Detailed Operations Model Assessment

City of Hamilton -
LRT Project Office
Hamilton LRT
Project Assistance
Operations Models Assessment Matrix - Nov 2023 - Draft.xlsm

Assessment Criteria	Model 1 - Third Party performs all Operational Activities.	Model 2 - Municipality performs Passenger Interface Provider Activities; Third Party Responsible for Everything Else (HC, Waterloo)	Model 3 - Municipality performs Passenger Interface Provider and LRT Driver Management Activities; Third Party Responsible for LRT Line Operations and Facility Operations	Model 4 - Municipality performs all aspects of Operational Activities except for Facility Operations. (TTC, Ottawa)
<u>Customer Experience</u> Is the model likely to contribute to a seamless customer service experience between bus service and the LRT service?	- High potential for overlaps and/or gaps in customer experience - High potential for customer confusion about who to call for inquiries - Significant effort needed to coordinate customer communication between the City and third party - High potential for inconsistent public messaging from the City and third party - Creates complexities for call centre, incident management, reporting and lost/found - Creates complexities related to stop communications: multiple screens/signs - Creates barriers for customer experience improvements, leading to customer experience issues/confusion may impact overall HSR brand.	- Should be relatively seamless customer experience, as City will be responsible for customer interface for HSR and LRT.	- Should be relatively seamless customer experience, as City will be responsible for customer interface for HSR and LRT.	- Should be relatively seamless customer experience, as City will be responsible for customer interface for HSR and LRT.
Is the model providing benefits to schedule and service integration requirements of the project?	- High level of effort will be needed to coordinate schedules between HSR and third party. - Coordination required through Metrolinx creates more complexities. - Potential for confusion when unpredicted schedule disruptions occur.	- Effort will be needed to coordinate schedules between HSR (City) and third party. - Coordination required through Metrolinx creates more complexities. - Potential for confusion when unpredicted schedule disruptions occur.	- Effort will be needed to coordinate schedules between HSR (City) and third party.	- Schedule and service integration should be relatively seamless, as City will be responsible for both HSR and LRT operations. - Will need to coordinate with Metrolinx and third party if any schedule changes have an impact on maintenance activities (should be minimal).
Does the model give the City the desired profile with transit customers?	- City would have limited presence on LRT system or vehicles. - Low ability to influence and provide quality control over customer interactions. - Potential for lack of alignment between fare enforcement activities, and optimizing revenue to the City.	- City will have public profile as the customer interface provider (although not as the system operator). - City will have the ability to optimize fare enforcement activities to achieve best balance between customer service and revenue objectives.	- City will have high profile as the Passenger Interface Provider (PIP) and Light Rail Vehicle (LRV) driver. City will be seen as responsible for system successes and any challenges/issues. - City will have the ability to optimize fare enforcement activities to achieve best balance between customer service and revenue objectives.	- City will have high public profile as the operator of the LRT and as the customer interface provider. City will be responsible for system successes and any challenges/issues. - City will have the ability to optimize fare enforcement activities to achieve best balance between customer service and revenue objectives.

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Does this model provide appropriate opportunities for the City to consider socio-economic circumstances when dealing with transit customers? Does the model foster opportunities for enhanced Inclusion, Diversity, Equity and Accessibility (IDEA) for the public?	- Limited or no opportunity for the City to consider socio-economic factors when dealing with customer service and fare enforcement i.e., addressing the barriers that affordability and enforcement can present to some. - Least opportunity for the City to influence delivery of the City's mandate for enhanced IDEA. - Low ability to influence and provide quality control over customer interactions.	- Increased opportunity (compared to Model 1) for the City to consider socio-economic factors when dealing with Customer Service and Fare Enforcement (i.e. addressing the barriers that affordability and enforcement can present to some). - Moderate opportunity for the City to influence delivery of the City's mandate for enhanced IDEA (coordination required with Metrolinx, and third party).	- Increased opportunity (compared to Model 1) for the City to consider socio-economic factors when dealing with Customer Service and Fare Enforcement i.e. addressing the barriers that affordability and enforcement can present to some. - Higher opportunity for the City to influence delivery of the City's mandate for enhanced IDEA; coordination required with Metrolinx, and third party (compared to Models 1 and 2).	- Increased opportunity (compared to Model 1) for the City to consider socio-economic factors when dealing with Customer Service and Fare Enforcement i.e. addressing the barriers that affordability and enforcement can present to some. - Highest opportunity for the City to influence delivery of the City's mandate for enhanced IDEA; coordination required with Metrolinx, and third party.
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)?	- Two separate customer service departments (HSR and LRT) would introduce inefficiencies (duplication of some effort). - Same party (third party) would be responsible for all LRT customer facing functions, which would potentially enhance LRT customer service efficiency.	- This should be efficient as the City will provide fully integrated customer service activities (e.g., one call centre, one communications team, one escalation process, etc). - Same party (City) would be responsible for all LRT customer facing functions, which would potentially enhance LRT customer service efficiency.	- This should be efficient as the City will provide fully integrated customer service activities (e.g. one call centre, one communications team, etc). - Same party (City) would be responsible for all LRT customer facing functions, which would potentially enhance LRT customer service efficiency.	- This model should be efficient as the City will provide fully integrated customer service activities (e.g. one call centre, one communications team, etc). - Same party (City) would be responsible for all LRT customer facing functions, which would potentially enhance LRT customer service efficiency.
<u>Accountability - Interface(s) between parties</u> In the model, what interfaces exist between the City and other parties? How complex are the interfaces between the City and other parties?	Model 1 contemplates some commonly known interfaces as Model 2, with the addition of customer service and fare enforcement/fare revenue interfaces. Interfaces in this model are mainly Moderate in complexity. For this model, known interfaces include but are not limited to the following: - Scheduling: Third party will be responsible for Light Rail Vehicle (LRV) scheduling; The City (HSR) will be responsible for bus scheduling. Will need close coordination to integrate scheduling, hours of operation etc. Complexity: Low to Moderate - Bus Bridging: Third party will be responsible for LRT operations, but the City (HSR) will be responsible for providing buses and operators needed for bus bridging, for planned and emergency service disruptions. Complexity: Moderate	Model 2 contemplates commonly known interfaces as model 1 with the addition of operation/communications interface. This model has the fewest number of interfaces. Interfaces in this model are mainly Low to Moderate in complexity. For this model, known interfaces include but are not limited to the following: - Scheduling: Third party will be responsible for Light Rail Vehicle (LRV) scheduling; The City/HSR will be responsible for bus scheduling. Will need close coordination to integrate scheduling, hours of operation, etc. Complexity: Low to Moderate - Bus Bridging: Third party will be responsible for LRT operations, but the City/HSR will be responsible for providing buses and operators needed for bus bridging for planned and emergency service disruptions. Complexity: Moderate	Model 3 has the highest number of known interfaces, including many associated with model 2, with the addition of operation/communications, LRV Operations/Network Operations and Transition from construction to operations. Interfaces in this model are mainly Moderate to High in complexity. For this model, known interfaces include but are not limited to the following: - Scheduling: Third party will be responsible for LRV .scheduling; The City / HSR will be responsible for bus scheduling. Will need close coordination to integrate scheduling, hours of operation etc. Complexity: Low to Moderate - Bus Bridging: Third party will be responsible for LRT operations, but the City/HSR will be responsible for providing buses and operators needed for bus bridging – for planned and emergency service disruptions. Complexity: Moderate	While many interfaces are expected to be resolved compared to the other models, Model 4 still contemplates some of the interfaces identified for other models, with the addition of some unique interfaces, such as Operations vs Maintenance, Maintenance Scheduling, LRT's Facility Operations, etc. Interfaces in the model are mainly Moderate to High in complexity. For this model, known interfaces include but are not limited to the following: - Operations monitoring/payments - Third party is responsible for operation facility; Metrolinx is responsible for monitoring Project Agreement (PA) compliance; The City is responsible for paying all operating costs. The City needs efficient, effective mechanisms to obtain operations monitoring/PA compliance information to determine appropriate payments and/or penalties. Complexity: Low

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<u>Accountability - Interface(s) between parties</u> In the model, what interfaces exist between the City and other parties? How complex are the interfaces between the City and other parties? **(continued)**	- Emergency Response: Third party will be responsible for responding to LRT-related emergencies; especially collisions involving LRVs. The City will likely also be involved in some aspects of emergency response (e.g., related to traffic operations; EMS; fire; others?) Protocols will be needed for the communication of notifications of emergencies between LRV and general traffic. Complexity: Moderate - Operations Monitoring/Payments: Third party is responsible for operations; Metrolinx is responsible for monitoring Project Agreement (PA) compliance; the City is responsible for paying all operating costs. The City needs efficient, effective mechanisms to obtain operations monitoring/PA compliance information to determine appropriate payments and/or penalties. Complexity: Moderate - Traffic Signal Operation: Higher level of coordination for different modes of transportation will be required between LRT's Operation Control Centre and the City's Traffic Signals Operations. Complexity: Moderate - Customer Service: The City and third party will both be providing customer service. Will need to be close coordination between them with respect to responsibility for various calls, complaints, and transfer and tracking protocols. Complexity: Low to Moderate. - Fare Revenue/Fare Enforcement: Depends on physical design of system and platforms, and location of "fare-paid zone". City is entitled to fare revenue, but third party is responsible for fare enforcement. May be motivation for third party to minimize (cost of) fare enforcement, which may reduce City's revenue. Complexity: Moderate. - Agreements: Anticipated that Metrolinx will have a PA with third party for design, construction, maintenance, network, LRV, and facility operation), and a separate agreement with the City for Customer interface. This may be cumbersome as the many interfaces between City and third party will need to be managed by Metrolinx, as there likely will not be an agreement between City and third party. Complexity: Moderate to High.	- Emergency Response: Third party will be responsible for responding to LRT-related emergencies, especially collisions involving LRVs. The City will likely also be involved in some aspects of emergency response (e.g., related to traffic operations; EMS; fire). Complexity: Moderate - Operations Monitoring/Payments: Third party is responsible for operations; Metrolinx is responsible for monitoring Project Agreement (PA) compliance; The City is responsible for paying all operating costs. The City needs efficient, effective mechanisms to obtain operations monitoring / PA compliance information to determine appropriate payments and/or penalties. Complexity: Moderate - Traffic Signal Operation - Higher level of coordination for different modes of transportation will be required between LRT's Operation Control Centre and the City's Traffic Signals Operations. Complexity: Moderate - Fare Revenue/Fare Enforcement: Depends on physical design of system and platforms, and location of "fare-paid zone". City is entitled to all fare revenue, but third party is responsible for fare enforcement. May be motivation for third party to minimize (cost of) fare enforcement, which may reduce City's revenue. Complexity: Moderate. - Agreements: Anticipated that Metrolinx will have a PA with third party for design, construction, maintenance, network, LRV, and facility operation), and a separate agreement with the City for Customer interface. This may be cumbersome as the many interfaces between City and third party will need to be managed by Metrolinx, as there likely will not be an agreement between City and third party. Complexity: Moderate. - Operation / Communications: Third party will be responsible for operations; City will be responsible for customer interface. Will need close coordination between third party operations staff and City Communications staff to ensure timely and accurate operational information is communicated to customers. Complexity: Low	- Emergency Response: Third party will be responsible for responding to LRT-related emergencies, especially collisions involving LRVs. The City will likely also be involved in some aspects of emergency response (e.g., related to traffic operations; EMS; fire). Complexity: Moderate - Operations Monitoring/Payments: Third party is responsible for operations; Metrolinx is responsible for monitoring Project Agreement (PA) compliance; The City is responsible for paying all operating costs. The City needs efficient, effective mechanisms to obtain operations monitoring / PA compliance information to determine appropriate payments and/or penalties. Complexity: High - Traffic Signal operation - Higher level of coordination for different modes of transportation will be required between LRT's Operation Control Centre and the City's Traffic Signals Operations. Complexity: Moderate - Customer Service: N/A - Fare Revenue: N/A - Agreements: Anticipated that Metrolinx will have a PA with third party for design, construction, maintenance, network, and facility operation), and a separate agreement with the City for Customer interface and LRV operations. This may be cumbersome as the many interfaces between City and third party will need to be managed by Metrolinx, as there likely will not be an agreement between City and third party. Complexity: Moderate to High - Operation / Communications: Third party will be responsible for operations; City will be responsible for customer interface. Will need close coordination between third party operations staff and City Communications staff to ensure timely and accurate operational information is communicated to customers. Complexity: Low	- Agreements – Anticipated that Metrolinx will have a PA with third party for design, construction, maintenance, and facility operation), and a separate agreement with the City for Customer interface and LRT system and vehicle operations. This may be cumbersome as the many interfaces between City and third party will need to be managed by Metrolinx, as there likely will not be an agreement between City and third party. Complexity: Low to Moderate. - Operations vs Maintenance - City will be responsible for all aspects of system and vehicle operations. Third party will be responsible for system and vehicle maintenance. This will create potential for disputes about the cause(s) of operational and maintenance issues (e.g., operational disruptions may be caused by improper maintenance; excessive maintenance may be caused by improper operation). Complexity: Moderate to High - Maintenance Scheduling (Vehicles and System) - City will be responsible for scheduling of operations, including number of vehicles required etc. Third party will be responsible for scheduling the necessary preventive and corrective maintenance on the vehicles and system. This may create conflicts between the need for in-service vehicles vs vehicles requiring maintenance. Complexity: Moderate - LRT's Facility Operations - City will be responsible for all aspects of operations, including network operations (such as power control/electrification). Third party will be responsible for facility operations, including stops and Traction Power Sub Station. This may create coordination issues related to operations and maintenance of stops, Traction Power Sub Station, power supply etc. Complexity: Moderate - Transition from construction to operations - Third party will be responsible for design, construction, commissioning, and facility operations. City will be responsible for LRT system and vehicle operations. Will require careful management of the start-up phase to avoid disputes about early operational challenges due to unforeseen design, construction, and commissioning issues. Complexity: Moderate to High

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<u>Accountability - Interface(s) between parties</u> In the model, what interfaces exist between the City and other parties? How complex are the interfaces between the City and other parties? **(continued)**			- Transition from construction to operations: Third party will be responsible for design, construction, commissioning, and network operations. City will be responsible for LRV operations. Will require careful management of the start-up phase to avoid disputes about early operational challenges due to unforeseen design, construction and commissioning issues. Complexity: Moderate	
Ease of Mitigation: 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?	In general, interface issues can be partially mitigated through appropriate provisions in the Project Agreement (PA) and in Standard Operating Procedures (SOPs) between the various parties: - Scheduling Mitigation: Create or use current PAs/SOPs to specify initial hours of service and need to coordinate/align schedules. PA could provide mechanism for ongoing coordination of schedules. - Bus Bridging Mitigation: PA and/or SOPs could specify roles and responsibilities and financial arrangements for bus bridging. Need to avoid incentive for third party to over-use the frequency or duration of bus bridging. - Emergency Response Mitigation: PA and/or SOPs could specify roles and responsibilities related to emergency response. - Operations Monitoring/Payments Mitigation: PA could include mechanisms for monitoring operations performance and tracking appropriate payments and penalties. Operation & Maintenance payment agreement between The City and Metrolinx could contain provisions to ensure The City gets appropriate information to inform Operations payments. - Traffic Signal Operation Mitigation: New SOPs established between the City and third party. - Customer Service Mitigation: Create or use current PAs/SOPs (who handles which types of calls, tracking customer calls, transferring calls, lost and found, etc.).	In general, interface issues can be partially mitigated through appropriate provisions in the Project Agreement (PA) and in Standard Operating Procedures (SOPs) between the various parties: - Operation / Communications: Mitigation – SOPs to specify roles and responsibilities for timely sharing of operational information with Communications staff. Potential for customer service/communications staff to have real time access to operational information. - Scheduling: Mitigation – PA could specify initial hours of service and need to coordinate/align schedules. PA could provide mechanism for ongoing coordination of schedules. - Bus Bridging: Mitigation – PA and/or SOPs could specify roles and responsibilities and financial arrangements for bus bridging. Need to avoid incentive for third party to over-use the frequency or duration of bus bridging. - Emergency Response: Mitigation – PA and/or SOPs could specify roles and responsibilities related to emergency response. - Operations Monitoring/Payments: Mitigation – PA could include mechanisms for monitoring operations performance and tracking appropriate payments and penalties. Operation & Maintenance payment agreement between the City and Metrolinx could contain provisions to ensure the City gets appropriate information to inform Operations payments.	In general, interface issues can be partially mitigated through appropriate provisions in the Project Agreement (PA) and in Standard Operating Procedures (SOPs) between the various parties: - Operation / Communications: Mitigation - SOPS to specify roles and responsibilities for timely sharing of operational information with Communications staff. Potential for customer service/communications staff to have real time access to operational information. - Scheduling: Mitigation - PA could specify initial hours of service and need to coordinate/align schedules. PA could provide mechanism for ongoing coordination of schedules. - Bus Bridging: Mitigation - PA and/or SOPs could specify roles and responsibilities and financial arrangements for bus bridging. Need to avoid incentive for third party to over-use the frequency or duration of bus bridging. - Emergency Response: Mitigation - PA and/or SOPs could specify roles and responsibilities related to emergency response. - LRV Operations/Network Operations: Mitigation - PA will need to include specific provisions about network operations vs LRV operations roles and responsibilities. - Transition from construction to operations: Mitigation - PA will need to provide considerable detail about commissioning, start-up and acceptance testing, and mechanisms to resolve disputes about early operational issues.	In general interface issues can be partially mitigated through appropriate provisions in the Project Agreement (PA) and in Standard Operating Procedures (SOPs) between the various parties: - Transition from construction to operations – Mitigation: PA will need to provide considerable detail about commissioning, start-up and acceptance testing, and mechanisms to resolve disputes about early operational issues. - Operations vs Maintenance – Mitigation: PA will need to provide considerable detail about maintenance responsibilities, and mechanisms to resolve disputes related to the operations/maintenance interface. Models and "lessons learned" from other projects that could inform these requirements. - Maintenance Scheduling (Vehicles and System) – Mitigation: PA and SOPs will need to provide clarity about roles and responsibilities for vehicle (and system) availability for service vs availability for maintenance. - Facility Operations: Mitigation: Metrolinx agreements with third party and the City will need to be carefully structured to deal with the interfaces and relationships between City and third party. - Operations Monitoring/Payments – Mitigation: PA could include mechanisms for monitoring operations performance and tracking appropriate payments and penalties.

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Ease of Mitigation: 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? **(continued)**	- Fare Revenue/Fare Enforcement Mitigation: PA could provide a minimum standard for fare enforcement.	- Traffic Signal Operation: Mitigation: Create updated SOPs for coordination between the systems. - Agreements: PA between Metrolinx and third party for design, construction, maintenance, network, LRV, and facility operation, and a separate agreement with the City for Customer interface.	- Operations Monitoring/Payments: Mitigation - PA could include mechanisms for monitoring operations performance and tracking appropriate payments and penalties. -Operation & Maintenance payment agreement between the City and Metrolinx could contain provisions to ensure The City gets appropriate information to inform Operations payments. - Agreements: Mitigation - Metrolinx agreements with third party and the City will need to be carefully structured to deal with the interfaces and relationships between City and third party.	- Operation & Maintenance payment agreement between the City and Metrolinx could contain provisions to ensure the City gets appropriate information to inform Operations payments. - Agreements: Mitigation: Metrolinx agreements with third party and the City will need to be carefully structured to deal with the interfaces and relationships between City and third party.
<u>Risks and Liability</u> What risks to the City does the model create? What are the likelihood and consequence of each risk? Assessment Criteria Model 1 - Third Party performs all Operational Activities. Model 2 - Municipality performs Passenger Interface Provider Activities; Third Party Responsible for Everything Else (HC, Waterloo) Model 3 - Municipality performs Passenger Interface Provider and LRT Driver Management Activities; Third Party Responsible for LRT Line Operations and Facility Operations Model 4 - Municipality performs all aspects of Operational Activities except for Facility Operations. (TTC, Ottawa)	The risks associated with all of the operational activities (LRV drivers, vehicle collisions etc.) are borne by third party operator, not by the City. This model generally has the same number of commonly known risks compared to Model 2; however, contemplates Medium overall risk to the City: - Poorly integrated/coordinated customer service and customer information. Likelihood: Medium; Consequence: High; Overall Risk: Medium - Schedules are not integrated/aligned. Likelihood: Low; Consequence: Medium; Overall Risk: Low to Medium - Bus bridging is not well-coordinated and/or is overly costly to the City. Likelihood: Medium; Consequence: Medium; Overall Risk: Medium - Emergency response not well-coordinated. Likelihood: Medium; Consequence: Medium; Overall Risk: Medium - Misalignment with COH objectives/philosophies when choosing third party contractor e.g. changes in priorities. Likelihood: Medium; Consequence: Medium; Overall Risk: Medium - Lack of reporting of LRV-related collisions, untimely investigations, resulting in claims. Likelihood: Low; Consequence: Low to Medium; Overall Risk: Low	In this model, the risks associated with all the operational activities (LRV drivers, LRV-related collisions etc.) are borne by third party operator, not by the City. In this model, the City's assumption of public interface activities eliminates some problematic interfaces. This model generally has the same number of commonly known risks compared to Model 1; however, contemplates the least overall risk to the City (Low), compared to all models: - Customer Service/Communications may not be given access to timely/accurate operational information. Likelihood: Low to Medium, Consequence: Low Overall Risk: Low - Schedules are not integrated/aligned. Likelihood: Low, Consequence: Medium Overall Risk: Low - Bus Bridging is not well-coordinated and/or is overly costly to the City. Likelihood: Medium, Consequence: Medium Overall Risk: Medium - Emergency Response not well-coordinated. Likelihood: Medium, Consequence: Medium Overall Risk: Medium - Misalignment with COH objectives e.g. change in priorities. Likelihood: Low, Consequence: Low to Medium Overall Risk: Low	In addition to many of the risks identified for Models 1 and 2, Model 3 contemplates a new set of commonly known risks relating to LRV operation, LRV drivers and drivers management and training. Risks associated with this model are perceived to be of overall Moderate to High. Some of the most commonly known risks relating to Model 3 include but are not limited to the following: - For Model 3, operational activities are partially transferred to third party. For this model, similar to Model 4, in case of an LRV-related collision, the City (as the driver's employer and supervisor) is likely to bear some (or all) of the alleged liability– unless the collision is the result of non-driver related causes such as system malfunction, signal or vehicle mechanical problems. For this model risks associated with LRV driver and management (including LRV collision-related risks) are borne by the City. Likelihood: Medium, Consequence: High Overall Risk: Medium to High - Customer Service/communications not given access to timely/accurate operational information. Likelihood: Low to Medium, Consequence: Low Overall Risk: Low - Schedules are not integrated/aligned. Likelihood: Low, Consequence: Low to Medium Overall Risk: Low	In addition to many of the risks identified for other models, Model 4 contemplates a new set of commonly known risks relating to operational activities fully transferred to the City. Model 4 exposes many risks with overall Medium to High and High as a result of their likelihood and consequence. Some of the most commonly known risks relating to Model 4 include but are not limited to the following: - For Model 4, operational activities are fully transferred to the City party. For this model, in case of a Light Rail Vehicle (LRV)-related collision, the City (as the driver's employer and supervisor) is most probable to bear any alleged liability, either related to driver or system related such as malfunctions in traffic signal or vehicle mechanical problems. In Model 4 risks associated with all operational activities are borne by the City (LRV drivers, LRV-related collisions etc.) and not transferred to third Party). - Disputes during start-up and operations related to design, construction, and commissioning issues - Likelihood: High, Consequence: Medium to High Overall Risk: Medium to High - Operations vs maintenance conflicts - Likelihood: High, Consequence: Medium to High Overall Risk: Medium to High - Insufficient Operations Procedures and SOPs - Likelihood: Medium, Consequence: Medium to High Overall Risk: Medium

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<u>Risks and Liability</u> What risks to the City does the model create? What are the likelihood and consequence of each risk? Assessment Criteria Model 1 - Third Party performs all Operational Activities. Model 2 - Municipality performs Passenger Interface Provider Activities; Third Party Responsible for Everything Else (HC, Waterloo) Model 3 - Municipality performs Passenger Interface Provider and LRT Driver Management Activities; Third Party Responsible for LRT Line Operations and Facility Operations Model 4 - Municipality performs all aspects of Operational Activities except for Facility Operations. (TTC, Ottawa) **(continued)**	- Fare enforcement is not appropriately aligned with fare revenue optimization. Likelihood: Depends on system design; Low to Medium; Consequence: Medium; Overall Risk: Medium - Reputational/Public perception risk for having public interface e.g. customer service, communication, fare enforcement and passenger interface security by third party (any bylaw issues or privacy issues having third party performing public interface security and fare enforcement). Likelihood: Low; Consequence: Medium; Overall Risk: Low - Operations do not meet PA service standards. Likelihood: Low; Consequence: Medium to High; Overall Risk: Low to Medium.	- Lack of reporting of LRV-related collisions, untimely investigations, resulting in claims. Likelihood: Low, Consequence: Low to Medium Overall Risk: Low - Operations do not meet PA service standards. Likelihood: Low, Consequence: Medium to High Overall Risk: Medium - Fare Enforcement/Revenue Collection. Likelihood: Low, Consequence: Low to Medium Overall Risk: Low - Reputational/Public Perception Risk: Once the City starts taking responsibility for some elements, the public perception of responsibility begins to shift. So while there remains a medium likelihood of the public assigning responsibility to the City (at least in the short-term) the consequence is now medium, since the City will bear some responsibility for information, coordination etc., affecting the customer service, increasing the overall risk to medium. Likelihood: Medium, Consequence: Medium Overall Risk: Medium - Operations do not meet PA service standards: Likelihood: Low, Consequence: Medium to High Overall Risk: Medium.	- Bus bridging is not well-coordinated and/or is overly costly to the City: Likelihood: Medium, Consequence: Medium Overall Risk: Medium - Emergency response not well-coordinated: Likelihood: Medium, Consequence: Medium Overall Risk: Medium - Disputes during start-up and operations related to design, construction, and commissioning issues: Likelihood: Medium to High, Consequence: High Overall Risk: Medium to High - Operations vs maintenance conflicts: Likelihood: Medium to High, Consequence: High Overall Risk: Medium to High - Insufficient Operations Procedures and SOPs: Likelihood: Medium, Consequence: Medium to High Overall Risk: Medium to High - Poor coordination between Network operations (Operations Control Centre) and LRV operations, due to misaligned or competing objectives between Operations Control Centre and LRV operations: Likelihood: Low to Medium, Consequence: Medium Overall Risk: Low to Medium - Insufficient operator training: Likelihood: Low, Consequence: Medium to High Overall Risk: Low to Medium - LRV driver scheduling problems/lack of availability of operators causing missed trips, leading to financial implications to the City and customer inconvenience Likelihood: Medium, Consequence: Medium Overall Risk: Medium - City's liability for all operator-related incidents, ranging from customer service complaints to death claims Likelihood: High Consequence: Medium Overall risk: High	- Insufficient operator training - Likelihood: Low, Consequence: Medium to High Overall Risk: Low to Medium - Maintenance Scheduling Conflict - Likelihood: Medium to High, Consequence: Medium Overall Risk: Medium - Coordination Issues, related to operations and maintenance of stops, Traction Power Sub Station, power supply, etc. - Likelihood: Medium, Consequence: Medium Overall Risk: Medium - Training scheduling of Operations Control Centre staff - Likelihood: Low, Consequence: Low Overall Risk: Low - Incidents associated with dispatch / communications - Likelihood: medium, Consequence: Medium Overall Risk: Medium - Incidents associated with the operation of signals and control systems - Likelihood: Medium, Consequence High Overall Risk: High

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How easy can the potential risks be mitigated?	In general, risks can be partially mitigated through appropriate provisions in the Project Agreement and appropriate Standard Operating Procedures between the various parties. Create or adjust PAs/SOPs to mitigate the risks and manage high liability circumstances, and to achieve: - Integrated/coordinated customer service and customer information. - Schedule integrated and alignment. - Bus bridging coordination and/or reduced cost to City. - Emergency response coordination. - Enhanced public interface. - Alignment with the City's objectives. - Fare enforcement appropriately aligned with fare revenue optimization (design system to minimize potential for customers to board LRVs without paying fares). - Operations meet PA service standards (adequate information available to City to ensure that appropriate payments are made and/or penalties withheld). - Accurate and timely reporting of LRV-related collisions: ensure collisions are reported to the City, handling of all LRV related collisions with other modes of traffic. i.e. documentation, reporting and investigation. Further mitigation could include the City proposing an initial "start-up" period e.g. 5 years, in which certain activities are operated by a third party, with an option for the City to assume responsibility for those activities after the expiry of the initial start-up period.	In general, the aforementioned risks can be partially mitigated through appropriate provisions in the Project Agreement and appropriate Standard Operating Procedures between the various parties: Create or use updated PAs/SOPs to mitigate the risk and to achieve: - City Customer Service/communications access to timely/accurate operational information. - Schedule integrated and alignment. - Bus bridging coordination and/or minimized cost to City. - Emergency response coordination. - Operations meet PA service standards (Adequate information available to City to ensure that appropriate payments are made and/or penalties withheld). Further mitigation could include the City proposing an initial "start-up" period e.g. 5 years, in which certain activities are operated by a third party, with an option for the City to assume responsibility for those activities after the expiry of the initial start-up period.	In general, risks can be partially mitigated through appropriate provisions in the Project Agreement and appropriate Standard Operating Procedures, emergency response plans and operator training between the various parties. Regardless, more risks to the City in Models 3 and 4. Create or use current PAs/SOPs to mitigate the risk and to achieve: - Customer Service/communications timely/accurate operational information. - Schedule integrated and alignment. - Bus bridging coordination and/or cost to City. - Emergency response coordination. - Coordination between Network operations (Operations Control Centre) and LRV operations. - reduced disputes during start-up and operations related to design, construction, and commissioning. - reduced Operations vs maintenance conflicts. City will need expertise to develop and deliver operation procedures/training to: - establish essential SOPs. - deliver complete operator training package. LRV-related collisions: establish appropriate SOPs related to operator training as well as notification, emergency response etc. Further mitigation could include the City proposing an initial "start-up" period e.g. 5 years, in which certain activities are operated by a third party, with an option for the City to assume responsibility for those activities after the expiry of the initial start-up period.	These risks can be partially mitigated through appropriate provisions in the Project Agreement and appropriate Standard Operating Procedures, emergency response plans and operator training between the various parties. Regardless, more risks to the City in Models 3 and 4. Create or use updated PAs/SOPs to mitigate the risk and to achieve: - Reduced disputes during start-up and operations related to design, construction, and commissioning. - Reduced maintenance scheduling conflicts. - Coordination related to operations and maintenance of stops, Traction Power Sub Station, power supply, etc. - reduced operations vs maintenance conflicts. City will need expertise to develop and deliver operation procedures/training to: - Establish essential SOPs. - Deliver complete operator training package. - LRV-related collisions: establish appropriate SOPs related to notification, emergency response, etc., as well as operator training.

Assessment Criteria	Model 1 - Third Party performs all Operational Activities.	Model 2 - Municipality performs Passenger Interface Provider Activities; Third Party Responsible for Everything Else (HC, Waterloo)	Model 3 - Municipality performs Passenger Interface Provider and LRT Driver Management Activities; Third Party Responsible for LRT Line Operations and Facility Operations	Model 4 - Municipality performs all aspects of Operational Activities except for Facility Operations. (TTC, Ottawa)
<u>Cost to the City</u> Is the model likely to result in greater or lesser cost certainty to the City? 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? Is the model likely to result in greater or lesser ongoing cost to the City for operations (excluding facility operations)?	Greatest cost certainty with third party contract compared to other models (most services contracted to third party). Least upfront cost to the City to bring in new functions compared to other models. Ongoing Costs should be similar to Model 2 and slightly lower than Models 3 or 4: - third party will need to make a profit on all aspects of contracted operations. - some duplication of customer service functions would lead to slightly higher costs for that function compared to Model 2. - fewer interfaces requiring management by City staff than Models 3 or 4. - fewest additional City staff required compared to other models. - the relative cost of City staff vs third party staff is unknown.	Slightly less cost certainty than Model 1 (because Passenger Interface activities performed by City rather than third party). Slightly more upfront cost to the City to bring in new functions compared to Model 1 (City would need to expand some HSR customer service activities and create fare enforcement program). Ongoing Costs should be similar to Model 1 and slightly lower than Models 3 or 4: - third party will need to make a profit on all aspects of contracted operations (except for Passenger Interface Activities). - fewest interfaces requiring management by City staff compared to other models. - slightly more City staff required than Model 1, but significantly less than Models 3 and 4. - the relative cost of City staff vs third party staff is unknown.	Less cost certainty than Models 1 and 2 (because Passenger Interface and LRT driving activities performed by City rather than third party). More upfront cost to the City to bring in new functions compared to Models 1 and 2 (City would need to expand some HSR customer service activities, create fare enforcement program, and staff, train and manage LRV drivers). Ongoing Costs should be similar to Model 4 and slightly higher than Models 1 and 2.: - third party will need to make a profit on fewer aspects of contracted operations compared to Models 1 and 2. - significant complex interfaces requiring management by City staff compared to other models. - significantly more new, additional City staff required than Model 1 and 2, but less than Model 4. - the relative cost of City staff vs third party staff is unknown.	Least cost certainty compared to other models (because fewest activities are contracted to third party). Most upfront cost to the City to bring in new functions compared to other models. City would need to expand some HSR customer service activities, create fare enforcement program, and staff, train and manage LRV drivers, and staff to operate and manage the LRT system. Ongoing Costs should be similar to Model 3 and slightly higher than Models 1 and 2: - third party will need to make a profit on fewest aspects of contracted operations compared to other models. - significant complex interfaces requiring management by City staff compared to other models. - most new, additional City staff required compared to other models. - the relative cost of City staff vs third party staff is unknown.