



Memo

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From: Dennis Kar, Dillon Consulting Limited

Date: October 14, 2021

Subject: ATS – Consolidated Ridership and Cost Forecasts

Our File: 21-1969

1.0 Introduction

Dillon Consulting Limited in association with Trestle Consulting was retained by the City of Hamilton to develop a business case and implementation plan of the City of Hamilton’s Auditor’s recommendations on the City of Hamilton Transit Division Accessible Transportation Services (A.T.S.). The audit focused on identifying ways to increase process efficiencies and explore cost saving opportunities, with a focus on eligibility determination process and service delivery.

It was concluded that three areas would provide the largest potential for cost savings:

1. Update the application process and conduct reassessments of existing passengers
2. Expand the travel training program and move towards integrated trips
3. Identify opportunities to increase the number of group trips.

Ridership, service hour, vehicle and operating cost forecasts noted in the report used 2019 as a base year, and were completed independently for each of the recommendations. This would allow the City to assess the cost and benefits of each of the recommendations on their own. It should be noted that the impacts of COVID-19 were not included in the original assessment.

The purpose of this memo is to illustrate the cumulative budget impacts of implementing each of the three recommended solutions noted in the final report. Short-term changes to ridership and operating costs from the COVID-19 pandemic were also considered in this report to gain a better understanding of how the pandemic would impact use of ATS services over the long-term.

2.0 Assumptions

The following outlines the assumptions used in the forecast that differ from those identified throughout the September 2021 City of Hamilton Review of ATS Eligibility Determination Process and Services report (September 2021 Report).

2.1 Base Case and Impacts from COVID-19

The Base Case (business as usual) scenario assumes none of the recommendations in the September 2021 Report have been implemented and forecasts ridership, service hours, peak vehicles and operating cost to the 2031 horizon year. The updated Base Case forecast in this memo takes into consideration both the short-term changes to ridership (2020 and 2021 year-to-date) due to the COVID-19 pandemic, along with the long-term impact. The long-term impact assumes that the number of registrants per capita and trips per registrant will not get back to pre-pandemic levels. This means that the Base Case 2031 forecast is likely to be less than the 2019 ridership that was experienced before the pandemic. This is illustrated in **Table 3** and based on the following assumptions:

1. 2020 and 2021 data is added to the forecast to show the impact of COVID-19 on ridership and operating costs.
2. 2021 data was provided up to August / September 2021. Actual monthly ridership data and service hours was provided until September 2021. Monthly September 2021 ridership and service hours was used to forecast ridership and service hours between October and December 2021.
3. 2021 actual operating cost data was provided between January and August 2021. Budgeted variable operating cost data between September and December 2021 was reduced by 45 to 50% to reflect a similar reduction in budgeted ridership data during these same months.
4. It was assumed that ridership would never fully recover from the COVID-19 pandemic, as many people have found other means to travel, rely more on virtual communication and/or appointments, and/or use of online shopping and services. It was assumed that the COVID-19 pandemic would be over in 2023, but this would continue to result in few trips made, based on the following assumptions:
 - a. Registrants per capita at 90% of 2019 levels;
 - b. Trips per registrant at 80% of 2019 levels for ATS trips; and
 - c. Trips per registrant at 90% of 2019 levels for Taxi Scrip trips.
5. Growth in ATS registrants is based on both the growth in population and the impacts of an aging population, and is based on the forecast completed for the 2019 City of Hamilton Development Charges Study: Transit Background Paper. Data on Taxi Scrip Only registrants for 2020 and 2021

was added to this analysis, and the number of registrants was reduced by 10% per year starting in 2022.

6. Ridership growth on specialized transit service contracted to DARTS is calculated by applying the 2019 number of trips per registrant (92.5), and adjusting it to 74.0 trips per registrant between 2023 and 2031. Trip per registrant between 2020 and 2022 are lower due to the ongoing COVID-19 pandemic (43.27 to 67.18).
7. Ridership growth on Taxi Scrip is calculated by adjusting the 2019 number of trips per registrant (27.9) for registrants that use Taxi Scrip (2,980) to reflect the impact of COVID-19, and carrying it through the 2031 horizon year. An adjustment was made to reduce the number of Taxi Scrip trips per registrant that uses Taxi Scrip to 25.1 starting in 2023. This was lower between 2020 and 2022 to reflect the ongoing COVID-19 pandemic.
8. The ratio of trips delivered by dedicated DARTS in-house service, dedicated subcontracted service, non-dedicated taxi service in 2019 was adjusted between 2020 and 2022 to reflect ongoing conditions. This then brought back to 2019 levels in 2023 and continued through to 2031. This is noted in the table below:

Table 1: Distribution of Trips by Service Type

Service Delivery	2019	2020	2021	2022	2023 - 2031
Dedicated DARTS In-House	38.7%	58.7%	65.3%	49.0%	39%
Dedicated DARTS Subcontracted	58.7%	40.6%	33.1%	49.0%	59%
Non-Dedicated DARTS subcontracted	2.6%	0.7%	1.6%	2.0%	2.6%

9. The 2019 ratio of dedicated (contractor DARTS and subcontracted) annual trips (822,458¹) per peak vehicle (148) was used to calculate the growth in peak vehicle requirements with ridership growth between 2023 and 2031. This ratio is 5,557 trips per peak vehicle. This was adjusted between 2020 and 2022, to reflect fewer boardings per vehicle due to the COVID-19 pandemic.
10. The following operating costs rates were used for each of the horizon years. The year 2019 was used as a base and was carried forward between 2023 and 2031. Actual costs were used for 2020 and 2021, with forecasts on costs completed for the remaining four months of 2021 as noted above. For 2022, the costs were assumed to be the difference between 2019 and 2021 costs. It should be noted that while the compensation for dedicated DARTS subcontracted services changed from a cost per trip model to an hourly model during the COVID-19 pandemic, the rates shown in the table below reflect the original cost per trip model for comparative

¹ This represents on dedicated trips. The total, including non-dedicated subcontracted trips in 2019 is 844,007

purposes. These rates were applied to each horizon based on the growth in service hours and passengers.

Table 2: Cost per Hour / Trip by Service Type

Service Delivery	2019	2020	2021	2022	2023 - 2031
Dedicated DARTS In-House (cost per hour)	\$72.02	\$90.98	\$72.84	\$72.43	\$72.02
Dedicated DARTS Subcontracted (cost per trip)	\$22.40	\$26.78	\$44.73	\$33.56	\$22.40
Non-Dedicated DARTS subcontracted (cost per trip)	\$18.16	\$23.50	\$26.51	\$22.33	\$18.16

11. All costs remain at 2019 levels with no adjustments for inflation or other rising costs for comparative purposes.
12. Any vehicle costs required as a result of growth were assumed to be included in the 2019 operating costs, therefore, no capital costs were assumed.

2.2 Recommendations

The following assumptions were used in the in the consolidated forecast that incorporates each of the recommendations in the report.

1. All assumptions noted in the final report are unchanged unless otherwise noted here
2. The order of implementation was assumed to be the following:
 - a. 2022 – Initiate change management process
 - b. 2022 – Revise application process as recommended and hire Transit Abilities Coordinator
 - c. 2022 – Implement revised travel training program and initiate integrated service delivery model on two corridors. Hire Accessible Transit Coordinator.
 - d. 2022 – Implement recommendations to reduce late cancellations and no-shows and increase group bookings. Hire Clerk Staff position to assist with this.
 - e. 2023 – Begin to reassess existing clients over a four year period under the new application process
3. For the assessment of Group Trips, a slight change in assumptions was made from the original report. Hamilton delivers 2.18 eligible passenger trips per revenue hour of dedicated service (2019 statistics). This is lower than the peer average of the peer systems interviewed for this project (2.82 eligible passenger trips per revenue hour of dedicated service). The original report assumed that the recommendations above would increase the trips per hour by 5% by 2026 and

10% by 2031, which would increase the average trip per hour to 2.30 and 2.41 respectively. In this analysis, the productivity increases with the introduction of integrated trips. This means there are more people making shorter trips and less making longer trips, which increases the trips per hour for each vehicle. Therefore, a new target of 10% growth by 2026 (2.41 trips per hour) and 15% growth by 2031 (2.52 trips per hour) from 2019 productivity (2.18 trips per hour) was established. This still falls below the peer group average of 2.82 and is considered a conservative estimate.

4. For each of the recommendations, trips were distributed by service type based on the assumptions noted in **Table 1** above.
5. The cost per hour and trip of each the recommendations noted in the report were based on the assumptions noted in **Table 2** above.
6. Potential savings from the revised application process is assumed to be higher in 2022 and 2023 than in the September 2021 Report due to the high number of inactive registrants as a result of the COVID-19 pandemic. As many of these inactive registrants return to transit, it was assumed that they would be reassessed using the new application process due to a long period of inactivity. Of these inactive registrants are not reassessed, the savings would be lower.
7. Passenger revenue was based on the 2019 average fare of \$1.68 for each ATS passenger for the years 2022 to 2031. The passenger revenue from 2020 and 2021 was based on data provided.
8. Other revenue, including charters, grants, etc. between 2022 and 2031 was based on the ratio of "Other Revenue" to "Passenger Fare Revenue" in 2019 (5%), which was applied to each subsequent year.

3.0 Revised Cost Savings

Table 3 below presents the potential ridership change, service hours, vehicle requirements and cost savings, revenue and net cost savings of each of the consolidated recommended noted above.

Ridership and costs presented below are best estimates based on a series of assumptions noted above and in the September 2021 Report and should be used for planning purposes. There are a number of factors that would cause forecasts to change, including the timing and extent of recovery from the COVID-19 global pandemic. The figures in this report should be reviewed by staff annually and updated with more current information.



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Table 3: Potential Cost Savings for Consolidated Recommendations from the Auditor Report

Ridership and Costs	2019	2020	2021	2022	2023	2026	2031
Specialized Transit Trips*							
Base Case (Do Nothing)	940,083	371,093	327,831	519,700	730,500	769,800	854,600
Reduction - New Application Process and Reassessment	0	0	0	-56,900	-114,000	-200,700	-220,000
Reduction - Travel Training	0	0	0	-4,100	-5,500	-5,100	-8,500
Increase – Integrated Short Trips versus Long Trips \	0	0	0	+200	+400	+1,100	+3,500
Reduction - Group Trips	0	0	0	0	0	0	0
Adjusted Ridership	940,083	371,093	327,831	458,900	611,400	565,100	629,600
Difference from Base Case	0	0	0	-60,800	-119,100	-204,700	-225,000
Service Hours							
Base Case (Do Nothing)	377,168	166,860	162,779	224,500	290,500	308,400	344,000
Reduction - New Application Process and Reassessment	0	0	0	-23,700	-45,850	-79,041	-89,157
Reduction - Travel Training / Integrated Trips	0	0	0	-2,200	-2,548	-10,194	-25,484
Reduction - Group Trips	0	0	0	-7,700	-1,601	-14,565	-11,959
Adjusted Service Hours	377,168	166,860	162,779	190,900	240,500	204,600	217,400
Difference from Base Case	0	0	0	-33,600	-50,000	-103,800	-126,600

Ridership and Costs	2019	2020	2021	2022	2023	2026	2031
Peak Vehicles							
Base Case (Do Nothing)	148	120	92	104	114	121	135
Reduction - New Application Process and Reassessment	0	0	0	-11	-18	-31	-35
Reduction - Travel Training / Integrated Trips	0	0	0	-1	-1	-4	-10
Reduction - Group Trips	0	0	0	-4	-1	-6	-5
Adjusted Peak Vehicles	148	120	92	88	94	80	85
Difference from Base Case	0	0	0	-16	-20	-41	-50
Operating Costs							
Base Case (Do Nothing)	\$25,420,913	\$15,957,500	\$15,568,800	\$22,202,000	\$20,145,400	\$21,210,200	\$23,370,400
Reduction - New Application Process and Reassessment	\$0	\$0	\$0	-\$2,108,700	-\$2,832,400	-\$4,906,900	-\$5,490,400
Reduction - Travel Training / Integrated Trips	\$0	\$0	\$0	-\$181,900	-\$145,200	-\$358,500	-\$830,600
Reduction - Group Trips	\$0	\$0	\$0	-\$412,800	-\$44,800	-\$432,100	-\$355,200
Staffing - Salary							
Transit Abilities Coordinator	--	--	--	\$100,000	\$100,000	\$100,000	\$100,000
Accessible Transit Coordinator	--	--	--	\$90,000	\$90,000	\$90,000	\$90,000
Clerk Staff Position	--	--	--	\$75,400	\$75,400	\$75,400	\$75,400

Ridership and Costs	2019	2020	2021	2022	2023	2026	2031
Third-Party Contractor (Assessments/ Appeals)	--	--	--	\$120,000	\$120,000	\$120,000	\$120,000
Set-up and Communications							
One-time Set-up Costs (office) / Ongoing Communications and Marketing)	--	--	--	\$20,000	\$15,000	\$15,000	\$15,000
One-time Change Management Costs	--	--	--	\$60,000	\$0	\$0	\$0
Software Upgrades Implementation	--	--	--	\$125,100	\$0	\$0	\$0
Software License Fees	--	--	--	\$11,400	\$11,400	\$11,400	\$11,400
Transportation							
Accessible Supervisor Vehicle Upgrade (\$25,000 per unit)	--	--	--	\$25,000	\$50,000	\$25,000	\$25,000
Transportation for a Portion of In-person Interviews	--	--	--	\$22,000	\$22,000	\$22,000	\$22,000
Total	--	--	--				
Adjusted Operating Cost**	\$25,420,913	\$15,957,500	\$15,568,800	\$20,147,500	\$17,606,800	\$15,971,500	\$17,153,000
Difference from Base Case	\$0	\$0	\$0	-\$2,054,500	-\$2,538,600	-\$5,238,700	-\$6,217,400

Ridership and Costs	2019	2020	2021	2022	2023	2026	2031
Revenue							
Base Case (Do Nothing)	\$1,486,752	\$525,661	\$644,375	\$808,300	\$1,149,600	\$1,217,000	\$1,356,200
<i>Base Case Passenger Revenue</i>	<i>\$1,417,343</i>	<i>\$509,710</i>	<i>\$398,913</i>	<i>\$770,600</i>	<i>\$1,095,900</i>	<i>\$1,160,200</i>	<i>\$1,292,900</i>
<i>Base Case Charters, Grants, etc.</i>	<i>\$69,409</i>	<i>\$15,951</i>	<i>\$245,462</i>	<i>\$37,700</i>	<i>\$53,700</i>	<i>\$56,800</i>	<i>\$63,300</i>
Adjusted Revenue	\$1,486,752	\$534,710	\$418,413	\$717,100	\$956,900	\$892,800	\$991,700
Adjusted Passenger Revenue	\$1,417,343	\$509,710	\$398,913	\$683,600	\$912,200	\$851,100	\$945,400
Adjusted Charters, Grants, etc.	\$69,400	\$25,000	\$19,500	\$33,500	\$44,700	\$41,700	\$46,300
Difference from Base Case	\$0	\$9,049	-\$225,962	-\$91,200	-\$192,700	-\$324,200	-\$364,500
Net Operating Cost							
Base Case (Do Nothing)	\$23,934,161	\$15,431,839	\$14,924,425	\$21,393,700	\$18,995,800	\$19,993,200	\$22,014,200
Adjusted Net Operating Cost	\$23,934,161	\$15,422,790	\$15,150,387	\$19,430,400	\$16,649,900	\$15,078,700	\$16,161,300
Difference From Base Case	\$0	-\$9,049	\$225,962	-\$1,963,300	-\$2,345,900	-\$4,914,500	-\$5,852,900

**Note: Includes Taxi Scrip trips*

*** Does not include reduction from passenger revenues*