



# Streetcar Noise – King & Sumach Intersection

## Community Meeting Toronto Transit Commission

Wednesday, November 16, 2016

6:30 p.m. to 8:30 p.m.



# STREETCAR NOISE KING & SUMACH INTERSECTION



## **AGENDA**

- 1) Welcome and Introductions
- 2) Presentation
- 3) Discussion

# **STREETCAR NOISE**

## **KING & SUMACH INTERSECTION - 2**

### **TABLE OF CONTENTS**

- 514 Cherry streetcar service
- Operation – design
- Streetcar Intersections
- Community concerns - noise
- Testing and Testing Results
- Next Steps

# 514 CHERRY STREETCAR SERVICE

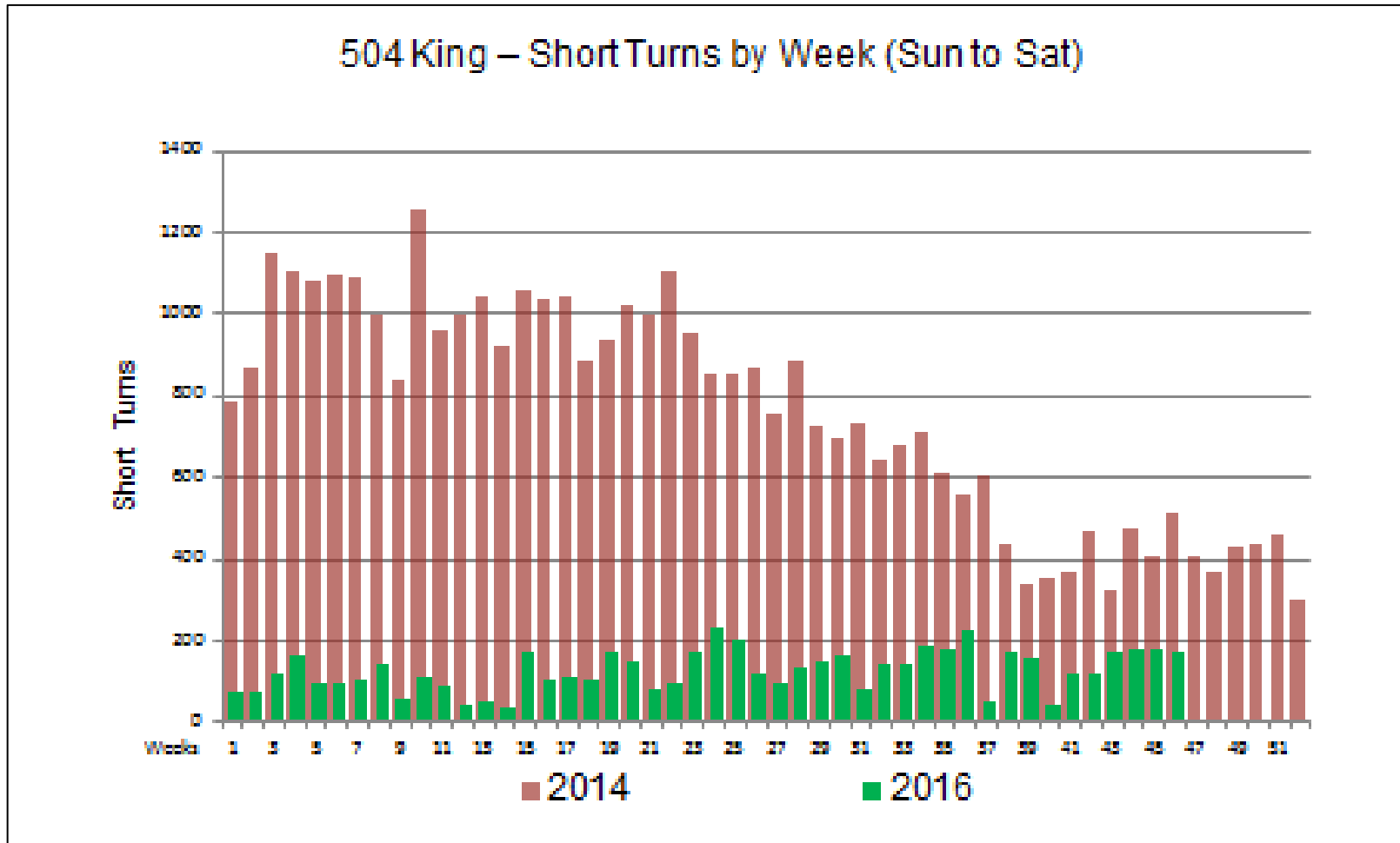
- **New route**
- First new streetcar route in Toronto in 16 years (June 19, 2016)
- The new route provides support to the 504 King route which carries 65,000 riders per day
- Waterfront Toronto; Infrastructure Ontario, TTC



# 504 KING SERVICE QUALITY AND RELIABILITY



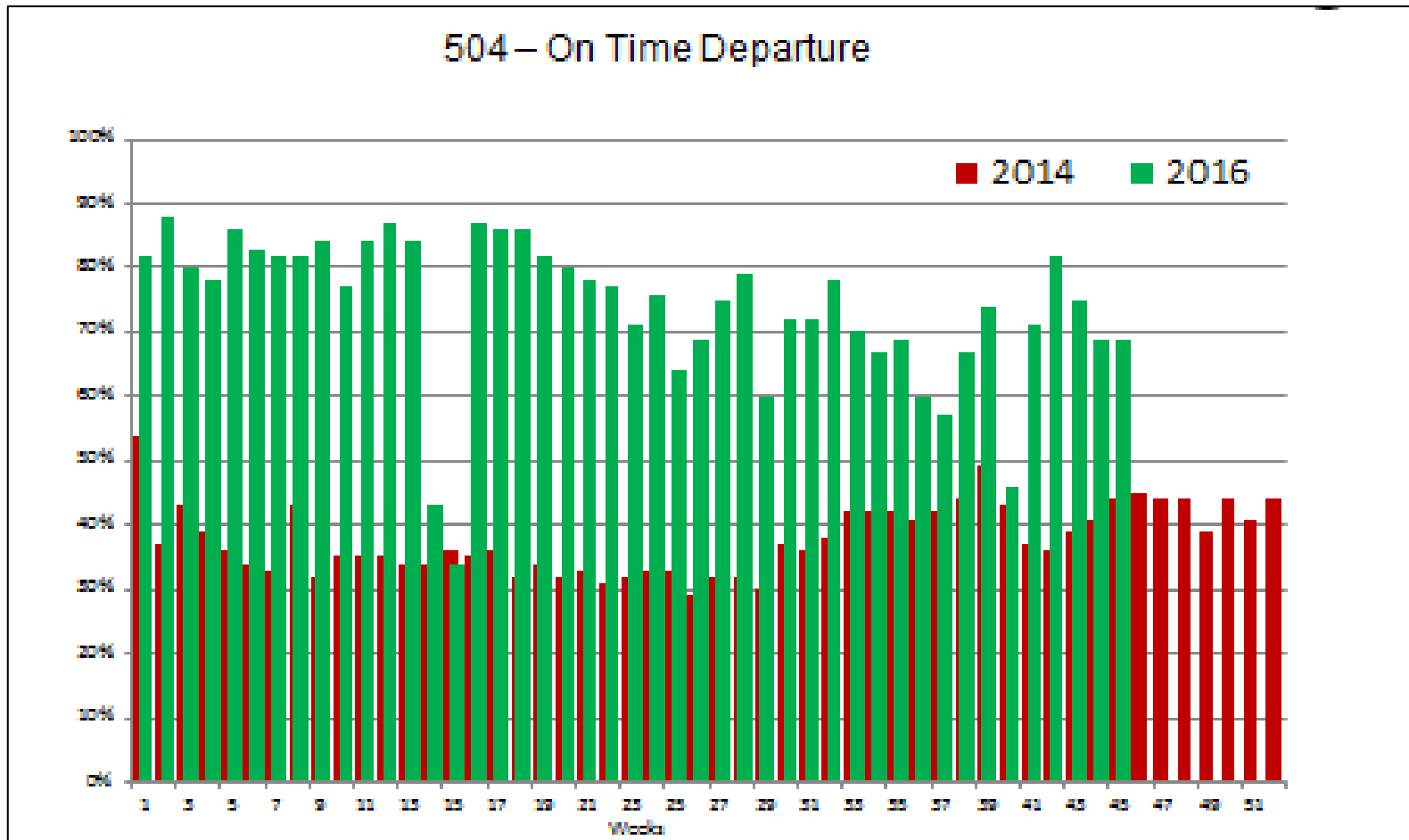
## Short turns



# 504 KING SERVICE QUALITY AND RELIABILITY - 2



## On time departures



# 514 CHERRY STREETCAR SERVICE



- **Operation**

- Designed for new low-floor streetcars.
- Track at King and Sumach intersection.

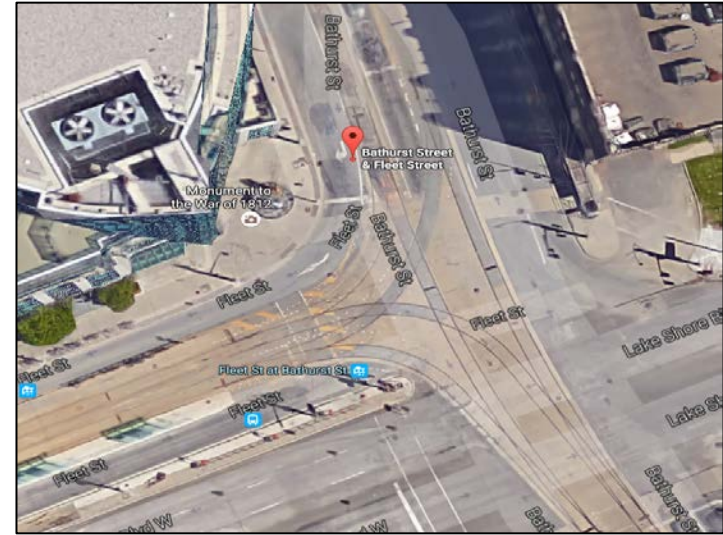




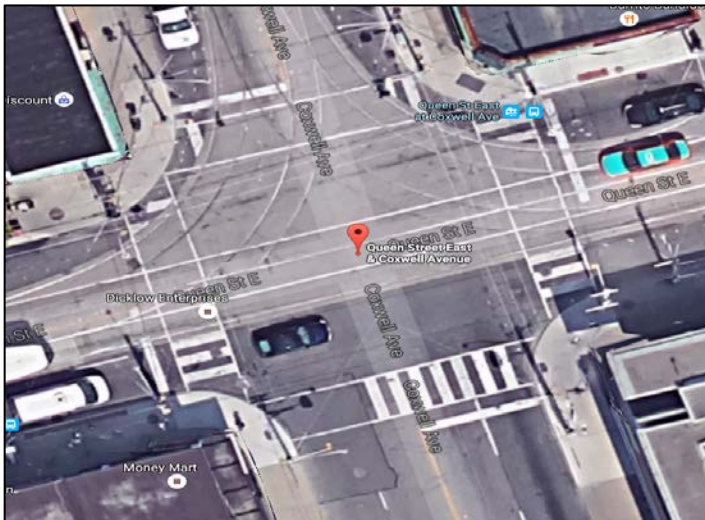
# STREETCAR INTERSECTIONS



**Broadview and Queen**



**Bathurst and Fleet**



**Queen and Coxwell**



**Queen and Church**



# COMMUNITY CONCERNS

- **Streetcar noise**



1) Rumble - eastbound track switch.

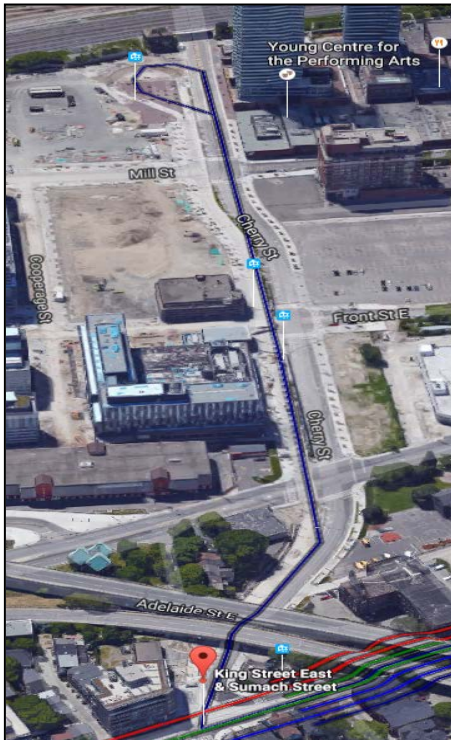


2) Squealing noise - streetcars turning.

3) Streetcar horns - motorists on right-of-way (r-o-w).

## • Temporary Service - 514 streetcar

- Streetcars replaced with a Wheel-Trans bus south of King Street, nightly between 10 p.m. and the end of service, and from start of service to 7 a.m. on weekdays, and 10 a.m. on weekends.
- Until December 22, streetcar operations will also be extended in the evening to 11:30 p.m.



# COMMUNITY CONCERNS – CONT..

- **Streetcar noise – continued....**

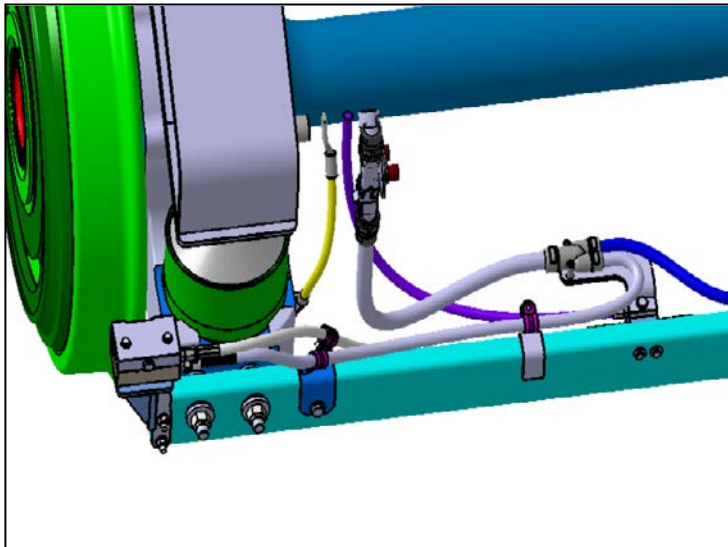
3) Streetcar horns -  
motorists on right-  
of-way (r-o-w).





# OTHER MITIGATION TO REDUCE NOISE

- New low floor streetcar with wheel lubrication system.
- Lubrication system at Distillery Loop.
- Wheel-Trans shuttle bus.
- Wheel-rail interface projected to improve with additional operation.



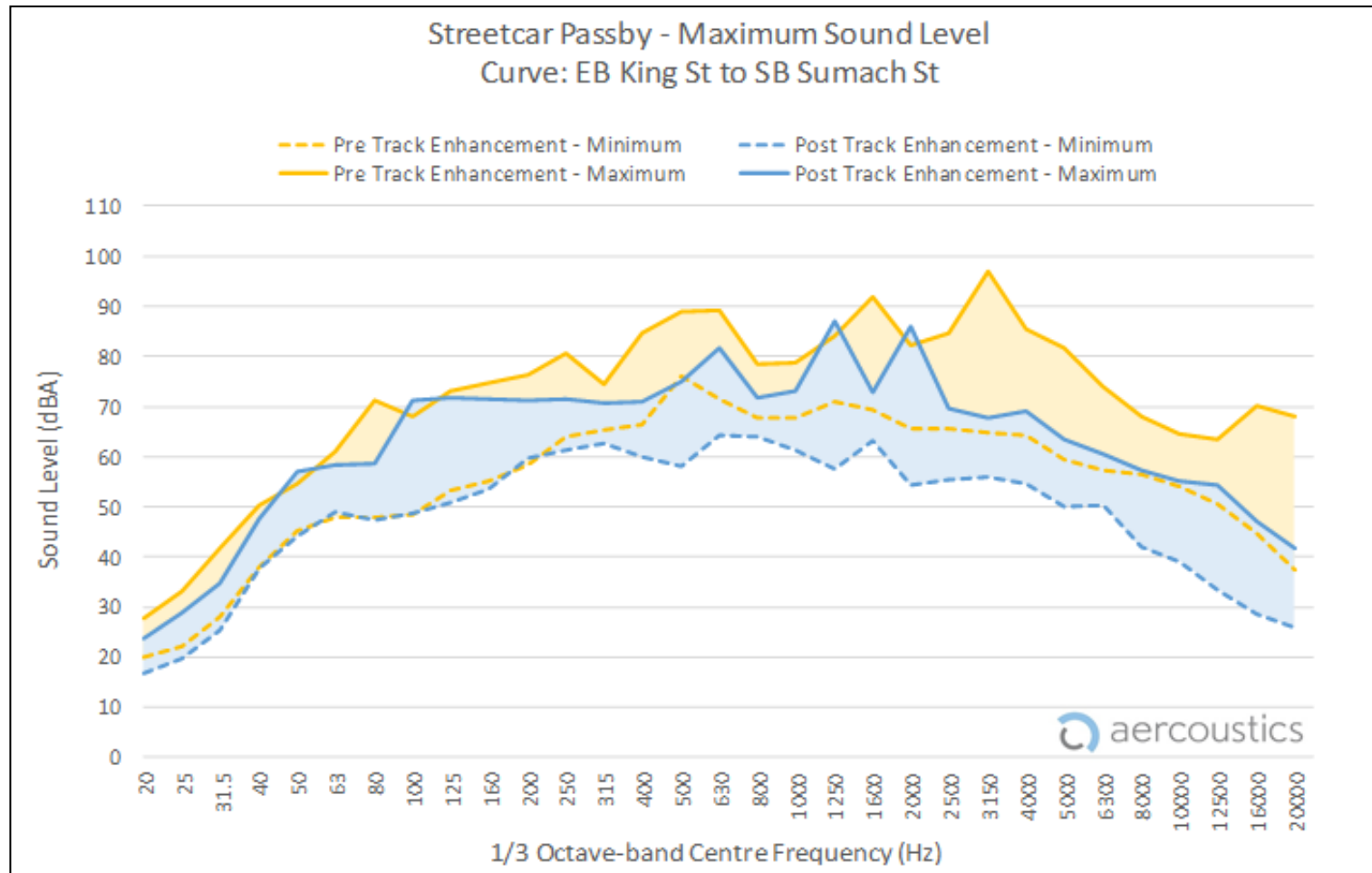
# TESTING AT KING/SUMACH



- August 10, 2016: Base line Noise and Vibration measurements.
- October 4, and 6, 2016: Noise & Vibration measurements after rail enhancement work.
- Measurements conducted and analyzed by TTC's consultant; Aercoustics Engineering Ltd.

# TESTING AT KING/SUMACH

- Before and after measurements

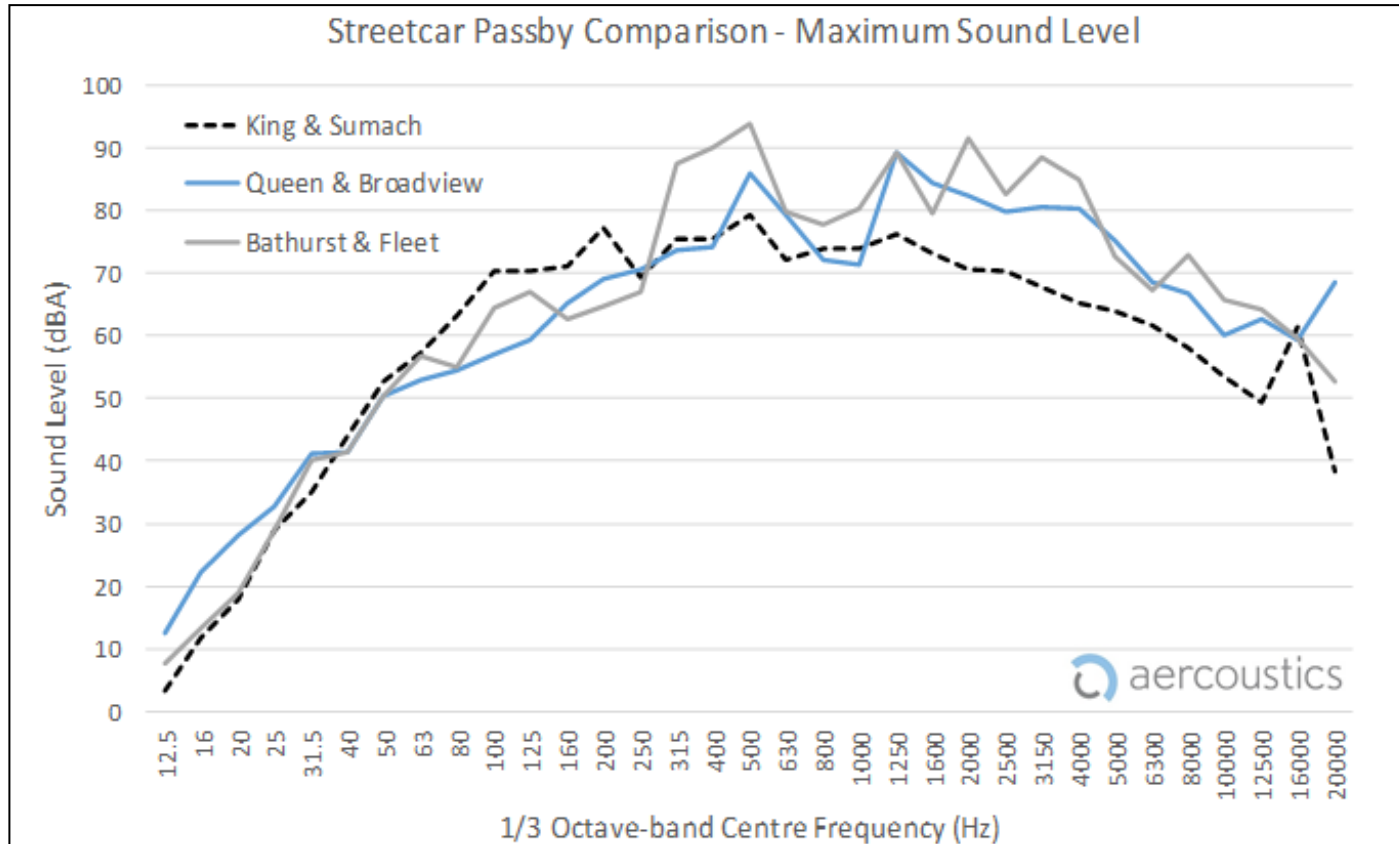


Graph shows the maximum noise results of before (baseline) and after measurements at the intersection of King and Sumach. The levels measured indicate a reduction in noise, particularly in the high end range of frequency. Additional testing will take place in 2017.



# COMPARATIVE INTERSECTION TESTING

- Noise measurements - October 26, 2016



Graph shows comparison of maximum noise measurements between three intersections of similar track configuration and radius. King and Sumach, Queen and Broadview, and Bathurst and Fleet. The duration of squeal at King and Sumach has been reduced after rail enhancement work, and is lower than the other two intersections. The noise levels associated with the top-of-rail squeal is in part; in-line with and also slightly higher than the other two intersections. While we anticipate improvement as the wheel and rail interface progresses naturally, we will explore other technologies to reduce squeal at King/Sumach and other locations of similar track geometry in the streetcar network. Further overall noise improvements are expected when the 514 route is serviced by all low-floor streetcars.



## **More measurements are required;**

- We will meet again with the community in summer/fall 2017 after;
  - 514 route is operated with all low-floor streetcars (scheduled for Q2, 2017).
  - Time for streetcar wheels to find their path through curves will further reduce noise.
  - Conduct further noise measurements.
  - Update on any technology we are exploring
- Wheel-Trans shuttle will continue operating in late hours until low-floor streetcars fully deployed on 514 route

# QUESTIONS?



## Contact:

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**END**