance indicator of responding to complaints and inquiry was not included in the 2013 report. In addition, the 2013 report states that indicators relating to vehicle collisions would be provided to a future quarter report to Transit Committee.

In addition, the report notes that staff are developing new suitable methods to properly track and report on fuel and emissions as well as OC Transpo operating costs and will make recommendation to the Transit Commission in 2015.

A new performance indicator, the rates of access to e-information request was reported in the OC Transpo Annual Performance Report for 2013 (compared to 2012). In addition, the Annual Performance Report for 2013 noted that OC Transpo “strive to minimize the number of guarantee hours paid to operators. In 2013, guarantee hours as a percentage of total paid hours was 1.7 percent, down from 2.9 percent in 2012; and, that OC Transpo strives to maintain the ratio of paid hours to planned service hours as near to 1:1 as possible. In 2013, the ratio of paid hours to planned service hours was 1.08, down 1.3 percent from 1.10 in 2012”.

OAG: % complete **100%**

2011 Recommendation 4

That management proactively monitor bus operators' selection of scheduled work, and implement ongoing "quality control reviews" by non-union staff to ensure compliance and overall scheduling efficiency.

2011 Management Response

Management agrees with this recommendation.

Management currently monitors operator selection of work, and has been doing so since July 2009. Following the booking process, non-unionized staff review work selection and make adjustments as required in order to maximize system efficiency.

Management will continue to analyze, study and adjust booking to booking to maximize efficiency and ensure management control of the day. The next implementation of this will take place for the fall 2011 booking, as we incorporate the changes resulting from the route optimization process.

Management Representation of Status of Implementation of Recommendation 4 as of July 1, 2013

As part of OC Transpo's regular business operations Management reviews the outcome of each booking cycle to ensure scheduling efficiency and to compare against service delivery. Improvements are then evaluated and implemented in subsequent bookings. This process is ongoing and is part of OC Transpo's commitment to continuous improvement.

Management considers implementation of this recommendation to be complete.

Management: % complete **100%**

OAG's Follow-up Audit Findings regarding Recommendation 4

At each booking cycle (four times per year) a new Hastus spreadsheet is developed. The spreadsheet, a copy of which was provided for our review, is the output from the scheduling software Hastus which is ultimately used for monitoring and comparing one quarter to the next. The spreadsheet summarizes booking features such as number of relief straights, day splits, true three-pieces, etc. which is ultimately used for the departments performance reporting.

OAG: % complete **100%**

2011 Recommendation 5

That management ensure new non-unionized hires in the scheduling group are recruited with a view of optimum analytical, computer modeling and mathematical skills, given recent and imminent staff retirements within the scheduling group at OC Transpo.

2011 Management Response

Management agrees with this recommendation, and it has been implemented.

In April 2011, Transit Services hired one non-unionized staff member in the scheduling group that possesses the necessary skills and qualifications, including analytical, computer modeling and mathematical skills. Management will continue to recruit qualified staff to perform these functions.

Management Representation of Status of Implementation of Recommendation 5 as of July 1, 2013

Management agrees with this recommendation and in April 2011 hired one non-unionized staff member in the scheduling group. This employee has the necessary analytical skill set to ensure that the unit achieves maximum scheduling efficiency. Management is committed to ensuring that all future candidates possess the necessary skill set to perform the required functions as set out in each job description.

Management considers implementation of this recommendation to be complete.

Management: % complete **100%**

OAG's Follow-up Audit Findings regarding Recommendation 5

During interviews, management informed us that the staff member hired in April 2011 was replaced by another employee from November 2011 to July 2013. Since November 2013 the position's duties have been overseen by two individuals: a temporary FTE (funded from vacancies) that has the experience but does not have the formal education; and, a full time FTE with a planning background. Per SAP, all four staff were part of ATU 1760.

For this recommendation to be considered complete, non-unionized staff in the scheduling group, not part of ATU 1760, should be recruited with a view of optimum analytical, computer modeling and mathematical skills.

OAG: % complete **75%**

Management Representation of Status of Implementation of Recommendation 5 as of November 27, 2014

Management agrees with the OAG's follow-up audit finding. Future staffing actions will ensure that non-unionized staff are hired with the optimum analytical, computer modeling and mathematical skills balanced with operational knowledge and experience. With the realignment announced by the General Manager, Transit Services in September 2014, management is currently reviewing the organizational structure with the goal of implementing changes by Q4 2015.

Management: % complete **75%**

2011 Recommendation 6

That management investigate the degree to which its current six-week scheduling period is longer than the period for comparator transit systems. Management should explore and execute business process re-engineering opportunities, within the limits of the Collective Agreement, to shorten the scheduling period from the six current weeks to a benchmarked industry standard period of time.

2011 Management Response

Management agrees with this recommendation.

Management is currently exploring electronic booking options in an effort to reduce booking time. The implementation of an electronic booking system is planned as part of the approved Technology Roadmap by Council, but is contingent upon the implementation of other elements of IT infrastructure. Management will strive to work on the process in 2012 and once more information is available, will establish a firm timeline for completion.

Management Representation of Status of Implementation of Recommendation 6 as of July 1, 2013

Management continues to look at all possible efficiencies within the manual booking system that is currently being used by OC Transpo. Management will research the opportunities for business process re-engineering that can be implemented independent of an electronic booking system that may make the booking process more efficient. For example, this could include the use of computer kiosks or monitors at the booking location.

Research has been conducted to explore electronic booking systems with the aim to reduce booking time. The OC Transpo IT Review is scheduled to be presented to Transit Commission in September 2013. The electronic booking system is one of many competing technology projects that OC Transpo is pursuing. The electronic booking system is one of the priorities established as part of the IT review, and once approved, Management will target implementation within 24 months of the project start date.

Management: % complete **10%**

OAG's Follow-up Audit Findings regarding Recommendation 6

At the time of our review, management intended to shorten the six-week scheduling period by replacing the manually booking, over a period of time, by kiosks.

OC Transpo plans to renovate its building located at 875 Belfast and relocate the four times per year current manual booking system to this location (from the leased 720 Belfast).

In mid-2014, a Project Manager and Project Officer were completing the Project Charter for the first phase of the project - Business Process Mapping.

At the time of our review, management informed us that alternatives to the paper booking boards such as computer kiosks or monitors were being studied and that the current scheduling system, Hastus also featured a booking module. The current Hastus implementation project will include the e-booking system. Timelines for implementation are to be determined during fall 2014. The OC Transpo IT Review, which included the e-booking as an IT priority, was tabled at Transit Commission on October 16, 2013.

Management further informed us that the first phase will be the implementation of BidWeb accessible through the Intranet at the bidding office. The strategy would be to train bus operators over multiple bookings prior to opening BidWeb at all kiosks and eventually opening it for extranet bookings.

For this recommendation to be considered complete, the current six-week scheduling period would need to be shortened to be more in line with industry standard period of time.

OAG: % complete ***25%***

Management Representation of Status of Implementation of Recommendation 6 as of November 27, 2014

Management agrees with the OAG's follow-up audit finding. Project planning, including current and future business process mapping, for the new Integrated Transit Management System is now well underway. One of the results of this work will be the identification of ways to improve current booking processes; this will be completed by the end of Q2 2015. Based on that work, Management will subsequently be working to identify the best way to manage the work booking process along with the many other staff engagement and training activities that take place at the regular booking sessions. Any revised process would be in place during 2017.

Management: % complete ***25%***

2011 Recommendation 7

That management explore the efficiency, cost, and union relations implications of potentially assigning drivers to distinct districts or garages for fixed periods of time. Work assignments should be limited to routes and work within the assigned district.

2011 Management Response

Management agrees with this recommendation.

Research will be undertaken to compare operating costs, service reliability, and the characteristics of work times for operators under the current model and under a model that would group service into different districts of the city.

Management notes that as the current model is geared to minimizing operating cost and the number of staff and buses required, any additional constraints introduced into the optimization process would likely increase resource requirements. In that case, a comparison would be made between any identified benefits in improved service reliability or improved quality of work against any identified increased costs or other drawbacks. If a conclusion is reached that increased costs were justified to achieve other valuable benefits, then a recommendation would be made to the Commission in a future business plan and budget.

This review will be complete by Q4 2012.

Management Representation of Status of Implementation of Recommendation 7 as of July 1, 2013

Management has done some preliminary work regarding the approach of assigning work based on distinct districts or garages. Management notes that the current model is geared to minimize operating cost and the number of staff and buses required; any additional constraints introduced into the optimization process will likely increase resource requirements. Cost analysis work is scheduled to be completed in Q1 2014.

Management: % complete **30%**

OAG's Follow-up Audit Findings regarding Recommendation 7

Management retained CSched Canada to review the viability of implementing the recommendation. CSched Canada provided management its "Modeled Results for Crew Scheduling by District" report in Q1 2014 which concluded that the district approach to scheduling would be cost prohibitive. However, CSched Canada's methodology did not provide for any adjustments to timetables. Because the timetables were developed around interlining routes across districts to reap efficiencies, using these same timetables without making any modifications necessarily resulted in additional vehicles, hours and human resources.

For this recommendation to be considered fully implemented, management would need to consider redoing the modelling to include the options of changing timetables to be the most optimal for districts.

OAG: % complete **90%**

Management Representation of Status of Implementation of Recommendation 7 as of November 27, 2014

Management agrees with the OAG's follow-up audit finding. In Q1 2015, Management will redo the modelling to include possible changes in timetables, while still meeting customers' travel needs. This comparison will also include a review of the union / labour relations impacts. Management also notes that the opening of the Confederation Line in 2018 will result in a major restructuring of the bus routes, geographically isolating east-end routes from west-end routes, which will significantly change the nature of the current resource-optimised interlined scheduling solution. Incorporating these changes, and comparing OC Transpo approaches to peer transit agencies, is an important part of the work to plan the transformation to a multi-modal transit system.

Management: % complete **90%**

2011 Recommendation 8

That management investigate automated alternatives to the existing manual booking board process.

2011 Management Response

Management agrees with this recommendation.

Management is currently exploring electronic booking options. The implementation of an electronic booking system is dependent on budget and Information Technology Services availability. Management would like to have an electronic booking system in place in 2012. Once more information is available, management will establish a firm timeline for completion of this initiative.

Management Representation of Status of Implementation of Recommendation 8 as of July 1, 2013

Management continues to look at all possible efficiencies within the manual booking system that is currently being used by OC Transpo. Research has been conducted to explore electronic booking systems with the aim to reduce booking time. The OC Transpo IT Review is scheduled to be presented to Transit Commission in September 2013. The electronic booking system is one of many competing technology projects that OC Transpo is pursuing. The electronic booking system is one of the priorities established as part of the IT review, and once approved Management will target implementation within 24 months of the project start date.

Management: % complete **10%**

OAG's Follow-up Audit Findings regarding Recommendation 8

The OC Transpo IT Review, which included the e-booking as an IT priority, was tabled at Transit Commission on October 16, 2013.

In mid-2014, a Project Manager and Project Officer were completing the Project Charter for the first phase of the project - Business Process Mapping.

At the time of our review, management informed us that alternatives to the paper booking boards such as computer kiosks or monitors were being studied. There are two main specialized scheduling software used in public transit industry: Trapeze by Trapeze and Hastus by GIRO. OC Transpo currently uses the Hastus scheduling system that also features a booking module. The Hastus booking module is being considered as an alternative booking method. The current Hastus implementation project will include the e-booking system. Timelines for implementation are to be determined fall 2014.

Management further informed us that the first phase will be the implementation of BidWeb accessible through the Intranet at the Bidding office. The strategy is to train bus operators over multiple bookings prior to opening BidWeb at all kiosks and eventually on the Extranet.

For this recommendation to be considered fully implemented, the implementation of BidWeb at the Bidding office will need to be completed.

OAG: % complete **25%**

Management Representation of Status of Implementation of Recommendation 8 as of November 27, 2014

Management agrees with the OAG's follow-up audit finding. Project planning, including current and future business process mapping, for the new Integrated Transit Management System is now well underway. One of the results of this work will be the identification of ways to improve current booking processes; this will be completed by the end of Q2 2015. Based on that work, Management will subsequently be working to identify the best way to manage the work booking process along with the many other staff engagement and training activities that take place at the regular booking sessions, and any revised process would be in place during 2017.

Management: % complete **25%**

2011 Recommendation 9

That management undertake performance metric based monitoring of OC Transpo's improved scheduling quarterly for two years (i.e., eight scheduling cycles) following the completion of the collective bargaining process.

2011 Management Response

Management agrees with this recommendation.

Management analyze and monitor all data associated with each cycle of booking regardless of the status of the outstanding arbitration, and have been doing so on an on-going basis. However, within the context of the recommendation, a two-year cycle of performance metric based monitoring will commence with the next booking (fall 2011), to be completed by the summer of 2012 (Q2 2012 – 8 booking cycles). Impacts of the arbitration process, route optimization and collective bargaining will be assessed, as applicable, as part of this review.

Management Representation of Status of Implementation of Recommendation 9 as of July 1, 2013

Management has been tracking specific qualitative and quantitative critical performance metrics related to scheduling (i.e. paid operator hours against vehicle in service hours). This has been done for the past three (3) years or 12 bookings to assess the effectiveness of scheduling initiatives as well as to assess the impacts of the arbitration process.

Management considers implementation of this recommendation to be complete.

Management: % complete **100%**

OAG's Follow-up Audit Findings regarding Recommendation 9

We concur with management representation. Management provided us with a trend booking-to-booking analysis. In addition, a Hastus driven spreadsheet is updated each quarter with both qualitative (operator quality of work initiatives) and quantitative data. Management informed us that two of the metrics will be reported for the first time on the next performance report.

OAG: % complete **100%**

Summary of the Level of Completion

The table below outlines our assessment of the level of completion of each recommendation as of June 2014.

**Table 3: OAG's assessment of level of completion of recommendations
(Repeat of Table 1 in Executive Summary)**

Category	% Complete	Recommendations	Number of Recommendations	Percentage of Total Recommendations
Little or no action	0 to 24	n/a	n/a	n/a
Action Initiated	25 to 49	6, 8	2	22%
Partially Complete	50 to 74	n/a	n/a	n/a
Substantially Complete	75 to 99	2, 5, 7	3	33%
Complete	100	1, 3, 4, 9	4	45%
Total			9	100%

The table below outlines management's assessment of the level of completion of each recommendation as of November 2014 in response to the OAG's assessment. These assessments have not been audited.

**Table 4: Management's assessment of level of completion of recommendations
(Repeat of Table 2 in Executive Summary)**

Category	% Complete	Recommendations	Number of Recommendations	Percentage of Total Recommendations
Little or no action	0 to 24	n/a	n/a	n/a
Action Initiated	25 to 49	6, 8	2	22%
Partially Complete	50 to 74	n/a	n/a	n/a
Substantially Complete	75 to 99	5, 7	2	22%
Complete	100	1, 2, 3, 4, 9	5	56%
Total			9	100%

Conclusion

Management has substantially or completely implemented all but two of the original audit's recommendations.

Hastus is the work scheduling software package which OC Transpo uses. In relation to recommendation 2, quarterly Hastus reports generate qualitative (statistics that could affect operators' quality of work such as the composition of their shift for their work day) and quantitative statistics. The Hastus statistics reports are used to prepare OC Transpo's annual performance report.

Management informed us that there are no cost simulations using Hastus done during negotiations as scheduling was not an issue during the last negotiation. Management indicated that a joint Working Group on Scheduling has been established which includes examining scheduling.

For recommendation 5 to be considered complete, non-unionized staff in the scheduling group, not part of ATU 1760, should be recruited with a view of optimum analytical, computer modeling and mathematical skills.

The completion of the implementation of recommendations 6 and 8 is dependent on the successful replacement of the manual booking system by an electronic booking system.

Lastly, for full implementation of recommendation 7, management would need to consider redoing the modelling to include the options of changing timetables to be the most optimal for districts.

Acknowledgement

We wish to express our appreciation for the cooperation and assistance afforded the audit team by management.