

MASS TRANSIT: PLANNING FOR 1.25 MILLION PEOPLE

RECOMMENDATION

That the February 15, 2022, Urban Planning and Economy report UPE00342, be received for information.

Report Purpose

Information only.

The intent of this report is to inform Urban Planning Committee of the mass transit network planning for a population of 1.25 million, as well as next steps for implementation.

Executive Summary

- The City Plan envisions a vibrant and prosperous city with an integrated transportation network, providing residents with convenient and equitable options.
- Foundational to this network is a robust transit system, including an evolved mass transit network that anchors an overall mobility system which connects all areas of the city.
- This report summarizes a critical implementation piece that advances The City Plan's Systems and Networks.
- Administration conducted a technical study to identify a mass transit network that supports The City Plan concept at a population of 1.25 million people.
- The findings of the mass transit technical study identify a network that includes the strategic expansion of LRT routes in consideration of additional mass transit options that include bus rapid transit, limited stop and frequent routes.

REPORT

The City Plan envisions a vibrant and prosperous city of two million people with half of future population growth occurring in established areas. The foundation of our future urbanized city is an evolved mass transit network which supports nodes and corridors. In turn, the nodes and corridors provide the necessary urban structure to direct future investment and manage ongoing change. Ultimately, these combine to support greater community equity, opportunity and connectedness. Building off of the Bus Network Redesign, a well-integrated mass transit network

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will provide Edmontonians with access to safe, convenient and reliable service with faster journey times, and contribute to reaching a target in which 50 per cent of all trips are made by transit and active transportation. The mass transit network for two million people is illustrated in Attachment 1.

The transit network will continue to adapt in response to emerging technologies and mobility services, and will increasingly move towards a low carbon operation. Investing in a complete transit network, with mass transit serving as the foundation of that system, will be an increasingly important tool for both city building and climate resilience as Edmonton grows.

As part of The City Plan implementation, Administration completed a mass transit technical study that identifies a mass transit network to support a population horizon of 1.25 million people. This mass transit technical study is the first step to identify opportunities and constraints for future mass transit development and is an important part of Edmonton's journey to achieve its goals for greenhouse gas emissions reductions.

Project Background

Success Factors for 1.25 Million Population Horizon

Critical success factors, identified from The City Plan mass transit study and incorporated into this planning work, are key to support the mass transit network at a population of 1.25 million:

- **Mass Transit Priority:** This refers to the reallocation of existing road right-of-way in order to create dedicated transit right-of-way. It also refers to the introduction of transit priority measures, including additional transit signal priority and semi-exclusive right of way. These measures represent a significant shift in approach that will help to increase capacity, improve reliability, reduce travel times, and provide opportunities for service to respond to ridership growth.
- **Future Development Opportunities:** Mass transit succeeds when it is supported by future land use development and intensification, particularly in priority growth areas. Transit-oriented development in nodes and corridors, supported by mass transit stops and stations, should influence when future mass transit extensions are built.
- **Filling Network Gaps and Parallel Corridors:** Parallel mass transit routes can balance passenger loads from overloaded mass transit routes. Mass transit routes can also fill network gaps and improve accessibility to transit.
- **Parking Policy and Mobility Hubs:** Parking pricing and availability, including strategic application of Park and Ride and the development of mobility hubs, will allow the mass transit network to be well connected with other travel options.

The scale with which these mass transit success factors are applied will have a direct effect on climate change goals given the impact of the mobility system on greenhouse gas emissions.

Mass Transit Network to Support 1.25 Million Population

This study identifies the mass transit network required to support The City Plan concept for 1.25 million people, as illustrated in Attachment 2. This network is based on the Bus Network Redesign and LRT expansion and aims to increase transit ridership and mode share in line with the City

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Plan concept. Specific terms used to describe mass transit or the types of service are further defined in Attachment 3.

City-Wide Routes

City-wide mass transit networks include LRT and bus-based mass transit routes to provide the foundation of public transit and create city-wide mass transit circuitry connecting all quadrants. The LRT network provides key city-wide routes. High-floor LRT runs mainly along exclusive rights-of-way while the urban-style, low-floor Valley Line will operate in a dedicated right-of-way with more integration into the surrounding streetscape, communities, and destinations.

Bus rapid transit routes will provide new connections and alternatives to congested corridors, often at a lower capital cost. The development of these routes will be important to achieve the ultimate mass transit network envisioned in The City Plan. Bus rapid transit routes can be implemented through a cohesive, context-sensitive combination of dedicated travel lanes on key corridors and transit priority measures at key intersections. Bus rapid transit routes envisioned for a 1.25 million population involve the reallocation of space on existing infrastructure, and are not anticipated to require grade separations or new river crossings.

Bus rapid transit is not intended as a precursor to LRT but complements the LRT network. The mass transit planning technical study identifies alternative approaches to increase transit ridership through semi-exclusive, bus-based service, such as bus rapid transit and select limited stop rapid routes.

District Routes

District routes fill gaps in the mass transit network and provide connections to city-wide routes, nodes and corridors, and major employment areas. Many district routes will be an evolution of existing ETS bus routes, including new bus routes, with higher service levels. Growth and evolution of the bus network to respond to population growth, particularly in support of nodes and corridors, are necessary to realize these district routes to better serve 15-minute communities.

Limited stop rapid routes and urban frequent routes will make up most of the district route network. Limited stop rapid routes will evolve from the combination and/or upgrade of existing ETS bus routes, including new bus routes, through the use of key operational and infrastructure investments such as increased service and transit priority measures. Frequent urban district routes consist mainly of existing ETS bus routes, including new bus routes, and are expected to become increasingly important. Future service levels will respond to and facilitate the intensification of key nodes and corridors.

Supporting Service

The mass transit network will be supported by several additional types of non-mass transit service provided by the local transit network, including the new bus network, and our regional partners.

- **Local Transit Network** includes multiple layers of transit service including conventional bus, on demand transit and paratransit. The local transit network generally balances access with

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speed. These routes provide an alternative to driving for shorter trips within districts and create connection points to the mass transit network.

- **Regional Routes** will be integral to the continued prosperity and connectivity of the Edmonton region. These routes will be guided by regional partners and entities, such as the Edmonton Metropolitan Transit Service Commission. Pursuing opportunities associated with future regional routes will require continued connection and collaboration with regional partners.

Findings and Implications

Focused investment in strategic transit corridors will require a careful assessment of how Edmonton uses available transit funding to achieve The City Plan outcomes. Below are the key findings and implications outlined in the technical study.

- **LRT Network Plan** - Aligning future LRT expansion to high development potential will provide the most benefit to the overall mobility system. Based on the technical study, the 1.25 million population mass transit network includes the future Capital Line extension beyond Ellerslie Road but does not include the Metro Line extension beyond Blatchford. This finding differs from previous City Council priorities regarding the LRT network plan which were set prior to City Plan approval. Metro Line extension north of Blatchford was identified as the next priority after the Capital Line South extension to Ellerslie Road. Decisions related to future LRT expansion will be set by City Council as the availability of transit funding becomes clearer.
- **Bus Rapid Transit** - Creating new bus rapid transit and limited stop rapid connections will improve service to existing demand and provide alternative connections to key nodes and corridors. New dedicated bus right-of-way opportunities paired with transit priority measures at key intersections will allow these routes to operate more efficiently and reduce travel time. There are opportunities to create dedicated rights-of-way for transit in the 1.25 million population horizon through the redistribution of road space and allocation of travel lanes along major arterial roadways such as 97 Street, Whyte Avenue, Terwillegar Drive, Whitemud Drive and Gateway Boulevard/Calgary Trail. Additionally, incorporating bus rapid transit and rapid bus service as part of the mass transit network provides relief to capacity-constrained routes, such as the Capital Line, and extends mass transit service to key destinations that complement the LRT network.
- **Airport Connection** - An efficient and direct mass transit service to an airport is a key feature of world-class cities. The mass transit study recommends a connection to the Edmonton International Airport that does not consist of an extension of the LRT past city boundaries. As such, the initiation of a direct bus-based mass transit connection between downtown and the Edmonton International Airport has merit to explore with regional partners.
- **Benefits of Mass Transit Network** - The technical study found that the improvements to the mass transit network are expected to capture future travel demand, resulting in a modest increase to transit mode share and corresponding reduction of greenhouse gas emissions. Transportation is one of the four major sources of greenhouse gas emissions within Edmonton, making up approximately 30 per cent of all emissions. Transitioning towards zero emission mobility options, including a zero emission transit system that features a fleet of

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zero/low emissions vehicles, will significantly reduce greenhouse gas emissions. Greater benefit to transit mode share or greenhouse gas emissions could be achieved by applying additional levers of change identified in the February 2, 2021, Urban Planning and Economy report CR_7810, Transit Mode Share - Increase and Impacts.

The approval of The City Plan and associated technical studies, including the findings noted above, provide an opportunity to consider an overall assessment of mass transit network priorities. This could include a reassessment of future LRT expansions to consider them alongside mass transit routes serviced through bus rapid transit routes, and/or other mass transit options. The intent would be to implement and prioritize each component in a way that benefits Edmontonians and best contributes to The City Plan outcomes. It will be important to consider both upfront capital costs and overall operational costs associated with the specific type of service when determining future mass transit priorities. Further planning work is required to determine costs and benefits for prioritization.

Next Steps

The findings identified through the mass transit technical study are incorporated into the February 15, 2022, Urban Planning and Economy report UPE00491, Mobility Network Assessment. The Growth Management Framework, currently under development, will provide a lens to evaluate mass transit investments that support growth in consideration of priority growth areas.

Future planning work for implementing the mass transit network for 1.25 million people includes:

- Define types of mass transit for future consideration
- Operational study to identify conflicts and opportunities, including consideration for emerging technologies
- Complete technical studies related to
 - Development potential along mass transit routes
 - Impacts to the mobility system
 - Equity and inclusivity considerations
 - Impacts to climate strategy goals
- Assess and evaluate mass transit route alignments and design
- Identify mass transit network staging plan for 1.25 million people

Addressing needs identified in the February 15, 2022, Urban Planning and Economy report IIS00416, ETS Fleet Storage and Maintenance Facility Project and the upcoming City Operations report CO00607, Mass Transit System - Sustainable Funding and Service Growth, will be critical to the growth and implementation of The Mass Transit network. Interim enhancements to the existing ETS network through service enhancements and stand-alone transit priority measures will be presented as part of the upcoming City Operations report CO00803 Bus Network Expansion Opportunities. These interim measures can reduce travel times and improve existing transit service levels. Opportunities to evolve these interim enhancements will be considered as part of the mass transit implementation noted previously.

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BUDGET/FINANCIAL IMPLICATIONS

Further planning and design work is required prior to providing an accurate assessment of implementation costs. Additionally, future technologies can affect the implementation and costs of building out the mass transit network envisioned in The City Plan.

COMMUNITY INSIGHT

The mass transit planning technical study did not include any direct input from the community. However, the project relied on the direction provided in The City Plan and other strategic documents that included robust public engagement with, and listening to, Edmontonians. Additional research and/or conversations with Edmontonians and other stakeholders would be included as part of the project development process for mass transit projects that proceed to planning and design.

GBA+

Inequities and exclusion for marginalized people can result from mass transit networks when equity and inclusion lenses are not applied intentionally or consistently. An extensive GBA+ process will ensure that the work does not create inequities or contribute to the further marginalization of diverse individuals.

As part of implementing the 1.25 million mass transit network, Administration plans to complete the following in 2022:

- Complete a literature review to identify inequities, exclusion and unsafe conditions that result from transit systems.
- Complete a review of transit agencies in Canada and around the world to identify potential equity and inclusivity measures, to understand the challenges faced and successes achieved, and how successful they proved to be.
- Engage with marginalized populations of Edmontonians to ensure research findings reflect diverse experiences and perspectives of individuals in Edmonton.
- Use quality of service models and neighbourhood demographic data to identify inequities experienced by users of the mass transit network at 1.25 million.
- Select equity measures to monitor the effectiveness in achieving equality of outcomes throughout network implementation.

ATTACHMENTS

1. City Plan Mass Transit Network
2. Mass Transit Network for 1.25 Million: City-Wide and District Routes
3. Glossary of Terms and Mass Transit Service Definitions