

New Transit Projects – Smart Bus Technology

Recommendation:

That Transportation and Public Works Committee recommend to City Council:

That up to \$3.4 million of capital funds be reallocated from Projects 66-1665 Transit Priority Corridors and 66-1420 Transportation Computer Equipment/Applications to Transit Smart Bus Technology Pilot Project 66-1293.

Report Summary

This report includes the business case, opportunities, benefits and funding strategy for implementing all or some of the capabilities associated with Transit Smart Bus Technology. The pilot may affect up to 50 buses and begin in 2011.

Previous Council/Committee Action

At the November 9, 2010, City Council meeting the following motion was passed:

That Administration provide information on all four projects outlined in item 2.1.C, to Transportation and Public Works Committee, for further consideration of the funding requests.

Report

Item 2.1.C referred to in the above motion covers the following projects:

- 66-1665 - Transit Priority Corridors (Municipal Sustainability Initiative)

- 66-1420 - Transportation Computer Equipment/Applications (General Financing)
- 66-1293 – Smart Bus (Municipal Sustainability Initiative)
- 66-1293 – Smart Bus (General Financing)

The above projects are detailed in the November 9, 2010, Supplementary Budget Adjustment.

What is a Smart Bus?

It refers to the addition of enhanced information and communication technologies in order to provide better information for customers, enable better management of on-road bus service, and collect data that assists transit planners when designing service.

Why Smartbus?

Between 2000 and 2009, annual ridership increased from 43 million to almost 68 million (60 percent increase), service hours increased from 1.56 million to 2.08 million (30 percent increase) and passenger concerns increased from 8,327 to 13,616 (60 percent increase). However, staff positions to support and manage this service and customer concerns have increased from 25 to 30 (20 percent increase). Staffing has not kept pace with the growth and complexity of the increased workload. Technology was identified as the most efficient and effective way to enable the existing staff to meet the new challenges.

Smart Bus

- allows riders access to real-time schedule information through mobile devices, the web, etc. reducing the need to call 311

- enables the transit staff to quickly identify service problems; prioritize the most critical issues and respond to improve service reliability
- permits maintenance staff to monitor and maintain the bus fleet in a more efficient and effective manner

What is Transit Smart Bus Technology?

New technologies build on the existing security cameras, automated passenger and other advancements in modern transit buses. They include -

- Automatic Vehicle Location
- Computer-Aided Dispatch for real-time service monitoring
- On-board Mobile Data Terminals for data collection and communication
- Real-Time Passenger Information Systems
- Automated Stop Announcements
- Automated Vehicle Monitoring

Why implement now?

Working to improve public transit accessibility through Automated Stop Announcements

Edmonton Transit System (ETS) was an early adopter of low-floor buses, as well as numerous other accessibility features across the system including a fully accessible LRT with Automated Stop Announcements. Various special needs groups have been advocating Automated Stop Announcements on transit buses as the next step in providing 'universal access' for all users.

Recent rulings by both the Ontario Human Rights Commission and the Canadian Transportation Agency require public transit operators in Ontario and federally regulated transit agencies to implement Automated Stop

Announcements systems. In Manitoba, the Human Rights Commission is encouraging Winnipeg Transit to implement Automated Stop Announcements systems. Attempts by Ottawa and Winnipeg to have drivers announce bus stops for passengers have not proven successful.

Meeting Rider Expectations

Public transit riders are predominately a young demographic and they expect easy access to information on the status of the service.

Size and Scope of Edmonton Transit's Fleet

Edmonton's transit fleet and the geographic area that it serves increasingly dictate the need for tools to efficiently identify service problems (e.g. service delays, security issues, vehicle breakdowns, bus routes requiring schedule adjustments, etc).

Already Proven Success in DATS

ETS Disabled Adult Transit Services (DATS), have realized significant service improvement through the adoption of new technologies. DATS has used onboard vehicle computers and global positioning systems since 2005.

Costs

- Based on the planned 2011 fleet size of 959 buses, the estimated capital budget expenditure for a fleet-wide implementation is \$32.7 million to cover all Transit Smart Bus Technologies that were described earlier in this report.
- The annual impact on the operating budget is estimated to be \$4.3 million.

- The Transit Smart Bus Technology pilot cost is estimated at \$3.4 million in capital budget expenditures.

Benefits

They include -

- **More accurate and comprehensive customer information** – the public would have access to real-time transit information in more formats making their travel easier and more predictable.
- **More reliable and safe transit service** – transit staff would be able to monitor service in real-time and take action on problems to minimize disruptions and delays while maximizing the safety of passengers and operators.
- **Improved ability to manage a large and growing asset** – the bus fleet is approaching 1,000 in size. Being able to locate a specific bus in a large geographic area with a security incident, maintenance problem or an unsafe operation is important.

A detailed benefits summary is provided in Attachment 1.

Funding Strategies

\$3.4 million of existing capital funding includes \$2.5 million from (66 -1665) Transit Priority Corridors, and \$0.9 million from (66-1420) Transportation Computer Equipment/Applications.

This level of funding supports the pilot on 50 transit buses. A request to fund a system-wide rollout can be submitted during the 2012 - 14 Capital Budget process.

A general implementation plan is provided in Attachment 2.

Option Automated Stop Announcements only

This is the most critical item of the new technologies given the need to ensure 'universal access'. It requires key common components to be installed in the bus that also support other Smart Bus technologies. The capital expenditure for this item to equip the entire bus fleet is estimated at \$11.5 million with an annual operating cost of \$1.2 million. An Automated Stop Announcements on the 50 buses in the pilot is estimated to cost \$2 million to implement.

There are disadvantages to only doing this item -

- Significant one-time costs are incurred implementing single point solutions.
- This solution only provides Automated Stop Announcements and none of the other benefits.
- It would be more expensive to add the other features later.

Budget/ Financial Implications

\$3.4 million of funding for the Smart Bus pilot is available for reallocation from within two approved Transportation capital profiles: 1) Transit Priority Corridors - \$2.5 million of MSI (profile 66-1665) and 2) Transportation Computer Equipment/Applications - \$0.9 million of Pay-As-You-Go financing (profile 66-1420)

The estimated cost for the implementation of the Smart Bus technology to the entire transit fleet is \$32.7 million with the Automated Stop Announcements only option being \$11.5 million. The funding will be reviewed as part of the 2012-2014 capital budget.

The annual operating budget impact is primarily data transmission charges which for the pilot project is expected to be \$20,000 annually commencing in 2012.

Projects not being undertaken/deferred

- Project 66-1420 – Transportation Computer Equipment/Applications
Reduced the scope for DATS Mobile Data Terminal replacement. A new approach means we no longer need to replace the related software.
- Project 66-1665 Transit Priority Corridors
In 2010 and 2011, major transit corridor initiatives were originally contemplated for areas that could be affected by future LRT construction (e.g. Stony Plain Road, Bonnie Doon Traffic Circle). Given the potential initiation for the LRT projects, consideration of transit priority measures in these corridors will be deferred.

Corporate Outcomes

This initiative is aligned with the following City Council's Strategic Goals:

- The Way We Move – Shift Edmonton's Transportation Modes;
- The Way We Green – Preserve and Sustain Edmonton's Environment;
- The Way We Live – Connecting Citizens

Justification of Recommendation

This project begins to implement Automated Stop Announcements on the bus fleet while creating an opportunity to assess a broader range of Transit Smart Bus Technologies for future deployment across the system when funding becomes available.

Attachments

1. Smart Bus Benefit Summary
2. Smart Bus Initiative Implementation Approach
3. Smart Bus Profile 66-1293

Others Reviewing this Report

- L. Rosen, Chief Financial Officer and Treasurer
- D. H. Edey, General Manager, Corporate Service Department