

Waterfront Transit "Reset" Phase 2 Study

Public Information & Consultation Meetings September 18 & 26, 2017



Agenda

6:00 Open House

- 6:30 Agenda Review, Opening Remarks and Introductions
- 6:40 Study Overview and Presentation
- 7:20 Questions of Clarification
- 7:30 Facilitated Open House
- 8:30 Adjourn



Project Study Team

• A Partnership of:





- The project study team is led by a joint City-TTC-Waterfront Toronto Executive Steering Committee
- Metrolinx, City of Mississauga and MiWay have also provided input on relevant aspects of the study

What's the Purpose of this Meeting?

- Present the waterfront transit network travel demand considerations to 2041
- Present and gather feedback on options assessment for transit improvements in key areas of the network, including:
 - Union Station Queens Quay Connection
 - Humber Bay Link
 - Bathurst Fleet Lake Shore Queens Quay Intersection
- Report the overall draft findings of the Phase 2 Study, priorities, and draft directions for further study prior to reporting to Executive Committee and Council

Study Timeline

Where Are We Today?



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Phase 1 Recap

To view the Phase 1 Report and other background material, please visit the City's website: <u>www.toronto.ca/waterfronttransit</u>

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Vision

Provide high quality transit that will integrate waterfront communities, jobs, and destinations and link the waterfront to the broader City and regional transportation network

Objectives

Connect waterfront communities **locally and to Downtown** with reliable and convenient transit service:

- Promote and support residential and employment growth
- Provide more travel choices •

Enhance accessibility (**improved reliability and convenience**) of transit service, linking key destinations (employment, housing, institutional, education, cultural, recreational, commercial):

- Improve connectivity in neighbourhood improvement areas Better connect people to everyday places Make transit an attractive option for more trips Attract new transit riders Improve quality of life

Promote broader City and regional transportation network connections Develop **implementable and affordable** solutions to address current needs and the **flexibility to respond** to future conditions

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To view the Phase 1 Report and other background material, please visit the City's website: www.toronto.ca/waterfronttransit

Segment Areas



July 2016 Council Decisions and Motions

- 1. To initiate Phase 2 of the Waterfront Transit "Reset" for further development and costing of alignment concepts, detailed analysis of transit operations and ridership, **identification of priority segments**, as well as the creation of a Business Case and implementation strategy for delivering a coordinated waterfront transit solution.
- 2. To report back on the results of Phase 2 of the Waterfront Transit "Reset" in the second quarter of 2017.
- 3. To submit for Council's consideration as part of the 2017 Budget process, a funding request to initiate a 30 percent preliminary design by the Toronto Transit Commission for the extension of streetcar service from the Exhibition Loop to the Dufferin Gate Loop, in accordance with the approved Environmental Assessment Modification Report (2008.PG17.10), and to be coordinated with plans to replace the Dufferin Street bridge over the Gardiner Expressway and Lake Shore West Rail Corridor.
- 4. To establish an immediate dialogue with the new owners of the 27 acre (Mr. Christie's) site at 2150 Lake Shore Boulevard West at Park Lawn Road to **explore the feasibility of a new transit hub**.
- 5. City Council **recognize the immediate need for improved transit in the Humber Bay Shores area** and request the Deputy City Manager, Cluster B to report back on the results of Phase 2 of the Waterfront Transit "Reset" in the second quarter of 2017.

To view the Phase 1 Report and other background material, please visit the City's website: <u>www.toronto.ca/waterfronttransit</u>

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Phase 2



Coordinated Priority Rapid Transit Network Planning



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Metrolinx Considerations

- Draft 2041 Regional Transportation Plan for GTHA
- New GO / SmartTrack Stations
 - Within waterfront area, East Harbour & Spadina-Front Station included in 10 year network plan
- Regional Express Rail & Electrification
 - Implementing frequent two-way all-day service along Lakeshore East, Stouffville, Kitchener and Lakeshore West corridors
 - Electrification related considerations
- Fare Integration Strategy
 - In December 2017, Metrolinx to report on strategy for:
 - Discounts on double fares (GO-TTC & 905-TTC)
 - Adjustments to GO's fare structure
 - Fare Policy Harmonization
- Union Station Area
 - Ongoing Union Station upgrades & capacity assessment
 - Planning for New Union Station Rail Corridor infrastructure

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Current Development in the Corridor



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Transit Demand Forecasting Estimates – <u>AM Peak Hour</u>



South Etobicoke – forecasted 2041 ridership and travel market supports enhanced streetcar operations

Humber River to Dufferin – Preliminary evaluation for new dedicated transit infrastructure complete and Preliminary Business Case underway

Leslie to Woodbine – forecasted transit demand is low, and consideration of a LRT is post-2041

East Bayfront and Union-Queens Quay connection is the highest ridership forecasted in the Waterfront Transit corridor, and is a priority (up to 50% higher without Relief Line)

Fort York / Bremner – forecasted transit demand to 2041 does not support an additional LRT corridor, however there may be potential operational advantages

Transit Demand - Off-Peak / Special Events



- Across the TTC Network, there is a steadily growing trend toward increased travel in off-peak periods
- The waterfront area has a very high number of special events, cultural and recreational destinations, generating significant additional network trips, in both peak and off-peak periods
- These factors may not be comprehensively captured in the transportation network model forecasts, which is peak period and commuter focused
- Hence, greater weighting to access, choice and reliability factors is required when considering network improvements in this corridor.

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Transit Planning Beyond the City Boundary



 WATERFRONT TRANSIT "RESET"

 Image: Construction of the second se

- Travel demand forecasts identify a positive cross border travel relationship in both directions along Lake Shore Boulevard/Road
- Potential opportunities include:
 - Enhanced Lake Shore Road bus service, including extending MiWay service further east into Toronto
 - Extending streetcar service into Mississauga
- Opportunities will be subject to detailed fare, operations, and service reviews

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Ferry Assessment

- Successful in select areas of the world where numerous favourable conditions converge
- Viable commuter ferry service for Toronto's waterfront needs to be directly accessible to dense residential / employment areas, with highly defined travel markets



- City policies support ferry service as a transportation mode
- Ferry service is regarded as supplemental to the overall transit network
- Could potentially provide transportation options for special events and / or longer distance travel

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Waterfront Transit Network Development

Directions to 2041



Note: Future TTC service/routing will be determined as new transit infrastructure/improvements are implemented. As a general rule, it should be expected that service frequency and capacity will either be maintained or increased at any given location in the network.

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Network Direction to 2041-South Etobicoke



Long Branch to Legion Road

- Lake Shore Boulevard streetcar to generally remain in mixed traffic, with enhancements targeted as follows:
 - transit signal priority (in progress)
 - improving GO / TTC / MiWay interface
 - improving transfers at north-south routes, particularly at Kipling Avenue

Next Steps

- Feasibility studies
- GO station improvements (Metrolinx lead)
- Monitor transit volumes and coordinate with Mississauga





Long Branch to Legion Road Enhanced Streetcar

Enhanced streetcar operations along the corridor could include:



Transit Signal Priority



Turning Restrictions



Improving North – South Linkages





"Roncesvalles" Treatment



Network Direction to 2041-South Etobicoke



Legion Road to Humber Loop

- Introduce dedicated transit right-of-way on Lake Shore Boulevard
- Integrate potential new transit hub with new development on First Capital Site (former Christies Site)

Next Steps...

- Park Lawn Lake Shore Transportation Master Plan EA will incorporate a dedicated transit right-of-way on Lake Shore Boulevard into all alternatives
- Funding required for detailed design and construction





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Improved Connection

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Humber Bay Shores Dedicated Transit Right-of-Way



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Network Direction to 2041-Humber Loop to Strachan



Humber Bay Link

- Preliminary evaluation of short listed options for new transit infrastructure completed
- Preliminary Business Case for new transit infrastructure underway



Image Source: http//jsdoit.ca/?tag=sunnyside-pool

minary Directions



Humber Bay Link Options Humber Loop to Dufferin Street



Humber Bay Link Options: Preliminary Evaluation



Typical Section East of Colborne Lodge Drive



Preliminary Preferred Option: Concept 2E – via Colborne Lodge Drive and Lake Shore Blvd.

 Provides a balanced trade-off between improved transit service, mobility choice, and enhanced connections to key destinations

Shaping the City

Healthy Neighbourhoods

blic Health and Environ

Supports Growt

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Affordability

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- Comparatively minimal environmental and property impacts
- Presents a lower construction cost by avoiding major construction impacts and issues

See Display Boards for Summary Feeling Congested? Evaluation

Active Transportation Corridor

Humber Bay Link Preliminary Preferred Option 2E – Via Colborne Lodge / Lake Shore Blvd

Dedicated Transit Corridor

THE QUEENSWA



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KE SHORE BOULEVA

Network Direction to 2041-Humber Loop to Strachan



Liberty Village – Exhibition Place – Ontario Place Area

- 30% design for LRT extension along north side of Exhibition Place is underway and coordinating with:
 - Dufferin Bridges replacement
 - Metrolinx Exhibition GO Station Improvements and Electrification

Next Steps...

- Funding required for detailed design and construction of LRT extension
- GO station improvements (Metrolinx lead)
- Follow-up studies for additional transit links to be determined based on Ontario Place redevelopment and demand generation



Eminary Direction

NOVOM

Operatio

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Network Direction to 2041-Strachan to Parliament



Lake Shore – Fleet –Bathurst – Queens Quay Intersection

Preliminary evaluation of short listed options for transit infrastructure/intersection improvements completed

Next Steps...

Feasibility study and/or EA







Operation

mproved

Queens Quay/Fleet/Lake Shore/ Bathurst Intersection Improvement Options

Concept 3A – operational improvements (i.e. transit signal priority, revised signal timings, turning restrictions) – *Not Shown*



Concept 3B – intersection reconfiguration (at-grade)

Concept 3C – grade separation (transit underground)

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Preliminary Evaluation: Intersection Improvements



West East Image: Section – Bathurst Street

- Preliminary Preferred Option: Concept 3B –
 Re-configured At-Grade Intersection
 - Provides improved transit service reliability and local transit travel time
 - Presents enhanced intersection safety and northsouth linkages for pedestrians and cycling
 - Comparatively moderate construction cost, including associated risks

See Display Boards for Summary Feeling Congested? Evaluation

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Supports Growt

Affordability

Shaping the City

Healthy Neighbourhoods

Public Health and Environme

Network Direction to 2041-Strachan to Parliament



Front Street and / or Bremner Boulevard Transit

Additional analysis and longer-term consideration for LRT and/or BRT is required as major initiatives in this area advance (e.g. RER, Rail Deck Park, Relief Line West)

Next Steps...

Consider in conjunction with overall TOcore
 mobility strategy





Iminary Directio

Important

Operation



Union Station – Queens Quay Connection

- EA Approved Option LRT Expansion
- Critical portion of network
- Initial proof of alternative concepts complete and all have been found to meet forecasted 2041 transit demand
- > Other considerations are required

Next Steps...

To be determined



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Existing South Bay Corridor Travel Patterns



Transit Characteristics

- ~25% of SB passengers travel one stop to Queens Quay (50% at AM peak hour)
- ~20% of NB passengers travel one stop from Queens Quay (5% at AM peak hour)

Pedestrian Characteristics

 Significant volumes along Bay Street and new elevated PATH west of Bay between Union and Queens Quay

Future South Bay Corridor Travel Patterns



Future Trend

N/S Movements

Combined Pedestrian and Transit Volume (Projected 2041 AM Peak Hour Estimates)



Notes:

- 1. Estimated transit volumes: 3700 pph southbound and 1700 pph northbound.
- 2. Estimates are conservative.
- Significant increase in N/S movements along the southern Bay corridor as new development emerges locally and further to the east
- Southbound movements in particular may increase more than 100% (AM peak)
- How may these movements be accommodated?

Network Direction to 2041-Strachan to Parliament





Pedestrian Improvements to Bay Corridor – At Surface

Required in conjunction with Union – Queens Quay tunnel connection option

Next Steps...

 Consider in conjunction with overall TOcore mobility strategy



SEGMENT 3

Queer

OPTION A

Expand LRT Infrastructure

This option expands capacity at the Union Station streetcar loop to allow future eastbound and westbound service along Queens Quay to run thru Union Station. UNION STATION

LAKESHORE BLVD

2 QUEENS QUAY STATIO

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HARBOUR ST
Option A1: Major Union Station Loop Expansion



Key Infrastructure (EA Approved)

- Union Station
 - provisions for 4 platforms
 - additional by-pass trackage to access each platform separately
 - integrated pedestrian tunnel between Union Station and new inter-regional bus terminal
- Queens Quay
 - extend underground tunnel to east of Freeland

Operations

- operates as a mainline station (not as a terminus)
- assumed 4 min headways in each direction
- on-board operator



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Option A2: Smaller Union Station Loop Expansion



Key Infrastructure (EA Approved)

similar as per Option A1, except there are initially only provisions for 2 platforms

Operations

similar as per Option A1

Option A2 Advantages Over Option A1

construction cost and complexity are lower



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OPTION B

Repurpose Tunnel to Walkway/Moving Sidewalk

This option replaces the streetcar service between Union Station and Queens Quay with a moving sidewalk and walkway within the existing tunnel.

There would be a convenient transfer to a future east-west LRT through service along Queens Quay.



Repurpose Tunnel for Pedestrian Activity

Walking and using a moving sidewalk technology for the peak direction movement, similar to those around the world at airports and other transit systems, significant capacity can be provided in each direction. Potential to integrate with the City's PATH system and connect to existing and planned developments.



Tunnel Length – 530 m

- Finished Tunnel Width 3.0 m
- Moving Sidewalk Width 1.2 m (wider widths available)
- Tunnel Length 530 m (moving sidewalk not continuous due to tunnel constraints and to allow for cross-overs and connections to destinations along the tunnel)





Toronto – Billy Bishop

London – Jubilee Line, Waterloo Station



Toronto – LBPIA



Paris – Charles De Gaulle Airport



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Toronto's PATH Network

Toronto's PATH Expanding Network

As per PATH Pedestrian Network Master Plan (2012), the PATH network:

- generates higher value for below grade retail space and increases the market area for individual stores
- provides a critical leasing advantage to the property owner .
- brings in over \$254 million in income, sales and property taxes (2009) •



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Option B1: Queens Quay Section

Conceptual illustration of the relationship between the streetcar and the moving sidewalk/walkway, with Queens Quay transit service at grade.



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Option B2: Queens Quay Section

Conceptual illustration of the relationship between the streetcar and the moving sidewalk/walkway, with Queens Quay transit service below grade.



OPTION C

Repurpose Tunnel to Alternative Transit Technology

This option replaces the single-line streetcar service between Union Station and Queens Quay with a high-speed, high capacity, dual-line cable-pulled system in the existing tunnel.

There would be a convenient transfer to a future east-west LRT through service along Queens Quay.

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BYPASS

AKESHORE BLVD

FERRY DOCKS STATI

ARBOUR S

UNION STATION

Automated Dual Line, Dual Haul Bypass Funicular

Using technology similar to the train at Pearson Airport, four cars would operate on two lines, with a total capacity of 8,250 pphpd and reliability of over 98% with no human operator on the cars.



Precedents

Existing technology can be readily adapted for this system. Automated funicular technology is increasingly being used for short-haul service around the world, including as a connector between longer-haul systems, such as the Red Bridge Funicular in Luxembourg, which provides transfers between the Northern Line train and the Kirchberg Plateau Tram. The Fun'ambule in Neuchatel, Switzerland provides a direct link between the main commuter train station and the university.

Fun'ambule (Neuchatel, Switzerland)



image by Funimag (Michel Azema)

330
Funicular. Single track bypass.
3,400
126
2
8 m/s

Red Bridge Funicular (Luxembourg)



https://www.youtube.com/watch?v=PkUbh1m3hPU

Length (m)	240
Configuration	Dual haul bypass
Capacity (pphpd)	6,000
Total Train Capacity	168
Number of Trains	4
Speed	7 m/s

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Tunnel Modifications

Queens Quay Station (Return System)

The existing Queens Quay Station can be retained and retrofitted for the Link, or the station could be pushed farther south to bring it closer to the Queens Quay line and the Ferry terminal.

Tunnel (Section showing bypass)

The existing tunnel can accommodate the funicular system without impacting the slurry wall, with the exception of a 50m segment in the middle for the bypass.

Union Station (Drive Room)

The existing loop is large enough for expanded twosided platform and all drive equipment.











Option C1: Queens Quay Section

Conceptual illustration of the relationship between the streetcar and the Link, with Queens Quay service at grade.



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Option C2: Queens Quay Section

Conceptual illustration of the relationship between the streetcar and the Link, with Queens Quay service below grade.



Union - Queens Quay Connection Options Summary Assessment for 2041

- · All factors considered, no option has an overall advantage at this stage of analysis
- The distance travelled to/from Union Station is a key consideration

Further Review & Next Steps

- · At-grade vs. below grade Queens Quay options
- User experience for future transit and walking trips
- Comparative cost evaluation



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East Bayfront and Port Lands

- Transit planning completed under separate studies:
 - East Bayfront LRT EA (2010)
 - Port Lands and South of Eastern Transportation and Servicing Master Plan EA (2017)

Next Steps...

- Future considerations subject to Union Queens Quay Connection recommendation:
 - Phasing and timing of incremental transit extensions
 - Alternative Downtown transit routing implications (i.e. size and location of terminus loop(s))



Source: Port Lands + South of Eastern Transportation and Servicing Master Plan, Open House Nov 14, 2015





Leslie Street to Woodbine Avenue

- Forecasted transit demand is low
- Post-2041 transit network consideration
- To consider bus-based solutions as part of the network solution

Next Steps...

To be determined







Summary of Network Directions



Draft Phase 2 Network Directions – Major Emerging Priorities

- 1. Union Waterfront Link (and unlocking access to East Bayfront)
- 2. Dufferin Loop to Exhibition Loop
 - 30% design underway; significant Metrolinx coordination
 - funding required for detailed design and construction

3. Dedicated Lake Shore Boulevard Transit Right-of-Way in Humber Bay Shores

- PLLS TMP EA to incorporate direction
- funding required for design and construction

4. Bathurst / Fleet / Lake Shore / Queens Quay Intersection

 preliminary preferred concept - Option 3B (intersection re-configuration with transit at-grade / prioritized)

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• EA required for multi-modal improvements and public realm design

5. Humber Bay Link

- preliminary preferred concept Option 2E "Colborne Lodge"
- Preliminary Business Case underway

Study Timeline & Next Steps



Discussion Questions?

- Are there any questions of clarification?
 - What do you like?
 - What, if anything, concerns you and why?
 - What refinements, if any, would you suggest?
- Up next:
 - A facilitated open house to learn more and gather input
 - **Circulate** through the stations, learn more about the overall network direction and design considerations for further study

Contact Us!

• Submit your feedback at the end of the meeting or by October 3, 2017 via email to:

nangelis@lura.ca

• For more information, please visit the project website:

toronto.ca/waterfronttransitreset