

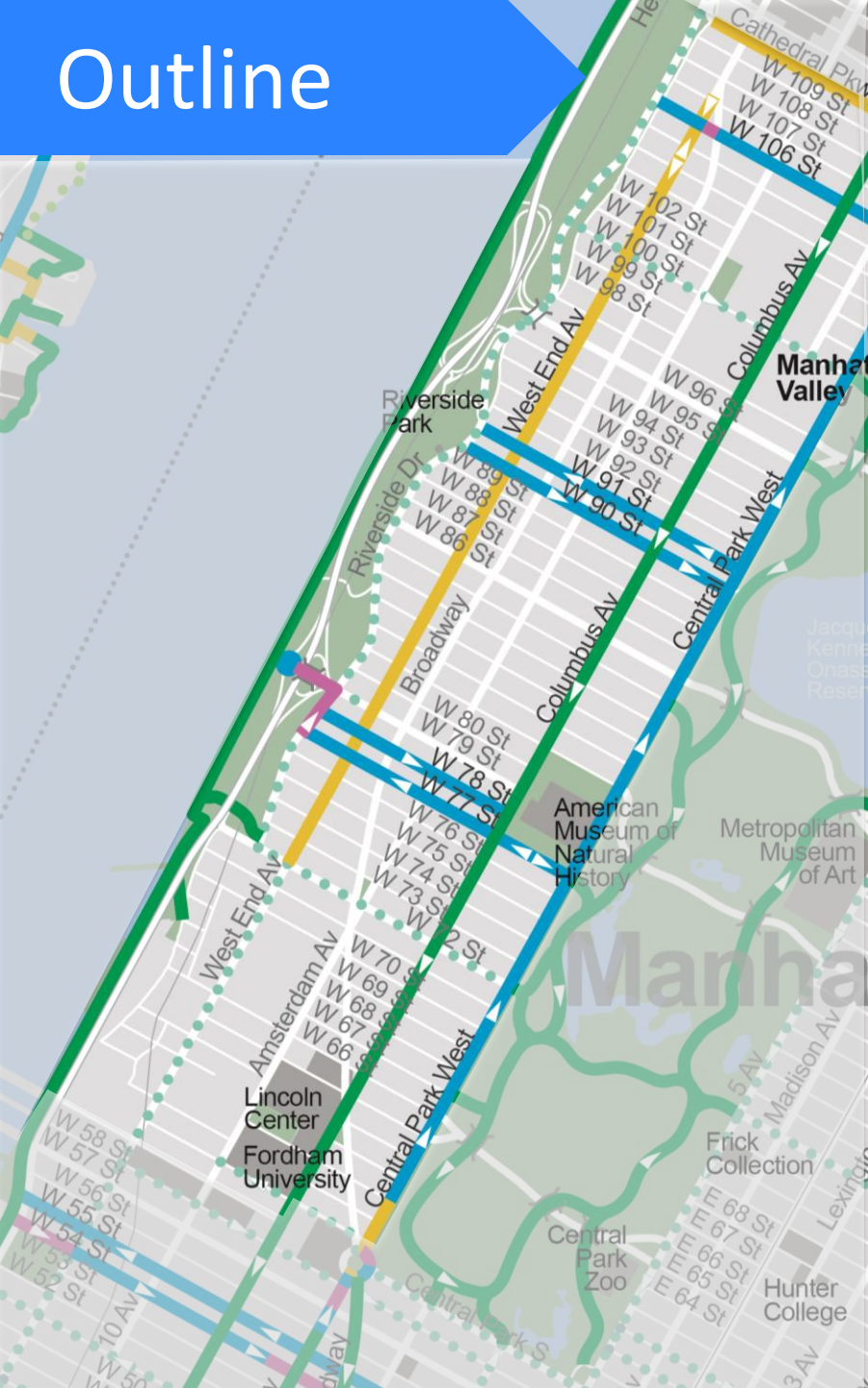
# Amsterdam Avenue

## Proposed Northbound Bike Route

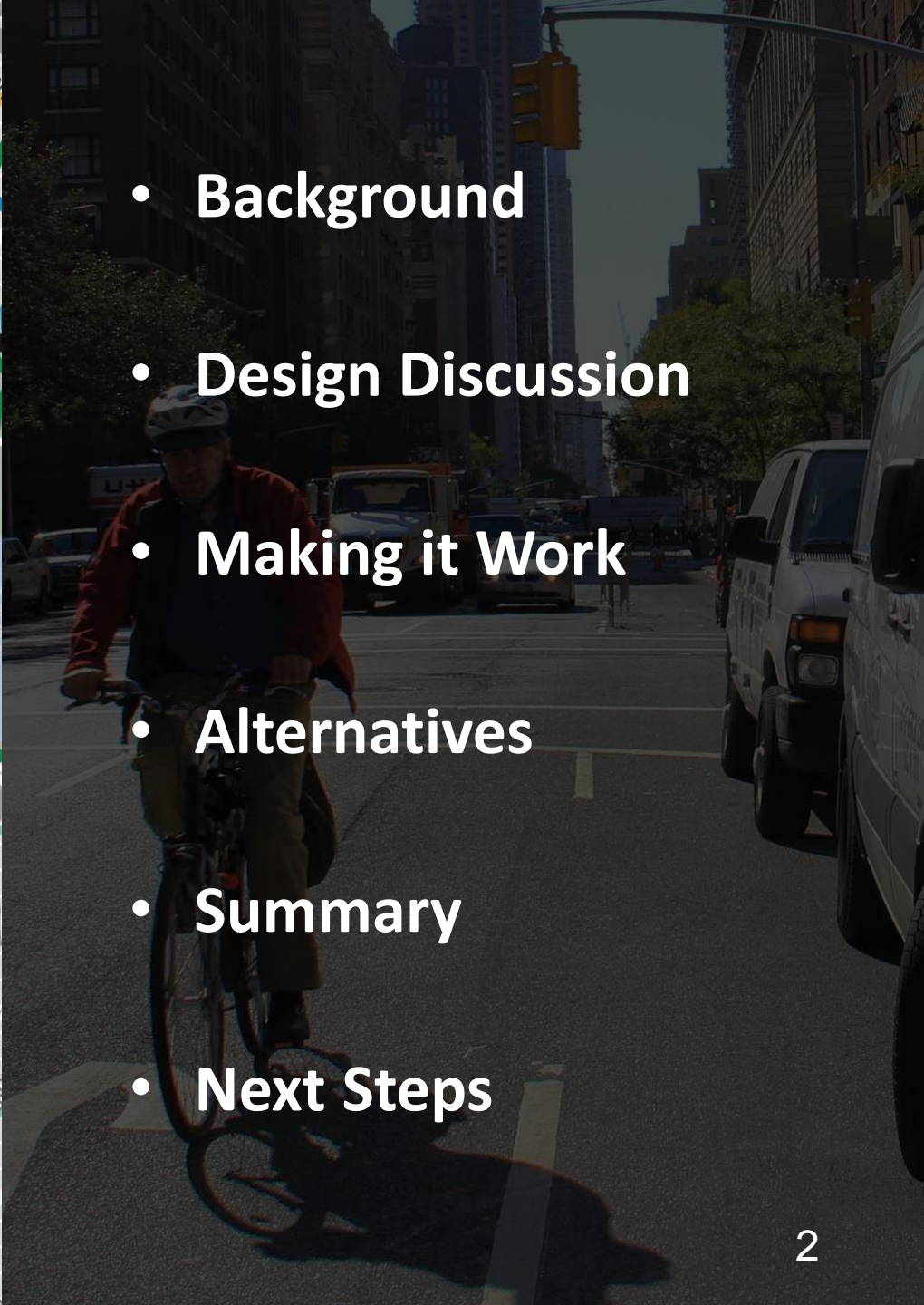




# Outline

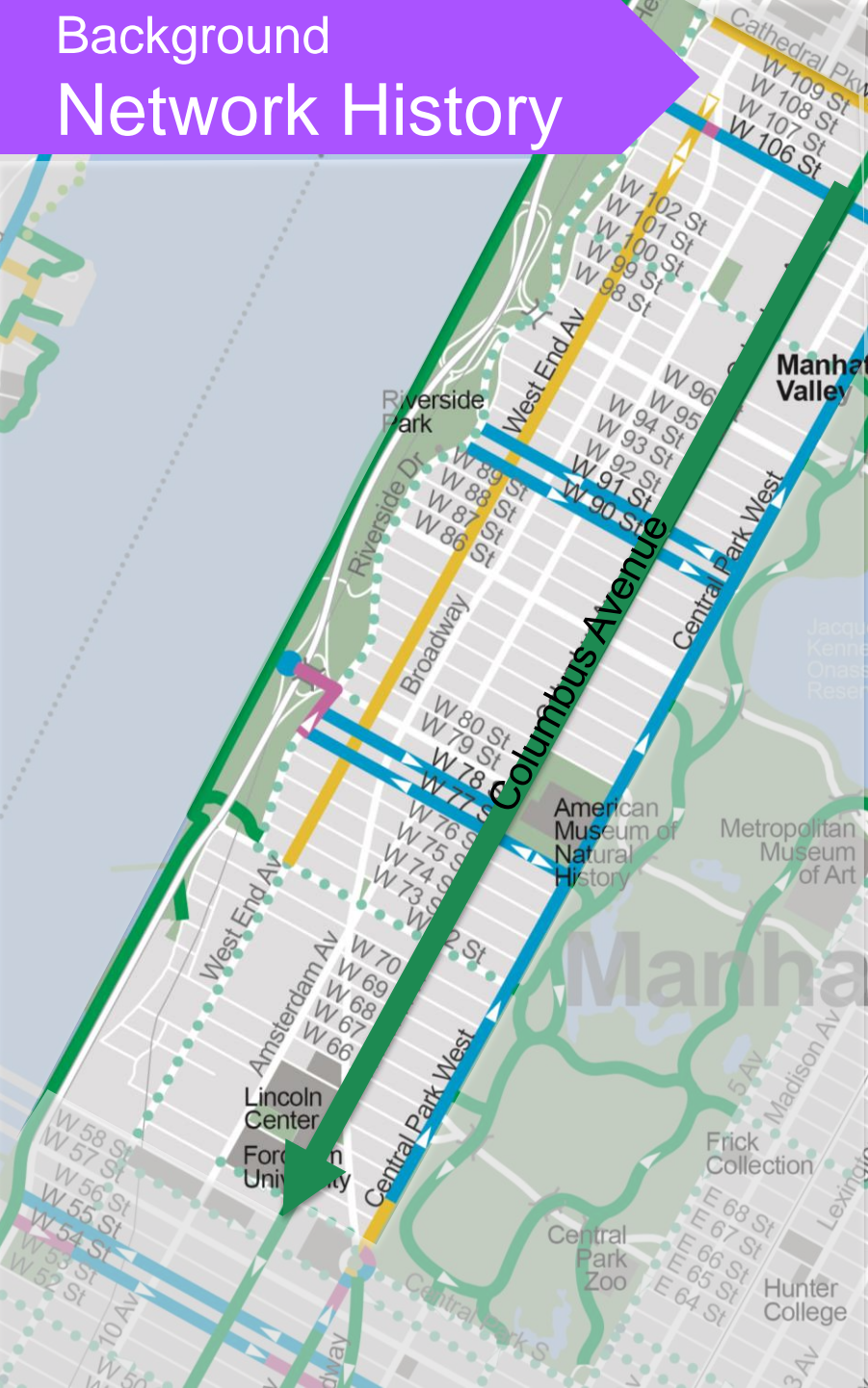


- Background
- Design Discussion
- Making it Work
- Alternatives
- Summary
- Next Steps





# Background Network History



## 2010

- Columbus Avenue Parking Protected Bicycle Lane (96<sup>th</sup> St to 77<sup>th</sup> St)

## 2013

- Columbus Avenue Parking Protected Bicycle Lane (110<sup>th</sup> St to 96<sup>th</sup> St and 77<sup>th</sup> St to 69<sup>th</sup> St)

## 2015

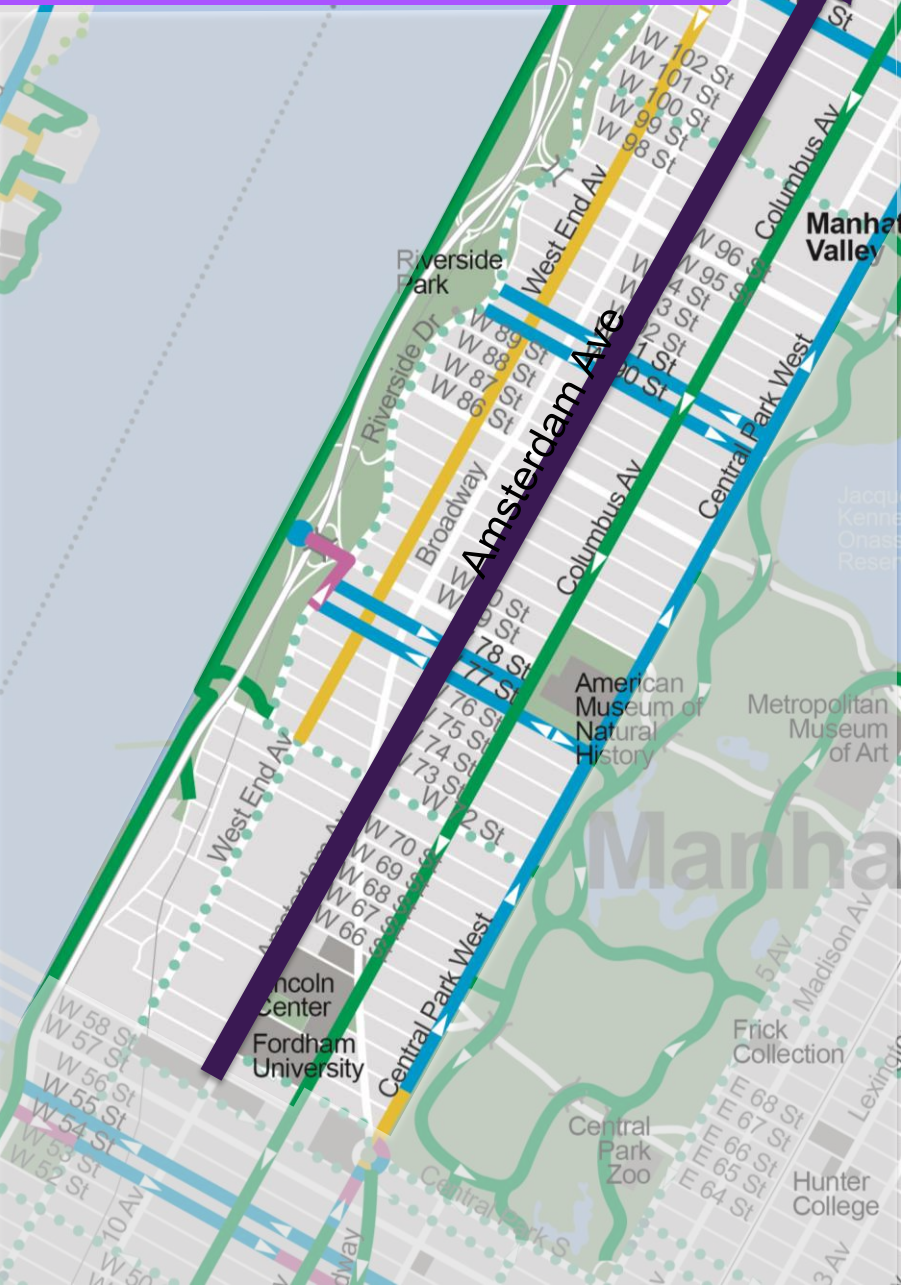
- Lincoln Center Bowtie / Columbus Avenue Parking Protected Bicycle Lane (69<sup>th</sup> St to 59<sup>th</sup> St)

## Northbound Route

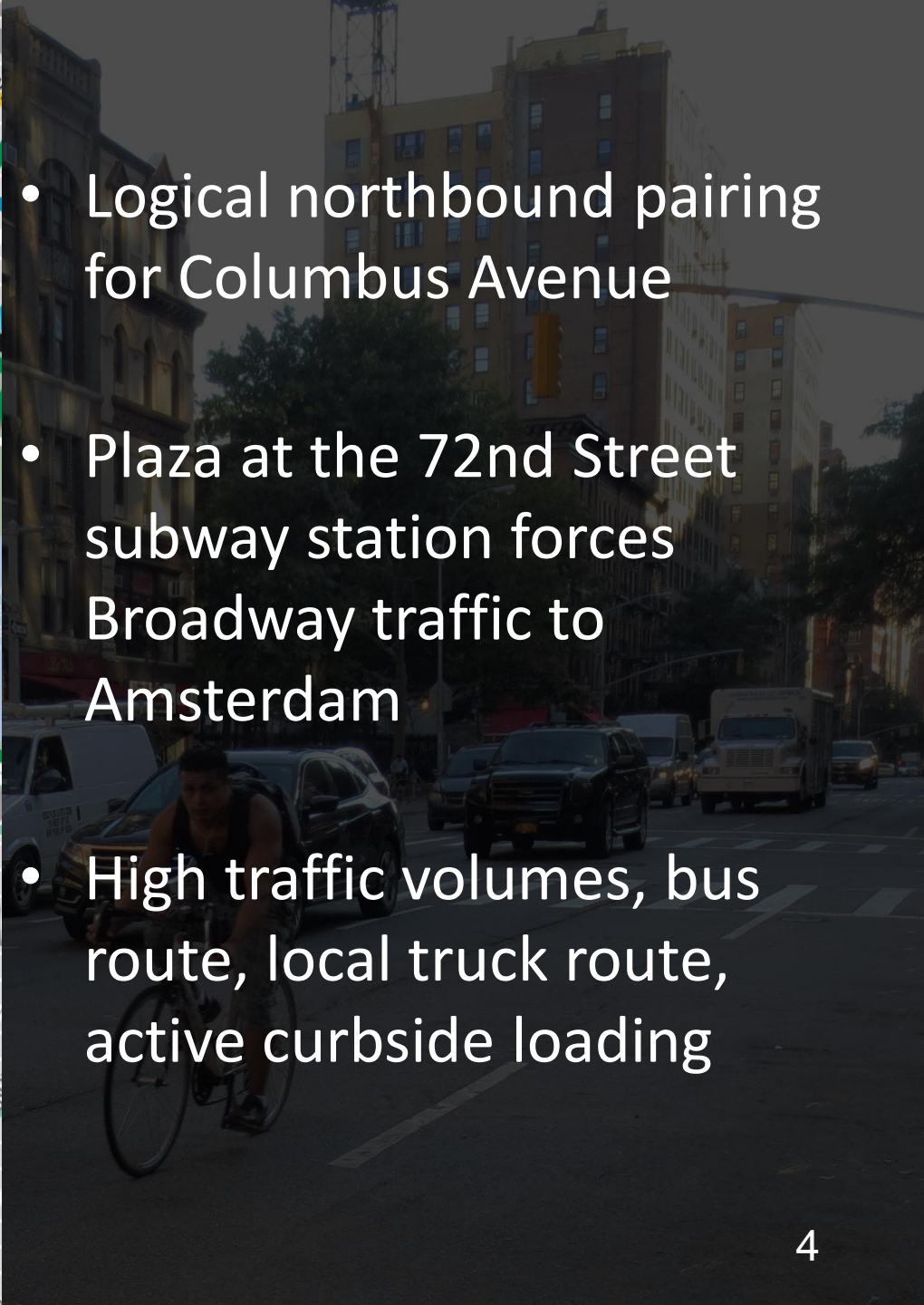
- No corresponding northbound protected route serves the community
- CB 7 and electeds asked DOT to study Amsterdam Avenue
- DOT has looked at several NB possibilities



# Amsterdam Avenue

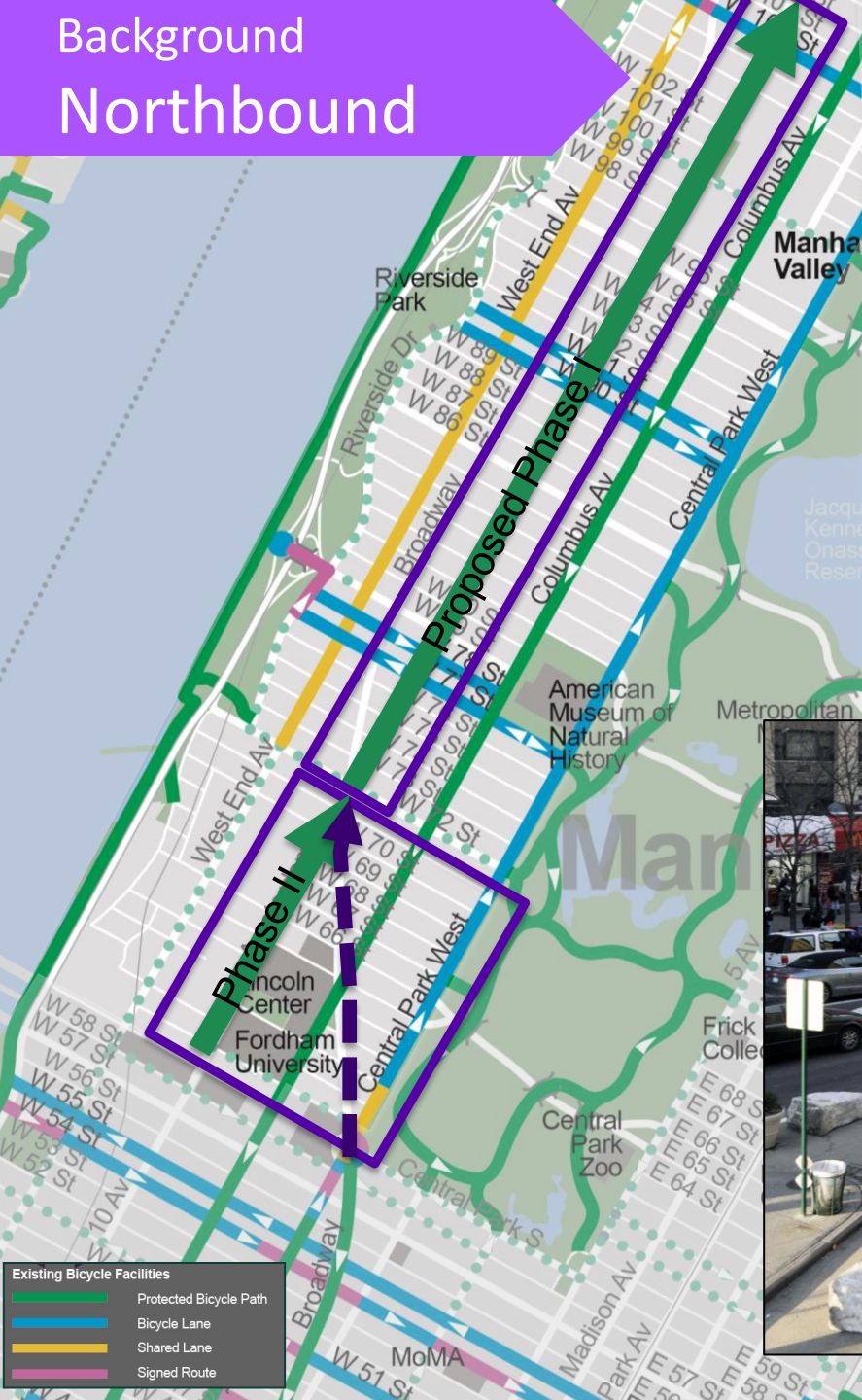


- Logical northbound pairing for Columbus Avenue
- Plaza at the 72nd Street subway station forces Broadway traffic to Amsterdam
- High traffic volumes, bus route, local truck route, active curbside loading





# Background Northbound

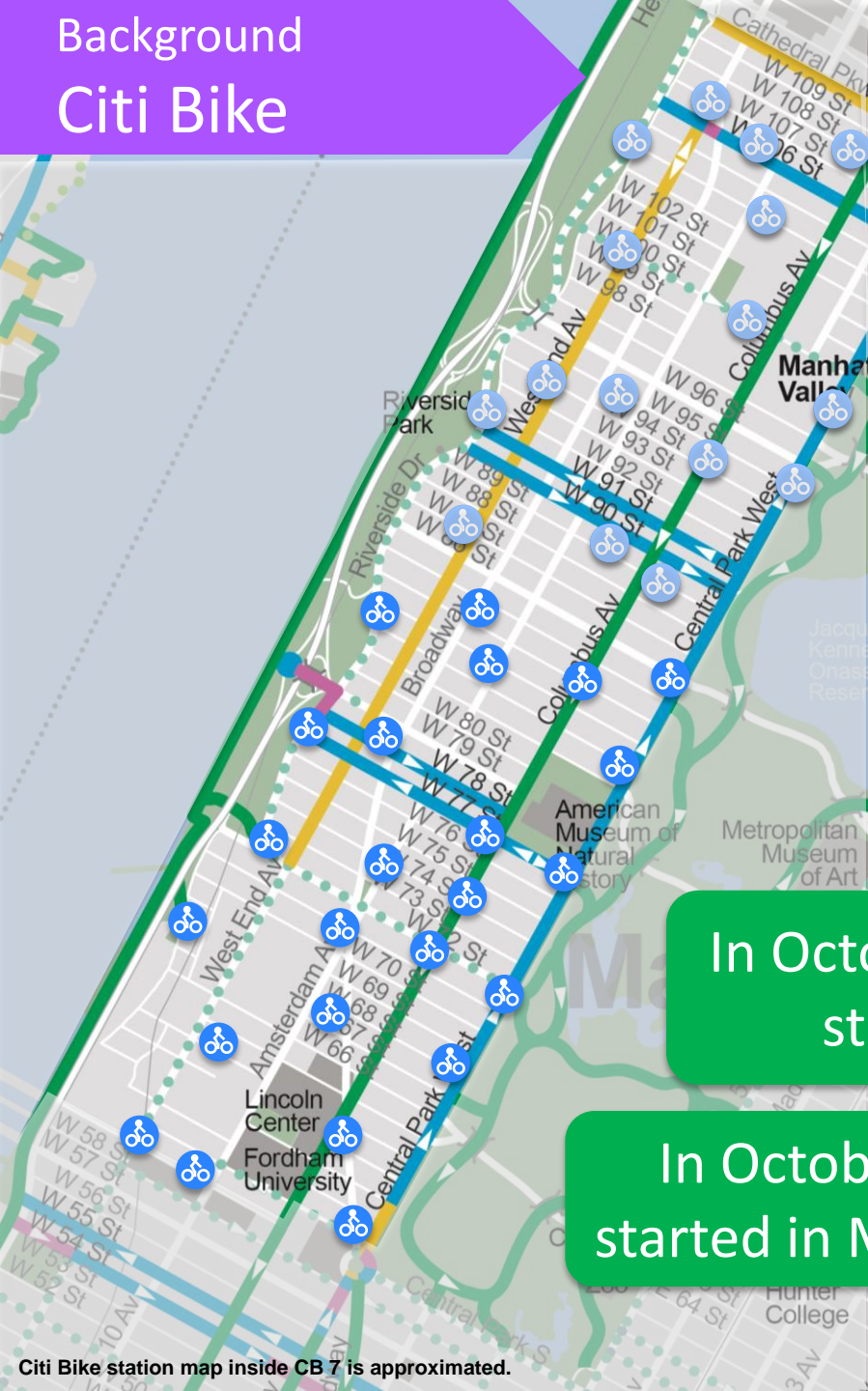


- North of 72nd Street
  - Amsterdam carries traffic from 10<sup>th</sup> Ave and Broadway
  - Connected to network via CPW and 77<sup>th</sup>/78<sup>th</sup>
- South of 72<sup>nd</sup> Street
  - Network connections
  - Bowtie considerations





## Background Citi Bike

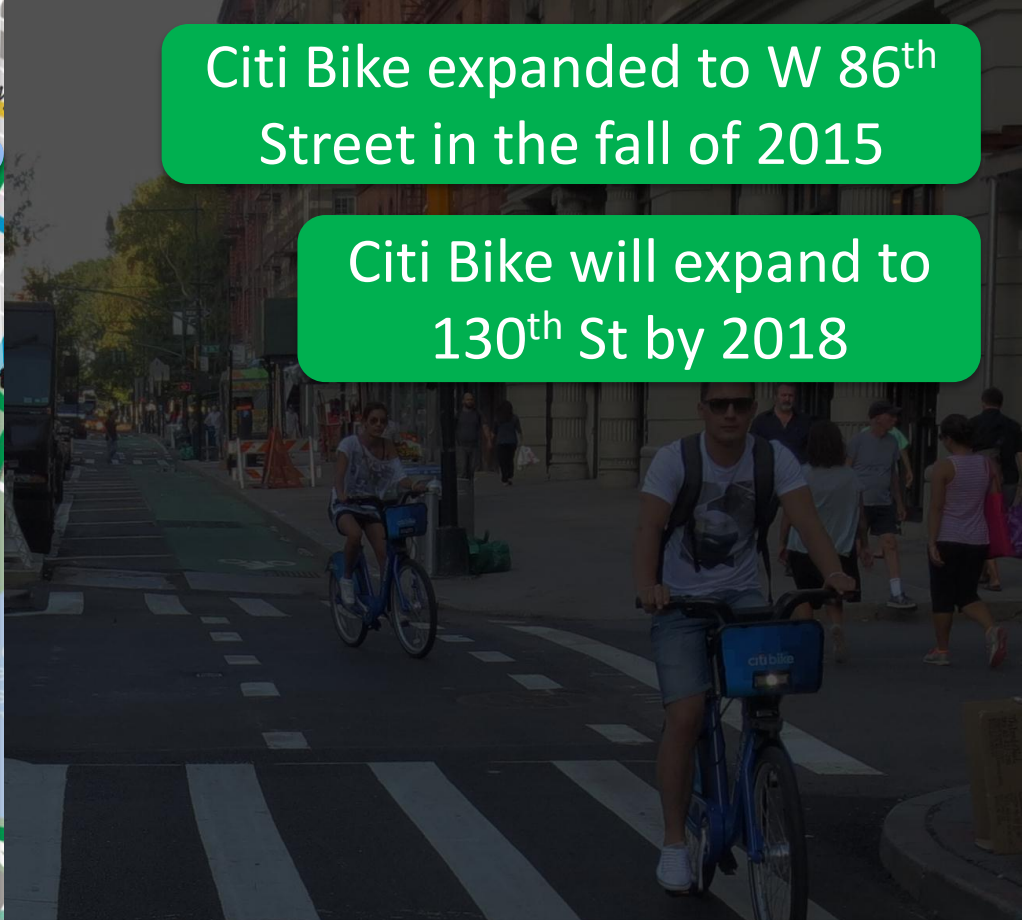


Citi Bike expanded to W 86<sup>th</sup> Street in the fall of 2015

Citi Bike will expand to 130<sup>th</sup> St by 2018

In October 2015, 29% of Citi Bike trips that started in CB 7 also ended in CB 7

In October 2015, 45% of Citi Bike trips that started in Midtown ended in CB7 (CB 4, 5, or 6)





## Background Bike Volumes

<b>Amsterdam Ave</b> W 85 <sup>th</sup> to W 86 <sup>th</sup> St	<b>12-hour Bike Volume</b>
October 2007	217
October 2011	515
October 2015	609

- A three fold increase in cycling on Amsterdam since 2007 and almost double on Columbus.

<b>Columbus Ave</b> W 87 <sup>th</sup> to W 86 <sup>th</sup> St	<b>12-hour Bike Volume</b>
October 2007	486
October 2011	594
October 2015	724



# Background Injuries

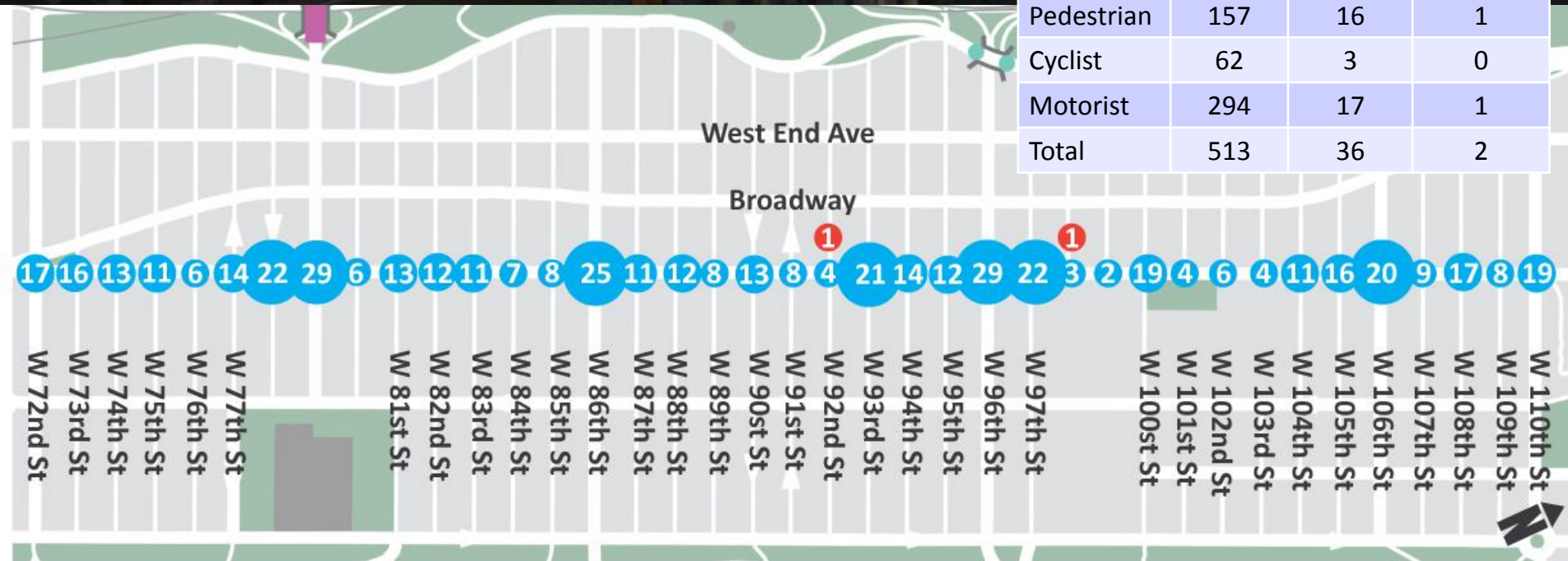
Amsterdam Ave has a KSI (killed or severely injured) of 8.9 per mile for pedestrians (KSI of 19.7 for all).

## Amsterdam Avenue

W 72<sup>nd</sup> St to W 110<sup>th</sup> St

Injury Summary 2009-2013 (5 years)

	Injuries	Severe Injuries	Fatalities
Pedestrian	157	16	1
Cyclist	62	3	0
Motorist	294	17	1
Total	513	36	2



● Indicates the number of injuries

● Indicates that a fatality occurred at this location



## Existing Issues

59% of vehicles are speeding at off-peak times

Long crossing distances

High peak vehicle volumes

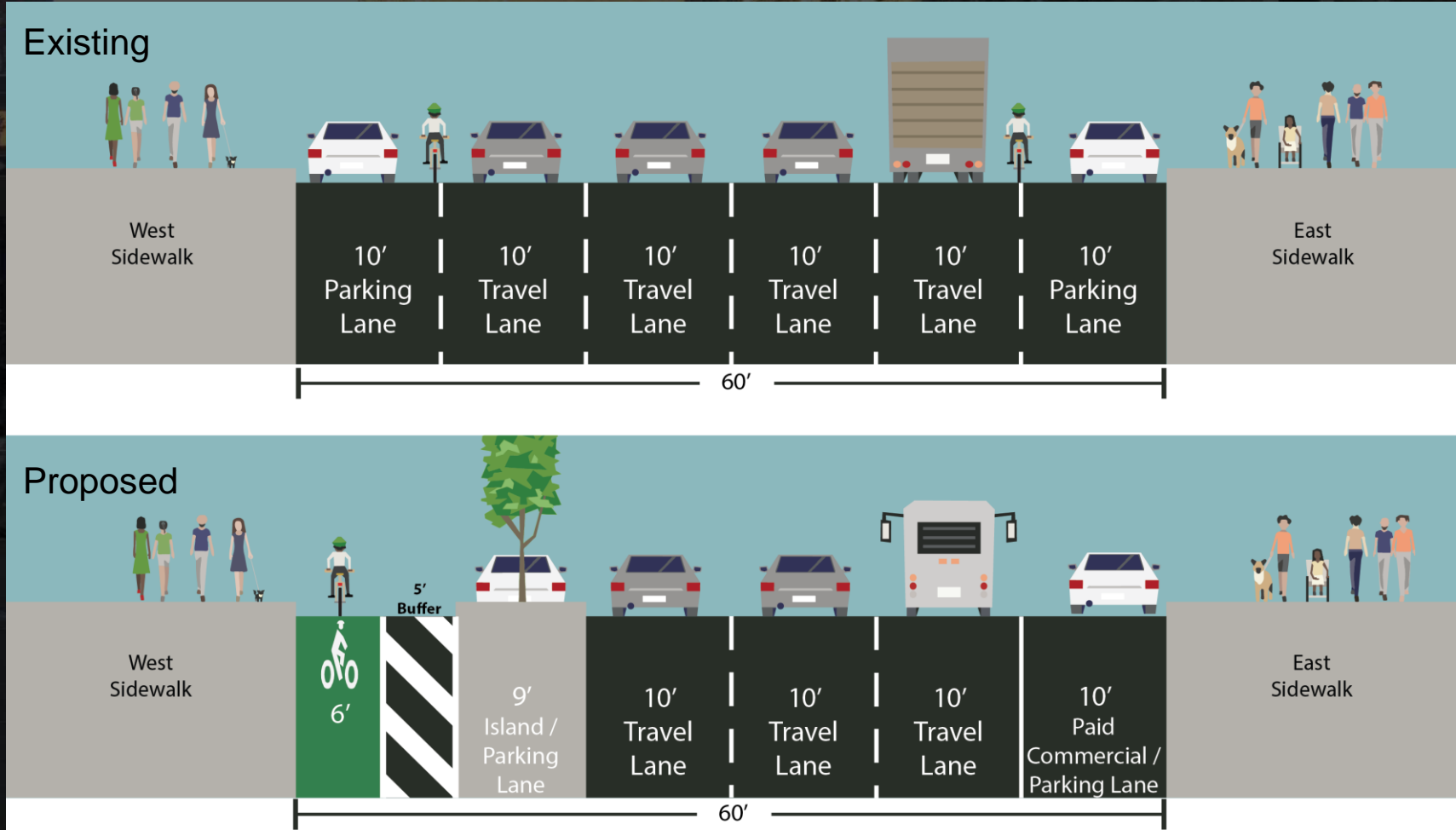
Current design encourages bad driver behavior

Not designed to a neighborhood scale





# Design Proposal



Curbside parking  
protected lane

Pedestrian  
safety  
islands

Lane reduction  
with turn lanes

Updated curb  
regulations  
10



# Design Proposal

Off-peak  
traffic calming

Bicycle lane  
protected  
from traffic

New trees

Reduced crossing distances

Neighborhood  
scale design

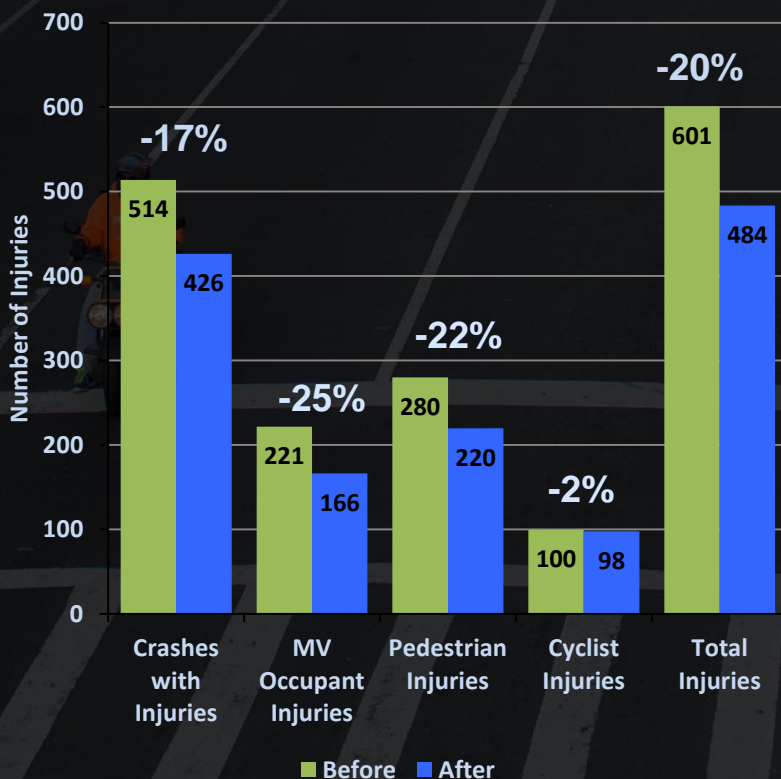
Columbus Avenue at W 107<sup>th</sup> St

W 79th

Amsterdam Ave



## Protected Bicycle Lanes with 3 yrs of After Data: Before vs After



In general protected bike lanes in Manhattan improve safety for all users:

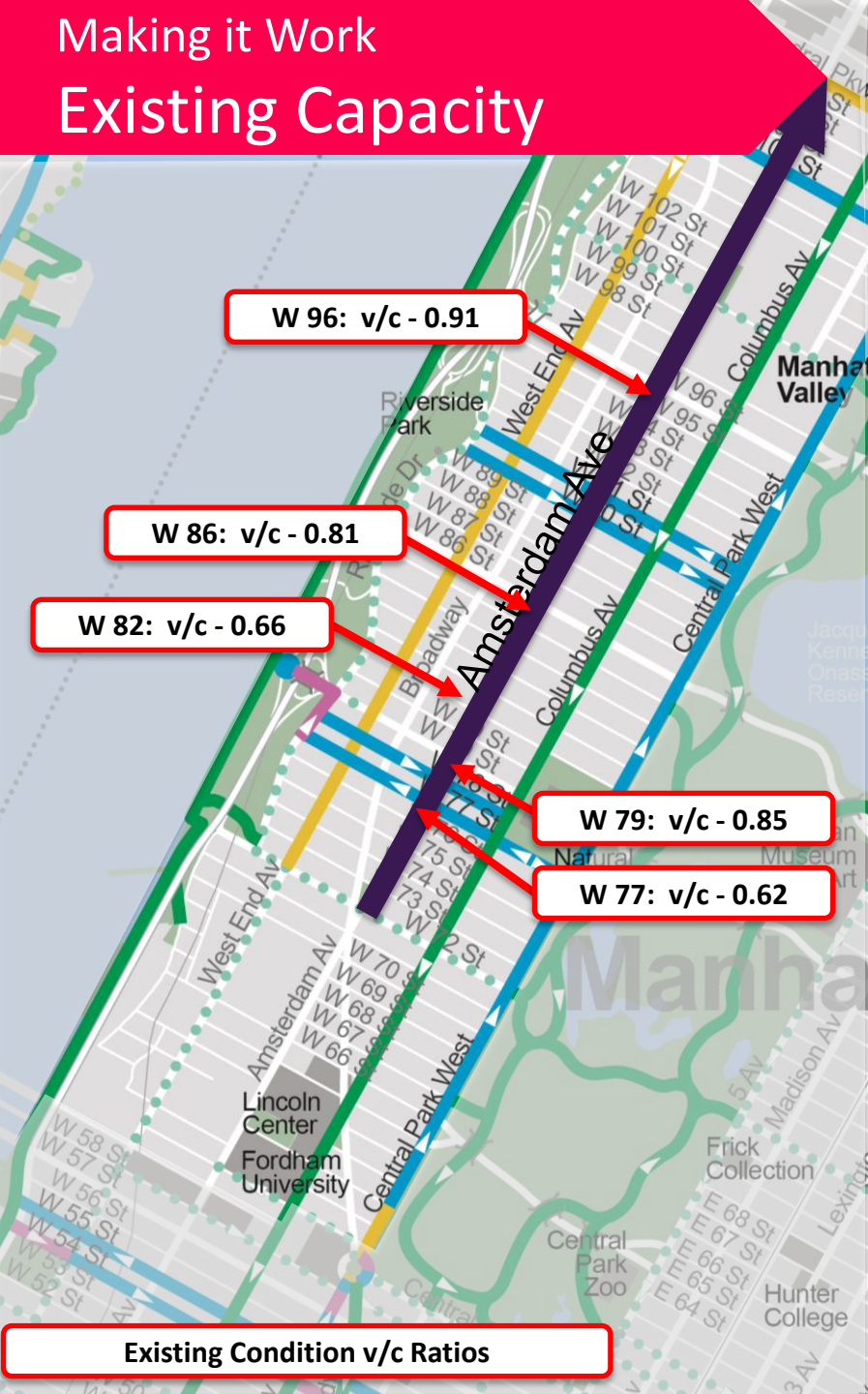
- Crashes with injuries have been reduced by 17%
- Pedestrian injuries are down by 22%
- Cyclist injuries show a minor improvement even as bicycle volumes have dramatically increased
- Total injuries have dropped by 20%

Protected bicycle lane projects with 3 years of after data include the following: 9<sup>th</sup> Ave (16<sup>th</sup>-31<sup>st</sup>), 8<sup>th</sup> Ave (Bank-23<sup>rd</sup>, 23<sup>rd</sup>-34<sup>th</sup>), Broadway (59<sup>th</sup>-47<sup>th</sup>, 33<sup>rd</sup>-26<sup>th</sup>, 23<sup>rd</sup>-18<sup>th</sup>), 1<sup>st</sup> Avenue (Houston to 34<sup>th</sup>), 2<sup>nd</sup> Ave (Houston-34<sup>th</sup>), Columbus Ave (96<sup>th</sup>-77<sup>th</sup>) Note: Only sections of projects that included protected bicycle lanes were analyzed

Source: NYPD AIS/TAMS Crash Database



# Making it Work Existing Capacity



Existing Condition v/c Ratios

## Existing Traffic Conditions

Cross Street	Amsterdam 6-7 PM Peak Volumes (veh/hr)	Delay (s)	Volume- to- Capacity Ratio
W 96 <sup>th</sup>	1,687	12.8	0.91
W 86 <sup>th</sup>	1,704	6.5	0.81
W 82 <sup>nd</sup>	1,545	3.0	0.66
W 79 <sup>th</sup>	1,330	40.9	0.85
W 77 <sup>th</sup>	1,377	4.8	0.62

The **volume-to-capacity** ratio is a measure of how “full” a roadway feels and is calculated as a ratio between the measured traffic volume and calculated capacity of the roadway. The result is expressed as a number between 0 and 1. A value of “1” would indicate that the roadway is “full.”

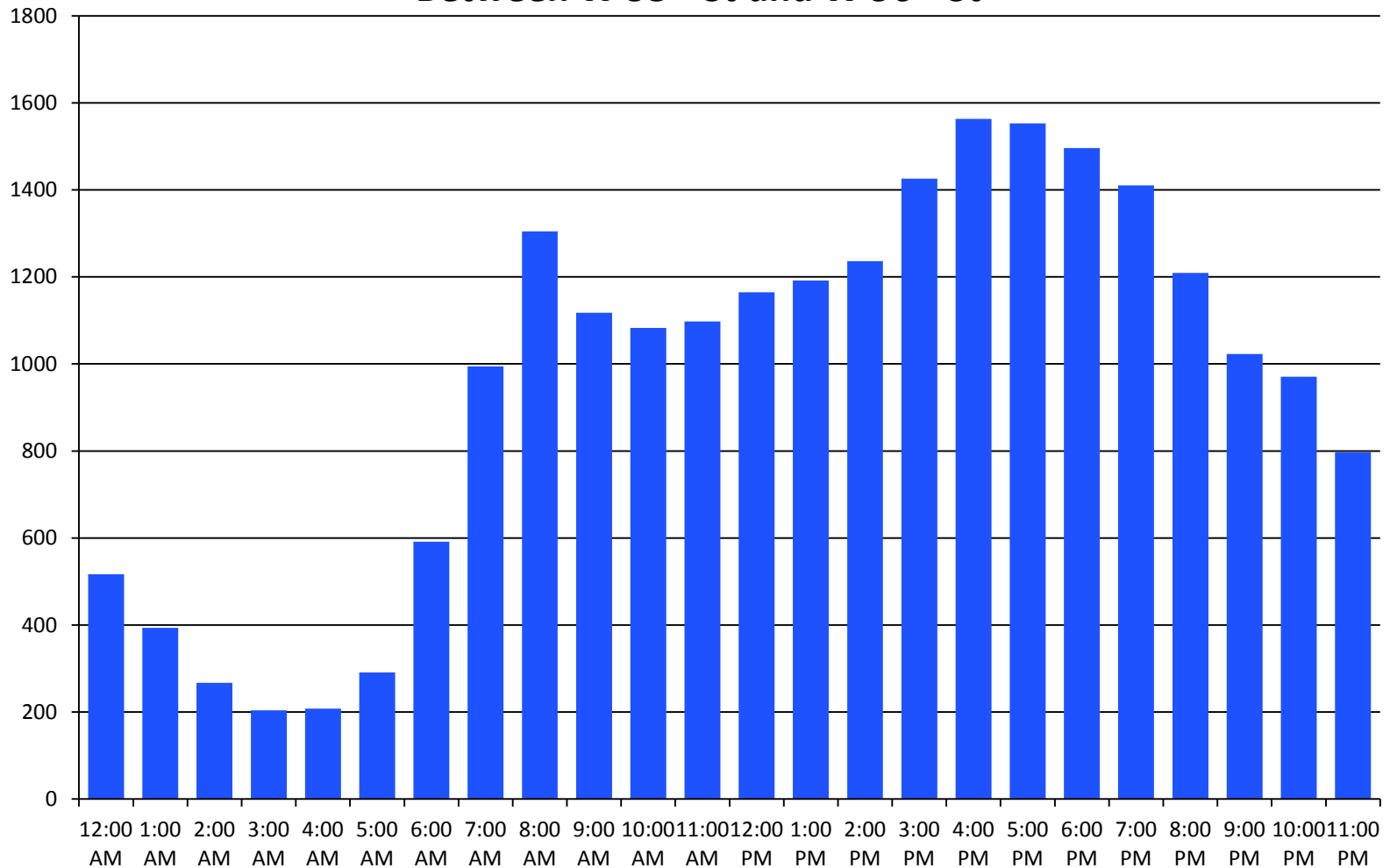
**Delay** is a measure of the average time a vehicle will spend processing through an intersection



# Making it Work

## Daily Volumes

***Amsterdam Avenue Daily Vehicle Volumes  
Between W 95<sup>th</sup> St and W 96<sup>th</sup> St***

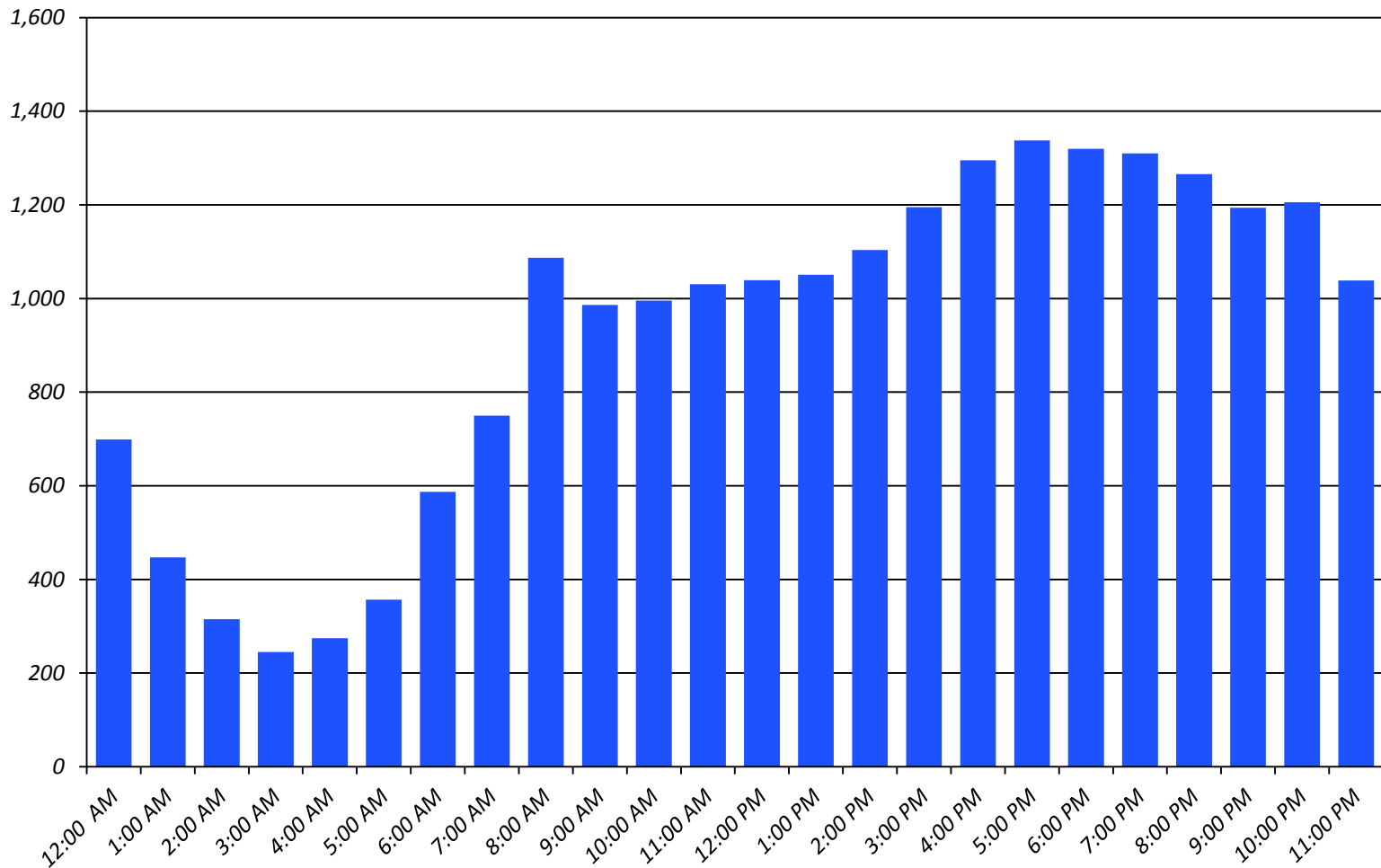




# Making it Work

## Daily Volumes

***Amsterdam Avenue Daily Vehicle Volumes  
Between W 78<sup>th</sup> St and W 79<sup>th</sup> St***





# Taxi Usage

- From 4pm to 7pm on weekdays there are approximately 16,065 yellow cab trips that start or end in CB 7
- 50% of trips (8,090) are 1.5 miles or less
- 44% of trips (7,000) are wholly within CB 7 (both start and end)
- 32% of afternoon traffic on Amsterdam Ave is taxis (approximately 400 per hour)
- Large potential for a protected lane to shift trips from taxi to Citi Bike



# Making it Work Left Turns

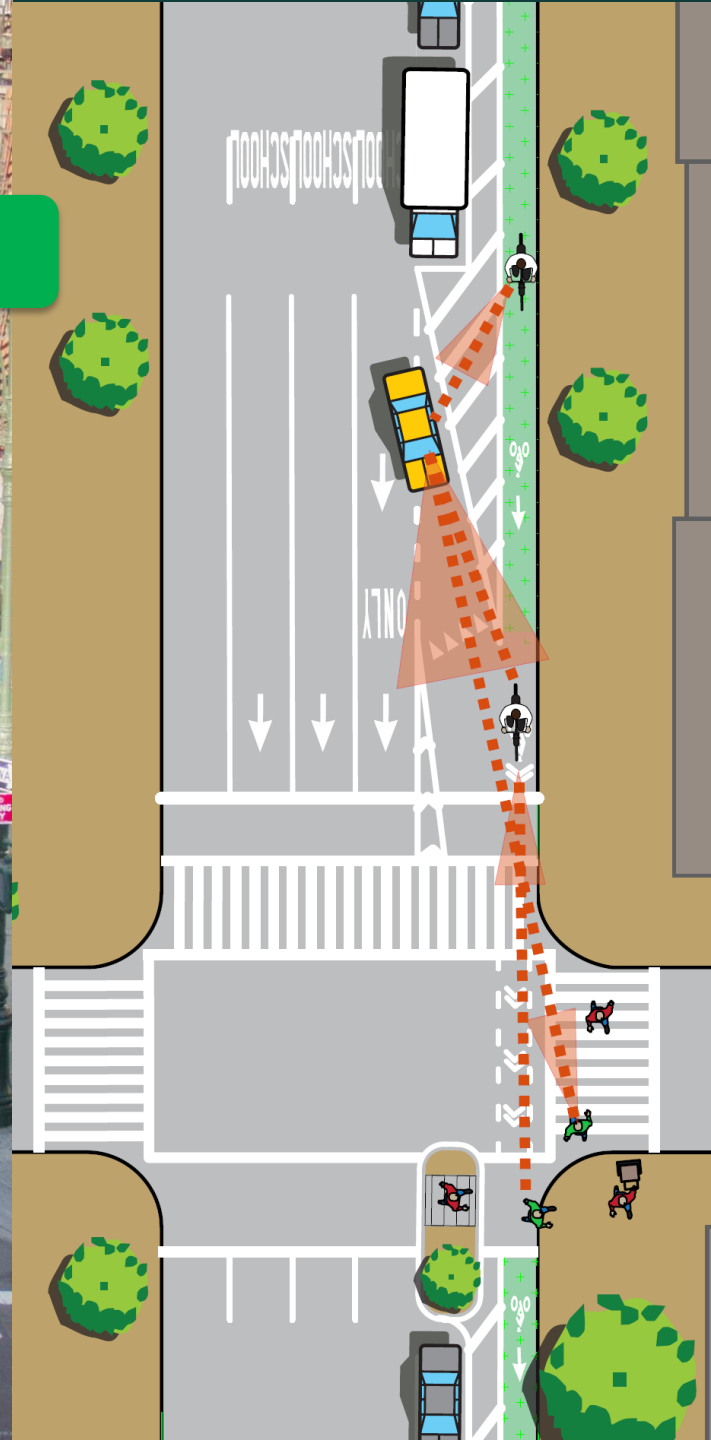
## Mixing zones at all non-two way left turns

Improves visibility  
of cyclists

Provides space to  
negotiate conflict

Removes left turns  
from through lanes

Creates left turn  
vehicle storage





# Making it Work

## Left Turns

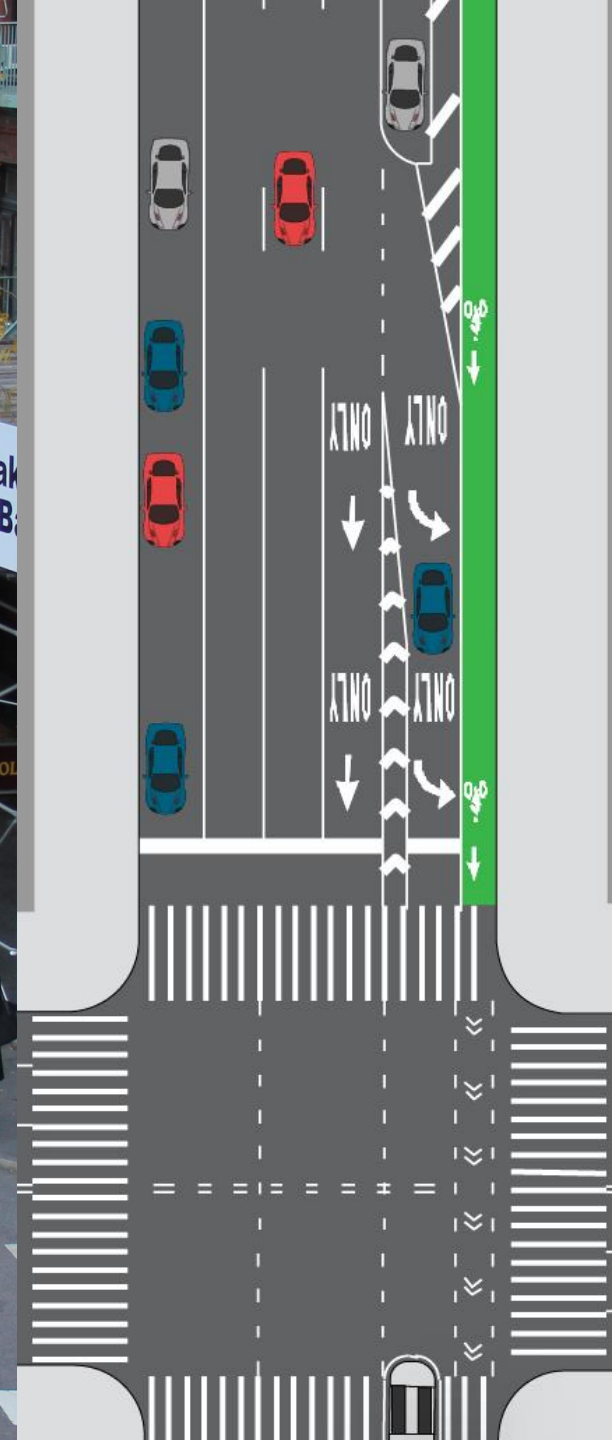
Left-turn bays at 79<sup>th</sup>, 86<sup>th</sup>, 96<sup>th</sup>

Turning vehicles  
queue for turn phase

Bike lane continues  
the length of the block

Split phase allows through  
traffic to move while holding  
left turns, up to 23% more  
green time given to through

Pedestrians and cyclists have a  
leading phase to get a head start





# Making it Work Deliveries



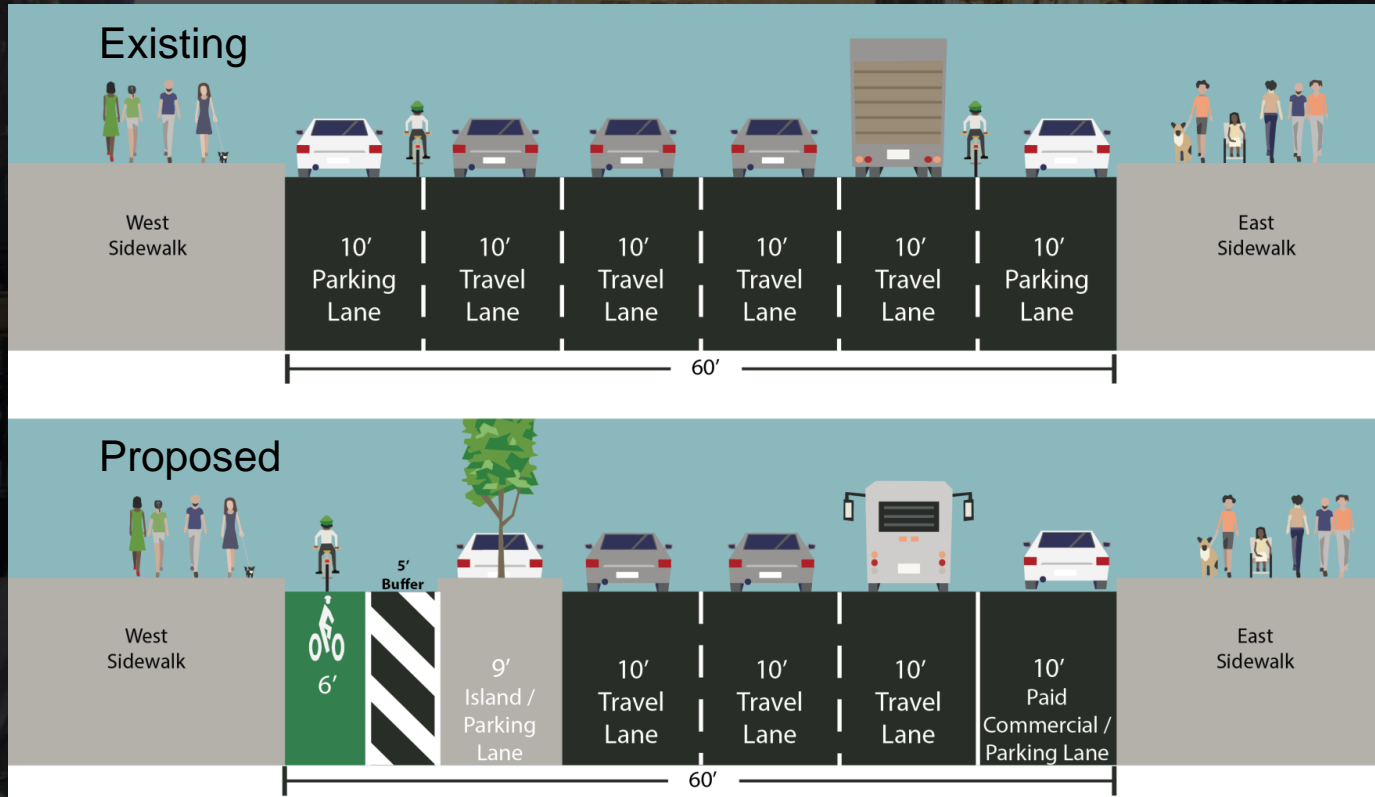
Existing 1-hr metered  
parking 9a-7p

Install a paid commercial parking regulation along the east curb of Amsterdam Ave from W. 72<sup>nd</sup> to W. 96<sup>th</sup> between 7am and 7pm on weekdays, plus at select locations on west curb

- Maximizes curb space available for trucks loading or unloading on busy commercial corridor
- Reduces the likelihood of trucks double-parking during peak travel times
- Clear through lanes process traffic more efficiently



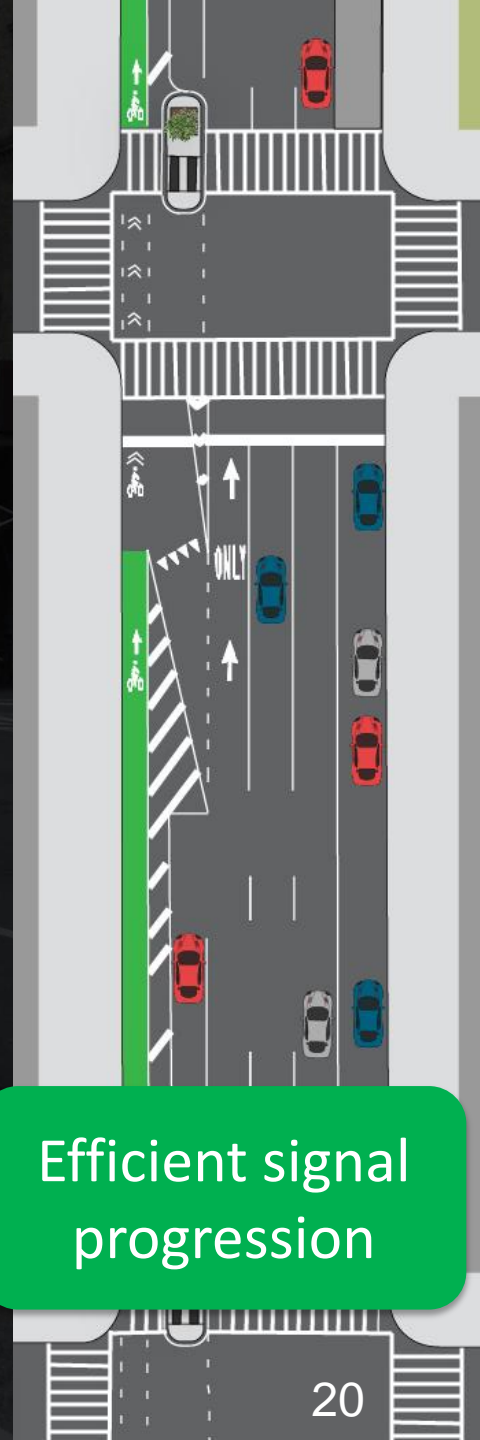
# Making it Work Overall



3 through lanes  
process efficiently

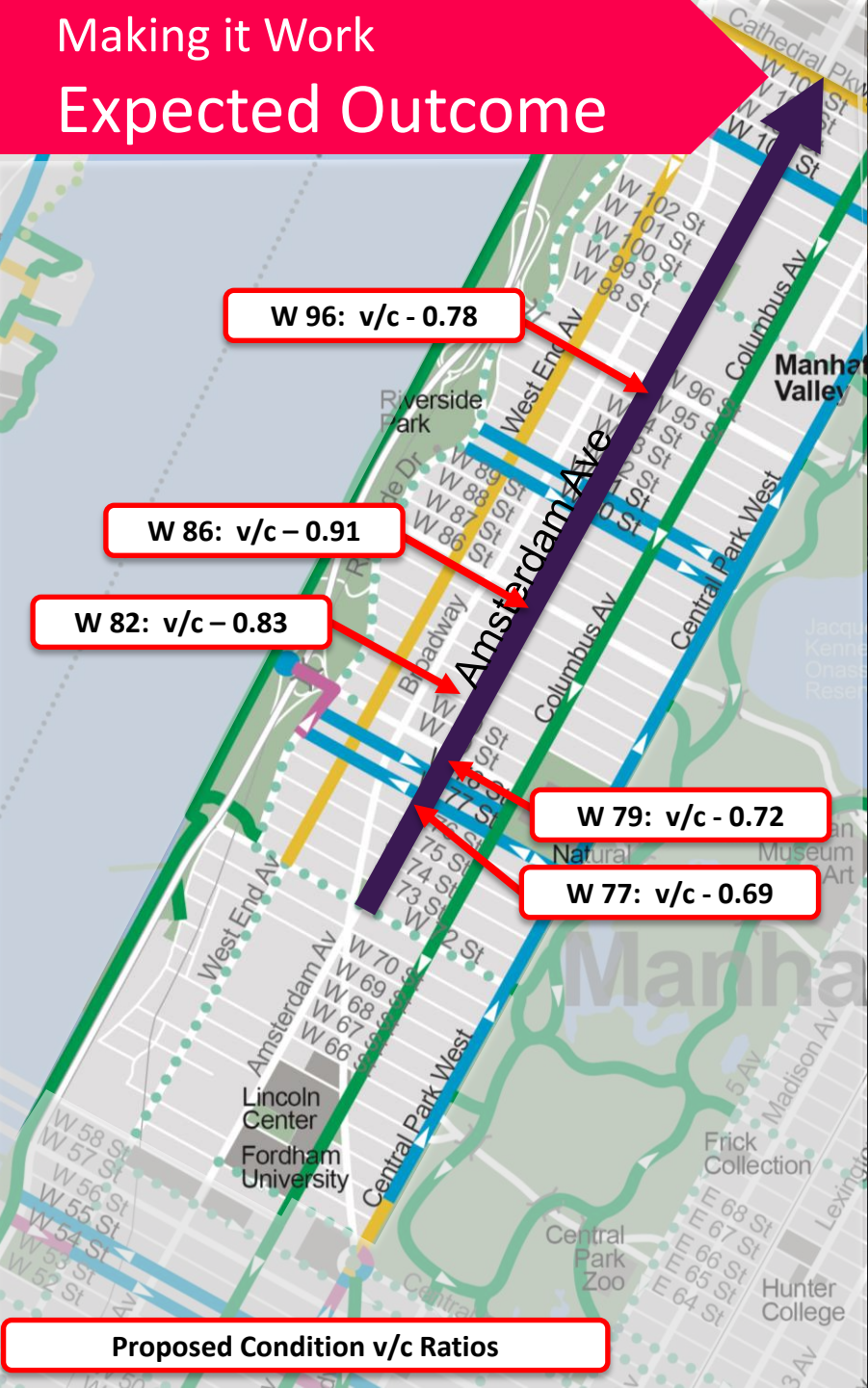
Traffic is organized into  
through, turns, and proper  
loading zones

Efficient signal  
progression



# Making it Work

## Expected Outcome



### Existing

Cross Street	Amsterdam 6-7 PM Peak Volumes (veh/hr)	Delay (s)	Volume-to-Capacity Ratio
W 96 <sup>th</sup>	1,687	12.8	0.91
W 86 <sup>th</sup>	1,704	6.5	0.81
W 82 <sup>nd</sup>	1,545	3.0	0.66
W 79 <sup>th</sup>	1,330	40.9	0.85
W 77 <sup>th</sup>	1,377	4.8	0.62

### Proposed

Cross Street	Amsterdam 6-7 PM Peak Volumes (veh/hr)	Delay (s)	Volume-to-Capacity Ratio
* W 96 <sup>th</sup>	1,670	5.0	0.78
W 86 <sup>th</sup>	1,687	12.7	0.91
W 82 <sup>nd</sup>	1,530	5.9	0.83
* W 79 <sup>th</sup>	1,317	35.5	0.72
W 77 <sup>th</sup>	1,363	4.5	0.69

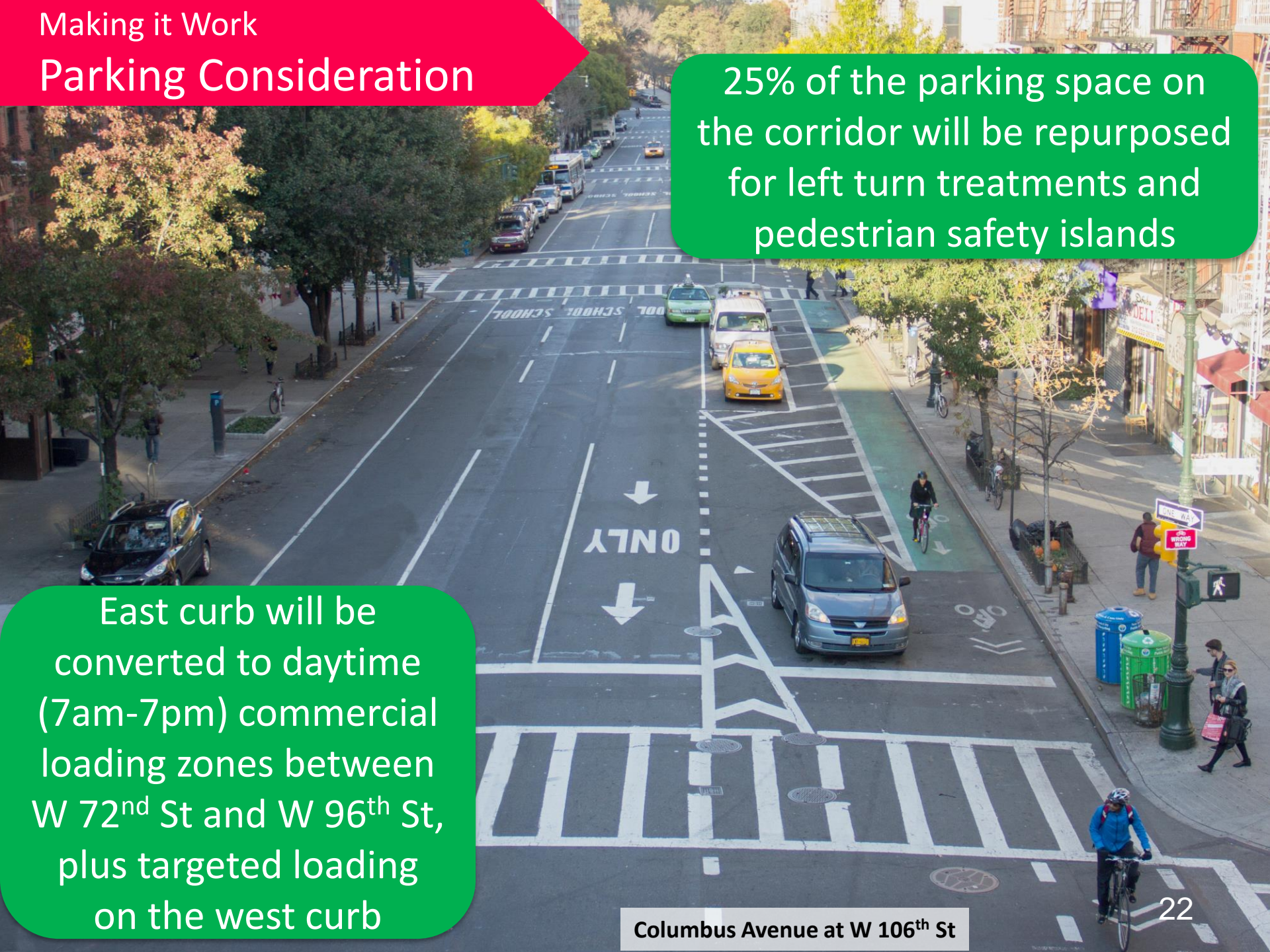
\* Benefit from conversion from LPI to Split LPI



## Parking Consideration

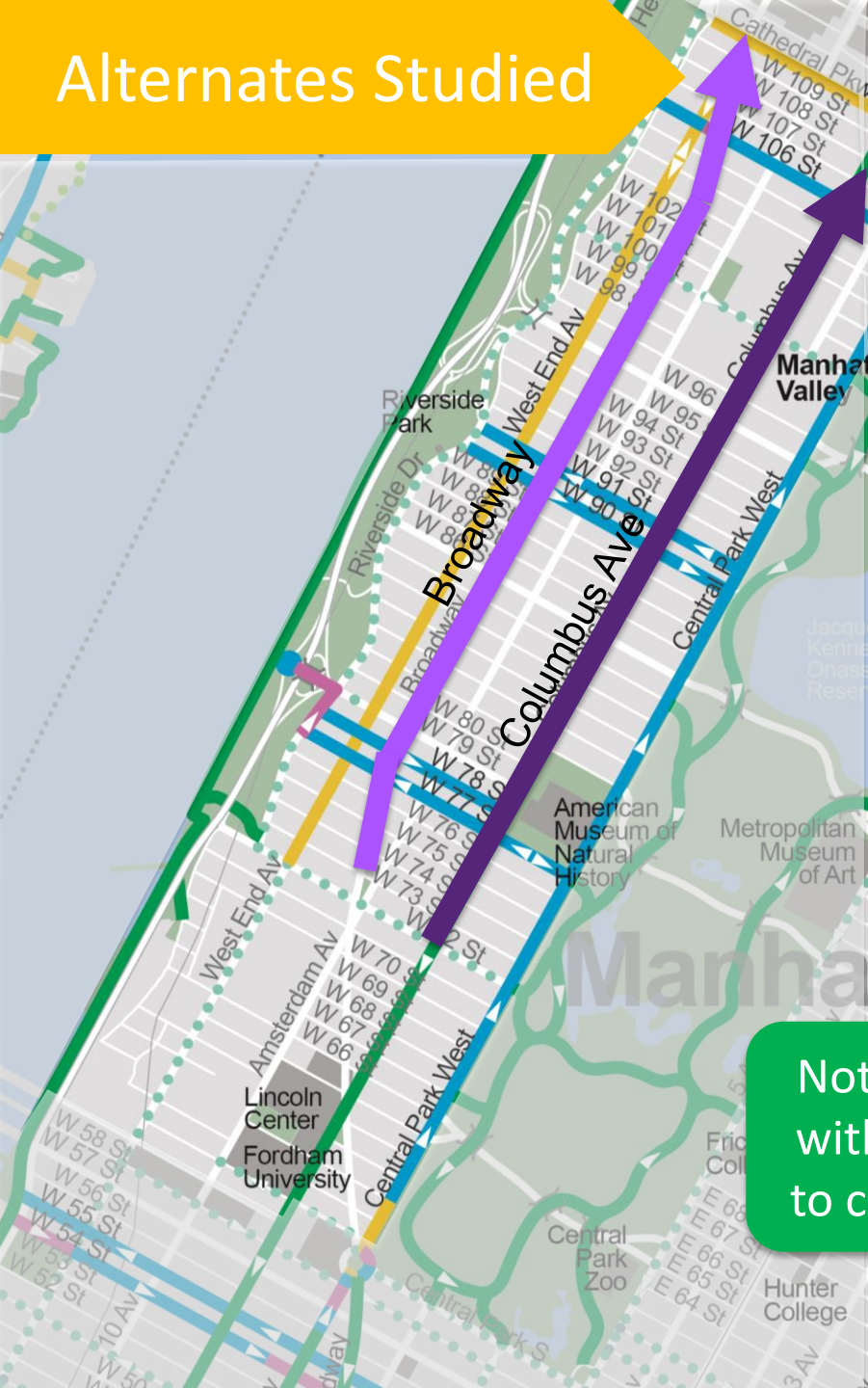
25% of the parking space on the corridor will be repurposed for left turn treatments and pedestrian safety islands

East curb will be converted to daytime (7am-7pm) commercial loading zones between W 72<sup>nd</sup> St and W 96<sup>th</sup> St, plus targeted loading on the west curb





## Alternates Studied



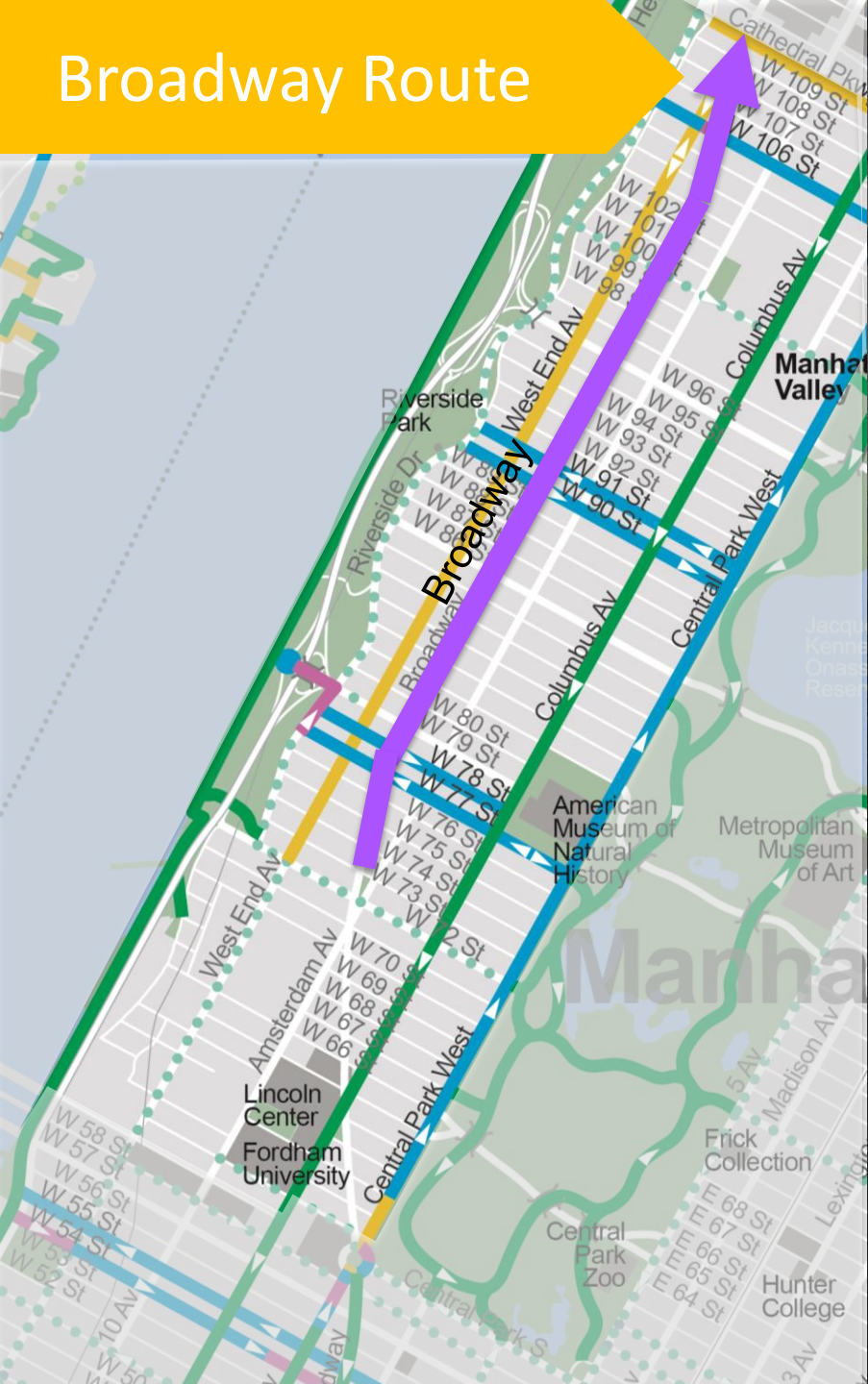
Amsterdam Avenue is the *preferred northbound route*, however it comes with parking loss and some vehicular capacity reduction

DOT has studied potential alternatives on nearby Broadway and Columbus

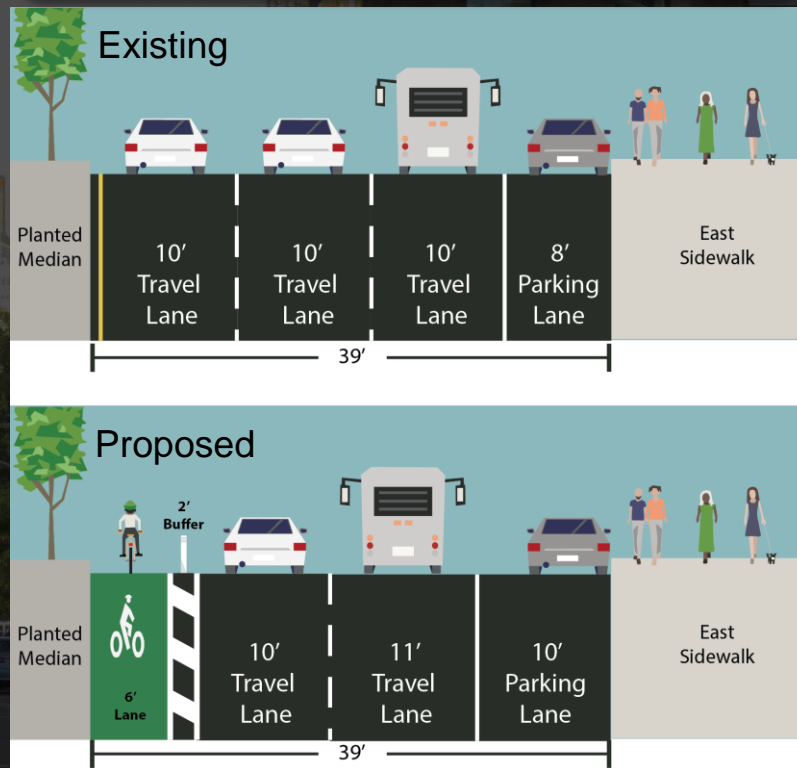
Note: Any alternative bike route will be paired with pedestrian improvements on Amsterdam to create a safer corridor without bike facilities



# Broadway Route



Buffered bicycle lane  
against the median in the  
northbound direction



Minor traffic impact

Design challenges between  
95<sup>th</sup> and 97<sup>th</sup>

Requires new left turn design



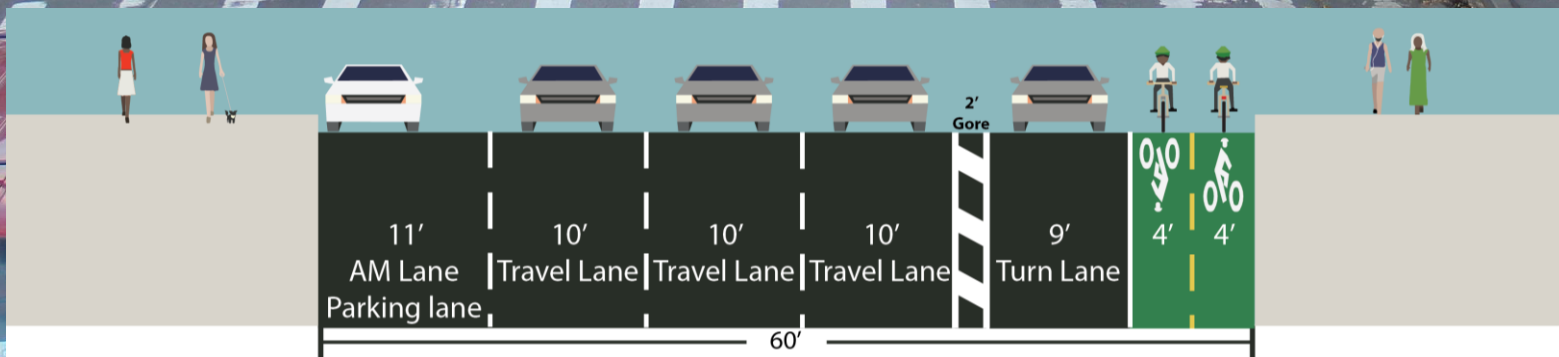
# Columbus Ave Route

Convert southbound lane to a two way path

No changes to vehicular capacity

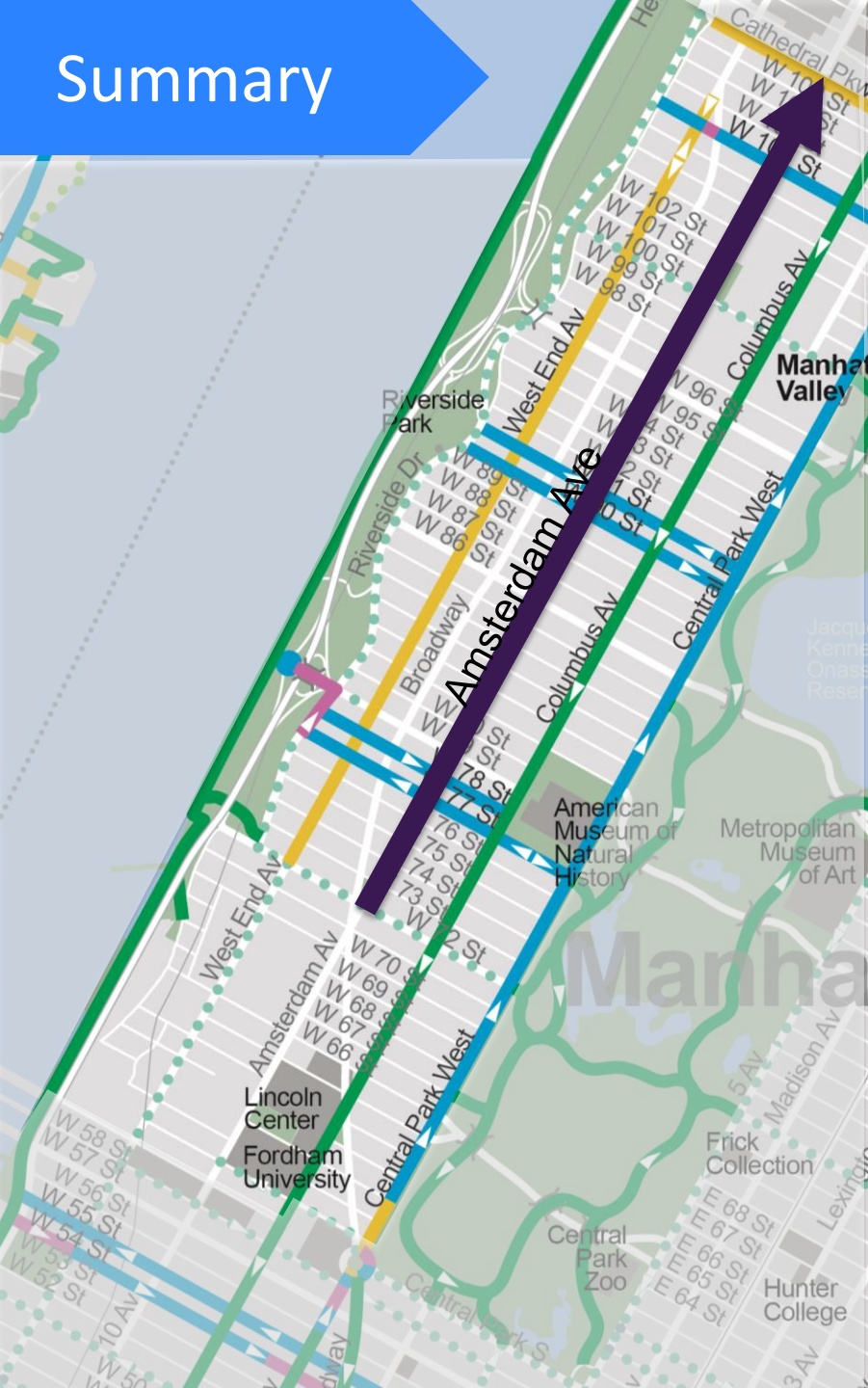
Learning curve for users, heavy pedestrian access

Requires infrastructure upgrades





# Summary

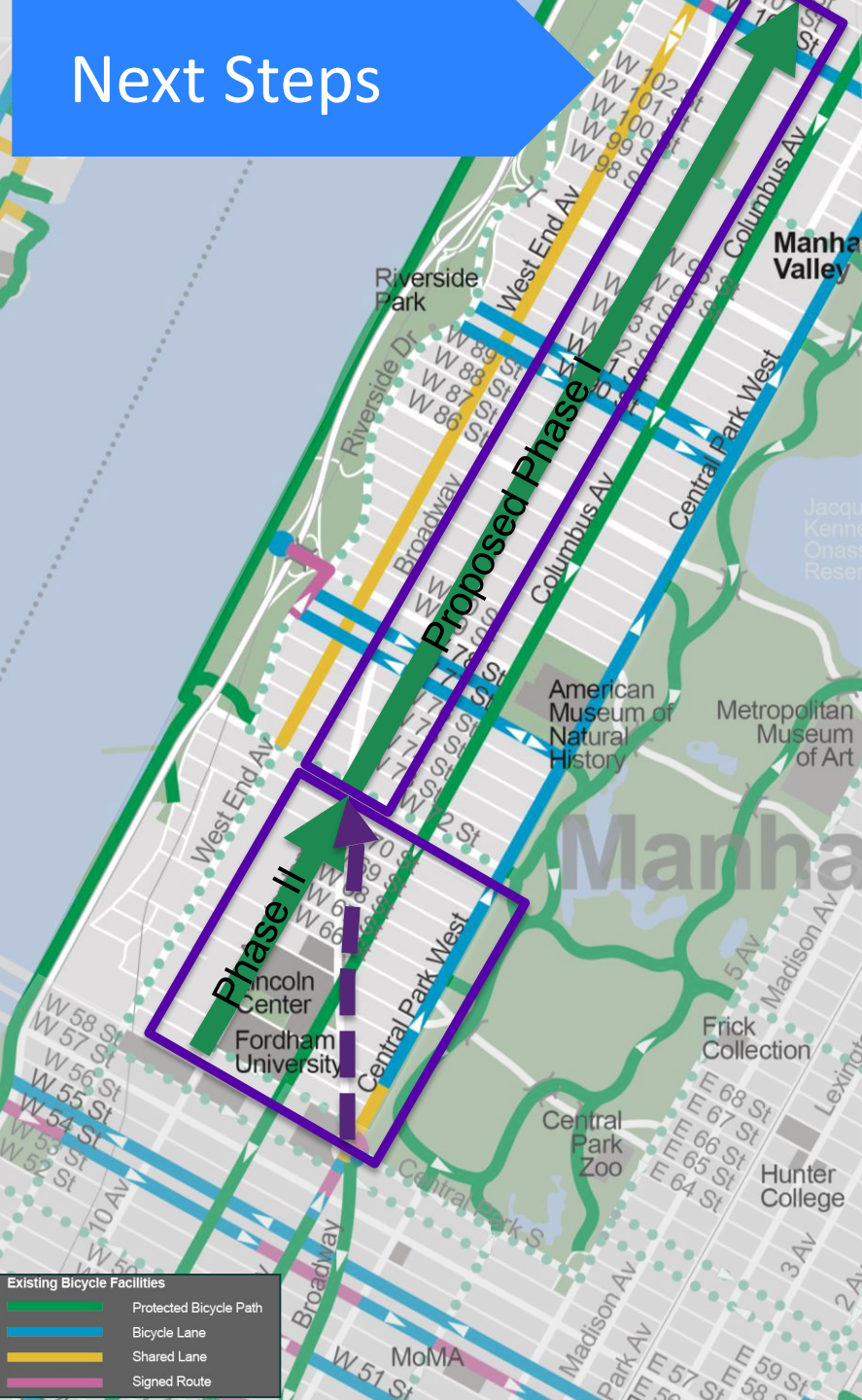


## Phase I – Amsterdam Avenue Preferred Route

- Protected bicycle lane provides northbound route for cyclists
- Reduced pedestrian crossing distances with islands
- Design for neighborhood street with safety benefits expected for all users
- Lane reduction with left turn treatments
- High peak hour traffic volumes require some adjustments
- Left turn treatments and paid commercial spaces reduce parkable area
- Traffic flow will be maintained
- Connections to new route via CPW at 77<sup>th</sup>/78<sup>th</sup> and 90<sup>th</sup>/91<sup>st</sup>



# Next Steps



## Phase 1 – 72<sup>nd</sup> – 110<sup>th</sup>

- Incorporate feedback into plan and present to board for support
- Implement in Spring 2016, nearly two miles of protected lanes and new infrastructure

## Phase 2 – South of 72<sup>nd</sup>

- Gather feedback & develop proposals
- Consider network connections
- Coordinate with 2016 capital project at 71<sup>st</sup>/Amsterdam/Broadway
- Complete improvements at Columbus/65<sup>th</sup> Street/Broadway
- Any route will require careful planning through complex intersection of 71<sup>st</sup>/Amsterdam/Broadway





Questions?



Thank  
You