Plan for GROWTH

City of Saskatoon

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BUS RAPID TRANSIT / TRANSIT PLAN

Information Package

BRT and the Transit Plan Overview

To meet the transportation needs of a growing city, Saskatoon needs to provide a variety of transportation options. Organized around a Bus Rapid Transit (BRT) system a new Transit Plan will help Saskatoon Transit accommodate the city's expected growth while making transit a more attractive option for existing residents. Our Plan for Growth calls for a restructuring of Saskatoon Transit to a grid network with frequent, direct two-way routes serving major corridors and development nodes.

Although the Red, Green and Blue BRT Lines are the backbone of a new Saskatoon Transit route network (see map on following page) the Transit Plan will include other complimentary bus services, including a full suite of mainline, crosstown, and feeder bus services that provide transit services throughout the community.

The planning and design of the BRT and transit system reconfiguration will put the City in a position to start making significant changes to Saskatoon Transit as early as 2019, subject to City Council approval and availability of funding.

The Growth Plan to Half a Million, which Council approved in 2016, included the high-level route concepts noted on the next page (map). These concepts will guide the development of a more detailed Transit Plan.

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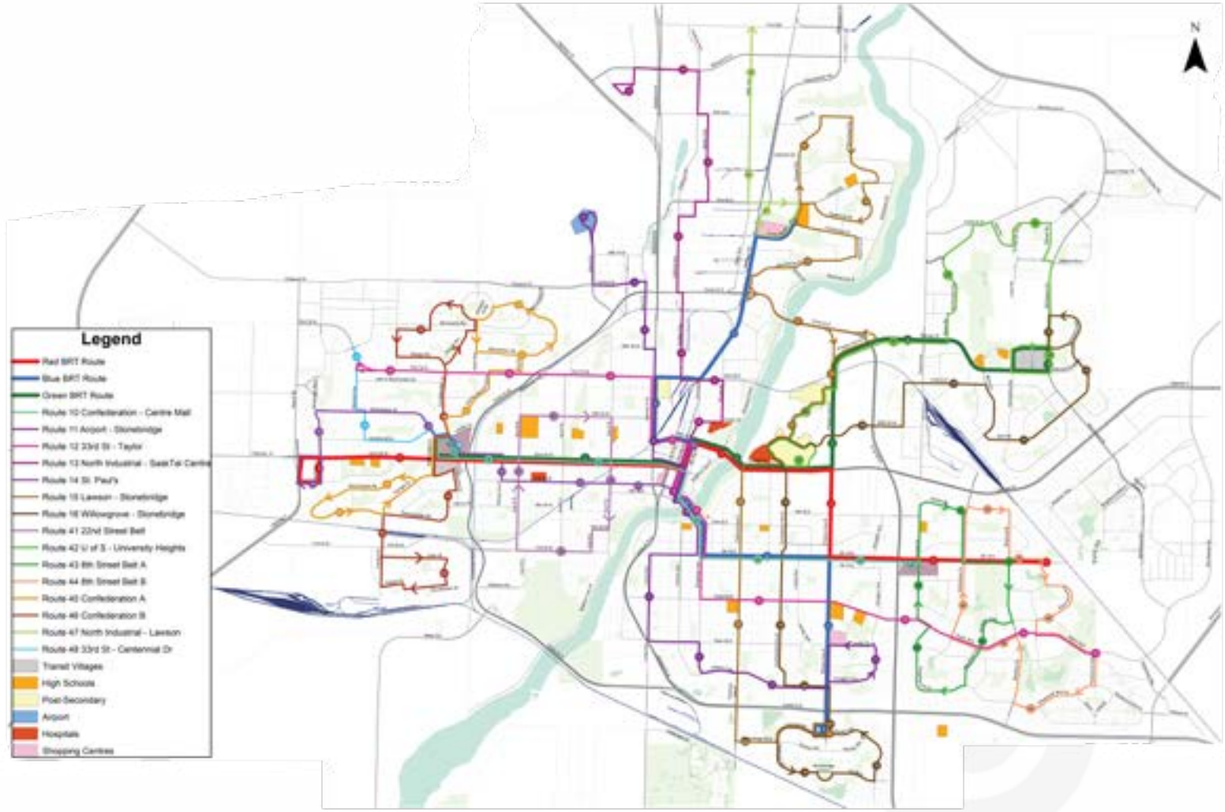

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What does a typical BRT system look like?

Bus Rapid Transit is defined as a rubber tired bus based rapid transit system that improves travel speed, reliability, capacity, and customer experience through enhancements to bus priority measures, stations, customer systems and runningways.

Transit Signal Priority Measures use existing traffic signal infrastructure, bus arrival detection and software logic to limit bus delay at traffic signals.

Geometric Priority Measures use queue jump lanes, and other roadway measures to provide buses with a time advantage at critical points along the corridor.

Stations include curb, pad, identification pylon, shelter, lighting, waste receptacle, bike racks, branding and allowance for public art to create a positive customer experience. An experience that is welcoming, safe, convenient and comfortable

Customer Systems use destination and wayfinding information, route and schedule information, real time next bus information, security monitoring and help phones, and off board fare processing to create a positive customer experience.

Runningways are the path that a bus follows. Runningways may vary from mixed traffic on an existing roadway to exclusive lanes within an existing roadway to exclusive roadways separate from other traffic.

Each of the components may be applied through a range of options that will define the scale, functionality and cost of the BRT system.

Corridor Selection

BRT is proposed along established corridors where existing and forecasted transit customer markets are significant: 22nd Street, 3rd Avenue, 25th Street, College Drive, Preston Avenue, Broadway Avenue, 8th Street, 25th Street, Idylwyld Drive, 33rd Street, and Warman Road.

3rd Avenue

- Currently hosts the majority of transit routes through downtown, BRT is a consistent and logical extension of that function.
- Most central north-south corridor through downtown, offering equal coverage to the east and west.
- Has lower traffic volumes than 1st, 2nd or 4th Avenues.
- Accessible from the north end of downtown via 25th Street / University Bridge and from the south end of downtown via 19th Street / Broadway Bridge.

Broadway Avenue

- Already serves existing transit routes through the area, BRT is an extension of that function.
- A major retail destination in Saskatoon. BRT connects residents, visitors, shoppers, employees, and students to the area.
- A direct connection to/from the Broadway Bridge which has two lanes in each direction compared to the Traffic Bridge, which will only have one lane in each direction.
- Has two travel lanes in each direction plus parking.

Ridership

BRT will form part of the core services of the new transit network. The BRT and reconfigured transit network will have all the 'key ingredients' that adds value to transit to attract more riders: frequency; reliability; travel time; directness; and comfort. Many cities have employed a similar approach, including: Brampton[1], Kingston[2], Seattle[3], Phoenix, and Houston. These cities, have successfully reconfigured their transit system to see a return on their investment through a growth in ridership..

Frequency

BRT is recommended to run every 10 minutes during core service hours, compared to a 30 minute frequency today. Having to wait less than 10 minutes for the next BRT bus provides transit passengers increased flexibility for when they choose to travel; greater chances of making transfers; and less reliance on fixed schedules.

Additionally, the proposed reconfigured transit network consolidates many routes, and ensures that routes are direct as possible. For many local routes, the frequency will increase from 30 to 20 minutes.

Reliability

Transit priority measures will make the BRT significantly more reliable than a comparable bus route without transit priority measures. These measures include: geometric roadway measures; exclusive runningways (transit only lanes along 3rd Avenue, Downtown, Broadway Avenue, and College Drive); and transit signal priority at all intersections along the BRT corridors.

For example, a bus today travelling along the Green Line would arrive at any given stop up to 7.5 minutes early or 7.5 minutes late (for a total variance window of 15 minutes), making travel along this corridor unpredictable and therefore unreliable. Customers travelling along the same route with transit signal priority at every intersection, exclusive runningways along key corridors mentioned above, and geometric improvements at select locations, could expect greater reliability. With the implementation of transit priority measures, a Green Line bus would arrive no more than 0 to 3 minutes late to any scheduled time point.

Travel Time

When a potential transit customer considers taking transit, the amount of time the trip takes is a big factor. From end to end of any line, a customer will save anywhere from five to ten minutes roundtrip with the BRT compared to a similar route without transit priority measures. Taking into account the travel time savings each day, this amounts to significant time saved over the course of a week, a month, and a year.

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1. TVO "The Secret Being Brampton's Transit Success" (2018) https://tvo.org/article/current-affairs/the-next-ontario/the-secret-behind-bramptons-transit-success

2. Global "Kingston Trnasit Expansion Pays Off Big as Ridership Skyrockets" (2017) https://globalnews.ca/news/3892662/kingston-transit-expansion-pays-off-big-as-ridership-skyrockets/

3. Streetsblog USA "Only a Few American Cities are Growing Transit Ridership – Here's What They are Doing Right" (2018) https://usa.streetsblog.org/2018/03/23/only-a-few-american-cities-are-growing-transit-ridership-heres-what-theyre-doing-right/

Directness

Most people want to travel the shortest distance along the most direct route, which is often a straight line. We often choose our routes based on the shortest trip; however, Saskatoon's current transit network does not always take the shortest route, instead, the route covers large areas by travelling in loops through neighbourhoods. While these routes provides good coverage of an area, it reduces the ability of a passenger to get from A to point B in the shortest distance possible. A reconfigured transit network provides a grid-like system with more direct routes that all intersect with the BRT at one or multiple stations.

Comfort

BRT stations will provide customers with an improved waiting environment. Station platforms are designed to be universally accessible. The design of the station will be highly visible and well lit; shelters will provide passengers with protection from the wind, rain and snow; and will be equipped with on-call radiant heat. A real-time information monitor will be integrated into the station pylon, visible from the platform or from inside the shelter. Stations will also be equipped with seating as well as waste and recycling bins.

Economic

Increased Property Values

Research indicates that commercial and residential properties located close to a transit station have, on average, higher property values than other properties of similar size and quality. For commercial properties, the increased property value captures the monetary value of sales potential, better access to production inputs, and/or skilled workforce. For residential properties, the increased property value captures the general preference and willingness to pay to live in neighbourhoods which are more "walkable", have greater transportation options (due to the presence of a good transit system), or are more "livable".

Studies of several BRT Lines: Brampton's Queen Street Zum Line, Cleveland's HealthLine, LA's Orange Line, Boston's Silver Line, Pittsburg's Martin Luther King Busway, and Eugene's Emerald Express Green Line have shown a positive relationship between BRT and property values. Studies show property values increased ranging from 1% to 8% after BRT implementation.[4]

Job Creation

Some studies have shown that BRT lines have increased employment along corridors. In Eugene, Oregon, jobs increased by 10% within 400 metres of BRT stations despite a 5% decline in employment in jobs beyond 800 metres from stations.[5]

Productivity

BRT and the reconfigured network will reduce travel times and improve reliability, which will result in greater productivity since passengers will spend less time waiting for and traveling on transit. Additionally, as mentioned previously, employers would also have improved access to a skilled workforce and customer base.

Reduced Transportation Costs

Passengers who switch from driving to taking transit will see reduced out-of-pocket transportation costs. Savings come from reduced expenses mainly related to fuel and parking. An annual Saskatoon Transit pass costs $913 while the average cost of owning and operating a vehicle is $11,000.[6] Downtown parking alone costs up to $225 a month compared to $83 for a monthly Saskatoon Transit pass.

Transit Customer Spending

Studies have examined the differences in consumer behaviour by mode of transportation. The results have indicated that while drivers will spend more than other forms of transportation in a single visit, transit users visited establishments significantly more often, and would spend on average more than drivers in the course of a month, except at supermarkets.[7] In addition, reducing on-street parking has not resulted in diminished revenues.

Another advantage to increasing transit ridership is that for those taking transit, transportation costs decrease, providing them with more disposable income to spend elsewhere.

City Building

High capacity transit is often seen as a potential catalyst to development and re-development of areas around stations. Transit infrastructure investments can attract capital for commercial and high density residential developments; lead to the revitalization of older commercial centres and stagnant corridors; and transform underutilized or empty parcels into mixed use sites.

Revitalization along BRT Corridors

Cleveland's HealthLine BRT transformed the Euclid Avenue corridor, once riddled with vacancies, into an economic hub. The $200 million project, which included funds to redesign the street, have spurred nearly $6 billion in economic development, including the creation of 8 million square-feet of commercial space, 13,000 jobs, and 4,000 new residential units.[8]

Enhancing Good Streets

The street infrastructure improvements that frequently accompany large new transit projects (such as upgraded street lighting, upgraded cycling lanes, trees, sidewalks, improved signage and street furniture) generally improve the appearance of urban streets and enhance the surrounding urban realm. Transit stations can also help reinforce the quality and character of the street, through unique station and shelter designs, branding, and public art.

Parking

Parking has capital (construction) and maintenance/operating costs borne by the owner/operator. Parking also has costs borne by the user.

Parking Requirements at Major Destinations

With faster, direct and frequent service, the BRT will reduce the amount of parking required at major destinations such as: Downtown, the UofS, SIAST, and Broadway.

Parking Impacts along 3rd Avenue and Broadway Avenue

Almost all of the on-street parking will be maintained along the BRT corridors; however, there are some small sections where impacts are unavoidable. These sections include 3rd Avenue and Broadway Avenue. In order to minimize parking impacts, stations are being consolidated, adjacent areas are being studied to add potential parking stalls and some turning lanes may be removed.

Traffic

Broadly, auto users can anticipate some travel time savings since many existing drivers will switch to BRT and conventional transit services, making more space on the roadway for private automobiles. One BRT bus is anticipated to carry an average of 30 passengers, which would otherwise translate to 27 cars on the road.

Auto Travel Times

Most of the BRT operates as buses do today: curbside in mixed traffic. Along 3rd Avenue, College Drive and Broadway Avenue it is recommended that transit-only lanes (exclusive runningways) and stations are built in the centre lanes to improve BRT travel time and reliability. This means that the centre lanes will be occupied by the bus, resulting in reduced general purpose lanes in each direction; however, with transit signal priority measures, personal vehicles travelling northbound along Broadway should see no change to their current travel time and those travelling southbound should save one minute. Along College Drive, transit signal priority measures will increase personal vehicle travel time by one minute in the eastbound and westbound direction.

Roadway Capacity

BRT improves the roadway capacity without having to add lanes to the existing street. For example, based on existing transit and auto volumes, Broadway Avenue moves 1700 people per hour. With the addition of BRT and the reconfiguration of local routes, Broadway Avenue will realistically move 2260 people per hour with plenty of capacity to move even more people by transit, by foot, and by car as the city grows.

Safety

Accident Reduction

BRT contributes to road safety through a reduction in the number of people traveling by car. Lower traffic translates into fewer car accidents and thus a reduction in accident-related societal costs.

Station Safety

All station platforms will be equipped with a highly visible tactile strip, which will help passengers detect the platform edge (despite the platform being fairly low - curb height or slightly more). The station platform, as well as the shelter, will be well lit so that waiting transit customers are highly visible from both the roadway as well as the surrounding built environment (adjacent shops, businesses, or residences).

When customers approach a station, they will have sightlines down the platform and into an unobstructed interior lit shelter, providing them with an opportunity to scan the station environment. Shelters will have dual entrances so that a passenger can easily move from inside the shelter to the platform deck, or leave the platform altogether. Stations will also be equipped with security cameras.

Health and Wellness

Research suggests that people who regularly use public transportation tend to be physically more active

4. IBI Group. "Queen Street Rapid Transit LRT or BRT Benefits Case," submitted to Metrolinx. May 2013.

5. Nelson, Arthur et al. "Bus Rapid Transit and Economic Development: Case Study of the Eugene-Springfield BRT System," Journal of Public Transportation, 3, 2013.

6. Canadian Automobile Association "Driving Costs" (2013). https://www.caa.ca/wp-content/uploads/2016/09/CAA_Driving_Cost_English_2013_web.pdf

7. Clifton, Kelly J. et al. "Examining Consumer Behaviour and Travel Choices," Oregon Transportation Research and Education Consortium, February 2013.

8. Institute for Transportation and Development Policy. "More Development for your Transit Dollar" 2013.ts/

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than auto users. According to one study, transit users take 30% more steps per day and spend 8.3 more minutes walking per day than people who rely on cars.[9] Another study demonstrates that 29% of transit users are physically active for 30 minutes or more each day (thus satisfying the guidelines on physical activity for health solely by walking to and from public transit stops) and the average walk time to/from transit stops and stations amounts to as much as 19 minutes per day.[10]

Reducing Social Inequalities

Better transit services may improve transportation options to population groups without access to a personal vehicle. About 12% of Saskatoon's residents live in low-income households.[11] Access to affordable transportation is particularly important for these individuals and may be essential for their livelihood to access amenities, services, employment, and educational opportunities. Transit is also important to groups such as individuals with disabilities, elderly, and others who do not drive for various reasons. Transit facilitates mobility and independence of these individuals, which may contribute to their successful social functioning and reduction in social inequalities.

Funding for Transit

In the last decade, the federal government has given high priority to improving transit infrastructure and services. Federally, transit investment has grown substantially, now averaging $1 billion per year. The City of Saskatoon has leveraged Federal funding for the Transit Plan and is positioned to leverage future funding by furthering BRT planning and design.

Environment

Transit projects generate positive environmental impacts by reducing local and regional use of motorized vehicles, reducing fossil fuel consumption and the resulting exhaust emissions of greenhouse gases (GHG).

Project Timeline

Following Council adoption of the Growth Plan to Half a Million, Federal Government approval of Public Transit Infrastructure Funding and a public procurement process, HDR Corporation was awarded a contract for the Bus Rapid and Conventional Transit Planning, Design and Engineering Services in July 2017. The major project milestones are as follows:

Summer/Fall 2018 – Completion of detailed design and implementation plan.

Fall 2018 – Presentation to City Council for project approval.

HDR Corporation is one of Canada's leading transportation planning and design companies. With seven offices cross Canada HDR Corporation provides a diverse range of architectural and engineering services to large and small cities, and private sector clients. HDR Corporation has developed significant expertise in multi-modal transportation services with core strength in bus, BRT and LRT planning and design. As well, staff from HDR Corporation work closely with HDR Inc. staff to support transit initiatives in the US.

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Project Background

Saskatoon will welcome 250,000 people in the next few decades. Adopted in 2016, our plan for growth will create a stronger social, environmental, economic and financial future for all residents based on the following key components:

- *Corridor Growth* – encouraging growth and redevelopment near existing major corridors and at major development nodes
- *Transit and BRT* – making transit more attractive to more people as the City grows
- *Strategic Infill* – supporting development of the Downtown, North Downtown and University of Saskatchewan "endowment lands" to accommodate more people and jobs within Circle Drive
- *Core Area Bridges* – making the best use the existing road capacity and planning for the future
- *Employment Areas* – ensuring the right amount of employment in the right areas
- *Active Transportation Plan* – provide infrastructure and support for greater use of walking and cycling for work and personal use
- *Financing Growth* – planning ahead for the costs of growth

9. Active Living Research, "Active Transportation: Making the Link from Transportation to Physical Activity and Obesity" Research Brief, Summer 2009.

10. Besser Lilah M. and Andrew L. Dannenberg, "Walking to Public Transit Steps to Help Meet Physical Activity Recommendations", American Journal of Preventive Medicine, 2005, 29 (4), pages 274-280

11. Source: 2016 Census, Statistics Canada, profile of Saskatoon Census Metropolitan Area; prevalence of low-income based on low-income measure (LIM-AT).

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