




INFORMATION REPORT

TO:	Chair and Members Light Rail Transit Sub-Committee
COMMITTEE DATE:	July 26, 2023
SUBJECT/REPORT NO:	Light Rail Transit Operations Models (PED23166) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Abdul Shaikh (905) 546-2424 Ext. 6559 Farhad Shahla (905) 546-24224 Ext. 5360
SUBMITTED BY:	Abdul Shaikh Director, Hamilton LRT Project Office Planning and Economic Development Department
SIGNATURE:	

COUNCIL DIRECTION

Not Applicable.

INFORMATION

On September 15, 2021, City Council ratified a Memorandum of Understanding with Metrolinx and the Ministry of Transportation to move forward with the 14-kilometre Hamilton Light Rail Transit (LRT) Project. The Memorandum of Understanding notes that the City will be responsible to pay operations and maintenance costs, save and except lifecycle maintenance costs. Metrolinx has indicated they are open to input from the City regarding the roles it would like to play in the operations of the LRT; however, the final decision rests with Metrolinx. The Memorandum of Understanding notes that the City would be responsible for operations and non-lifecycle maintenance costs, whether or not the City is the operator. Lifecycle maintenance activities contribute to extending the lifecycle of the asset through structural refurbishment, or end-of-life replacement. Non-lifecycle maintenance activities enable the asset to deliver the intended level of service but do not significantly contribute to extending the lifecycle of the asset.

The purpose of this Information Report is to provide Council with an overview of potential LRT operating models, and to outline the next steps and analysis that staff intends to take prior to bringing forward a recommended operating model to Council in Q4 2023. This report includes high-level background on the activities required for the operations and maintenance of a light rail transit system, identifying various operations models that exist for the Hamilton LRT Project, and how these models will be assessed to recommend the preferred operations model.

1) Roles and Responsibilities

The Memorandum of Understanding sets out the details in how the parties will interface and their respective roles and responsibilities with respect to the LRT Project. The table below outlines the key roles and responsibilities as set out in the Memorandum of Understanding.

Table 1: Roles and Responsibilities

Roles	Responsibilities
Owner	<ul style="list-style-type: none">• Metrolinx is the owner of the light rail transit assets and infrastructure
Project Delivery	<ul style="list-style-type: none">• Metrolinx has contractual responsibility for design, planning, construction, maintenance, and operations, as well as for the acquisition of property required for the Project, and community/stakeholder engagement
Costs	<ul style="list-style-type: none">• Metrolinx is responsible for all capital costs, including land acquisition costs associated with the Project• Metrolinx is responsible for lifecycle maintenance costs• The City is responsible for operating and non-lifecycle maintenance costs
Revenues	<ul style="list-style-type: none">• The City will be entitled to all fare box and a portion of certain non-fare box revenues, such as revenues from advertisements.
Operations and Maintenance	<ul style="list-style-type: none">• The Memorandum of Understanding does not set out which party will operate the light rail transit line (City or a third party through Metrolinx)

2) Operations and Maintenance

Section 4.1 of the Memorandum of Understanding states that one of the City's obligations is "to pay Operations and Maintenance Costs, save and except lifecycle [maintenance] costs, whether or not the City or HSR is the operator."

Metrolinx has indicated they are open to input from the City regarding the roles it would like to play in the operations of the LRT line; however, the final decision will rest with Metrolinx.

With regards to maintenance activities, Metrolinx recommends that these activities should remain with the third party ProjectCo (i.e., the entity responsible for designing and constructing the LRT project and the LRT vehicles) to ensure overall project efficiencies and accountabilities. It is worth noting that for other LRT projects in Ontario, maintenance activities are performed, with minor exceptions, by the same entity responsible for designing and construction of the project and the LRT vehicles.

Operational Activities

The City will fund the operations of the LRT system. City staff is working with Metrolinx to develop the list of these operational activities and has grouped like activities into three bundles. These bundles are created in a way to assess the advantages, disadvantages and/or implications to the City of taking on any of the bundle activities. Below are the details of operational activities grouped into three bundles:

Bundle 1: Light Rail Transit B Line Operations

Activities include, but are not limited to, the following:

- Light Rail Transit Operations Control Centre (24/7/365);
- manage on-time service performance and disruptions, service in the event of an emergency, and implementing service recovery post emergency, including coordination with City traffic and transit;
- unplanned event management, including coordination with power utilities, HSR, Traffic, etc.;
- emergency event oversight;
- scheduling and planning of LRT service, including planned event management;
- establishing, monitoring and reporting operational performance (on time performance, root cause analysis of service faults, etc);
- safety and security of the LRT line, including guideway and corresponding infrastructure. i.e., traction powered substations, overhead catenary systems, platform stops;
- power control authority for traction power with local hydro provider;

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- training to third parties who access right of way (emergency services, utility companies, etc); and,
- associated employee management activities for groups listed above, including staffing and forecasting, recruitment, training/testing, scheduling, performance management.

Bundle 2: Light Rail Transit Vehicle Operations

Activities include, but are not limited to, the following:

- driver staffing and forecasting, recruitment, training/testing, scheduling, performance management;
- drivers to perform safe operation of vehicle and adhere to schedules; and,
- drivers to adhere to safety-sensitive protocols, specifically during service disruptions and emergencies.

Bundle 3: Passenger Interface Provider

Activities include, but are not limited to, the following:

- overall customer experience: call centre management, public inquiries, issues management, public affairs and media relations;
- communications, including meeting AODA standards for service disruptions;
- safety and security of employees and passengers on board the light rail vehicles and at stops, including vandalism, loitering, threat response, medical emergency response;
- fare collection and enforcement, fraud investigation and fare evasion ticketing; and,
- passenger communication during emergencies.

Typical industry practice includes combining Bundle 2 (Light Rail Transit Vehicle Operations) within Bundle 1 (Light Rail Transit B Line Operations). Staff has “deconstructed” these two bundles in order to allow the City to consider if it wants to provide either, neither or both of Bundles 1 and 2.

In addition to the above three bundles, operational activities of this project will also include the facility operations for the Operations, Maintenance and Storage Facility. The Operations, Maintenance and Storage Facility stores the LRT vehicles and provides support for daily cleaning, inspections, scheduled maintenance/repair and heavy maintenance and overhaul. In general, facility operations consist of activities requiring unique skill sets and experience and are typically integrated with vehicle maintenance activities. Metrolinx therefore recommends that performing activities within facility operations be the responsibility of the same third party that is tasked with vehicle maintenance.

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It is also important to note that there are common responsibilities by the parties undertaking the operational functions within and across the bundles. Examples include, but are not limited to:

- design, development, implementation, and monitoring of standard operating procedures to ensure safe, effective and efficient operations, which will be interconnected with those of other parties for service continuity;
- planned and unplanned event management;
- collaboration between various parties (Metrolinx, third party, City, HSR) as the activities of an individual party will impact all other parties, including defined responsibilities, safety, and service quality; and,
- maintenance activities and operational activities are intertwined and must be carefully coordinated between the parties.

In addition, HSR will be responsible for providing assistance in emergency situations including backup services known as “bus bridging.” HSR buses will “bridge” service gaps caused by a light rail transit outage (either planned or unplanned) until service is able to resume.

Maintenance Activities

There are a range of maintenance activities for the LRT system, typically including lifecycle and non-lifecycle maintenance activities. Non-lifecycle maintenance activities are defined as those which enable the asset to deliver the intended level of service but do not significantly contribute to extending the lifecycle of the asset. Lifecycle maintenance activities involve renewal activities, which contribute to extending the lifecycle of the asset through structural refurbishment or end-of-life replacement. According to the Memorandum of Understanding, the City is responsible for the costs of non-lifecycle maintenance, whereas Metrolinx is responsible for the costs of lifecycle maintenance. The following shows the details of maintenance activities both for non-lifecycle and lifecycle.

Custodial: Custodial maintenance is a non-lifecycle cost which will be funded by the City and involves keeping LRT line infrastructure in a clean and orderly manner. Some examples are seasonal maintenance (including planning and conducting landscaping and snow removal, regular cleaning of LRT line infrastructure, supply and replacement of consumables, and waste and debris removal).

Preventative: Preventative maintenance is a non-lifecycle maintenance activity which will be funded by the City and involves any action which is performed at scheduled intervals in accordance with the maintenance plan, or as otherwise required to maintain the infrastructure at a constant level of performance to meet specified requirements. Some examples are the detection and correction of deviations from normal operation before an LRT Line component failure occurs,

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periodic inspections, testing and condition monitoring, critical item replacement, lubrication, adjustment, cleaning and calibration.

Corrective: Corrective maintenance is a non-lifecycle maintenance activity which will be funded by the City and involves repair and minor replacement of LRT vehicle and/or system infrastructure components to ensure they are meeting the intended level of service requirements. Some examples are investigation, localization, isolation of faults and troubleshooting, disassembly, reassembly, repair or replacement of the affected part(s), retesting of the repaired component, correcting defects and deficiencies, and replacement of the defective component or whole assets.

Renewal of Assets: Renewal of Assets maintenance (i.e. asset refurbishment and end-of-life replacement of LRT infrastructure etc.) is a lifecycle maintenance activity which will be funded by Metrolinx and involves activities which contribute to extending the lifecycle of the asset through structural refurbishment, or end-of-life replacement. Some examples are the replacement of LR vehicles, LRT line assets (signals etc.), IT assets, and facility furniture.

Metrolinx has recommended that the four maintenance activities listed above be performed by the third party (i.e. the entity responsible for designing and constructing the LRT project and the LRT vehicles) that is responsible for LRT project construction and LRT vehicle delivery, in order to ensure consistency in the level of service delivery, minimize multiple interactions amongst parties, enhance communication experience amongst asset owners and the maintenance party, and ensure a streamlined path for investigating maintenance-related incidents. This is typically the same for other LRT projects in Ontario, in which maintenance activities are performed, with minor exceptions, by a third party.

3) Light Rail Transit Operations Models

Based on reviews of other LRT systems in Ontario, there are several models for how the operational activities described above can be performed. City staff have set out four broad models below, although it is important to note that there are variations within and between these models. City staff will continue to work with Metrolinx to examine these models with respect to their applicability, and pros and cons, for the Hamilton LRT Project, in order to inform a future recommendation on a preferred model for the City. It should be noted, the selection of the preferred operations model will be subject to performance standards set by Metrolinx. As Metrolinx remains the owner of the LRT assets and infrastructure, they will retain final approval over the selection of the preferred operations model.

Model 1 – Third Party Performs all Operational Activities: Under this model, a third party performs all three bundle functions (Bundle 1: Light Rail Transit B Line Operations, Bundle 2: Light Rail Transit Vehicle Operations and Bundle 3:

Passenger Interface Provider). Staff is not aware of any use of this model for systems in Ontario.

Model 2 – City Performs Passenger Interface Provider Activities: Under this model, the City would be directly responsible for all activities under Bundle 3 that are related to passenger interface activities. The rest of the operational responsibilities would remain with a third party. The public interface functions could be integrated with existing HSR customer service functions to create a single point of contact with the public. This model is in use in the Region of Waterloo's LRT system and will also be used for the Hazel McCallion Line in Peel Region.

Model 3 – City Performs Light Rail Transit Vehicles Operations and Passenger Interface Provider Activities: Under this model, the City would perform Bundle 2 and Bundle 3. The rest of the operational responsibilities would remain with a third party. For Light Rail Transit Vehicle Operations (Bundle 2) to be successfully implemented, it would require strong coordination between the City and the third party responsible for Light Rail Transit B Line Operations (Bundle 1). Staff is not aware of any use of this model for LRT systems in Ontario; however, it is similar to an operating arrangement GO Transit has with a third party operator, whereby the third party provides staff and operates GO under a contract with Metrolinx.

Model 4 - City performs all aspects of Operational Activities: Under this model, the City would perform all activities described in the three function bundles. This is the approach planned for operations of the Eglinton Crosstown and Finch West lines, whereby the TTC will perform all of the operating functions and endeavour to provide a seamless passenger experience. This model is similar to Ottawa's Confederation line, which is being operated by the City of Ottawa's OC Transpo. As noted earlier, Facility Operations would not be accounted for in this operational model assessment.

It should be noted that whatever the preferred model, Metrolinx will remain responsible for managing the contract for operations of the LRT project, which will add an additional interface to Hamilton's LRT line. This is consistent with the Metrolinx examples above.

The table below provides a summary of the four models.

Table 2: Light Rail Transit Operations Models

Operational Activities	Operational Model 1		Operational Model 2		Operational Model 3		Operational Model 4	
	City	third party	City	third party	City	third party	City	third party
Bundle 1: LRT B Line Operations		x		x		x	x	
Bundle 2: LRT Vehicle Operations		x		x	x		x	
Bundle 3: Passenger Interface Provider		x	x		x		x	

4) Assessment Criteria

Staff will continue to assess the above models in order to make a recommendation for a preferred model for the City. To undertake this work, the following assessment criteria are being considered:

- i. **Customer experience:** to assess a seamless experience between all modes of transit, ease of information, and continuity, the following questions will be used:
 - Is the model likely to contribute to a seamless customer service experience between bus service and the LRT service?
 - Is the model providing benefits to schedule and service integration requirements of the project?
 - Does the model give the City the desired profile with transit customers?
 - Does this model provide appropriate opportunities for the City to consider socio-economic circumstances when dealing with transit customers? and
 - Does the model allow for the integration/coordination of some customer facing roles to enhance efficiency? (e.g. security also performs fare enforcement and passenger relations)
- ii. **Interface(s) between parties:** to assess the interface(s) between Metrolinx, the City and various third parties and to determine the associated complexities with shared activities. Typically, fewer interfaces and less complex interfaces would be preferred. The following questions will be used:
 - In the model, how many interfaces exist between the City and other parties?

- In the model, how complex are the interfaces between the City and other parties? and
 - How easy or difficult will it be to create agreements that clarify interface roles and responsibilities and provide adequate incentive for other parties to act responsibly?
- iii. **Risks and liability:** to assess the types of risks and liabilities that exist for each model, their likelihood of occurrence, and the consequences associated with each risk. The following questions will be used:
- What risks to the City does the model create?
 - What are the likelihood and consequence of each risk? and
 - How can the potential risks be mitigated?
- iv. **Cost to the City:** to assess the relative cost impact of each model to determine if this creates an additional funding liability for the City. At this stage, it is likely that this will be a “high-level” qualitative assessment of the relative costs associated with each model. The following questions will be used:
- Is the model likely to result in higher or lower costs to the City for operations and non-lifecycle maintenance? and
 - Is the model likely to result in higher or lower costs to the City associated with bringing in new functions, setting up the staffing units and appropriate skills and expertise?

Staff has developed a working group involving various service areas that would have interest in the operations and maintenance phase of the Hamilton LRT Project. This working group will continue to assess the operational models through the assessment criteria. The following areas are represented in the working group:

- HSR Operations
- Transportation
- Transportation Planning and Parking
- Corporate Security
- Transit Customer Service
- Communications
- Strategic Advisor
- Labour Relations
- Risk Management
- Finance
- LRT Project Office
- Strategic Advisor (Murray Advisory Services)

In addition, staff from other similar projects are being consulted, such as Region of Waterloo's LRT system and the Hazel McCallion Line in Peel Region (Model 2), and the Eglinton Crosstown and Finch West lines (Model 4).

5) Additional Information

On December 18, 2017 the General Issues Committee approved a motion which directed the City to affirm that Metrolinx continue with a "Design - Build - Finance - Operate - Maintain" procurement process, meaning that the ProjectCo ultimately selected to design and build the LRT system would also be responsible for operating and maintaining the LRT system. The December 18, 2017 motion also directed the City to ensure that the contract with Metrolinx and/or ProjectCo included several employment/labour relations conditions for ProjectCo when employing individuals for operating and maintaining the LRT system. It is important to note that the December 18, 2017 motion is not binding on the current LRT Project as the December 18, 2017 motion was contemplated and subsequently passed in relation to the original iteration of the LRT Project, governed by the 2016 Memorandum of Agreement. The 2021 Memorandum of Understanding explicitly states that it supersedes the 2016 Memorandum of Agreement, and the 2021 Memorandum of Understanding now introduces the potential for the City to be the LRT operator.

6) Next Steps

Staff intend to bring forward an initial high-level assessment of the operating models to the LRT Sub-Committee meeting on September 25, 2023, and the staff recommendation on the preferred model to the subcommittee meeting on November 29, 2023. Upon receiving Council direction on the preferred model, staff will communicate the preferred model to Metrolinx. As mentioned, Metrolinx remains the owner of the project and owns all LRT assets and infrastructure. The ultimate decision of selecting the operations model for the Hamilton LRT Project will remain with Metrolinx. Once the preferred operations model is selected, Metrolinx and the City will need to work together to develop the requirements for procurement and execute the agreements for the operations and maintenance period, in accordance with the principles established under the Memorandum of Understanding.

APPENDICES AND SCHEDULES ATTACHED

Not Applicable.