

O-Train Confederation Line & Bus Service Update



Agenda

- **Rail Service Update**
 - Reliability Issues
 - Corrective Action Plan
 - System Performance
 - Overview Of Response Plans
- **Bus Service Update**
 - What We've Heard
 - Data Analysis On Performance
 - Solutions For Improving Bus Service
- **Communications & Customer Information Update**
 - TTC Suggestions For Customer Communications
 - TTC Suggestions For Station Platform Operations
 - Improvement Plan
- **Update On Ongoing Improvements To Stations And Issues / Ideas Identified By Customers And Councillors**
- **Winter Operations**
 - Rail Operations
 - Bus Stations

Confederation Line Contract

Rideau Transit
Group (RTG)

Ottawa Light Rail Transit
Constructors (OLRTC)

Responsible for design, construction, testing, and commissioning of the complete integrated system including safety certification of the system.

Rideau Transit
Maintenance (RTM)

Responsible for maintenance of the complete system including life cycle costs and system performance. RTM staff and contractors maintain the entire system. Rail cars, track, switches, catenary, stations, etc.

City of Ottawa
Transportation
Services

Rail Implementation
Office / O-Train
Construction

Responsible for contract management of the OLRTC scope of work including oversight for design, construction, and testing.

OC Transpo Rail
Operations

Responsible for contract management of the RTM contract work including oversight for system performance. OC Transpo staff operate the trains.

Confederation Line Contract *(Cont'd)*

- Rideau Transit Group (RTG) is responsible for the design, construction, integration, testing, commissioning, and lifelong maintenance of the Confederation Line;
- As part of delivering the system prior to launch, RTG was responsible for testing the integrated system to ensure that it could meet the specific performance targets;
- Subsequent to launch, RTG is bound by a performance based contract for its maintenance services;
- Any degradation in system or vehicle performance due to technical issues will affect RTG's monthly service payment; and,
- Further to the above, RTG is responsible for resolving any new technical issues that arise over the life of the contract in order to meet their ongoing performance obligations.

Payment Mechanism

- RTG's monthly service payment for delivery of maintenance services is approximately \$4M - \$5M;
- The monthly payment amount will vary month to month depending pre-determined life cycle costs, escalation factors, and other contractual elements;
- This is a long term contract with a fixed price from RTG for all maintenance services until 2048;
- The delivery of maintenance services uses a performance based system with specific performance targets; and,
- The monthly service payment is adjusted when performance targets are not achieved in a given month.

Payment Mechanism *(Cont'd)*

Monthly Service Payments can be adjusted for the following reasons:

1. The total number of planned vehicle kilometers for the month are not achieved due to technical reasons;
2. Performance targets for access to stations and accessibility of the stations is not achieved due to technical reasons;
3. The total number of planned vehicle kilometers on a daily basis or for a daily peak period are not achieved due to technical reasons; and,
4. Specific quality issues arise and/or RTM fails to respond to specific technical issues in a timely manner.

Calendar / Key Dates

August 23- Revenue Service Availability achieved

Week of August 25

Week of September 1

Week of September 8

3 weeks; Trains in operation with no major issues



Technical drills, dress rehearsals, and operational and tabletop exercises

September 14 - Launch of LRT with parallel bus service

Week of September 15

Week of September 22

Week of September 29

An additional 3 weeks of trains in operation with no major issues



3 weeks of Parallel bus service;

October 6 - Network Service Change with parallel bus service removed

Week of October 6

Week of October 13

Week of October 20

Week of October 27



A number of occurrences at peak periods that impacted customers' travel



No major events but some minor delays



A number of occurrences at peak periods that impacted customers' travel



Sporadic events impacting customers' travel

Here Is What We Are Hearing From Our Customers

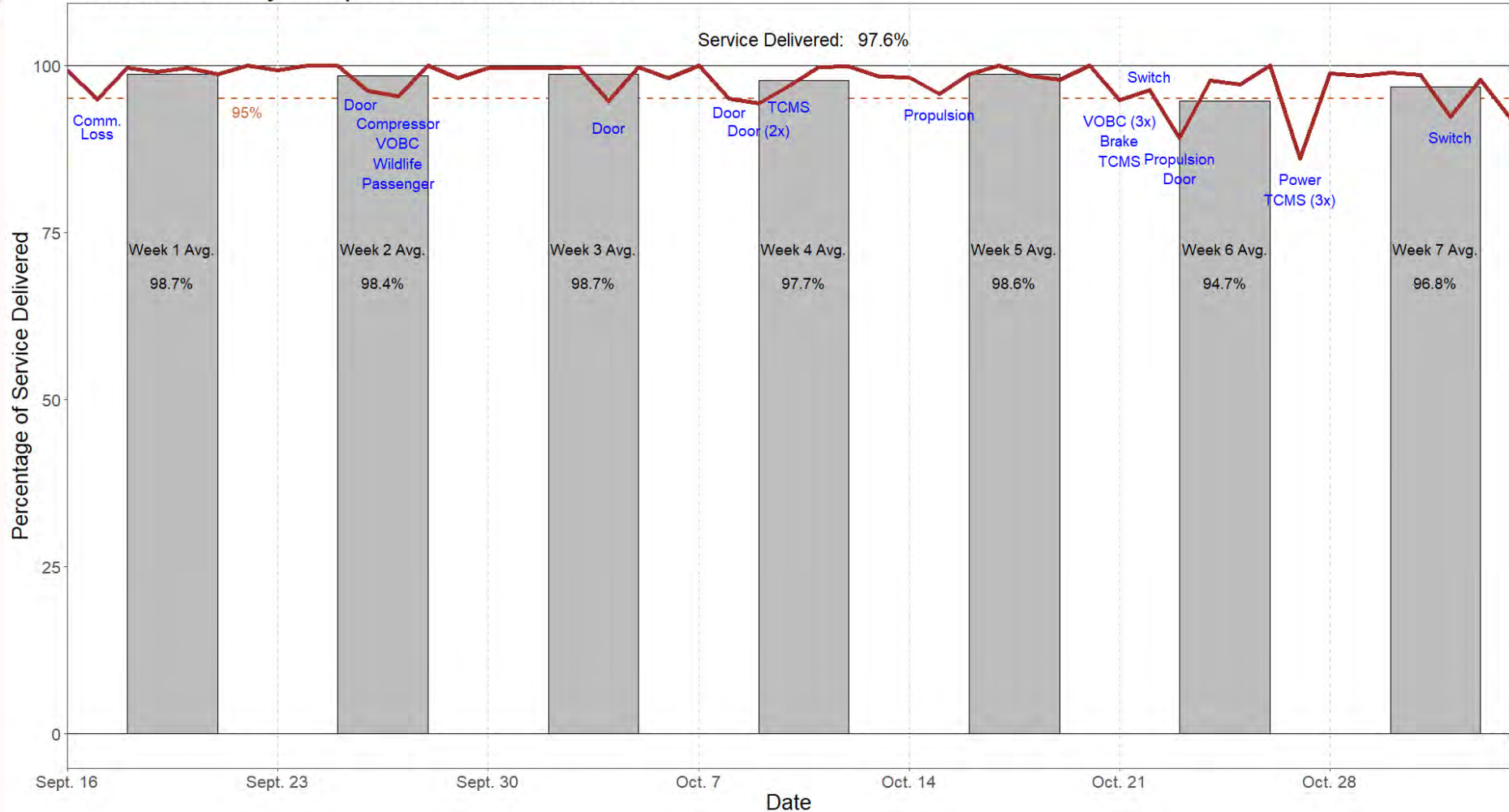
1. Train Reliability;
2. Concerns Associated With Bus Service Change; and,
3. Communications.

Rail Performance

- 3,200 trips scheduled on a weekly basis on Line 1;
- Approximately 500 trips, Monday to Friday, 400 trips Saturday and 300 trips Sunday;
- To date, we delivered over 20,000 trips and have travelled over 510,000 km;
- Line 1 is currently operating approximately 97.6%; and,
- A high degree of reliability is important to meet our customer volumes.

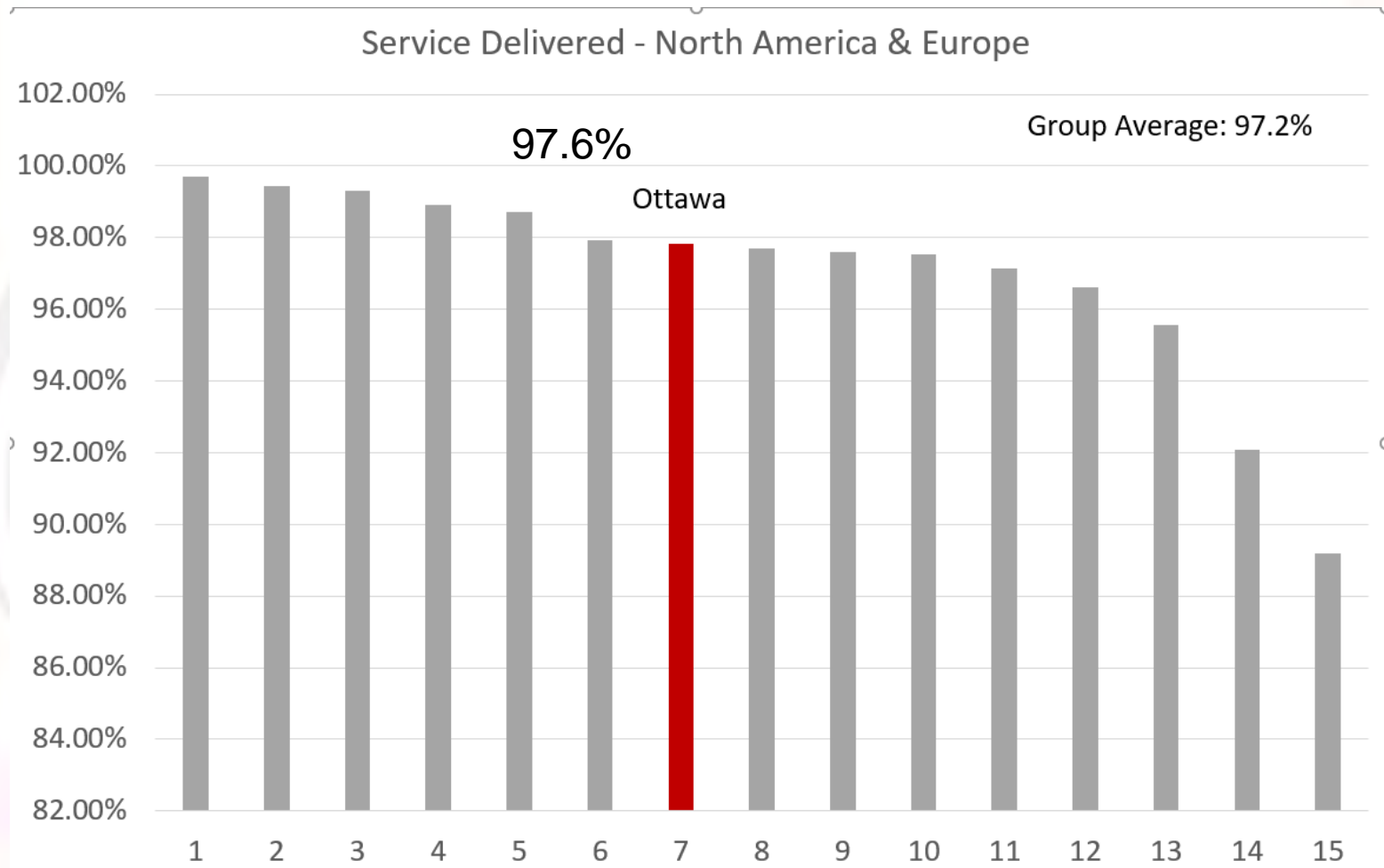
Rail Performance Trips

Service Delivery - Sept. 16 to Nov. 3, 2019



Rail Performance (Cont'd)

- Since launch, Ottawa has achieved an average of 97.6% of service delivered on Line 1; and,
- Note: the comparator properties in this graph are established, mature rail networks that have been in operation for many years.



On Time Performance

Service reliability speaks to both trips delivered and the on-time performance of the system.

Transit Property	Ottawa's Performance	Criteria
Vancouver Sky Train: 96.38%	96.9%	+/- 3 minutes of headway
TTC: Line 1 (yellow): 91% TTC: Line 2 (green): 90%	97.5%	+ 3 minutes of headway
Calgary: target 90%	98.8%	+ 5 minutes of headway
Seattle Sound Transit: target 90%	93.7%	+/- 2 minutes of headway

Issues Causing Rail Service Interruptions

- A number of issues post October 6, 2019 have caused rail service reliability to be inconsistent and problematic for customers;
- The City has advised RTG that they are not dedicating the correct type and quantity of resources to quickly address the issues that are impacting the line; and,
- Immediate action is required to correct train issues, anticipate potential problems and significantly increase technical and specialized resources.

Issues Causing Rail Service Interruptions *(Cont'd)*

- The Mayor and Senior staff have met with RTG and RTM executives. The City provided clear direction to the executives that they are to mobilize and provide additional resources required to rectify the issues that are affecting the reliability of the rail service; and,
- They were also reminded to be proactive in ensuring they are fully mobilized for winter operations and that they are to ensure that any issues that may occur that affect the service are handled appropriately and expediently.

Four Primary Issues Causing Rail Service Interruptions Since October 6, 2019

1. Train Control and Monitoring System (TCMS)
2. Vehicle On Board Control (VOBC)
3. Doors
4. Switches

Train Control and Monitoring System (TCMS)

- TCMS is the computer that is essentially the brain of the train; and,
- It monitors all systems on a train, controls the traction power and braking systems and alerts the operator to any issues requiring attention.



Controls all the systems onboard the train

- | | | |
|---------------------------|------------------------|----------------------------------|
| o Sensors | o Onboard CCTV cameras | o Doors |
| o Speakers | o PA/PIDS | o Emergency communication |
| o Propulsion | o Brakes | o Train to wayside communication |
| o HVAC | o Traction | |
| o Next Stop Announcements | o Lights | |
| | o Diagnostics | |

Corrective Action Plan - TCMS

- RTG and RTM have been directed to mobilize a dedicated team of experts to investigate and solve the issue that results in the TCMS errors;
- Experts include TCMS architect/designer, train system engineer, train control engineer, train validation engineer, train systems analyst, and other experts/support personnel;
- This team is actively investigating all potential root causes and is meeting every day; and,
- Actions include:
 - Complete review of all TCMS error occurrences;
 - Identification of all potential root causes;
 - Identification of pre-warning to Controller of potential occurrence;
 - Testing various solutions with out of service trains on the line; and,
 - Develop procedures to expedite response and rectification.

Vehicle On Board Controller (VOBC)

- VOBC is a computer on board the train that communicates with the signalling system; and,
- It is the system that provides safe protection of train movements and manages the train's position and speed with the Transit Operations Control Centre (TOCC).

VOBC



TOCC

Controls train movement, position and connects the train to:

- The overall system (switches, signals) and
- The Transit Operations Control Centre



Corrective Action Plan - VOBC

- Direction has been provided to Thales and Alstom to provide the necessary engineers and work collaboratively to identify root causes and resolve the ongoing issues with their systems;
- Experts include both Thales and Alstom train and systems engineers and other experts/support personnel;
- Teams are actively investigating all potential root causes including communication links, potential connection with TCMS issues and associated hardware; and,
- Actions include:
 - Complete review of all VOBC communication errors;
 - Identification of all potential root causes; and,
 - A review of the software logs and reports has been completed and the data is being analysed.

Door Issues

- Door safety is a very critical safety feature. The doors need to be equipped with multiple safety features to prevent “door drags” – persons, objects, etc. being caught in the door while trains depart which leads to serious injuries and death;
- The doors on our trains open 86,000 times per day;
- Door safety needs to be taken very seriously and our doors meet what is called Safety Integrity Level 2 (SIL2) certification. SIL certification follows international technical and engineering standards. In the context of doors, safety features need to operate at this level to mitigate any safety risks with the door operations; and,
- Two factors can create door issues:
 1. Human interactions that activate the door safety features; and,
 2. Safety feature calibration.

Door Issues *(Cont'd)*

Main door safety features:

Sensitive edge

- Detects objects in the way, like a backpack or a person

Light sensor

- If the beam is broken, the door will not close



Corrective Action Plan - Doors

Since the launch, the following actions have been taken:

1. Enhanced customer communications to “*not hold the doors*”;
2. An inspection of all door mechanisms;
3. Voltage inspection of all doors;
4. Modified procedures to permit consistent “door isolation” which enables affected train to return in service;
5. Dwell times have been adjusted at Hurdman, uOttawa, Rideau, Parliament, Lyon Stations as well as other stations as required;
6. Door sensitivity adjustments will be recalibrated;
7. Door default sequencing is being reviewed to prevent additional cycling of doors;
8. All door software has been inspected which enables the shift to manual door operations; and,
9. Signal engineers (Thales) and door supplier (Vapor) are part of the team reviewing and addressing these issues.

Switches

- Switches and crossovers are an important piece of the rail infrastructure and provide operational flexibility to keep trains moving
- Crossovers are locations on the track where a train can move from one track to another;
- This crossover is located just west of uOttawa Station; and,
- Line 1 has many crossovers located throughout the line.



Switches (Cont'd)

- Located within the crossover are track switches;
- Track switches are sections of movable rail that direct a train from one track to another;
- A track switch can either be in **tangent** (in yellow), which allows for the straight movement of the train or in **turnout** (in blue), which is when the train moves from one track to another;



Switches *(Cont'd)*

- A track switch must lock into place and confirm electronically that it's in the correct position with the TOCC;
- When a switch is not functioning correctly or communicating with the TOCC, trains cannot safely proceed, as a derailment may occur;
- The system prevents trains from crossing switches when they are not properly aligned or communicating;

Switches *(Cont'd)*

- As a result, switch issues can cause delays, may require the implementation of replacement bus service;
- A technician may be required to attend to the switch, if it cannot be resolved remotely;
- When switches do not function properly the rail service is affected; and,
- RTM has brought in a switch expert.

Corrective Action Plan - Switches

- RTG and RTM have been directed to have dedicated guideway technicians assigned at terminus stations during peak periods;
- A complete inspection and review of all switches has also been ordered;
- Switch covers, which were installed to assist with the upcoming winter season, have been removed at Tunney's and Blair Stations, and will be removed at other locations; and,
- Switch maintenance, inspection plans and greasing programs will be revisited to ensure reliability.



What Occurs When There Is A Disruption

- Modern systems such as Line 1, include features that enable service to continue when there is a disruption;
- Some systems do not have these features and when there is a track, train or system issue, the rail operation must cease in its entirety;
- Rarely will Line 1 come to a complete stop and be entirely out of service, and to date this has not happened; and,
- Operational plans are in place to respond to service disruptions, which can include:
 - Single tracking;
 - Supplemental bus service; and,
 - Rail replacement bus service (R1).

What Occurs When There Is A Disruption *(Cont'd)*

- Detailed management plans are in place for each station and for the rail system which include the unique station features;
- Electric Rail Operators are trained to respond to certain error codes onboard vehicles and the goal is to keep service moving;
- With the priority of keeping service moving, staff implement various mitigations measures. However, during peak periods, this can have an impact on customer travel and wait times; and,
- Depending on the nature of the disruption, the Controllers follow a series of steps to re-route trains, which can take time to implement, as the system is designed to protect the safe movement of trains.

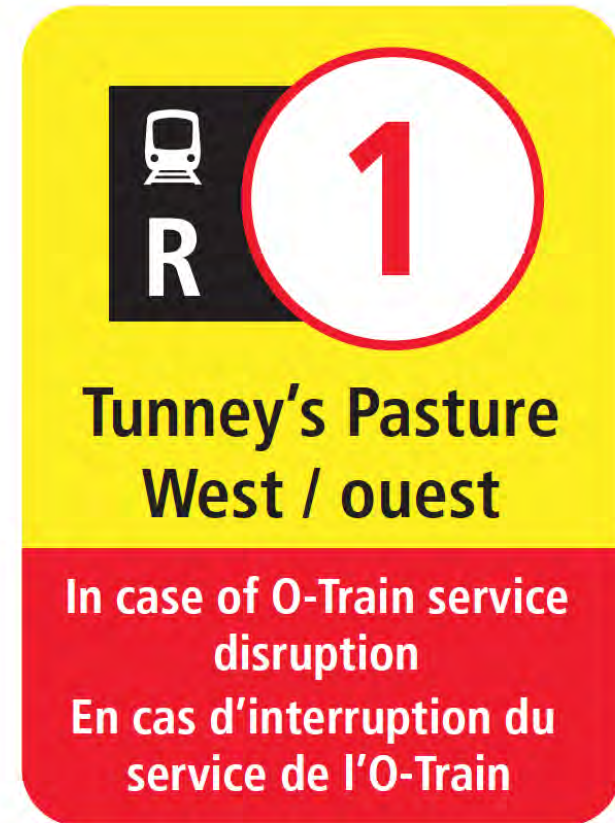
Single Tracking

- Single tracking is used when there is an obstacle on one of the tracks;
- The TOCC uses switches and crossovers to move trains from one track to another to keep rail service moving;
- Using single tracking means that a stopped train does not halt service;
- When single tracking is implemented, trains travelling in opposite directions share the same track, which means, they cannot operate at the same speeds or frequency; and,
- As a result, customers may also experience longer travel or wait times, which can vary.



Rail Replacement Bus Service

- Rail Replacement Bus Service is known as R1;
- R1 is used when trains are unable to operate in either direction along a portion of the track and single tracking is not an option;
- R1 may also be used to supplement rail service when there is a disruption that limits the capacity of the train service;
- Replacement bus service will mitigate the impact to customers until the O-Train resumes normal operations, but will be unable to match the capacity, speed and reliability of the train service; and,
- When rail replacement bus service is implemented, it can have an impact on other routes within the bus network.



Implementing R1 Service

- The priority is always to keep rail service moving, so our first step is to try and clear the issue, prior to considering implementing R1 or alternate train routing, such as single tracking; and,
- When considering whether to implement R1 service, the following factors are considered:
 - Location of the disruption;
 - Time of day;
 - Day of the week;
 - Service frequency; and,
 - Customer volumes.

Implementing R1 Service *(Cont'd)*

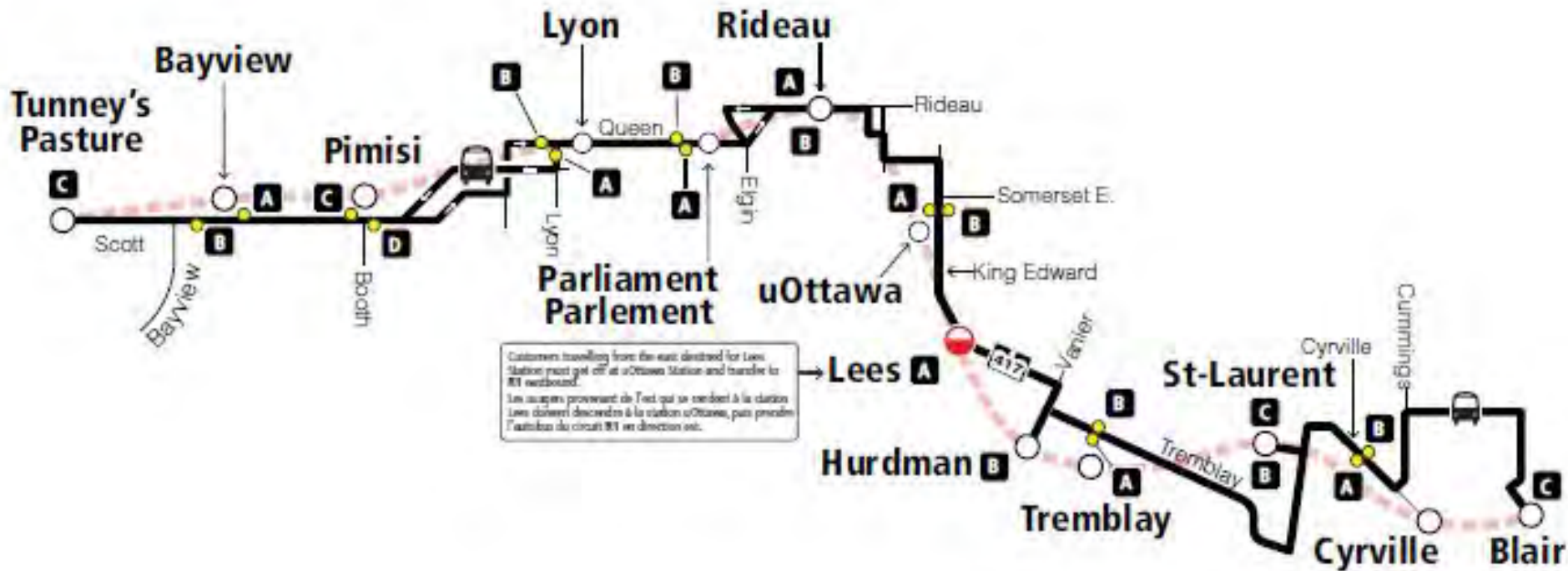
Implementing R1 service is the last resort because:

- It takes time for buses to get to R1 stops;
- It is the most disruptive for customers, as customers are sometimes required to exit the station, it may cause an additional transfer, and can be difficult to communicate;
- It may impact other routes in the bus network, as buses may be re-deployed to R1 from other routes; and,
- When R1 replacement bus service is implemented, OC Transpo will advise customers to check station diagrams for location of R1 bus stops. Customers walk to these designated bus stops and wait for the R1 bus to arrive.

Rail Replacement Bus Service



Tunney's Pasture ↔ Blair
 ← West/Ouest East/Est →



Partial service can be implemented across 14 segments.

Peer Comparisons / Industry Experts

- As we have done throughout the planning and launch of Line 1, staff are working closely with industry experts and comparator properties (e.g. Boston and Calgary);
- Experts from systems across Canada and the United States that have launched, operated and maintained systems have been on the City team for years;
- Best practices have been implemented in plans and procedures; and,
- In addition to this, the Toronto Transit Commission (TTC) has been brought in to observe and make recommendations on factors including:
 - Customer communications (including social media and alerts);
 - Station management;
 - Responding to disruptions; and,
 - Successful innovations from other transit organizations.

Feedback From TTC

Following the review with the representatives from TTC, they recommended the following:

- Extend O-Train Ambassadors;
- Consider increasing permanent station staff required for station and platform management and customer service;
- Enhance communication with frontline staff and the TOCC;
- Expand platform decal program to all stations and explore other potential uses;
- Review station management playbooks and implement measures to respond to overcrowding (for example customer flow control measurements); and,
- Implement platform access barricades to support measurement.

Feedback From TTC *(Cont'd)*

Communication recommendations include:

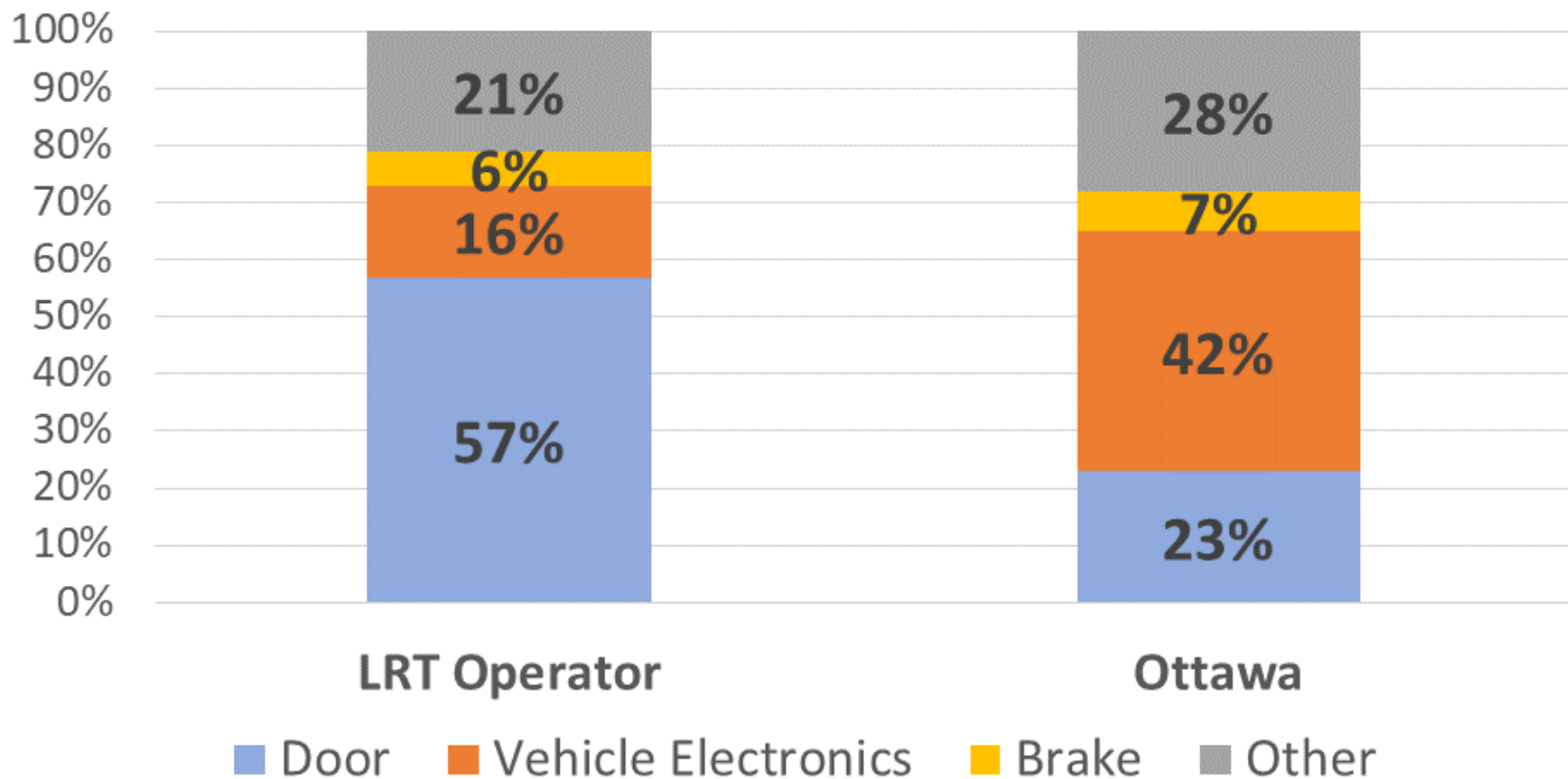
- Continued development of communications, including tweets and alerts;
- Continue to refine and develop pre-approved structured messages to provide timely updates to customers;
- Identify specific nature of delay and communicate to customers; and,
- Ensure all lessons learned are incorporated into Stage 2.

Benchmarking

- In 2019, OC Transpo applied for and was recently accepted into two international benchmarking groups to help assess performance and provide a comparison with other rail agencies: GOAL and NOVA;
- Both benchmarking groups are run by the Transportation Strategy Centre at Imperial College in London England globally recognized specializing in performance benchmarking, research and policy development for industry and government; and,
- Membership to these benchmarking groups gives OC Transpo access to a collaborative space to learn and share with the largest rail operators in the world.

Example Of What Causes Disruption To Light Rail Service

Most Frequent Vehicle Issues – Peer vs Ottawa



Bus Service



Bus System Key Metrics

- OC Transpo operates 139 bus routes:
 - Connexion = 39
 - Local = 72
 - Rapid = 11
 - Frequent = 17
- 8,454 daily bus trips Monday to Friday; and,
- 322,000 bus boardings per weekday.

Customer Journey Transformation

- October 6, 2019 – most significant bus service change in the history of Ottawa;
- 100 routes and 240,000 customer-trips per day affected;
- 72% of all routes affected by this change;
- Represented a major change to customer travel patterns;
- Introduction of a new transfer for most; and,
- Change in the way customers plan trips – particularly in the afternoon:
 - Pre-October 6: trip planning focused on bus departure times from Albert, Slater and Mackenzie King; and,
 - Post-October 6: trip planning now focused on which train connects to bus departure time at major transfer station.

Post-Service Change Transition Period

- Focus group testing results indicated that a transfer is disruptive for our customers, requiring time to adjust;
- Following all service changes – there is always a transition and adjustment period for customers and operational staff as they become familiar with new service;
- This has been the largest service change ever for OC Transpo customers, and we know that there also needs to be a large number of adjustments based on the experiences customers have been having; and,
- Challenges have been identified and we have developed a plan to address them:
 - Overloaded buses;
 - Late or missed trips; and,
 - New service / connections to O-Train Line 1.

Findings From Customer & Councillor Feedback

- OC Transpo is listening, reviewing and considering all customer comments and suggestions for bus service improvements;
 - Received through all communication channels – website, phone, in-person at customer service centres and social media;
- Meeting with Councillors and Transit Commissioners;
- Feedback from operational staff and the union;
- To date, identified 49 service change issues that fall under three main themes;
 - Overloaded buses;
 - Late or missed trips;
 - New service/connections to O-Train Line 1; and,
- Consistent with staff's analysis of on-time performance data.

Ideas Identified By Customers & Councillors

To date, identified 49 service change issues that fall under three main themes:

1. Overloaded buses:

- Concerns about crowded buses in the morning and the request for larger buses;
- Concerns about crowded buses leaving customers behind at major transfer stations; and,
- Requests for increased frequency on routes to relieve overloads.

Ideas Identified By Customers & Councillors *(Cont'd)*

2. Late or missed trips:

- Concerns are generally about late or missed trips in the peak periods.

3. Additional service:

- Requests to increase frequency to fill gaps in service or during infrequent time periods; and,
- Requests to add earlier trips.

Immediate & Corrective Two-Step Action Plan

Step 1:

- Staff have been using all available resources to enable the deployment of as many spare buses as possible;
- These spare buses have been located strategically to provide quick response;
- Overtime, deferred staff transfers, etc. have secured the temporary resources required to sustain this;
- This has improved bus service, but further enhancements are required;

Immediate & Corrective Two-Step Action Plan *(Cont'd)*

Step 1 (Cont'd):

- Suspension of the operator booking currently underway will free up operators that can be immediately deployed to service improvements;
- In addition, staff have held off disposing 40 buses that are in reasonable operating condition, are fully licensed and would add additional capacity to the system. These were deployed on Monday November 4 to address issues identified by Councillors and the public; and,
- Direct service to Kanata and Barrhaven Park & Rides were also implemented during the PM peak commute.

Immediate & Corrective Two-Step Action Plan *(Cont'd)*

Step 2:

- The draft Budget includes \$7.5M in funding for city-wide bus service;
- This includes 19 buses, in addition to the 40, that will enable OC Transpo to address identified issues, adjust bus schedules and expand service; and,
- The 40 buses will be embedded into the new schedule along with the additional bus service enhancements and 19 additional new buses with the schedule change for January 1.

Improving Bus Service

Phase 1 – November to December 31

- Supplementing service across the network using the 40 additional buses; and,
- Deploying extra trips as needed - based on real-time observations by staff at bus platforms.

Improving Bus Service Reliability *(Cont'd)*

Phase 2 – January 1 onwards

- Retain 40 buses to the fleet and include them in the new bus schedules;
- Capital investment in future years to replace those buses and maintain the enhancements;
- Additional investments of \$7.5M, 19 new buses and FTEs proposed in the 2020 budget allow us to:
 - Improve service reliability – standby buses at key locations, additional time on routes in congested traffic;
 - Increase capacity and reduce waiting time – routes with high ridership, routes with ridership increases following the opening of O-Train Line 1; and,
 - Provide new and improved connections to Line 1 – new growth areas, earlier/later trips, employment locations, etc.

Staff / Union Consultation / Suggestions

Bus Service Improvements

ATU 279 has brought forward the following ideas which are fully supported by management and will contribute significantly to improving bus service:

1. In order to enable the 2-step plan to be implemented, the current operator booking has been stopped;
2. Current work assignments will continue with adjustments to routes introduced to sustain them through to December 31;
3. New booking for service in January will reflect the upgraded service plan with the \$7.5M investment;
4. Operator recruitment will begin immediately to expand the operator pool;
5. Adding additional recovery time for operators leading to improved working conditions; and,
6. Creation of direct non-stop trips from Tunney's Pasture to west and south end.

Communications & Customer Information



Social Media Comparison Review

- OC Transpo invited an experienced team from the Toronto Transit Commission to review its customer notification process during service disruptions;
- Feedback gained from the visit was very informative;
- Staff have found there are opportunities to improve OC Transpo's current procedure; and,
- We are also asking other transit agencies to conduct similar reviews.

Feature/Process	TTC	OC Transpo	Exceeds/Same/Next Steps
Two Twitter accounts: <ul style="list-style-type: none"> • Customer service - for customer questions • Services updates - for informing customers about operations in real time 	✓	✓	Same
Twitter service hours - Customer service	7:00 - 22:00	24/7	Exceeds – 24/7
Twitter service hours - Service updates	7:00 - 22:00	6:00 - 21:00	Exceeds – because OC Transpo has 24/7 back up in off hours
Daily sign-in and sign-off on Twitter	✓	✗	
Conversational Tweets	✓	✗	We agree and moving in this direction as we expand
Drop down templates for service updates	✓	✗	Current templates being tested in real operations
Service alerts issued through multiple channels (Web, SMS, email, Twitter)	✓	✓	Same (except OC does not post alert on Facebook)
Alerts sent out regardless of whether impacts are localized or far-reaching	✓	✗	Under consideration

Feature/Process	TTC	OC Transpo	Exceeds/Same/Next Steps
Tweet bus trip cancellations	✗	✓	Exceeds
Tweets estimated timeline for resumption of service	✓	✗	In launch period there is limited experience compared to a mature system to predict timelines. Planned for future decision.
Service update channels (website, Twitter, on-site and on-board announcements and display)	✓	✓	Same
Updates every 15 minutes during service disruption	✓	✓	Same. Maximum time between updates.
Tweets sent in both official languages	✗	✓	Exceeds

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Customer Service Improvements

Customer Service improvements are designed to support the 24/7 operation:

- Maintain staff presence in terminus stations during weekday peaks and presence along the line throughout the service day;
- Support and respond to immediate station issues;
- Assist customers during service hours;
- Respond to system disruptions;
- Provide direct and live feedback to customers online and in-person; and,
- To provide a stable and consistent approach to skills for staff and presentation of consistent messages.

Customer Support At Stations

- Staff believe that additional resources are required to provide customer support;
- Stations were originally designed and developed to be unstaffed;
- System features allow for self serve options at ticket machines supported by audio visual help points;
- Printed customer information displays are provided throughout all stations;
- Fare gates were installed to eliminate the requirement for fare interactions;
- The system has always anticipated operational staff presence through floating/roving staff; and,
- Our experience to date and the TTC review clearly indicates the need for additional staff presence at stations.

Customer Service Expansion

Customer Service staffing requirements to support expanded services (15 FTEs):

- 12 station leads – 6 at terminus stations, 6 roving customer service representatives to provide the required service level;
- 2 social media staff to provide the live and customer service presence;
 - This would be backed up for evenings, weekends and special events by 24/7 staff; and,
- 1 supervisor.

Customer Service Expansion *(Cont'd)*

- This is in addition to 6 positions that were originally budgeted;
- The FTEs are included in the draft budget and will be capital funded in 2020; and,
- In the 2021 budget, they will be included in the operating budget.

Update On Customer Apps

- Recently, there have been technical issues with the open data API and real-time arrival systems;
- Impact is periodic loss of schedule and real-time data to 560560, 560-1000, OC Transpo app, independent apps, and Information Screens;
- Systems are currently stable;
- Technical staff are monitoring closely and responding quickly; and,
- Improved stability and next trip predictions are expected with scheduled software and database updates between now and January 2020.

O-Train Ambassadors (Red Vests)

- 150 O-Train Ambassadors providing service to tens of thousands of people every day;
- Since launch, staff have responded to thousands of customer service situations, as well as medical emergencies, reuniting lost children with their parents, etc.;
- Operational staff and O-Train Ambassadors in stations and along the line during all service hours; and,
- The plan is to keep O-Train Ambassadors in place into December and possibly longer.

Ongoing Improvements

Wayfinding floor decals and signs installed at Tunney's Pasture to help identify platforms:



Ongoing Improvements *(Cont'd)*

Wayfinding decals installed at Tunney's Pasture bus loop:



Ongoing Improvements *(Cont'd)*

Signage added at platform level to encourage customers to spread out along the platform:



Ongoing Improvements *(Cont'd)*

Platform level floor decals are being installed at all stations to help customers align to the doors to improve exiting and entering:



Ongoing Improvements *(Cont'd)*

Paper hangers were placed in trains with door messaging to remind and educate customers:



Ongoing Improvements *(Cont'd)*

- Stability strap hangers ordered October 31;
- Staff are sourcing local suppliers to start installation soon; and,
- Installation date to be confirmed.



Ongoing Improvements *(Cont'd)*

Doors removed at Tunney's Pasture Station to improve pedestrian traffic flow:



Ongoing Improvements *(Cont'd)*

Expanded bus platforms at Tunney's Pasture provide more comfortable waiting area and improve pedestrian flows:



Ongoing Improvements *(Cont'd)*

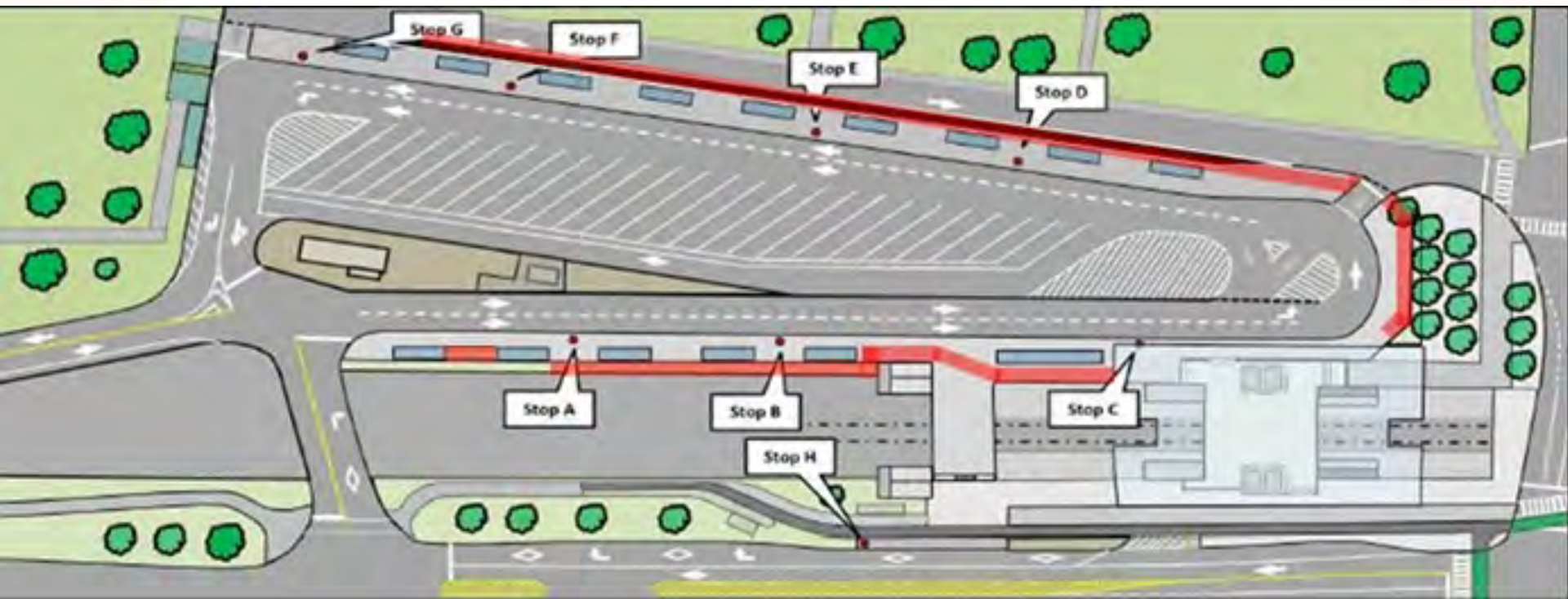
Canopies at Tunney's Pasture bus platform:

- Additional weather protection for customers walking between station and bus stops; and,
- Temporary canopy installation commenced Tuesday, November 5.



Ongoing Improvements *(Cont'd)*

Canopies at Tunney's Pasture bus platform (indicated in red below):



Ongoing Improvements *(Cont'd)*

At Blair Station:

- Relocated bus stop markers to increase platform space at certain stops;
- Changed bus stop locations for Routes 15, 24, and 224;
- Increased signage to improve customer wayfinding;
- Increased fencing to improve pedestrian safety;
- Added standby buses to fill gaps in service;
- Reminded customers and operators of all-door boarding; and,
- Added a supplemental layup area on City Park Drive to provide additional surge capacity.

Ongoing Improvements *(Cont'd)*

Addressing Slippery Tiles:

- Immediate Solution:
 - Installation of anti-slip mats has begun at downtown stations; and,
- Permanent Solution:
 - Application of anti-slip coating on tiles at key entrances – timing to be confirmed; and,
 - Continued monitoring and observation of safety at entrances by RTM / City.

Winter Operations



Winter Operations *(Cont'd)*

- This will be the first winter season with full customer loads across the network. Accordingly, RTM has been told by the City that:
 - Their new updated winter plan must be robust, and anticipatory of Ottawa's winter climate; and,
 - They are to over-resource with extra personnel, equipment, materials, etc. and to be prepared to adjust as the winter season progresses.

Winter Operations *(Cont'd)*

Staffing:

- RTG has developed winter weather staffing plans including staffing increases and use of sub-contractors to supplement snow clearing operations.

Stations:

- Radiant heating in passenger waiting areas, platform heating systems (heat trace) have been checked and will continue to be monitored by RTG; and,
- Snow clearing equipment including snow blowers, shovels, salt bins, etc. have been procured and have been installed at the above ground stations.

Winter Operations *(Cont'd)*

Fleet:

- Winterization Fleet Checks are in progress;
- Heaters and defrosters are being inspected; and,
- Proactive maintenance measures to prevent the build up of snow and ice on vehicles will be implemented.

Track & Infrastructure:

- Pre-inspection for switch heaters has been completed;
- Additional duct work completed for improved switch heater operations; and,
- Track modifications are underway, including the installation of snow fencing.

Winter Operations *(Cont'd)*



Winter Operations – Transfer Stations

- OC Transpo is responsible for snow clearing of the bus loops, bus platforms, shelters and sidewalks in fare paid zones;
- Dedicated resources available 24 hours per day during weather events;
- Dedicated staff are ensuring that there is minimal accumulation of snow at major transfer points, including Blair, Hurdman and Tunney's Pasture;
- Enhanced salting and snow removal at transfer stations;
- Targeted maintenance and snow clearing around fare gates; and,
- Citywide coordinated approach to snow removal between OC Transpo, RTM and Public Works & Environmental Services.

