

# Route 44 TPMC Before and After

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Capital Planning and Portfolio Management  
Speed & Reliability

# Presentation Outline

- Route 44 background
- Project background
- Project timeline
- Measuring change
- Quantifying change
- Observations
- How is this helpful to you?



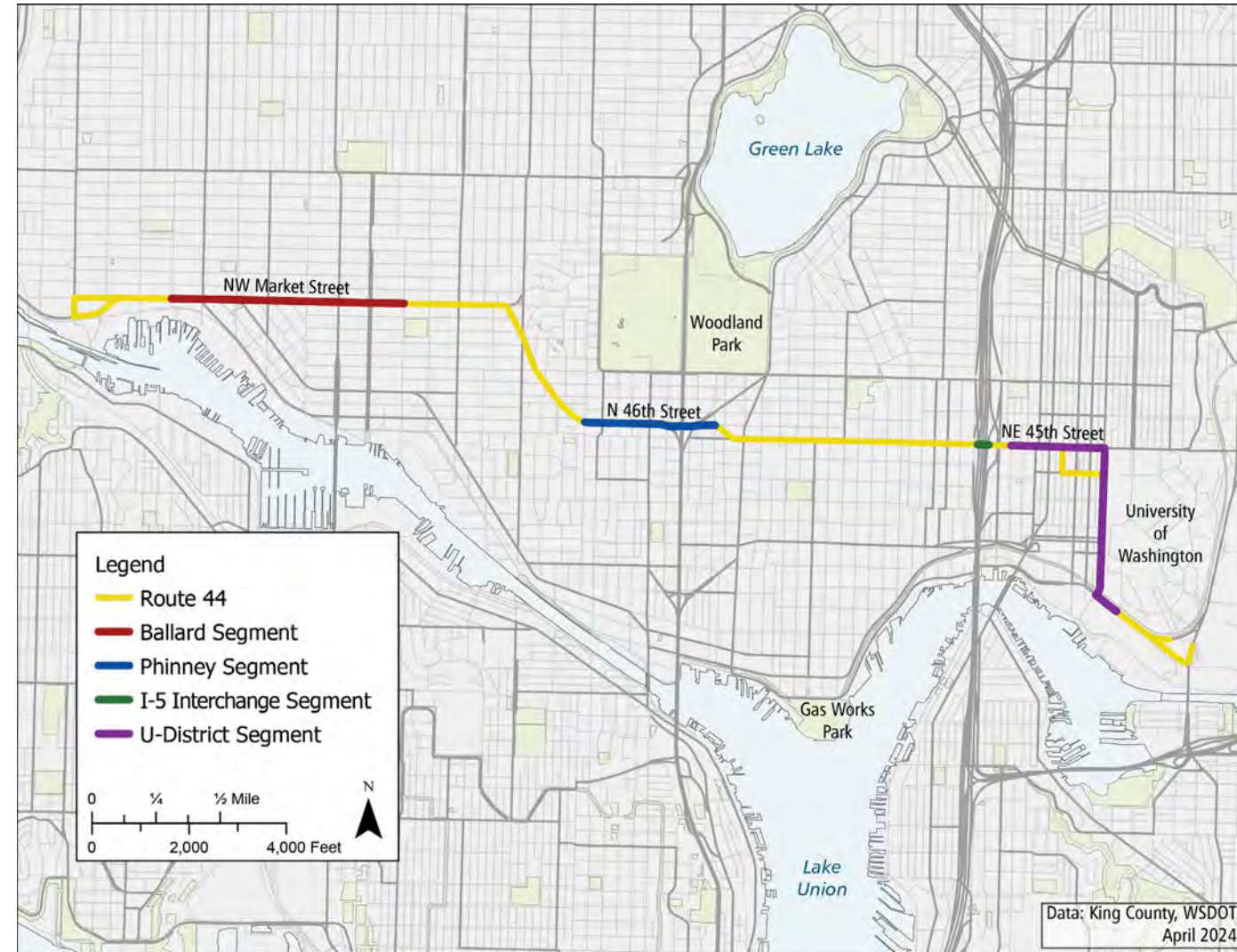
# Route 44 Background

- East/West Route
  - Connections: Ballard, Phinney Ridge, Wallingford, University District
  - Historically:
    - AM Travel EB
    - PM Travel WB
- Population within ¼ Mile:
  - 41,400 people
- Ridership:
  - Fall 2019: 8,873
  - Fall 2023: 5,799



# Project Background

- SDOT led improvement project with funding and support from KCM
- SDOT Goals: Improve safety, access to transit, and speed and reliability of the route, and advance community needs.
- Metro Goals: 10-15% Travel Time reduction for the Route 44.



# Project Background Route 44 TPMC Project Timeline



# What did we want to measure and why?

- Travel Time Changes
  - Did Metro meet goal of 10-15% reduction?
- Reliability Changes
  - On Time Performance
    - Basic measurement of route level reliability
    - Did the On Time Performance get better?
  - Travel Time Reliability Ratio
    - Variation in travel time reliability
    - Median vs. 90th Percentile
- What benefit is provided to our customers?  
Operational benefits?





# How did we measure?

- AVL Data
- Identify Stop Pairings
- Determine before and after periods
- Observed travel times
- On Time Performance Key Performance Indicator
- Based on Observations
- Did stops move/consolidate?
- Think about unique situations that may impact analysis
- Compare to estimated travel times
- Identify changes in early, late, and on-time trips

# How did we measure?

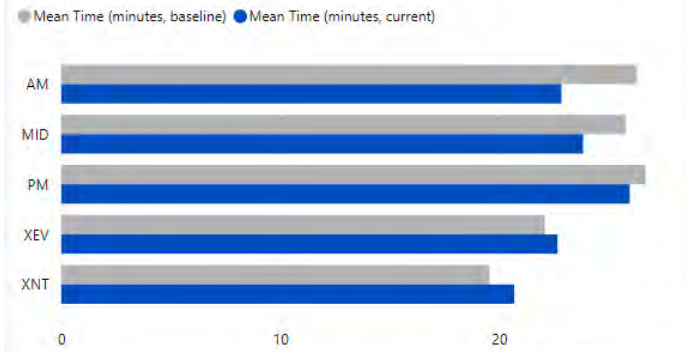
- Stop to Stop Analysis
- Mean, Median, 90th Percentile Travel Times
- Baseline and Analysis periods
- Levels of Analysis

## Two Stops Baseline v Current - Travel Time & Speed

This product is intended for use by Metro staff for continuous improvement purposes. Data is not fully processed and may contain errors. Latest date: 4/30/21

Comparing travel times from Zone 29420 to Zone 18760 (EB from NW Market St & 28th Ave NW - NE Pacific St) from October 2019 to October 2023

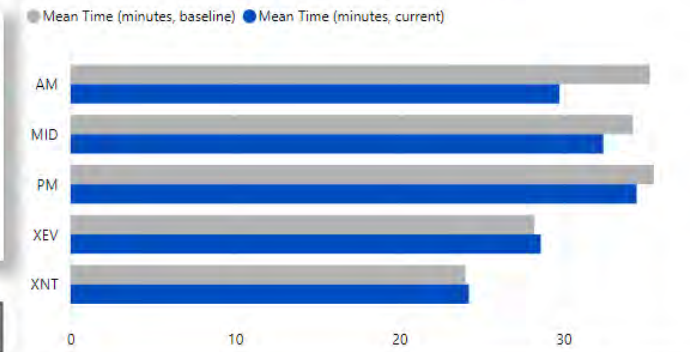
Travel Time Between Stops by Time Period (No Dwell)



Period	Change (no dwell)	Change (with dwell)
AM	-13.1%	-15.6%
MID	-7.5%	-5.3%
PM	-2.7%	-3.0%
XEV	2.6%	1.4%
XNT	5.8%	0.8%
<b>Total</b>	<b>-3.6%</b>	<b>-4.9%</b>

Switch to Speed

Travel Time Between Stops by Time Period (With Dwell)



Travel Time (min, No Dwell) - Baseline								
Period	Mean	Median	StDev	25th P'tile	85th P'tile	90th P'tile	95th P'tile	Count
AM	26.29	26.57	4.22	22.92	30.42	31.43	33.32	304
MID	25.77	25.58	2.83	23.72	28.50	29.42	30.62	774
PM	26.70	26.53	2.75	24.75	29.50	30.22	31.25	456
XEV	22.09	21.67	2.75	20.15	24.92	25.78	26.93	285
XNT	19.56	19.22	2.15	18.13	21.78	22.72	23.55	143

Travel Time (min, No Dwell) - Current								
Period	Mean	Median	StDev	25th P'tile	85th P'tile	90th P'tile	95th P'tile	Count
AM	22.85	22.63	2.80	20.87	25.45	26.33	27.90	288
MID	23.84	23.82	2.33	22.23	26.13	26.83	27.90	583
PM	25.97	25.65	3.15	23.75	28.85	29.85	31.07	412
XEV	22.67	22.53	2.40	21.02	25.05	25.75	26.70	217
XNT	20.69	20.77	2.44	19.02	23.00	23.73	24.83	275

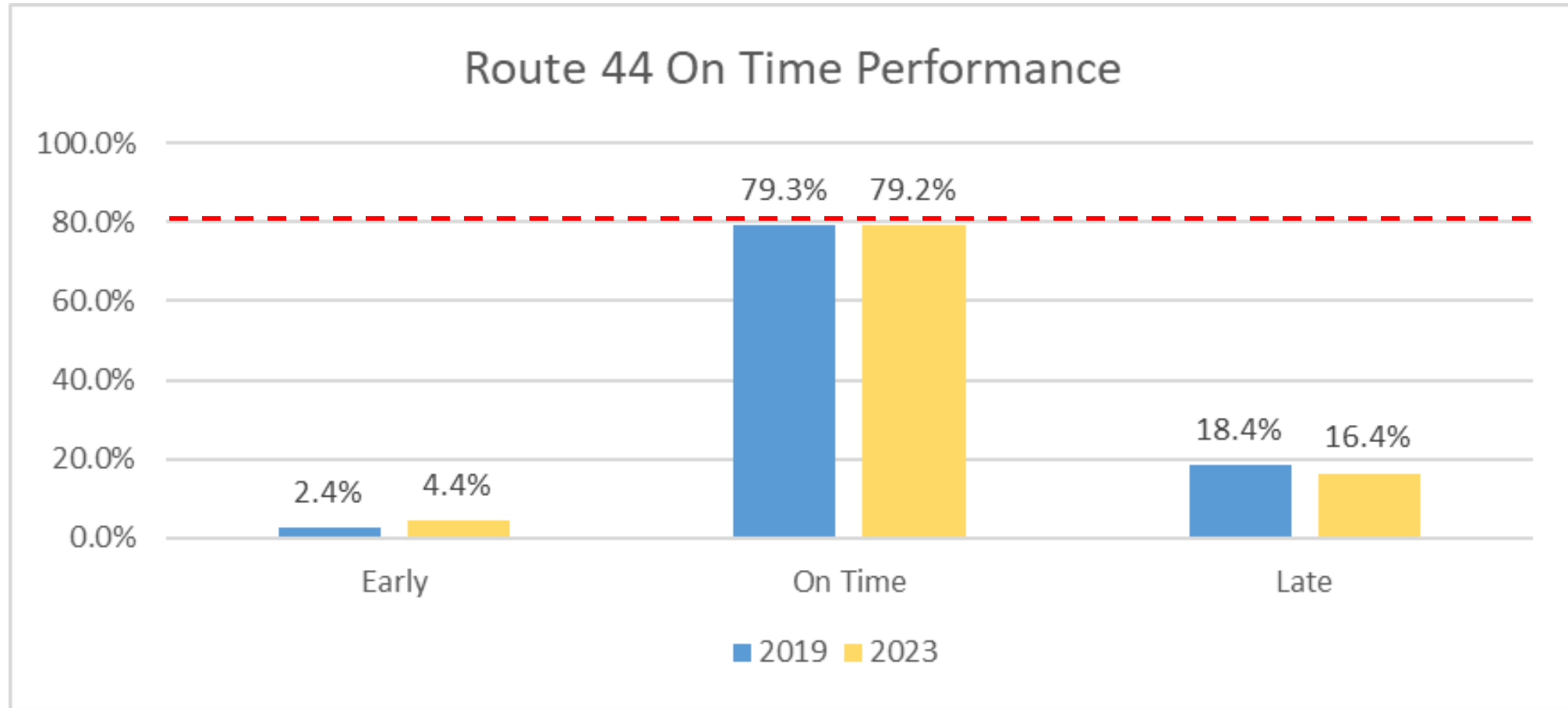
Travel Time (min, With Dwell) - Baseline								
Period	Mean	Median	StDev	25th P'tile	85th P'tile	90th P'tile	95th P'tile	Count
AM	35.26	35.65	5.58	31.72	40.75	42.13	44.02	304
MID	34.22	33.85	3.66	31.72	38.12	39.10	40.42	774
PM	35.49	35.37	3.82	33.07	39.48	40.50	41.93	456
XEV	28.22	27.70	3.62	25.52	32.17	33.15	34.05	285
XNT	24.04	23.45	3.52	21.68	27.52	28.58	31.35	143

Travel Time (min, With Dwell) - Current								
Period	Mean	Median	StDev	25th P'tile	85th P'tile	90th P'tile	95th P'tile	Count
AM	29.75	30.02	4.88	25.83	35.13	36.13	37.63	288
MID	32.41	32.27	2.88	30.48	35.22	35.92	37.18	583
PM	34.45	34.27	3.99	31.68	37.95	39.37	41.07	412
XEV	28.60	28.45	3.28	26.18	32.30	33.17	34.05	217
XNT	24.24	24.02	3.67	21.90	27.53	29.28	30.80	275





# What did we find? On Time Performance

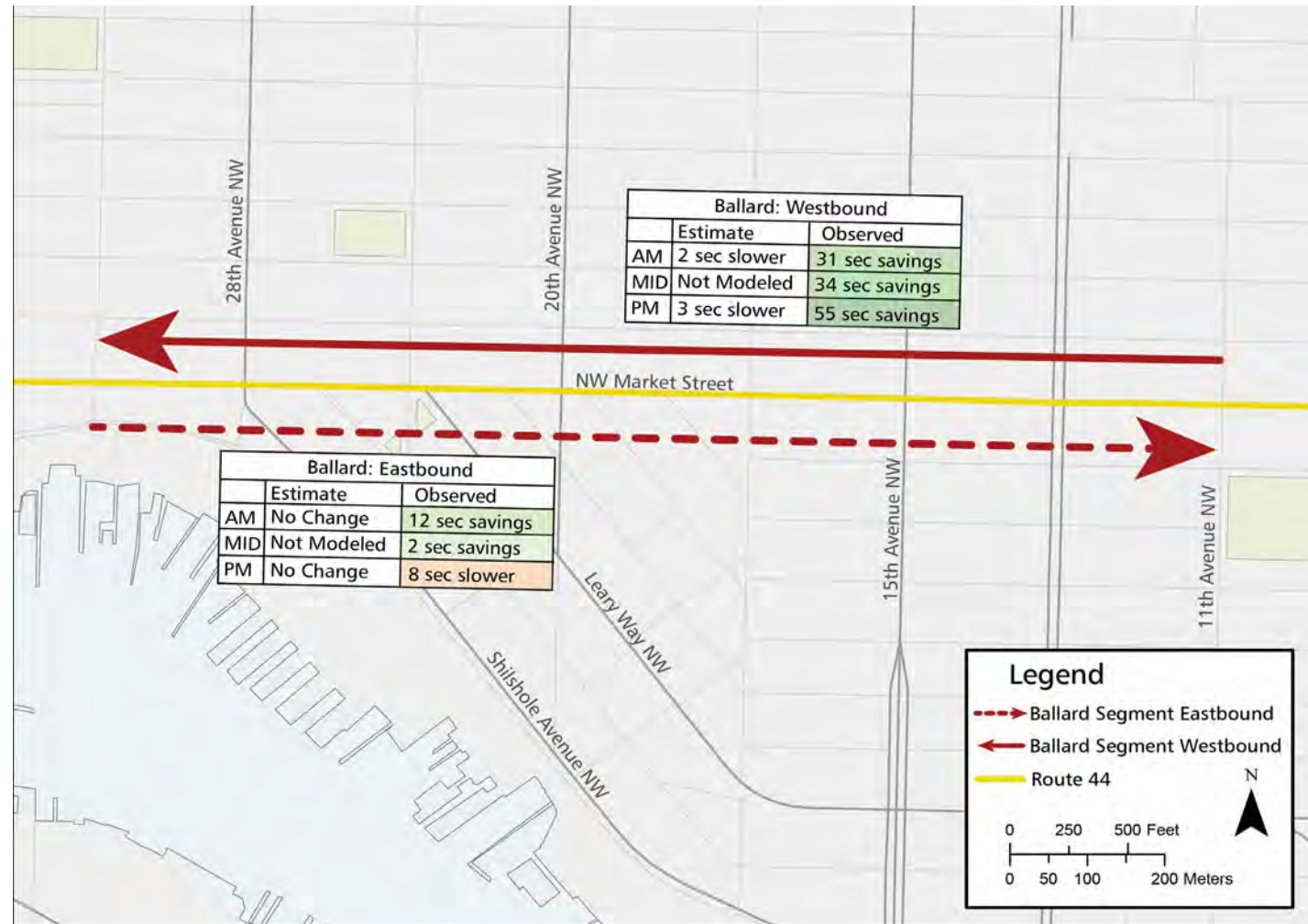


# What did we find? Corridor Level

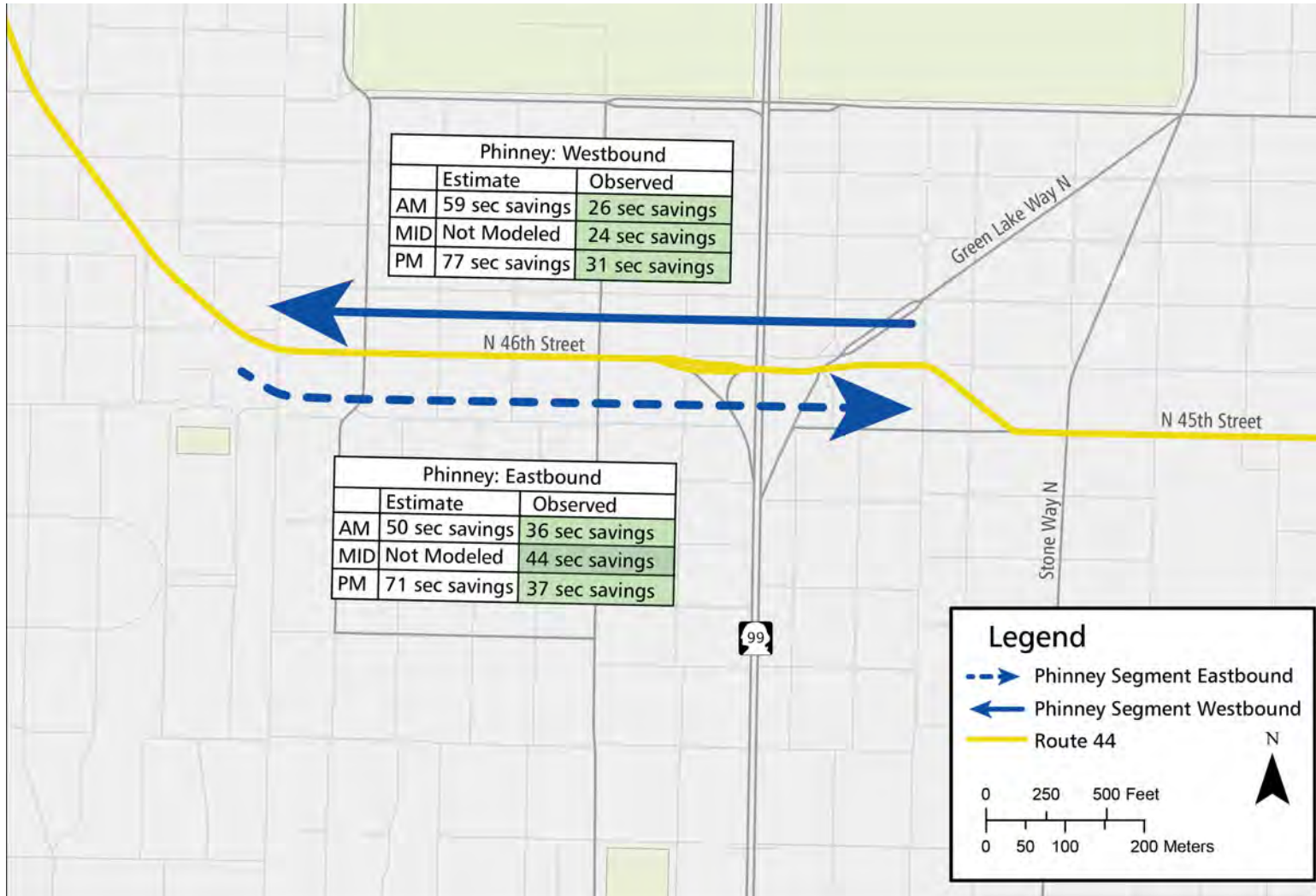
AM Change									
Direction of Travel	AM Estimated Savings	AM Mean Change (Sec)	AM Median Change (Sec)	AM 90th% Change (Sec)	AM Mean % Change	AM Median % Change	AM 90th % Change	2019 Travel Time Reliability Ratio	2023 Travel Time Reliability Ratio
WB	-86.4	-22.8	-30.6	-37.2	-1.7%	-2.3%	-2.4%	1.178	1.177
EB	-163.1	-206.4	-236.4	-306	-13.1%	-14.8%	-16.2%	1.183	1.163
MIDDAY Change									
Direction of Travel	MID Estimated Savings	MID Mean Change (Sec)	MID Median Change (Sec)	MID 90th% Change (Sec)	MID Mean % Change	MID Median % Change	MID 90th % Change	2019 Travel Time Reliability Ratio	2023 Travel Time Reliability Ratio
WB	N/A	-33	-24	-38.4	-2.4%	-1.7%	-2.4%	1.135	1.127
EB	N/A	-115.8	-105.6	-155.4	-7.5%	-6.9%	-8.8%	1.150	1.126
PM Change									
Direction of Travel	PM Projected Savings	PM Mean Change (Sec)	PM Median Change (Sec)	PM 90th% Change (Sec)	PM Mean % Change	PM Median % Change	PM 90th % Change	2019 Travel Time Reliability Ratio	2023 Travel Time Reliability Ratio
WB	-156.8	-91.2	-39.6	-49.2	-5.8%	-2.6%	-2.8%	1.147	1.144
EB	-241.3	-43.8	-52.8	-22.2	-2.7%	-3.3%	-1.2%	1.139	1.164

# What did we find? Ballard Segment

- Estimated changes were much lower than observed changes\*
- Filtering transit through major left turning intersections provided more time savings
- Pedestrian improvements did not significantly change transit travel times
- SDOT Traffic Counts indicate a change in travel behavior that was not accounted for



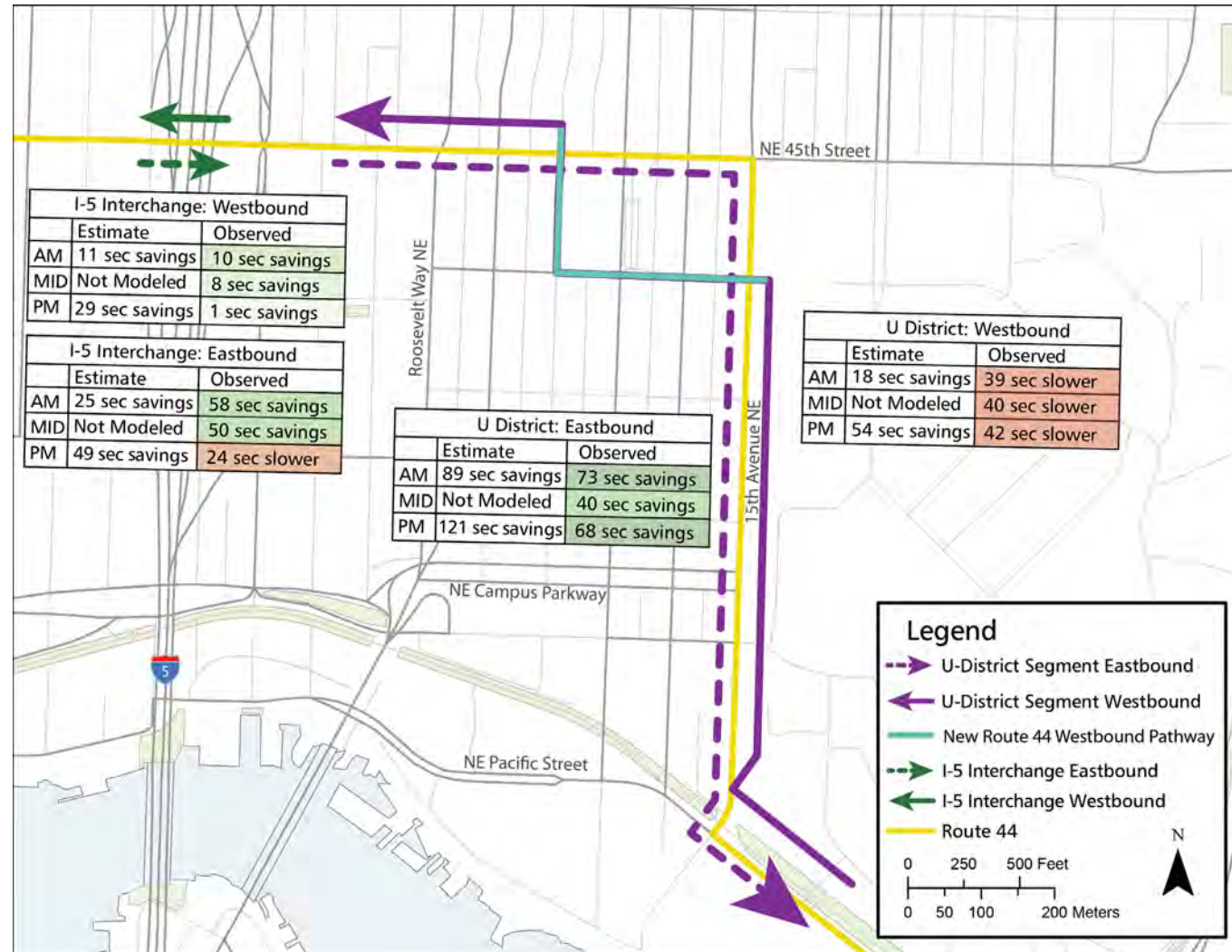
# What did we find? Phinney Segment



- Planning-level estimates were higher than observed travel time savings
- Reducing potential vehicle conflicts = safer, more efficient trips
- Bus stop optimization helped operators move through the segment with more ease

# What did we find? University District Segment

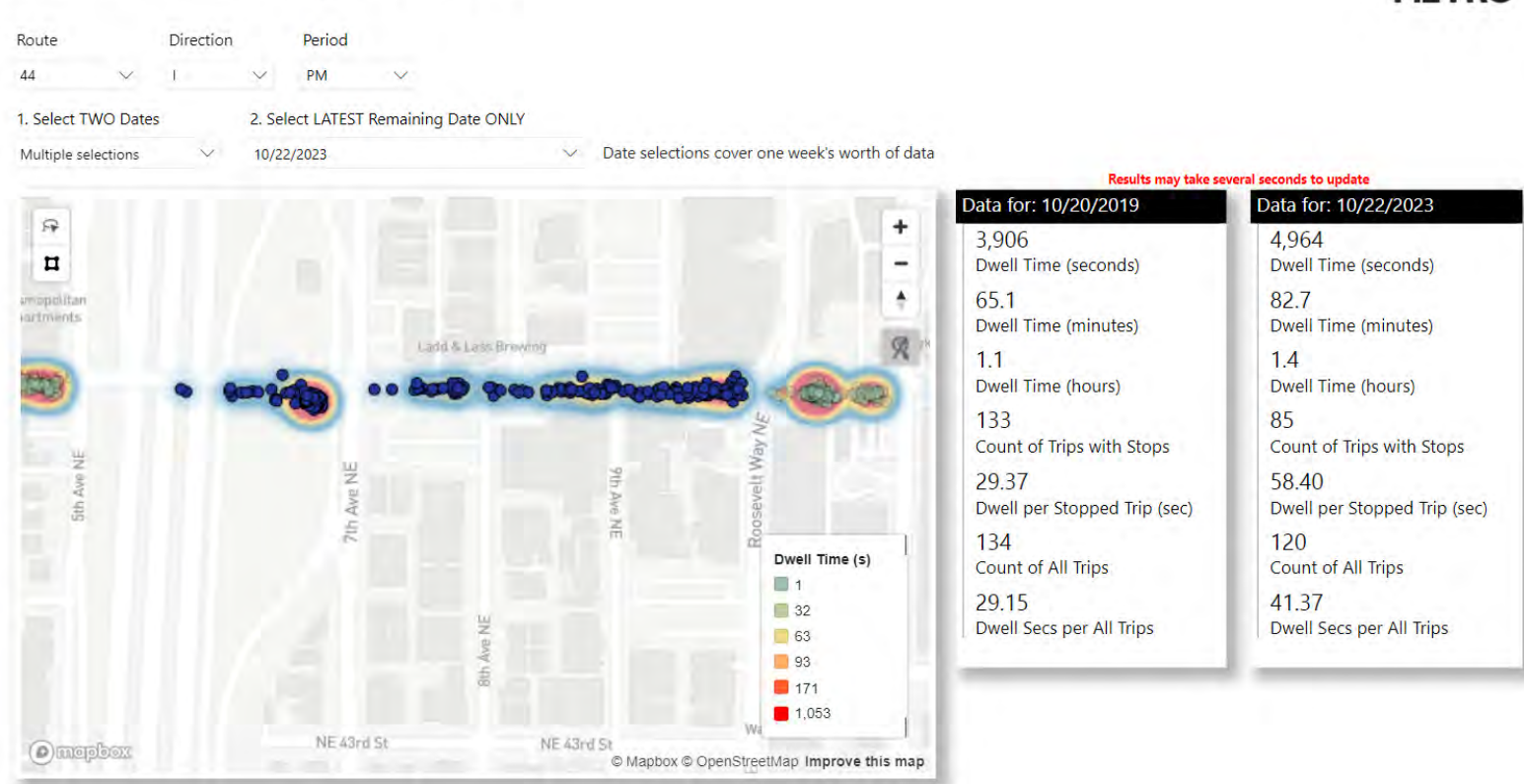
- Eastbound Travel – BAT Lanes work
- Westbound Travel – Significantly slower than modeled
  - New Pathway to serve light rail station
  - Two lefts instead of one
  - Heavy pedestrian Travel
- 15<sup>th</sup> Ave NE BAT Lanes
  - Benefits in both directions
  - Particularly in light of WB travel time changes
- I-5 Interchange
  - Removal of Bus Stop Pairing



# How did we measure unique findings?

- King County Metro Delay Points Tool
- Identify queues and areas of delay
- Does not require active bus stop pairings
- Number of stopped trips
- “Dwell” per All Trips

## Performance - Delay Points Tool



King County Metro “Delay Points” tool uses AVL data to track when and where transit trips experience delay

# Closing: What did we find?

- Estimates were generally higher than observed travel time changes
- Dedicated Transit Lanes = Good for transit service
  - May have shifted travel to other east/west routes
- In capacity constrained areas with complex movements, prioritizing the primary travel direction provided great benefits
- Changes in travel patterns following the pandemic



# Closing: What were the transit benefits?

- \$1.65M in annual operating hours savings
- 24,589 Passenger Hours Saved







# How can this be helpful to you?

- In planning phase of project:
  - Travel time estimates
  - Right-size investments and anticipated outcomes
- Considerations when conducting a before and after study
  - Documenting the methods for future studies
  - Identify where gaps may be present in your analysis
  - Determine alternative methods of measurement
- Convey to the public what the project accomplished, whether goals were achieved, future opportunities and additional considerations

# Questions?

Andrew Randall

Speed & Reliability

Transportation Planner

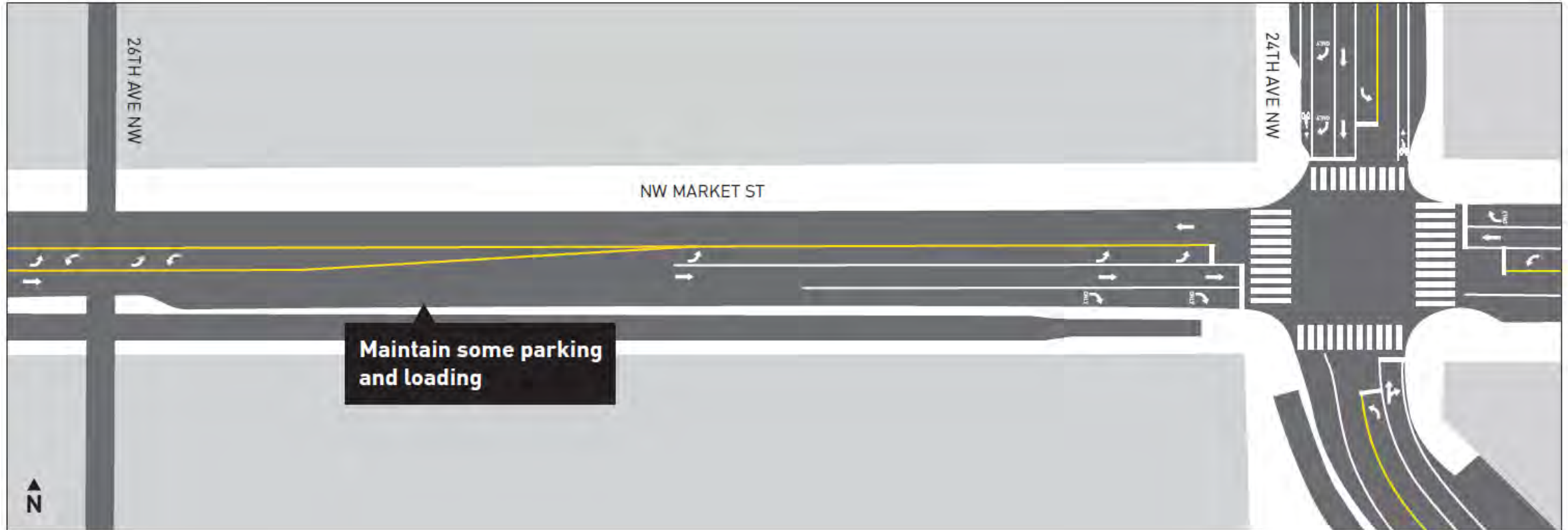
[arandall@kingcounty.gov](mailto:arandall@kingcounty.gov)



King County  
**METRO**

*Moving forward together*

# Project Background: Notable Transit Improvements Ballard

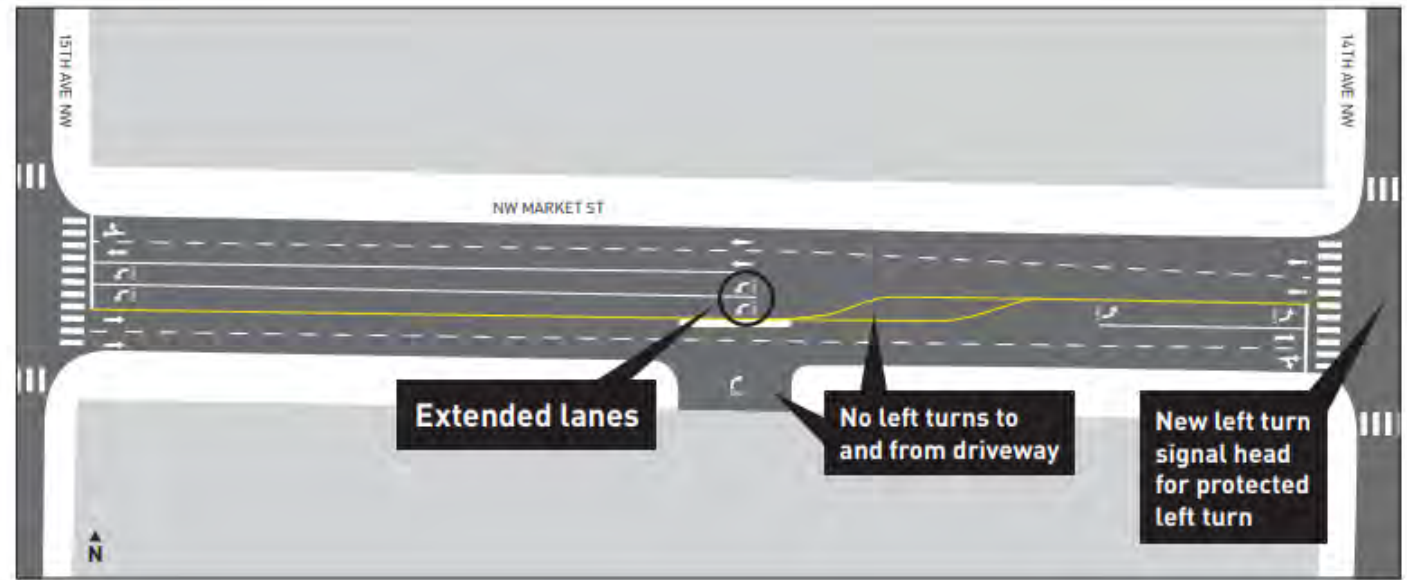


# Project Background: Ballard

## Before

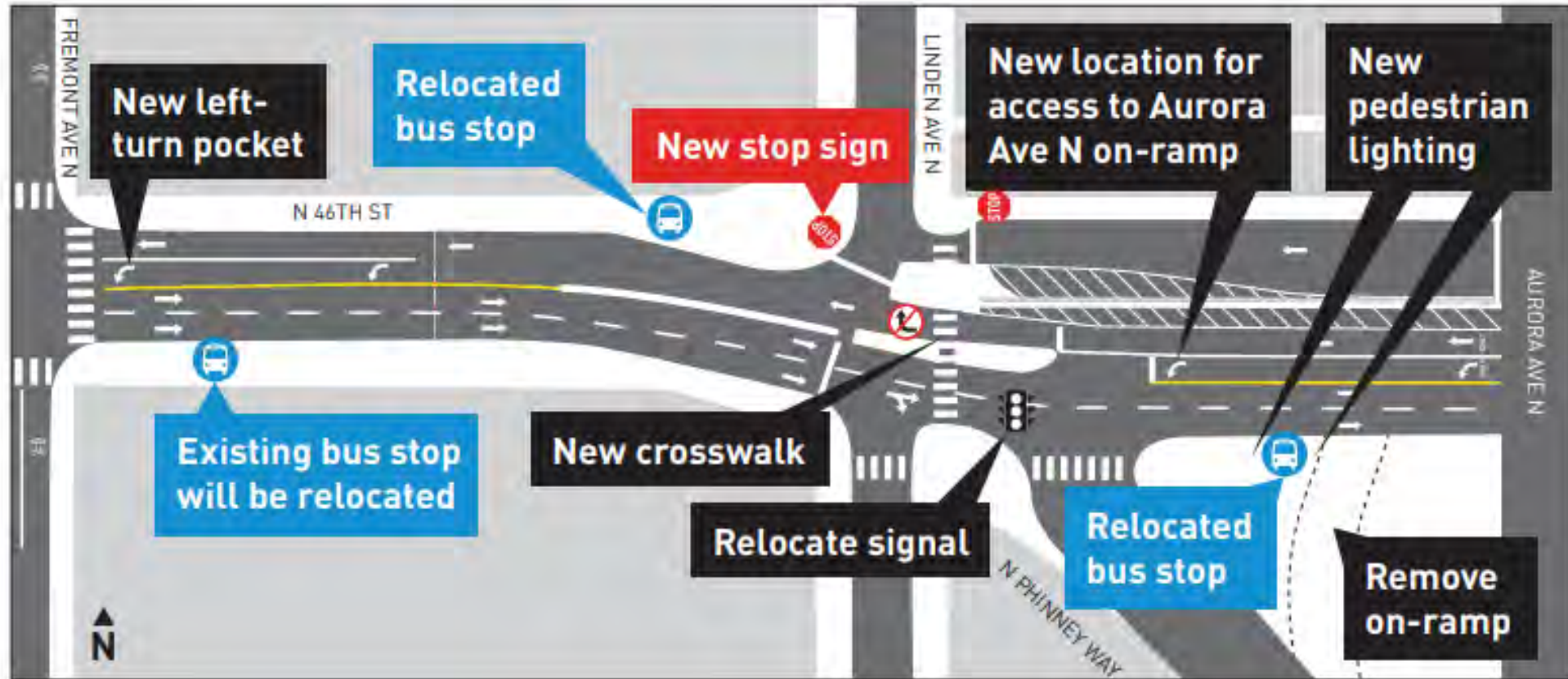


## After



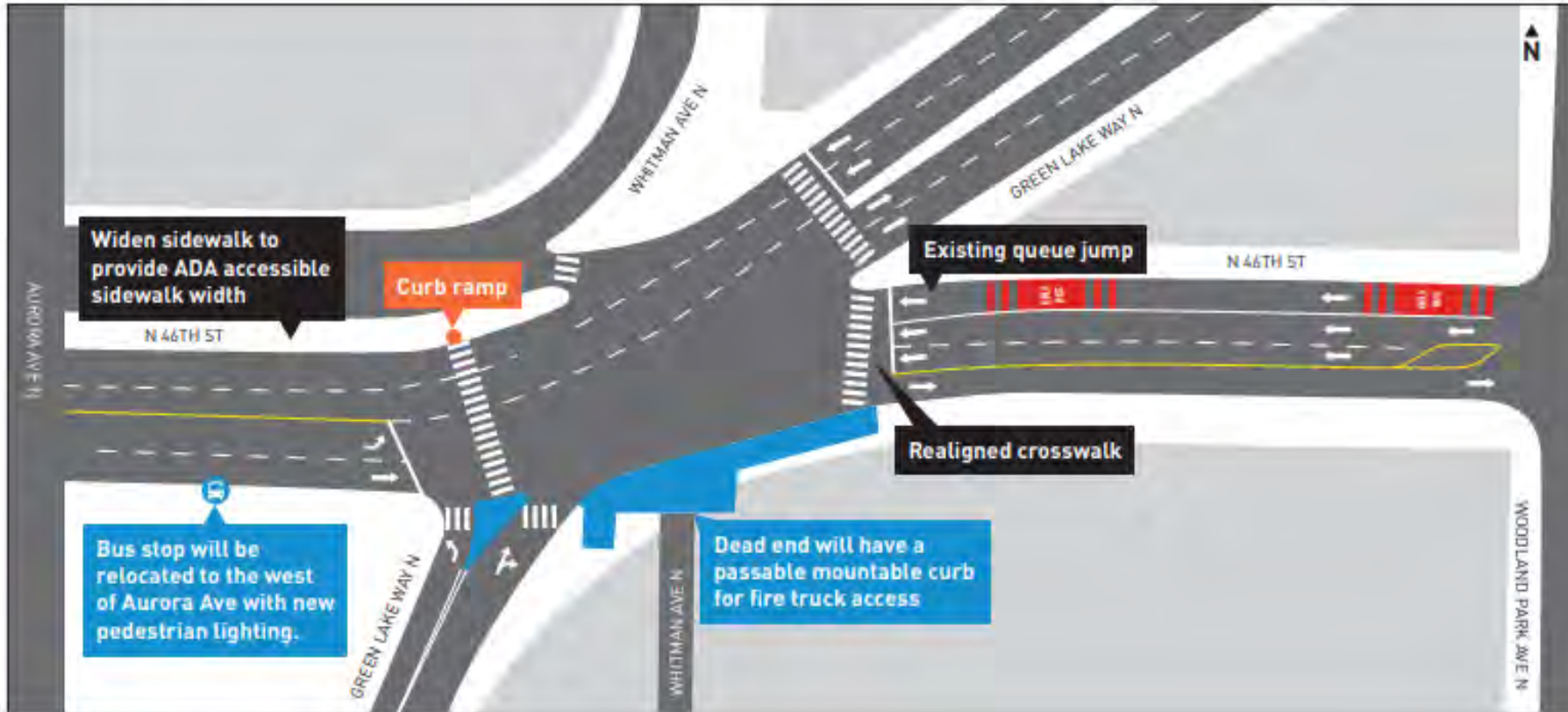
# Project Background: Phinney

## After



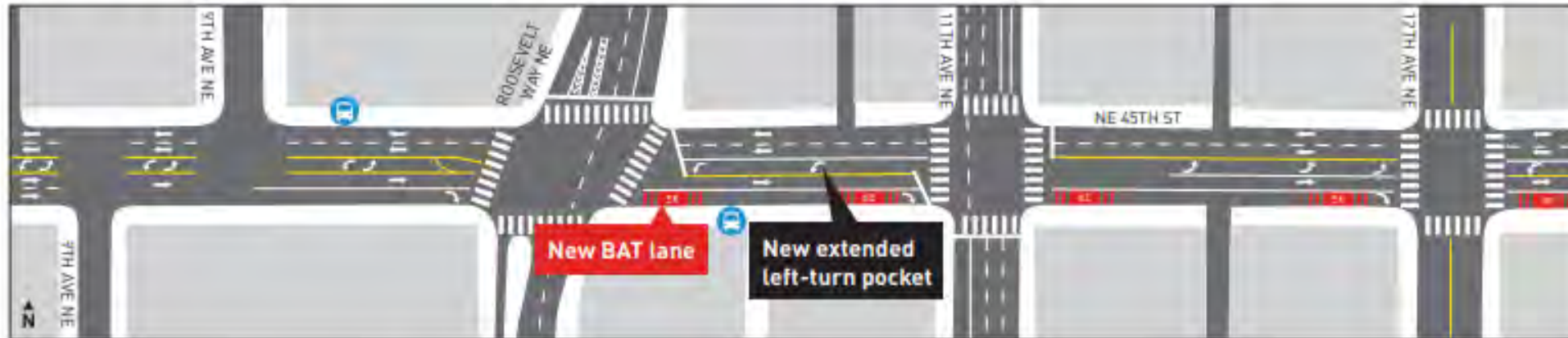
# Project Background: Phinney

## After



# Project Background: University District

## After



# Project Background: Notable Transit Improvements

## After

