Transit Performance Measures (and how to improve them)

ITS Washington Annual Conference 2017

Owen Kehoe, PE, PTOE
King County Metro
Speed & Reliability Group

King County METRO
We'll Get You There

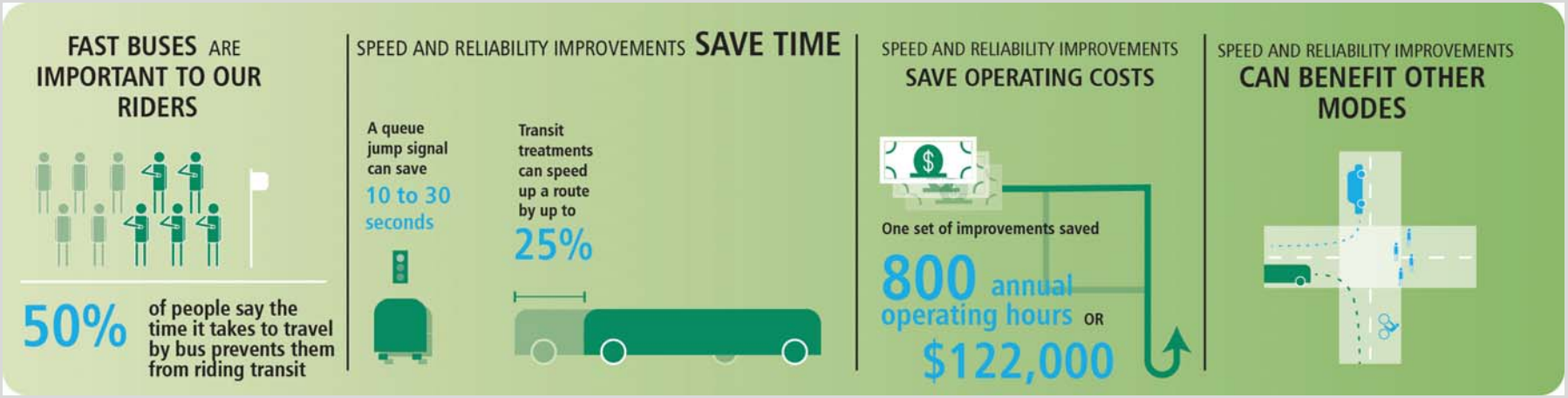
Overview

- Why is Speed & Reliability Important?
- Metro's Data Sources
- How Transit Performance is Reported
- Strategies to Improve Speed & Reliability
- TSP as a Performance Management Tool

What are Transit Speed and Reliability?

- **Speed** is the ability of transit vehicles to move along their routes in reasonable amounts of time.
- **Reliability** is the ability for transit vehicles to arrive at stops at consistent and predictable times.
- **Both Speed and Reliability** help transit agencies reduce operating costs, help people travel faster and more conveniently, and help local jurisdictions make transit an attractive transportation option.

Why is Speed & Reliability Important?

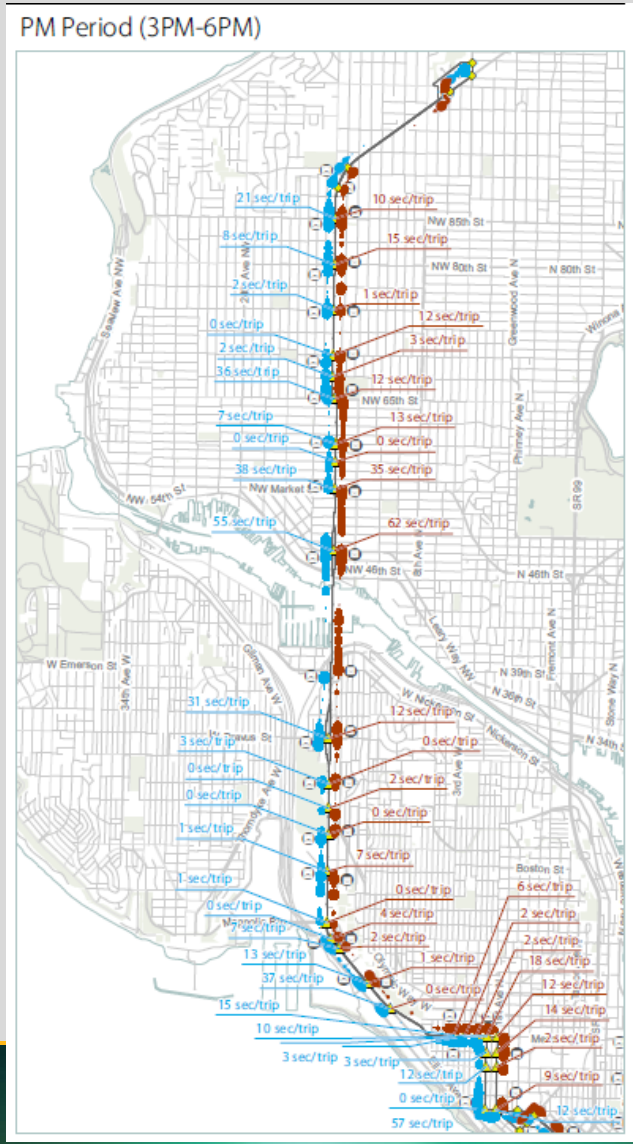


Metro's Data Sources

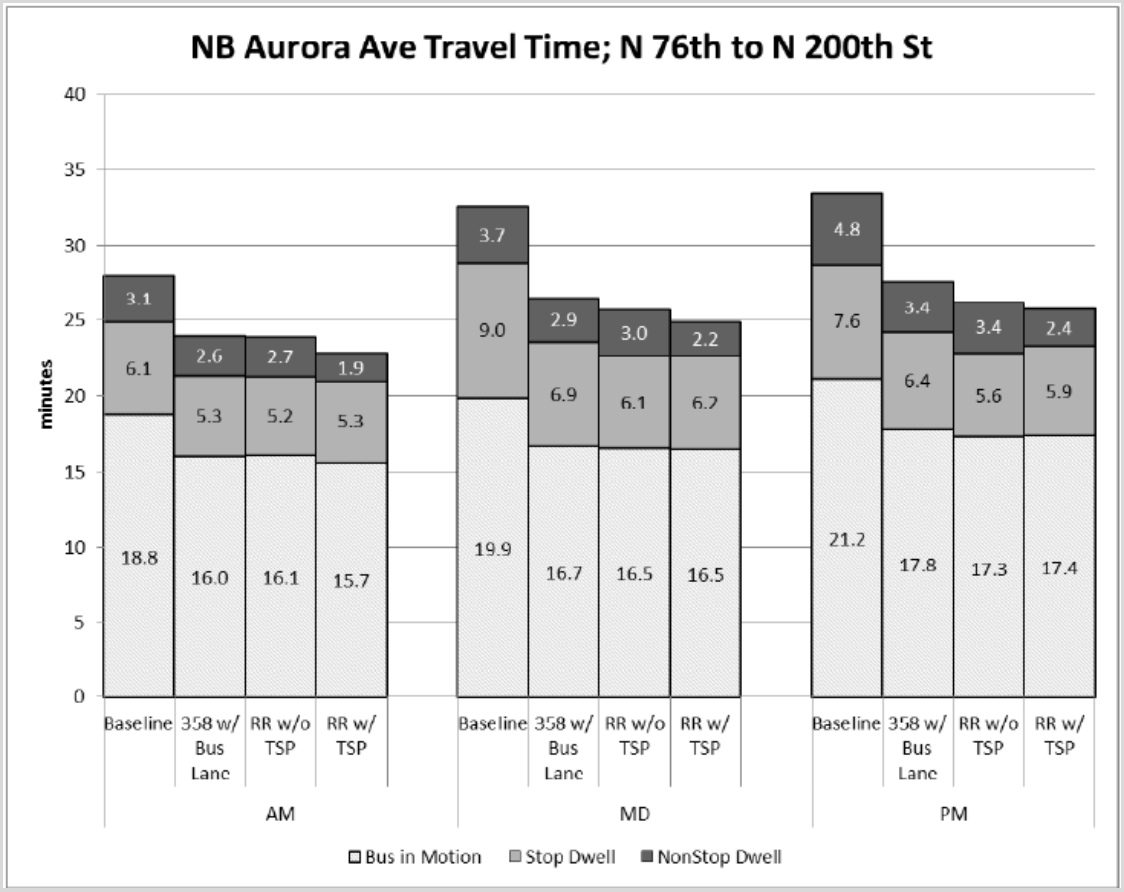
- On-Board System (OBS) Data
  - Time stamps at each bus stop
  - Dwell time and door open time at each stop
  - "Disturbance stop" → Traffic delays
- Time Point Data (AVL)
  - Travel time between time points
  - Schedule performance at a time point (early/late)
- Automatic Passenger Counter (APC) Data
  - Ons/Offs at bus stops
  - Passenger load on the bus

How Transit Performance is Reported

- Microscopic
  - Delay assessment
  - Before/After studies
- Macroscopic
  - Power BI

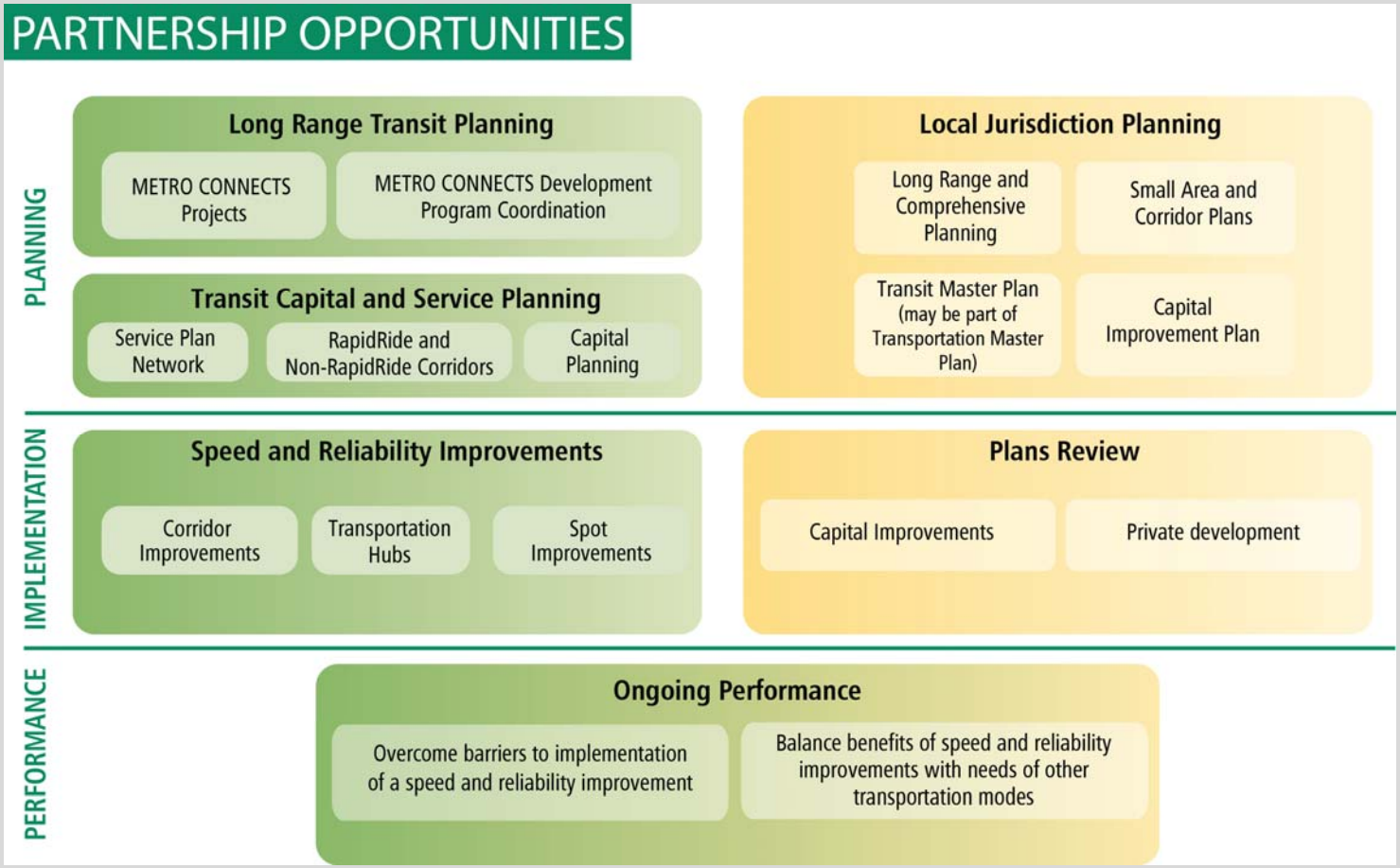


How Transit Performance is Reported



Rapid Ride E-Line before/after study

Strategies to Improve Speed & Reliability



Partnerships are key to implementing transit speed & reliability projects

Strategies to Improve Speed & Reliability

- S&R “Toolkit”
  - Reference document released March 2017
  - Framework for partnerships
  - Transit supportive project examples
    - Bus Lanes
    - Queue jumps
    - TSP
    - etc.
  - Download a copy:
    - http://kingcounty.gov/~/media/depts/transportation/metro/about/planning/speed-reliability-toolbox.pdf

TSP as a Performance Management Tool

- Current TSP Strategy
  - Speed-focused
  - Try to give every bus TSP
  - Schedule reflects TSP
  - Traditional TSP timings:
    - Green Extension
    - Early Green
- New TSP Strategy
  - Reliability-focused
  - Late buses request higher level of TSP
  - Enhanced TSP timings:
    - Phase skipping
    - Cascading priority
    - Priority at near-side stops
  - When available: traditional TSP for on-time buses

TSP as a Performance Management Tool

- Considerations for TSP strategy/timings:
  - Intersection LOS or V/C ratio
  - Ridership; on the bus and downstream
  - Location of bus stops and other intersections
  - Pedestrian volumes and activity
  - Lateness threshold
  - Time of day

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