BACKGROUND

Hamilton City Council approved the 10 Year Local Transit Strategy in March 2015. Building upon previous plans that considered how to prepare for moving people quickly and efficiently across Hamilton, the *10 Year Local Transit Strategy* focuses on refining the customer experience, addressing system deficiencies, revising service standards, adding capacity, and adding rapid transit (the BLAST network) in Hamilton. Completing the implementation of the Strategy will ultimately mean a 50 per cent increase in transit service across the city, and will involve a total of $300 million capital investment in public transit.

As recommended in the strategy, we will be reviewing the design of the transit network to ensure it is serving the needs of our customers. Some of the day-to-day challenges that HSR faces are linked to the design of the network, and it appears that with the amount of growth and development that Hamilton has experienced – and is continuing to experience – we may no longer have a transit system that is designed to take customers where they want to go, when they want to go there.

We are working with the **Civil Engineering Department of McMaster University** and the **McMaster Institute of Transportation Logistics (MITL)** on a project with two key objectives:

1. To arrive at an understanding of the perceived and desired quality of HSR service from the point of view of a wide range of Hamilton residents including those who use transit regularly or not at all

2. To suggest a multi-criteria reconfiguration of HSR service based on the evidence from data collection and modelling efforts
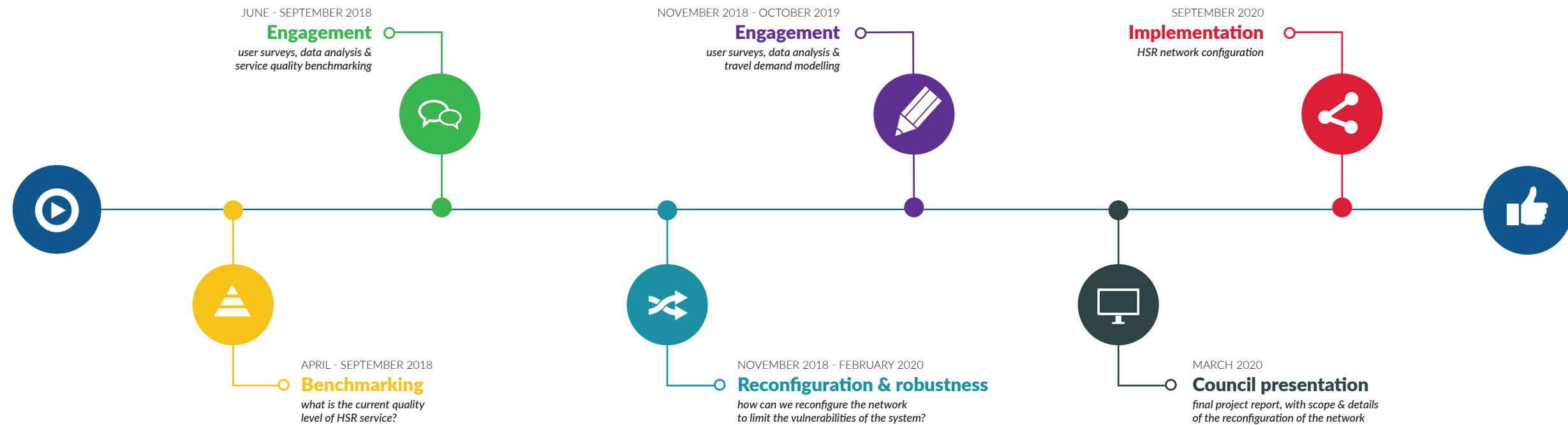
REENVISIONING
Hamilton Street Railway

A systematic assessment and optimization of Hamilton's transit network.

CONTACT

reenvision HSR | project timeline

JUNE - SEPTEMBER 2018
Engagement
*user surveys, data analysis &
service quality benchmarking*

NOVEMBER 2018 - OCTOBER 2019
Engagement
*user surveys, data analysis &
travel demand modelling*

SEPTEMBER 2020
Implementation
HSR network configuration

APRIL - SEPTEMBER 2018
Benchmarking
*what is the current quality
level of HSR service?*

NOVEMBER 2018 - FEBRUARY 2020
Reconfiguration & robustness
*how can we reconfigure the network
to limit the vulnerabilities of the system?*

MARCH 2020
Council presentation
*final project report, with scope & details
of the reconfiguration of the network*

Benchmarking the quality level of current HSR service will be carried out using two sets of measures: current and potential user perspective and performance quality.

To measure user perspective, the level of quality perceived by current transit users as well as the desired quality of both current and potential users, four key measures will quantify the significance of each service attribute, the impact of each service attribute on the probability of increased ridership, the willingness-to-pay for each service attribute, and the influence of attitudinal orientation on ridership. This will provide a blueprint for accommodating users' perspectives in the quality improvement process of HSR service.

To measure performance quality of HSR service, two measures will be used: a survey of transit operators' perspectives and performance quality in terms of service reliability, dependability, and bus bunching. Advanced Vehicle Locators (AVL) data with be combined to quantify service discrepancies from schedule adherence and routes of critical performance.

A combined stated preferences/revealed preferences survey will be developed for current and potential customers. Data will be collected through a customer survey of approximately 1000 households, administrated by a third party. To strengthen the representation of transit riders, the survey will be available through various online channels.

A survey developed specifically for HSR operators will be administered by the HSR in conjunction with the customer survey.

Objective one deliverables
• User survey
• Data analysis
• Service quality benchmark working paper

November 2018 – October 2019
The second objective of the proposed project is to reconfigure the HSR network based on results from the surveys.

Three 'families' of measures will be used to inform the scope and details of an HSR network reconfiguration:
• Service quality
• Travel demand modelling and;
• Network optimization and system robustness

A comprehensive travel demand model for the City of Hamilton will be developed based on the 2016 Transportation Tomorrow Survey data. An optimization model of HSR service with a multi-objective approach reinforced by machine learning techniques will use Automatic Vehicle Locator (AVL) data and incorporate several parameters: quality, operation, travel demand, cost, fleet size, current service, and human resourses (operators).

September 2019 – February 2020
Following that, a network-based assessment model will be developed to quantify the HSR network robustness. All nodes (station and/or stop) and links (routes) will be evaluated with respect to the overall network robustness. An HSR system Vulnerability Index (VI) for each system component (stations and routes) will be created to test the system-wide performance of HSR under disruption. The network assessment and service reconfiguration work will happen in parallel.

Extensive public engagement will occur once potential network reconfiguration options have been developed. Engagement efforts will make use of both traditional (Public Information Centres, open houses/workshops) and modern (real-time consultation-on-a-bus, online network modelling) techniques.

Objective 2 Deliverables
• Transportation Tomorrow Survey data analysis
• AVL performance assessment
• System reconfiguration
• Reinforced learning and optimization
• Travel demand and service reconfiguration working paper
• Data coding
• Robustness analysis
• Network vulnerability index
• Network analysis working paper

The final project report, with the recommended scope and details of the HSR network reconfiguration will be presented to Council in March 2020. An implementation plan will be presented will be included in the presentation to Council.