



# City of Edmonton Office of the City Auditor

## Edmonton Transit Service Revenue Management Audit

August 27, 2019



1200, Scotia Place, Tower 1  
10060 Jasper Avenue  
Edmonton, AB T5J 3R8  
Phone: 780-496-8300  
[edmonton.ca/auditor](http://edmonton.ca/auditor)

Report Highlights

- Revenue, Ridership & Governance**
  - ETS Revenue and Ridership ..... 4
  - Governance ..... 9
- Fare & Non-Fare Revenue Management**
  - Establishing Fares ..... 12
  - Non-Fare Revenue ..... 16
  - Defining Social Benefit ..... 20
- Fare System Performance**
  - Assessing the Fare System ..... 23
  - Performance Measures ..... 27
- Fare System Security**
  - Fare Evasion ..... 30
  - Managing Inventory of Fare Products ..... 36
- Conclusions ..... 40
- Appendix – ETS Fare Schedule 2014 to 2019 ..... 42

## Objectives

This audit assessed the efficiency and effectiveness of Edmonton Transit Service (ETS) revenue management processes.

Through our risk identification and assessment process, we identified the following four audit objectives for this audit:

To determine if the City has a governance framework for the fare system and revenue management in place - including a clear delineation of roles and responsibilities.

To determine if the City has an efficient and effective fare system in place.

To determine if the City has an effective strategy in place to optimize non-fare revenue opportunities.

To determine if internal controls over fare media are properly designed and working as intended to mitigate risks of error, mismanagement, and fraud.

## Scope

ETS data collected between January 1, 2018 and December 31, 2018 was included in any detailed testing conducted for this audit. Longer trends included data from 2000 to 2018.

ETS expenditures and service levels were not reviewed as part of this audit.

This review did not include revenue obtained through DATS operations.

## Statement of Professional Practice

This project was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing.

# ETS Revenue Management Audit Summary



## Revenue, Ridership & Governance

The transit system is more subsidized by taxpayers today than in the past. Ridership and revenue have leveled off and the percentage of ETS revenue generated by fares has declined.

There are weaknesses in the ETS Governance framework related to revenue management. Revenue-related decisions and rationale for these decisions are not documented and risk management practices can be improved.

Recommendation 1  
Strengthen governance

Reporting weaknesses can impact the ability of Council and management to make well-informed decisions related to revenue management.

Recommendation 2  
Improve program reporting



## Fare and Non-Fare Revenue Management

The City can improve on the traceability on how transit fares are developed. City Council has not quantified the level of social benefit, and thus the tax levy subsidization

The development of the fare schedule does not have a consistent methodology and uses assumptions and inputs that are not documented.

Recommendation 3  
Document support for inputs and assumptions

The strategy to optimize non-fare revenue opportunities needs to be enhanced.

Recommendation 4  
Enhance non-fare revenue strategies



## Fare System Performance

For users, the current ETS fare system is generally simple, quick, and flexible. For administration, it is economical and reliable, but doesn't provide good data.

Two ETS performance measures related to ETS revenue are not reported or calculated consistently.

Recommendation 5  
Document performance measures methodology



## Fare System Security

Fare security throughout the fare system has an impact on revenue. Fare evasion, misuse of fare products and the misappropriation of fare products impact the risk of loss of revenue.

ETS does not currently have an effective system to manage fare evasion.

Recommendation 6  
Mitigate fare evasion

Recommendation 7  
Improve U-Pass controls

Fare media require better safeguards.

Recommendation 8  
Improve safeguards for fare media



# Revenue, Ridership & Governance

## ETS Revenue and Ridership

### Summary

The growth in the cost of providing public transit services has outstripped the growth in revenue over the years. Although transit has always been partially subsidized by taxpayer funds, it is subsidized more by taxpayers today than in the past.

Although ridership has grown over the years, this growth has not provided enough revenue to maintain a lower subsidized percentage of costs.

The number of individuals paying full fare to ride transit has decreased and there has been an increase of individuals accessing programs that provide discounted fares. This negatively impacts fare revenue.

The percentage of ETS revenue generated by fares has declined and has leveled off. This emphasizes the importance of optimizing revenue from other sources.

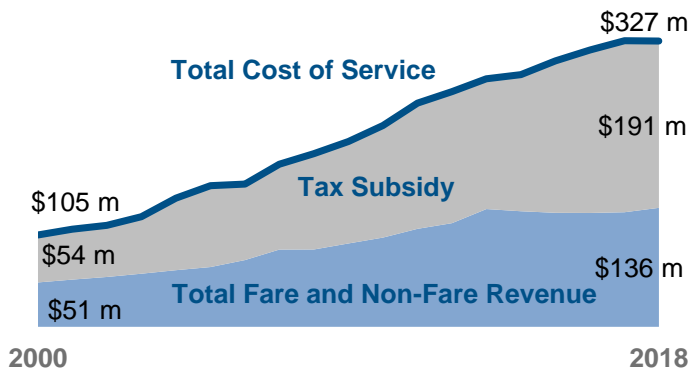
### Increased subsidization

According to ETS, the primary focus is to optimize service, ridership, and safety for passengers. The total cost of providing public transit services has grown by 211% between 2000 and 2018, from \$105 million to \$327 million.

In the same period, total revenue increased by 166% from \$51 million to \$136 million.

The total operating subsidy provided by the tax levy increased by 254% from \$54 million in 2000 to \$191 million in 2018. This has resulted in the tax levy subsidizing 58% (2018) of its operations compared to 51% (2000).

*Between 2000 and 2018, the costs to operate the transit system increased faster than revenue. As a result, the transit system is more subsidized today by the tax levy than it was in the past.*



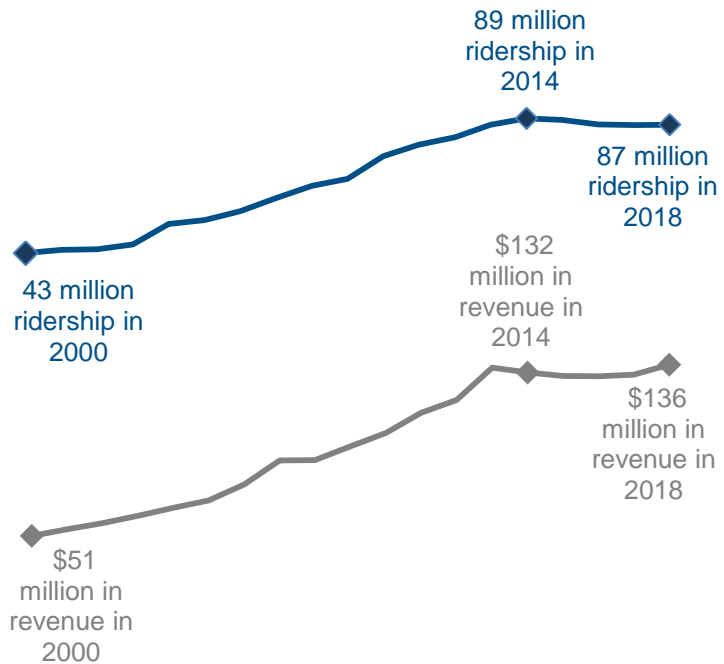


Transit ridership and revenue has leveled off since 2014

Ridership and revenue are both important indicators of Edmonton’s public transit use <sup>1</sup>. ETS has seen growth in both revenue and ridership from 2000 to 2014. Between 2000 and 2014, ETS estimates that ridership increased by 107% and revenue by 159%.

Despite the overall increase in ridership, there was not enough additional revenue generated to maintain or decrease the amount of subsidization required by the tax levy.

*ETS has seen growth in both revenue and ridership from 2000 to 2014. Since 2014 ridership and revenue has leveled off.*



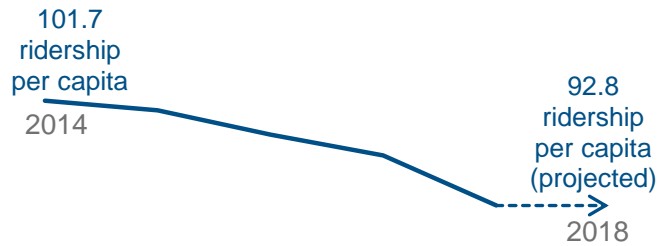
Further growth in ridership and revenue might only be achievable through service improvements and enhancements, such as the proposed bus network redesign, introduction of Smart Fare in 2020, the expansion of the LRT, and increased advertising at new LRT stations.

<sup>1</sup> Annual ridership figures refer to the total number of linked passenger trips. A linked trip is the complete ride from origin to a destination, no matter how many transfers between buses (or between LRT and buses) it takes to complete the trip. ETS doesn’t measure ridership directly. ETS calculates ridership figures by applying estimated number of trips per user category to fare product sales for that category.



Another measure of transit use is ridership per capita (estimated transit rides per resident of Edmonton). Between 2000 and 2013, ridership per capita increased, indicating that more people were using transit more often. However, starting in 2014 the ridership per capita has been declining.

*Ridership per capita has declined 9% between 2014 and 2018 (projected).*

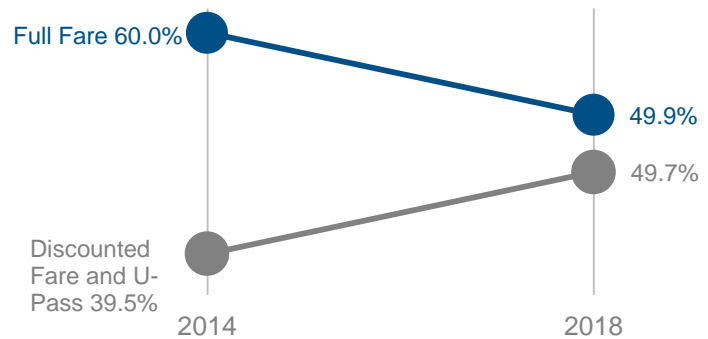


Fare Revenue - Less revenue from full fares

There has been a decrease in the percentage of fare revenue that is generated by payment of full fare versus discounted fares and U-Pass<sup>2</sup>. Other fare products such as the Edmonton International Airport (Route 747), day pass, and convention pass accounted for less than 1% of total fare revenue.

In 2014, fare revenue was \$120 million and 60.0% of sales are from individuals paying full fare and 39.5% of sales from discounted fares and the U-Pass program.

By 2018, fare revenue decreased to \$117 million and 49.9% of sales are from individuals paying full fare and 49.7% of sales from discounted fares and the U-Pass program.



<sup>2</sup> U-Pass is the universal transit pass which provides eligible students enrolled at participating local universities and colleges with transit services in Edmonton and neighbouring communities. The U-Pass will be further discussed under the section “Fare Evasion”.

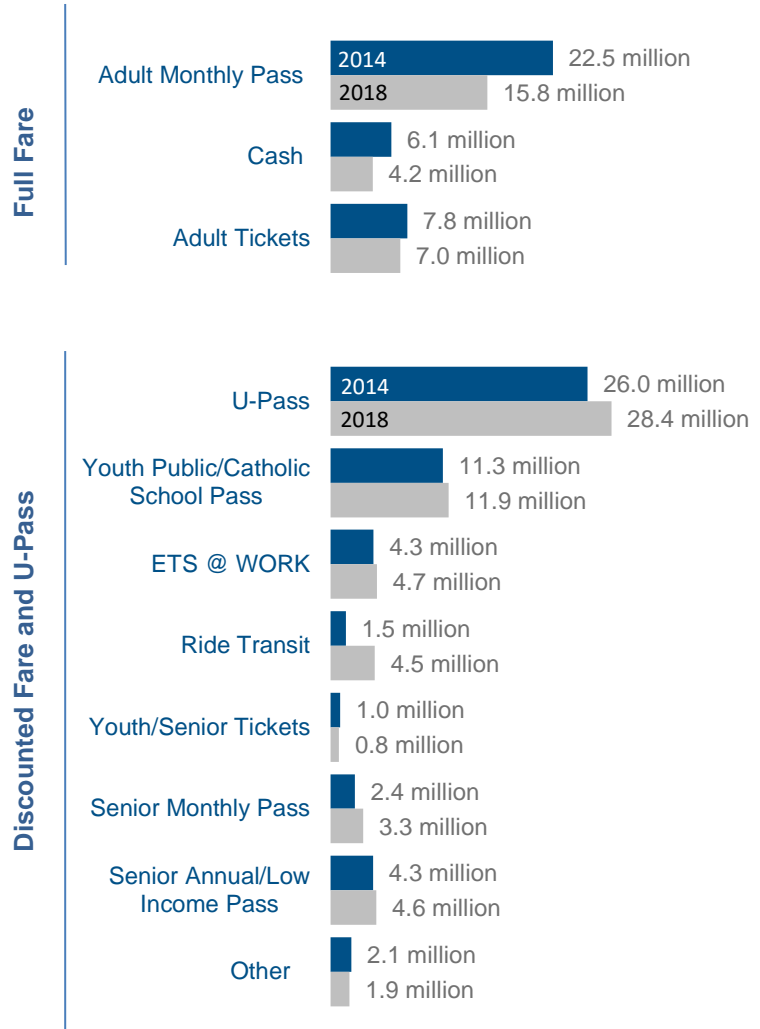


Ridership - Fewer full fare riders

Overall ridership decreased from 89 million in 2014 to 87 million in 2018. There has also been a decrease in the number of riders who pay full fares to ride transit, and a corresponding increase in the number of riders who receive reduced fares through various ETS discount programs and U-Pass.

*There has been a decrease in ridership from those paying full fare using adult monthly passes, cash fares, and adult tickets.*

*There has been a corresponding increase in ridership from those using discounted fare products and U-Pass.*





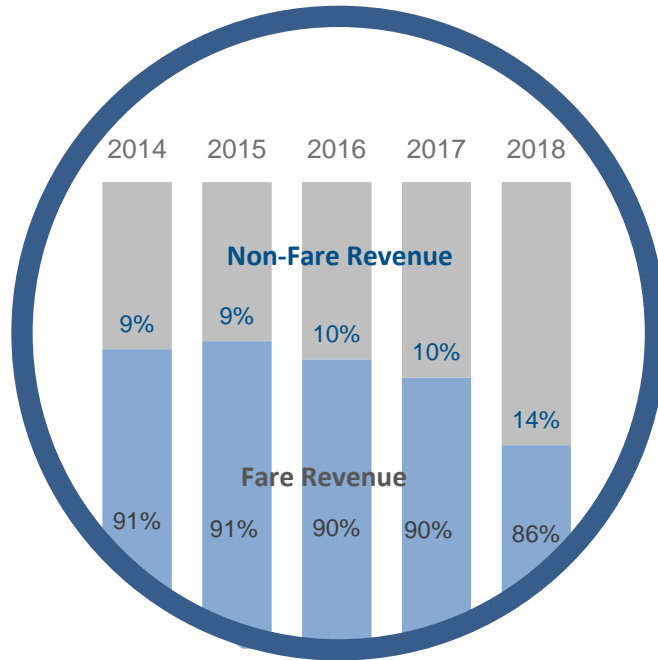


### Reduced revenue from fares

Since 2014, fare revenue has declined from \$120 million in 2014 to \$117 million in 2018. Fare revenue as a percentage of total revenue has been constant from 2014-2017. In 2018<sup>3</sup>, due to a grant from the Provincial Government, non-fare revenue has increased to 14% of total revenue.

Fares provide the highest portion of ETS revenue, Non-fare sources include advertising, service contracts, partnership agreements, grants, and transfers from City of Edmonton reserve funds.

See below for the distribution of fare revenue vs. non-fare revenue<sup>4</sup>.



<sup>3</sup> Most of the increase in non-fare revenue in 2018 is attributed to a temporary Provincial grant funding for the Ride Transit (low-income) pilot. Of the 14%, the grant makes up 4% and other non-fare revenue 10%.

<sup>4</sup> The percentages have been rounded.



# Governance

## Summary

Good governance is demonstrated through organization structures, policies, and processes that supports effective decision making.

There are weaknesses in the ETS governance framework related to revenue management. These weaknesses can impact the ability of Council and administration to make well-informed decisions.

The analysis and reporting on discount programs has been limited. As such, it may be difficult for Council to determine if these programs are effective at achieving their intended social objectives at a reasonable cost to the City.

## Oversight and roles

ETS has oversight and decision-making bodies that meet regularly. Examples include the branch leadership team and branch financial review committee. However, these bodies do not keep agendas or meeting minutes to document issues, risks, opportunities and decisions related to revenue management. As a result, we were unable to determine to what extent revenue management is discussed and what the rationale is for revenue management decisions.

Responsibilities for revenue management are divided amongst multiple positions within ETS and the Administration. Therefore, some decision making that impact ETS's revenues may not be within their control.

## Risk management

The identification and documentation for fare system and revenue management risks needs to be enhanced in order to facilitate a risk-based management approach. Currently, risks are only documented at a very aggregate level in the enterprise risk management register.

Recommendation 1  
Strengthen governance

### Recommendation

We recommend that the Branch Manager of ETS improve documenting revenue management issues, risks, opportunities, and decisions.



### Responsible party:

Branch Manager of ETS



**Accepted** by Management

**Management Response**

Administration will implement meeting minutes process for the ETS Financial Review Committee meetings. The minutes will serve as a log for decisions pertaining to the review of revenue issues, opportunities and risks.



**Implementation:**

December 15, 2019

Program reporting

ETS, like most transit systems, offers discounted fare programs to various users and groups. In Edmonton, these include programs such as ETS@work and Senior Annual Pass.

ETS can improve the analysis and reporting on these programs. This would allow ETS to determine if these programs are effective at achieving the intended social objectives at a reasonable cost to the City.

By conducting a comprehensive analysis of the discount programs in context with the whole fare system, and providing this information to Council, ETS management would be able to better support Council in making decisions related to discount transit programs.

Recommendation 2  
Improve program reporting

**Recommendation**

We recommend that the Branch Manager of ETS improve program reporting to ensure that Council has the sufficient information to make decisions including anticipated social benefits and cost implications.



**Responsible party:**

Director, Business Integration and Workforce Development



**Accepted** by Management

**Management Response**

Administration will document a procedure to conduct a program evaluation, every four years, for discounted fare programs to align with the corporate budget planning process.



**Implementation:**

June 30, 2020



# Fare and Non-Fare Revenue Management

## Establishing Fares

### Summary

There is a lack of Council-approved guidance in existing policies and procedures to ensure the fares are set in a traceable and consistent manner.

The process used by ETS management to develop a fare schedule for Council approval uses assumptions that are not documented. The fare schedule is developed to achieve an overall revenue goal. This revenue goal is identified through the City's operating budget process.

Council has the authority to approve all or part of the fare schedule recommended by ETS management. However, if Council does not approve the recommended fare schedule as a whole, ETS may not receive the expected amount of fare revenue and operations may require additional subsidization from the tax levy.

### Policy and procedures

When proposing changes to the fare schedule, ETS is guided by the ETS Transit Strategy and the Fare Policy. However, neither of these documents currently provides guidance to ETS on how to develop fare prices. The fare schedule for 2014 to 2019 is provided in the Appendix.

ETS has recognized the lack of policy guidance, and in the Fall of 2018, ETS management submitted a draft Fare Policy and Procedure (C451H) to Council for discussion. Council deferred a decision on this policy and associated procedure until the Fall of 2019. The draft policy and procedure provide some improvements related to the setting of the fare schedule and fare prices.

In addition to a lack of policy guidance, ETS does not have internally documented procedures to describe how the fare prices for each fare product are developed.



## Unsupported calculations

ETS has developed a calculation model in a spreadsheet to create a multi-year fare schedule to recommend to Council (See Appendix). Like most models, various inputs and assumptions can be changed to explore different scenarios. These include effects of fare prices changes, changes in anticipated sales volumes, and ridership projections.

Based on our review of the spreadsheet, we observed various assumptions and inputs used that were not documented or supported. Without documentation, there is a risk that a reviewer cannot trace the inputs and assumptions to confirm the reasonableness of the inputs and assumptions. Additionally, when assumptions are not supported there is a risk that the proposed fare schedule will not provide the revenue that is projected.

### Fare Model Calculator Assumptions



Price elasticity refers to how the number of transit users will change when the price of the product changes. ETS currently uses the same price elasticity factor for all fare products. Our research indicated that various factors affect price elasticities including but not limited to the age of a user (e.g. adult versus senior), purpose of use (e.g. daily commute versus incidental), or whether the customer is more transit dependent (e.g. monthly pass) versus discretionary (e.g. ticket packs).



Ridership is calculated by multiplying the number of fare products sold with an estimated use factor. For example, ETS estimates that adult monthly pass holders will ride transit 58 times per month. Therefore, every monthly pass sold will result in 58 rides when calculating ridership for the year. Other estimates include: Ride Transit pass (27 rides per month), U-Pass (47 rides per month) and Senior monthly pass (33 rides per month). These estimates are based primarily on customer surveys and have not been reviewed or updated since 2011.



The budgeted U-Pass sales are based on enrollment at the eligible institution. The assumption used for 2019-2022 had enrollment being the same



for all 4 years. There was no documented rationale for keeping the sales volume the same all four years. We made similar observations for the monthly youth pass to school boards and regular post-secondary pass.

### Partial fare schedule approval

Currently, for each operating budget cycle, ETS recommends a fare schedule to Council for approval. This fare schedule includes the recommended fare prices for the various fare categories such as Adult Regular, Youth, Senior, etc. and fare products such as tickets, passes, etc.

Although ETS recommends a full fare schedule to Council for approval, Council has the ability to approve either the whole schedule or changes to only specific fare categories within the schedule.

In 2019, the proposed fare schedule (see Appendix) included price increases and decreases to a majority of fare products. However, Council chose to only approve an increase to the cash fare for 2019. There is a risk that when a fare schedule is not accepted in its entirety, the original budgeted revenue may not be obtained.

#### Recommendation 3

Document support for inputs and assumptions

#### Recommendation

We recommend that the Branch Manager of ETS document the inputs and assumptions that support how prices for each fare product are developed to ensure traceability.



#### Responsible party:

Director, Business Integration and Workforce Development



#### Accepted by Management

#### Management Response

Administration will document inputs and assumptions that go into developing fare schedules as part of the



corporate budget planning process.



**Implementation:**

June 30, 2020





## Non-Fare Revenue

### Summary

Fare revenue is generated from the sale of fare products as listed in the approved fare schedule (see Appendix). ETS also generates non-fare revenue from several sources such as advertisements, service contracts, partnership agreements, provision for charter bus service, parking fees at LRT stations and Park and Ride services. Between 2014 and 2018, non-fare revenue averaged \$12.3 million per year.

There is no clear policy or strategy to guide decisions and recommendations related to non-fare service contracts and programs or net losses due to these contracts and programs.

### Service contracts and programs

ETS has service contracts and programs that provide discounted transit services for events and organizations like Green and Go (Edmonton Eskimo games), the Heritage Festival, and University of Alberta Staff LRT Access program<sup>5</sup>.

Certain contracts/programs such as Green and Go and Heritage Festival do not provide enough revenue to offset the cost of providing the service. The difference is subsidized by the tax levy. Additionally, there is lost revenue if program users would have otherwise chosen to pay full price for transit.

Council may determine that these programs serve a civic or social purpose which justifies taxpayer subsidization. However, there is currently no policy or strategy to guide service contract decisions or recommendations to Council. There are currently no guidelines provided to ETS management that indicate an acceptable level of subsidization for these programs, and thus no way to set contract or service pricing. ETS also lacks guidance describing the information that Council requires to make decisions related to these programs.

---

<sup>5</sup> In exchange for a lump sum annual payment, all University of Alberta staff can use LRT for free between South Campus and Kingsway/Royal Alexandra Hospital.



### Green and Go Program

ETS is a participant in a City of Edmonton contract with the Edmonton Eskimo Football Club. Everyone attending a home game can use ETS for free two hours before and after the game. This includes LRT and ETS Bus Park & Ride.

The cited benefits of this program include reduced congestion in the public and community spaces around Commonwealth Stadium. These benefits have not been monitored or measured. Due to increased ridership, LRT and bus service is increased during the applicable time period. This increases the cost of providing the service.

In 2018, the Eskimos Green and Go Program generated \$156,000 in revenue and \$907,000 in expenses. As a result, taxpayers subsidized this service by \$751,000. It is not clear if the benefits provided by the service are equal to the subsidization amount.

This program is unique to Eskimo games. There are no similar on-going programs for any other sports organization or other highly attended events such as concerts or festivals that may cause congestion in public and community places around stadiums and arenas in Edmonton.

The Edmonton Eskimos organization estimates that approximately 55% of attendees use the Green and Go Program to attend home games.

### Heritage Festival

ETS provides transit service to and from the Heritage Festival in Hawrelak Park. Attendees pay a reduced transit fare for this service.

In 2018, ETS received \$349,000 in revenue. The cost of providing the service was \$722,000. The service was subsidized by \$373,000.



### University of Alberta Staff LRT Program

The University of Alberta pays ETS an annual amount to allow their staff free LRT access between South Campus and Kingsway/Royal Alexandra Hospital stations.

In 2016, the University of Alberta estimated there to be approximately 9,000 eligible employees, of which approximately 960 use the LRT system for travel between the campuses. The revenue of the program has been adjusted only for inflation, from \$280,000 in 2016 to \$301,000 in 2018. The number of actual users and the purpose of travel (daily commute or work purposes) has not been monitored or measured.

In 2018, changes to the definition of a University employee resulted in an increase of individuals eligible for the program. Prior to this change, ETS had been receiving annual revenues of approximately \$175,000 through the ETS@work program. With this change, the U of A is no longer participating in the ETS@work program. Employees may still purchase passes or tickets for their transit needs through an outlet.

Without better management of program eligibility and use, ETS will not be able to determine if they are receiving appropriate value from the University of Alberta Staff LRT program.

### Optimizing non-fare revenue

The percentage of revenue received from fares has not significantly increased over the years. As such, it is prudent for ETS to optimize revenue from non-fare sources.

In Q4 2018, ETS commissioned a study to evaluate and strengthen the methods in which ETS generates non-fare revenue. In its report issued in December 2018, the consultant recommended that ETS hire a Revenue Generating Officer to focus on maximizing relationships and perform revenue-related research. According to the consultant's report, this Revenue Generating Officer should be able to garner a significant increase in the proportion of profit driven by non-fare revenue.



ETS is currently in the hiring process to fill a Revenue Generating Officer position.

Recommendation 4  
Enhance non-fare revenue strategies

#### Recommendation

We recommend the Branch Manager of ETS develop documented strategies to increase non-fare revenue and review existing non-fare revenue programs to ensure they meet their intended outcomes.



#### Responsible party:

Director, Business Integration and Workforce Development



**Accepted** by Management

#### Management Response

Management agrees and work was already underway. We commissioned a non-fare revenue study to explore opportunities for improving our non-fare revenue performance. Administration is in the process of filling the position that will be responsible for developing an action plan for greater attention to non-fare revenues.



#### Implementation:

June 30, 2020



## Defining Social Benefit

### Summary

It is common practice for transit systems throughout the world to offer a transit service that is at least partially subsidized by taxpayers. The rationale for subsidizing public transit service is to recognize the social, environmental, and economic benefits that all members of society realize from this service and to price the service so that it is attractive for urban travel.

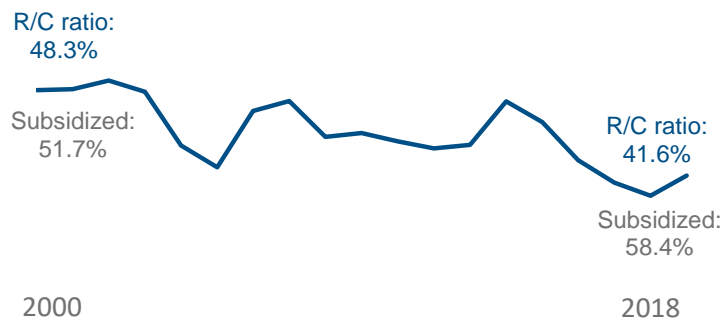
City Council has not quantified the level of social benefit and thus the level of tax levy subsidization. This results in inconsistent approaches to fare and non-fare revenue practices.

### R/C ratio (Revenue/Cost ratio)

The revenue/cost ratio (R/C ratio) is a calculation that identifies how much the transit service is subsidized.

In 2000, the R/C ratio was 48.3%, meaning that taxpayers subsidized 51.7% of the transit system. By 2018, the R/C ratio had dropped to 41.6%. The amount that taxpayers were subsidizing the transit system had increased to 58.4%.

*An R/C ratio of 0% means the ETS system is fully subsidized by the taxpayers. An R/C ratio of 100% means that ETS recovers all of its costs with no tax levy funding.*



The R/C ratio is used as a measure of the perceived social benefit the City of Edmonton receives from its transit services. The lower the R/C ratio, the more transit is subsidized, and the more social benefit the service is perceived as providing. If the transit system is seen as providing little or no social benefit, it should not receive significant tax levy subsidization, and users would be expected to pay the costs of the service they receive.



## No approved R/C ratio guidelines or target

A Council-approved target R/C ratio would inform ETS management about the level of subsidization that Council deems appropriate for the transit system. They could use this information to guide the development of fare pricing.

In 2017, Council approved a new Transit Strategy. It states that establishing a target for the R/C ratio would demonstrate what City Council considers an appropriate balance of the social and individual benefits of public transit. It would also help ensure that:

*...adjustments to fare levels be made in a manner consistent with the overall fare policy, rather than in response to specific issues.*

ETS management has also drafted a proposed fare policy and procedure which sets a target range for the R/C ratio of 40% to 45%. ETS and Council are anticipating a discussion on the societal benefits of public transit prior to approving a target R/C ratio. This discussion is set to occur in the Fall of 2019.

As indicated previously, an R/C ratio of 0% means the ETS system is fully subsidized by the taxpayers. An R/C ratio of 100% means that ETS recovers all of its costs with no tax levy funding. This is purely mathematical. In practice, when discussing the amount of social benefit it is important to note that under the current fare pricing schedule/products, transit service will always require subsidization. We estimated<sup>6</sup> that under the current fare schedule the maximum achievable R/C ratio is 59%. Therefore, at a minimum, the subsidy from the tax levy would be at 41%. This should be taken into consideration when discussing the acceptable amount of social benefit.

### Outstanding Audit Recommendation

In the Office of the City Auditor's 2016 *Edmonton Transit System Bus and Light Rail Transit Review*, we indicated:

*One way City Council can convey the value the City places on societal benefits is to set a target revenue/cost ratio for ETS to use when*

---

<sup>6</sup> This estimation is based on the assumption that all fare products are sold at the full fare amount. The other assumption is that the sales volume for all products remain the same regardless of price.



*developing its budget.*

At the time, we recommended that the ETS Branch Manager:

- a) Engage City Council in a discussion on the societal benefits of public transit;
- b) Establish a revenue/cost ratio target that conveys the value City Council places on societal benefits; and
- c) Establish a fare procedure that sets out the fare structure.

This recommendation is still outstanding.



## Assessing the Fare System

### Summary

For users, the ETS fare system is generally simple and quick. For ETS, the system is economical, and reliable, but does not effectively provide data for ridership, boardings, and fare evasion. There are also opportunities to improve the security of the fare system.

ETS management has indicated they expect to improve fare security and have better information as a result of the implementation of Smart Fare and SmartBus technology in 2020.

### Fare system components

The fare system is the key interface between a transit agency and its users. It directly affects the way in which users pay for the service they receive. The fare system consists of the following components:

- **Fare policy** - Principles, goals and constraints that guide and restrict a transit agency in setting and collecting fares.
- **Fare structure** - The special structure that supports the fare system (e.g., flat fare, fare-by-distance, transfers between modes, concession fares).
- **Fare product** - The range of tickets available (e.g., single, multi-ride, periodical) and associated business rules (e.g. concession availability, transfers).
- **Fare media** - The technology used to process ticket transactions (e.g., tickets, tokens, passes, cash, magnetic or smart cards).
- **Fare collection procedures** - Pay on entry, pay on exit, proof of payment, honour fare.
- **Fare collection equipment or technology** - Bare fareboxes, electronic registering fareboxes, turnstiles, and equipment to read magnetic stripes, smart cards or proximity cards.
- **Fare level or price** - The price of each fare product.





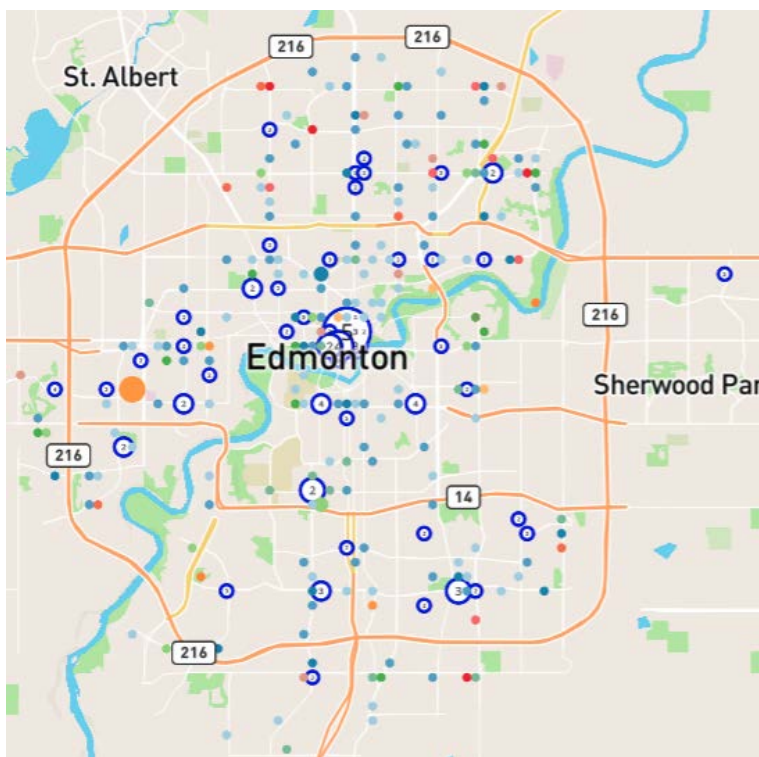
While these components are often discussed in isolation from each other, they are, in fact, highly inter-related, and changes in any one of these components of a fare system can require changes to some or all of the remaining components. Changes to the fare system have a direct impact on how ETS collects and manages its fare revenue.

## User experience

For ETS users, the pay-on-entry flat fare structure is simple, easy to understand, and easy to use.

The current ETS system is quick, allowing for fast transactions and boardings. There are transit ticket vending machines at all LRT stations as well as 330 sales distribution outlets throughout the City that sell fare products, and two online stores (one for the public and one for sales distribution outlets).

*There are 330 locations in and around Edmonton where transit users can purchase transit passes, tickets, and other fare products.<sup>7</sup>*



<sup>7</sup> Blue circles indicate multiple outlets in close proximity of each other. The different color dots indicate different types of sales distribution outlets (e.g., grocery stores, gas stations, independent small retailer).



Riders quickly board a bus by showing a pass or depositing money into a farebox. Riders quickly board the LRT by carrying a valid proof-of-payment.

The full integration of all the ETS modes and services, together with free transfers between services, makes the system easy and convenient for users.

## System administration

There is limited flexibility in the current system to try new or innovative pricing structures, to provide event-specific fare promotions, or to attract or address niche market opportunities. The fare structure would improve with more consistency and transparency in how fare discounts are determined.

ETS currently has a mix of closed and open fare systems that are efficient for riders, but do not provide a secure environment to limit fare evasion. Buses use a closed fare system where users must show proof of payment to the transit operator or drop cash/tickets into a low-tech fare box upon boarding. The LRT uses an open system where riders have to carry proof of payment, but are not required to show it upon boarding.

The current fare collection process and equipment is low-tech and manual. However, it is also cost-effective and reliable with low maintenance costs and established procedures.

## Information and Smart technology

The current paper-based fare products (e.g., tickets, passes) combined with low-tech “drop-in” fare boxes do not allow for efficient or effective data gathering. This inhibits ETS’s ability to get accurate data on ridership, boardings, and fare evasion.

ETS has indicated that the planned 2020 implementation of Smart Fare technology will provide opportunities for better information gathering and address many of the current issues with fare evasion (see Section Fare Evasion).



Additionally, ETS management expects Smart Fare to:

- Improve customer convenience through ease of use
- Decrease the need for physical fare products
- Increase revenue security
- Improve data on ridership and revenue; and
- Increase flexibility to accommodate new fare policies, programs and (regional) partnerships

Smart technology is expected to provide many benefits to the City. However, with the implementation of new systems, there is always a risk that the benefits of the existing system will be lost and stakeholder expectations may not be met. By continuously assessing the changes to the fare system, ETS can help ensure that it continues to meet the expectations of stakeholders.



## Performance Measures

### Summary

ETS reports on the R/C ratio and Ridership per Capita as two of its overall performance measures. Both of these are closely linked to ETS revenue.

Both performance measures have issues that limit their value in reporting performance and limit comparability of ETS's performance with other organizations.

### R/C ratio

The R/C ratio indicates the amount that transit service is subsidized by the tax levy.

Different public documents produced by ETS report different ETS cost amounts. It is not clear which of these documents should be used to calculate the R/C ratio. Changes to the expense amounts will change the R/C ratio and impact decisions based on its use.

ETS reports the R/C ratio publicly in the *ETS Annual Service Plan 2018-2019*. The calculation correctly used total revenue as an input. However, the accompanying information indicated it was calculated using user fees instead of total revenue. This impacts the understandability of the measure.

The R/C ratio is a commonly reported benchmarking measure to compare municipalities. However, different cities include different types of revenue in their R/C ratio calculations. For example, unlike Edmonton, Calgary includes fine revenue in their R/C ratio calculation and Ottawa includes gasoline tax revenue. R/C ratio benchmarking should be used cautiously to ensure that the comparisons are valid.



## Ridership per capita

Ridership per capita is a measure of estimated transit use by the city's population. It is calculated by dividing the estimated ridership number by the City's population numbers.

Ridership is calculated using sales numbers. Based on published information, the 2015 and earlier ridership number indicated it was calculated using sales at the beginning of the month. From 2016 and onwards, it was changed to using sales numbers at the end of the month. Management indicated it is an error in the labelling and ridership has been consistently calculated using sales numbers at the end of the month. This labeling error should be corrected so that a reader is not confused as to whether there was a methodology change. The source of the population number should also be clearly stated.

ETS has a ridership per capita target reported on the City's public dashboard indicating that the target of 105 rides per capita in 2018 is 'almost met'. A status is calculated utilizing linear projections to 2018, which use the available data from 2014 (101.7 rides/capita) through 2017 (91.6 rides/capita). There appears to be a downward trend thus it is unclear if this target should be classified as 'almost met'.

In 2019 a report to Executive Committee indicated that a target was to be determined. As a result, it is not clear what the target is.

### Recommendation 5

Document performance measures methodology

#### Recommendation

We recommend the Branch Manager of ETS document, review, and consistently use the definition and calculation methodology of the R/C ratio and Ridership per Capita measures.



#### Responsible party:

Director, Business Integration and Workforce Development



Accepted by Management



### **Management Response**

Administration is revising the organization's key performance metrics through the Enterprise Performance Management project. The project, once completed, will result in key performance indicators for the corporation with strong data definitions, clear reporting requirements and targets.



### **Implementation:**

December 15, 2019



## Fare Evasion

### Summary

Fare evasion causes a loss of fare revenue. Fare evasion is when passengers do not pay their fare, or pay less than the correct fare. ETS does not currently have an effective system to manage fare evasion.

### Inaccurate evasion rates

Edmonton Transit measures fare evasion rates on the LRT system on a monthly basis and produces a report on an annual basis. The fare evasion rate is determined based on the number of fare evaders identified during LRT fare evasion checks as a percentage of total riders checked at selected LRT stations.

#### LRT fare evasion

Based on fare inspection data from 2014 to 2018, the fare evasion rate for LRT is between 2.15% and 2.73%.

Fare evasion rates are not available for buses as the City does not conduct regular fare evasion checks on buses. In our 2007 audit follow up report<sup>8</sup>, ETS determined that it was inefficient to continuously monitor fare evasion on the bus system because the presence of an Officer on a bus deters a potential offender from boarding the bus. However, Transit Peace Officers do attend to various incidents that occur on buses.

As a result of this mixed system, fare evasion numbers are not accurate, consistent, or complete. Calculating or estimating ETS fare evasion under the current fare system is difficult, labour intensive, and costly. As a result, we also cannot estimate the revenue loss resulting from fare evasion.

### Inaccurate ridership data

Because ETS calculates ridership numbers based on the number of passengers who pay instead of the number of passengers who ride, fare evasion reduces the calculated ridership number reported by ETS.

ETS's yearly ridership numbers have shown a slight decrease between 2014 and 2018. However, it is possible that ridership

---

<sup>8</sup> ETS Fare Evasion Review Follow Up – November 1, 2007 – Recommendation 4



## Ineffective fare evasion inspection program

only appears to be declining, if fare evasion is worsening. ETS currently does not have an effective way of measuring actual number of passengers riding buses and LRT. ETS has installed Automatic Passenger Count technology on buses. However, roughly 40% of the data is determined to include errors and thrown out, thus this system currently does not provide reliable data.

Fare evasion is detected through the fare inspection program. There are a number of issues that limit its effectiveness.

Transit Peace Officers<sup>9</sup> stated that fare evasion is one of many priorities that they must balance in the performance of their jobs. A key priority for Transit Peace Officers is to address safety calls and concerns on the City's transit system. They also have numerous other duties including but not limited to enforcing municipal bylaws and provincial statutes, investigating complaints, transporting fare media and cash, collecting ETS fares and managing crowds at special events.

Currently, there is a standard operating procedure that describes how the Transit Peace Officers are to conduct fare evasion checks on the LRT. However, there is no document that provides direction on where, when, why, and how many fare evasion checks should be completed.

Transit Peace Officers focus their fare evasion work on conducting checks at LRT stations and on the LRT. In the ETS – Annual Security Summary report, 287 fare evasion checks were conducted at LRT stations. This amounts to less than one per day. The report did not specify how many checks were conducted on an LRT vehicle.

Transit Peace Officers currently do not conduct regular fare evasion checks on buses. There are different interpretations within Administration of the City's Bylaw<sup>10</sup> as it pertains to buses being considered a proof of payment area. ETS is in the process of putting proof of payment notices on buses by September 2019 to clarify expectations.

---

<sup>9</sup> Since 2018, the Transit Peace Officers no longer reside in ETS, but in Citizen Services (Community Standards & Neighborhoods Branch).

<sup>10</sup> City of Edmonton Bylaw 8353 – Conduct of Transit Passengers (November 22, 2011) – Section 2(i) Proof of Payment Area.





## Fare evasion on buses

There are a number of other practices that increase the risk of fare evasion on ETS buses. There is currently not an effective method of ensuring riders pay the appropriate fare upon boarding.

Buses are susceptible to fare evasion when the transit operator takes a break at a transit centre and leaves a door open. This removes the authority of the transit operator to oversee fare payment.

*As shown here, a bus is left open for riders to board while the transit operator takes a break.*



## Misuse of fare products

Not all fare evasion is as simple as an individual boarding a bus or train without paying the appropriate fare. There are currently weaknesses in the transit fare system that allows individuals to misuse transit fare programs.

ETS and Corporate Security monitor and investigate the misuse of transit passes, tickets and programs regularly. They also monitor the resale of transit passes and tickets on social media and other platforms. It is not possible to estimate the amount of revenue that is lost through misuse of fare products as there are many online platforms and other less public methods of sale such as person-to-person.

## Smart technology and fare evasion

ETS is planning a phased implementation of Smart Fare technology in 2020. ETS has indicated that they expect the introduction of Smart Fare to allow for better fare monitoring, inspection, and reporting. As a result of these changes, ETS management also expects a reduction in fare evasion and misuse of fare products.

ETS may not see a reduction in fare evasion if proper controls are not implemented. These include more effective ways of preventing and detecting fare evasion on buses and the LRT.



Recommendation 6  
Mitigate fare evasion

**Recommendation**

We recommend that the Branch Manager of ETS, in collaboration with Citizen Services Department, develop, document and implement strategies to mitigate fare evasion.



**Responsible party:**

Branch Manager of ETS



**Accepted by Management**

**Management Response**

Administration will document procedures and expectations related to fare evasion monitoring.



**Implementation:**

December 15, 2019

U-pass

The U-Pass provides eligible students enrolled at participating local universities and colleges with transit services in Edmonton and neighbouring communities. The program is funded through mandatory fees that eligible students pay their institution each term.

U-Passes are stickers that are applied to a student identification card. Stickers have been listed for resale on online media and other platforms. Asking prices vary but can be for the full \$170 amount paid by students that permits full ETS transit use for 4 months. The market for these passes may include transit users who would normally have paid \$97 for a monthly pass. As a result of these resales, ETS may lose revenues from legitimate pass sales.

It is unclear how many U-Pass stickers are being resold and how much revenue is being lost by ETS due to this practice.



### U-Pass Resale

In January 2019, Corporate Security requested an online resale site to remove 62 advertisements for U-Pass stickers.

In August 2019, the City has requested that educational institutions help enable stronger U-Pass controls. By partnering with the institutions, there is an opportunity to reduce resales and improve the ability to identify individuals reselling their U-Passes.

Each U-Pass sticker has a serial number. The City tracks which serial numbers go to specific post-secondary institutions. By tracking which sticker is provided to each student, the institution would be able to identify resellers when the City provides a list of resold or confiscated pass serial numbers. Although institutions are not able to release the reseller information to the City due to privacy legislation, they may be able to address the behavior through their own institutional student behavior codes and regulations.

Additionally, the ability of students to resell their U-Pass stickers could be reduced by having institution staff place the U-Pass sticker directly on the student ID card when it is provided to the student. Stickers are tamper proof, so the ability of a student to remove the sticker and then resell it is more difficult than when the student is handed an unused sticker that they are expected to apply themselves.

Controls can also be improved if students are required to present their expiring, used sticker prior to picking up a new one for the next term (applicable to those that already have stickers).

Recommendation 7  
Improve U-Pass controls



### Recommendation

We recommend that the Branch Manager of ETS formally request institutions to implement:

- Processes to hold students accountable for misuse of U-Pass stickers.
- Additional control measures to prevent the misuse of U-Pass stickers including process changes relating to the distribution of stickers.



**Responsible party:**

Branch Manager of ETS

**Accepted** by Management



**Management Response**

Management will formally request that participating institutions improve controls to hold students accountable for misuse of U-Pass stickers and implement additional control measures to prevent the misuse of U-pass stickers including process changes to the distribution of stickers.



**Implementation:**

September 30, 2019



## Managing Inventory of Fare Products

### Summary

Fare products are the range of tickets and passes available (e.g., single, multi-ride, periodical). Fare media is the technology used to process ticket transactions (e.g., tickets, tokens, passes, cash, magnetic or smart cards). The sale of fare products and the fare media used represent the primary way that fare revenue is received by ETS.

There are significant issues with the safeguards around fare products which increase the risk of error, mismanagement and fraud.

### Non-compliance with Administrative Directive

The Fare Media Distribution Centre (FMDC) has not protected fare products with the rigour required by the Administrative Directive and Procedure for the *Handling of City Money*.

According to the Handbook for the Handling of City Money:

*Cash-like products, such as transit passes and tickets, can have considerable monetary value, and require the same secure storage facilities as provided for Cash.*

Despite this definition, the FMDC had not been considered a cash site and the ETS Branch and Treasury Management Branch are working to rectify this. Inadequacies in the vault, storage facilities, and staff training with respect to appropriate handling procedures were identified as part of a recent Treasury Management review.

The Treasury Management review was the result of a Fare Product Investigation as described on the following page.



### Fare Product Investigation

In late 2017, Corporate Security was involved with an investigation by the Edmonton Police Service relating to a box of counterfeit U-Pass stickers seized by the Canada Border Services Agency. In early 2018, Corporate Security requested Treasury Management conduct a review of the controls over ETS fare media. This review of internal controls identified a number of control weaknesses over the fare products throughout the process of printing, transportation, storage, distribution, and destruction.

In addition, there was approximately \$344,000 worth of passes and tickets at the FMDC that were unaccounted for.

Between June 2018 and October 2018, the Office of the City Auditor and Labour Relations conducted a joint investigation into the unaccounted fare media products. Due to the control weaknesses in internal processes and the lack of documented procedures, the investigation was unable to determine who internal or external was responsible for the unaccounted fare media products.

The control weaknesses and gaps in internal processes put the City at risk of mismanagement, error, and fraud. ETS is working with Treasury Management to address the control weaknesses identified.

### Outstanding weaknesses

Since the fall of 2018, ETS has taken significant steps to work towards compliance with this Directive and addressing the identified control weaknesses. A number of control weaknesses are still in the review process and have not been fully addressed. Management has indicated that these recommendations are actively acted upon and is scheduled to be completed by Quarter 3 of 2019. Until such time, there is a residual risk that an element of risk of theft, fraud, and misuse of fare media remains.

During our review of the progress ETS is currently undertaking to address the recommendations, we have worked with ETS in identifying further gaps that exists. These areas include controls over ordering of inventory, unsold fare products returned mid-month, destruction of fare media, and the design



of U-Pass stickers.

The amount of fare media inventory that is ordered by ETS decreased in 2019; however excess inventory<sup>11</sup> remains a concern. For the period of January to April 2019, total value of excess inventory was estimated at \$9.9 million. In 2018, 24% - 95% of printed fare media (depending on type of fare media) was excess inventory and marked for destruction. Excess inventory increases risk by having more products to handle, track and destroy. It's also an unnecessary expense.

Unsold fare media returned by sales distribution outlets, including monthly passes and transit tickets that are not fully expired, are not voided even though they still have a resale value. This creates an unnecessary theft temptation for individuals who have access to these returned products.

The process to destroy unused fare media has been drafted; however it has not been finalized. No fare media has been destroyed since June 2018. Although many fare media expire and have no value, others may still be live for a period of time and would still have use or resale value.

The design process for U-Pass stickers has not been documented. U-Pass stickers have security features and design elements that help prevent counterfeiting and fraud. Without a documented design process, printed stickers may not have the necessary features, or may not be handled in a secure manner.

#### Recommendation 8

Improve safeguards for fare media

#### Recommendation

We recommend that the Branch Manager of ETS improve the safeguarding of fare media by:

- Addressing key control weaknesses identified by the internal control review and the investigation.
- Working with Treasury Management to ensure documented procedures are in accordance with the Cash Handling Handbook and included as site specific procedures to the Handbook.

<sup>11</sup> Excess Inventory – Total of undistributed products at the FMDC plus unsold products returned from the outlets.



- Ensuring employees receive training on new procedures and sign an acknowledgement form to indicate their agreement to comply with the procedural documents.



**Responsible party:**

Director Business Integration and Workforce Development



**Accepted** by Management

**Management Response**

Administration is addressing the internal control weaknesses identified during Treasury Management's internal control review and working with Treasury Management to ensure documented procedures are in accordance with the cash handling handbook.



**Implementation:**

March 31, 2020



## Conclusions

### What did we find?

In this audit, we assessed the efficiency and effectiveness of ETS revenue management processes. We conclude that there are multiple areas for improvement resulting in eight recommendations.

The growth in the cost of providing transit services has outstripped the growth in revenue over the years. Although transit has always been partially subsidized by taxpayer funds, it is more subsidized by taxpayers today than in the past.

Since 2014, ridership and revenue have leveled off. In addition, the percentage of ETS revenue generated by fares has declined. This emphasizes the importance of sound revenue management and optimizing revenue from other sources.

Improvements can be made in the ETS governance framework related to revenue management. The weaknesses identified can impact the ability of Council and management to make well-informed decisions related to revenue management.

The City can improve on the traceability on how transit fares are developed. There is a lack of guidance in existing policies and procedures to ensure the fares are set in a methodological way. In addition, ETS uses a spreadsheet to develop a fare schedule for Council approval that contains assumptions and inputs that are not documented and supported. Furthermore, the process is focused on achieving an overall revenue goal as per the City's Operating Budget Process rather than a target Revenue/Cost ratio.

ETS needs to improve on their strategy to optimize non-fare revenue opportunities and guide decisions related to service contracts and non-fare programs. This includes determining whether non-fare programs are meeting their intended objectives.

City Council has not quantified the level of social benefit – and thus the tax levy subsidization – that is acceptable for Edmonton's transit system. This results in inconsistent approaches to fare and non-fare revenue practices.

For users, the ETS fare system is generally simple and quick. For ETS management, it is economical and reliable, but doesn't

provide good data. This is expected to change with the implementation of Smart Fare in 2020.

ETS reporting on the Revenue/Cost ratio and Ridership per Capita are not reported or calculated consistently, which limits their value in reporting ETS performance and comparability of ETS with other organizations.

Fare security throughout the fare system has an impact on revenue. Fare evasion, misuse of fare products and the misappropriation of fare products impact the risk of loss of revenue.

ETS does not currently have an effective system to manage fare evasion.

Internal controls over fare media products have significantly improved since an internal control review and investigation were conducted in the Summer of 2018. However, additional actions are required to ensure that fare media is appropriately safeguarded.

## Appendix – ETS Fare Schedule 2014 to 2019

Approved Fares							
Type	2014 Fares	2015 Fares	2016 Fares	2017 Fares	2018 Fares	2019 Fares	2019 Proposed <sup>12</sup>
Adult and Senior Cash Fare	\$ 3.20	\$ 3.20	\$ 3.25	\$ 3.25	\$ 3.25	\$ 3.50	\$ 3.50
Adult Ticket Pack (10)	\$ 24.00	\$ 24.00	\$ 24.75	\$ 25.50	\$ 26.25	\$ 26.25	\$ 27.50
Youth/Senior Ticket Pack (10)	\$ 21.00	\$ 21.00	\$ 21.50	\$ 22.25	\$ 23.00	\$ 23.00	\$ 17.75
U-Pass (Fall Term)	\$ 155.00	\$ 162.50	\$ 170.00	\$ 170.00	\$ 170.00	\$ 175.00	\$ 175.00
Route 747 Airport Monthly	\$ 100.00	\$ 100.00	Not listed	Not listed	\$ 90.00	\$ 90.00	\$ 90.00
Day Pass	\$ 9.00	\$ 9.00	\$ 9.25	\$ 9.50	\$ 9.75	\$ 9.75	\$ 9.75
Monthly Adult Pass	\$ 89.00	\$ 89.00	\$ 91.50	\$ 94.25	\$ 97.00	\$ 97.00	\$ 100.00
Monthly Youth Pass (general public)	\$ 69.00	\$ 69.00	\$ 71.00	\$ 73.00	\$ 75.00	\$ 75.00	\$ 70.00 <sup>13</sup>
Monthly Youth Pass (school boards)	\$ 69.00	\$ 69.00	\$ 71.00	\$ 73.00	\$ 75.00	\$ 75.00	\$ 70.00
Monthly Post-Secondary	\$ 81.00	\$ 81.00	\$ 83.50	\$ 86.00	\$ 88.50	\$ 88.50	N/A <sup>14</sup>
Monthly Senior	\$ 14.00	\$ 14.00	\$ 14.50	\$ 15.00	\$ 15.50	\$ 15.50	\$ 35.00
Monthly Low Income	\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
Annual Senior	\$ 125.00	\$ 125.00	\$ 128.75	\$ 132.50	\$ 136.50	\$ 136.50	N/A
Annual Senior Low Income	\$ 54.00	\$ 54.00	\$ 55.75	\$ 57.50	\$ 59.25	\$ 59.25	Free

<sup>12</sup> ETS presented this 2019 proposed fare schedule in the Fall of 2018 during budget deliberations. Council has only approved the increase in the adult cash fare for 2019 and deferred the remainder to the Fall of 2019.

<sup>13</sup> ETS is proposing to increase the youth age to 24.

<sup>14</sup> ETS is proposing to eliminate the Monthly Post-Secondary Pass and the Annual Senior Pass.