

LRT Station Winterization

Recommendation

That the September 30, 2020 Community and Public Services Report CR_8130, be received for information.

Previous Council/Committee Action

At the September 30, 2020, Community and Public Services Committee meeting, the following motion was passed:

That the September 30, 2020, Integrated Infrastructure Services report CR_8130, and City Operations report CR_7653, be postponed to the October 14, 2020, Community and Public Services Committee meeting.

At the February 19/21, 2020 City Council meeting, the following motion was passed:

That Administration provide a report on potential improvements to help “winterize” the South Campus/Fort Edmonton LRT Station and other stations, as required, to improve transit user comfort and safety during extreme weather events, along with a high-level cost of necessary improvements.

Executive Summary

This report provides a current state overview of the station design for the South Campus/Fort Edmonton LRT Station and other existing LRT stations on the Metro and Capital lines. Potential opportunities to improve transit user comfort and safety for extreme weather events, along with high-level costs, are explored.

Report

The existing LRT stations on the Metro and Capital LRT lines have been built in stages and met the LRT design guidelines that were in place at the time of design and construction. LRT design guidelines evolve over time to reflect changes in industry design standards, best practices, and the City’s urban integration vision; the heating of stations is addressed within the guidelines.

Administration reviewed LRT stations to identify potential opportunities to further enhance the safety and comfort level of transit users for extreme cold weather events,

specifically, heated space and protection from the elements (i.e., wind, rain, and snow).

The existing Metro and Capital lines have a total of 18 stations. Administration reviewed the 10 stations that are ground-level; underground stations were excluded because they are fully protected from the elements. NAIT and Stadium stations were also excluded from the review because they are temporary locations and undergoing rehabilitation. Attachment 1 outlines the current state of the existing LRT stations.

Ground-level stations are classified as follows:

1. **Ground Only Stations** (McKernan/Belgravia, South Campus/Fort Edmonton, MacEwan and Kingsway/Royal Alexandra Hospital):

These stations show the greatest variety in the range of shelters offered to transit users from semi-enclosed/no-door (McKernan/Belgravia), semi-enclosed (South Campus/Fort Edmonton) to fully enclosed (Kingsway/Royal Alexandra Hospital).

Although these stations offer overhead protection from rain and snow, some stations, such as the South Campus/Fort Edmonton station, are located in open areas and are more susceptible to wind and potential passenger discomfort. This can become more prevalent as ridership increases and more passengers are waiting to board trains on the platforms. In these cases, it may be appropriate to install additional protection from the elements to decrease passenger discomfort. Protection may include enclosed and/or heated spaces or wind barriers.

2. **Ground + Elevated Concourse** (Belvedere, Century Park, Southgate and Health Sciences/Jubilee):

These stations provide the greatest weather protection for transit users. The platforms are spacious and provide overhead protection, and the elevated concourses offer a heated area for transit users to wait and monitor the arrival of trains. Administration considers improving these stations a low priority item because most of the stations have heated waiting rooms on the track level as opposed to the Ground Only Stations that have no or limited heating.

3. **Ground + Underground Concourse** (Coliseum and Clareview):

One of the major problems characterizing these two stations is the limited heated enclosures on the platform level. Underground heated concourses are available for transit users with audible announcements for incoming trains

above, however it does not allow for easy visual monitoring of the incoming trains above. As such, transit users tend to wait in the heated vestibule of the escalators/stairs on the platform level. A potential solution is to extend the heated vestibule area at the platform level to increase the waiting room for transit users, instead of building another heated enclosure.

Options for Winterization

Winterizing LRT stations is in alignment with the City of Edmonton's WinterCity Strategy and Crime Prevention Through Environmental Design (CPTED), playing a transformative role in connecting Edmontonians to the community.

The McKernan/Belgravia and South Campus/Fort Edmonton stations were designed and built in 2009 as part of the South LRT Extension and have both different ridership values as well as different site context making their challenges both unique. However, the current state reviews indicate that the South Campus/Fort Edmonton and McKernan/Belgravia stations have some similar attributes: the platforms have no walls and are exposed to the wind, and have semi-enclosed waiting shelters. The open entry of the waiting shelters allows for heat loss and reduces wind protection.

Winterization options for these two stations include:

Option 1: Fully enclose existing waiting shelters

Fully enclosing the existing semi-enclosed waiting shelters would involve adding doors and ceilings, and providing additional heating. The addition of doors needs to be reviewed in more detail because doors could impact accessibility and platform circulation. In order to ensure summer functionality, operable top-windows or similar measures that would assist in natural stack ventilation would be required.

The estimated capital cost to heat and enclose the existing waiting shelters on the South Campus/Fort Edmonton and McKernan/Belgravia stations is approximately \$150,000 to \$300,000 (-/+50%). There will also be ongoing operational costs for increased utilities and maintenance.

It is also possible to heat and enclose all existing waiting shelters on the 10 ground-level stations. The rough order of magnitude capital cost estimate for this is \$1.0 to \$1.5 million (-/+50 %).

Option 2: Remove existing waiting shelters and install larger shelters

This option involves removing existing waiting shelters and replacing them with enclosures designed to better protect transit users from wind, rain, and snow. The size of the new heated shelters would be based on the ridership increment analysis from

2009 to the current year, along with standing and sitting ratios. To ensure functionality during the summer and transition seasons, a top-window mechanical ventilation system would be installed. Air conditioning the shelters is not recommended due to its capital and operating costs.

For this option, the South Campus/Fort Edmonton and McKernan/Belgravia stations will require the replacement of four existing shelters (one at McKernan/Belgravia and three at South Campus). The rough order-of-magnitude capital cost estimate is:

- South Campus/Fort Edmonton: \$900,000 to \$1.5 million (-/+ 50%)
- McKernan/Belgravia: \$300,000 to \$500,000 (-/+ 50%)

Option 3: Fully enclose station platforms

This involves removing the existing platform structures and constructing a new platform with walls and a roof. Preparing a capital cost estimate for this option would require a detailed analysis and conceptual design that is not currently funded.

Corporate Outcomes and Performance Management

Corporate Outcome(s): Edmontonians use public transit and active modes of transportation			
Outcome(s)	Measure(s)	Result(s)	Target(s)
Edmontonians use public transit and active modes of transportation.	Transit Ridership per capita	89.6 (2018)	105 (2019)
The City of Edmonton's operations are environmentally sustainable	Corporate Measure: City operations greenhouse gas emissions	269,894 tonnes of carbon dioxide equivalents (2016)	179,228 (2018)

Attachments

1. Current State Review of Existing LRT Stations

Others Reviewing this Report

- G. Cebryk, Deputy City Manager, City Operations
- S. McCabe, Deputy City Manager, Urban Form and Corporate Strategic Development
- C. Owen, Deputy City Manager, Communications & Engagement
- B. Andriachuk, City Solicitor