



**Corridor Safety  
Assessment**  
K Street NE

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August 3, 2017

# Overview

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- Study Goals – *What brought us here?*
- Corridor Operations – *What are the results of the corridor analysis?*
- Intersection Safety – *What are the results of the safety investigation?*
- Next Steps – *Where do we go from here?*

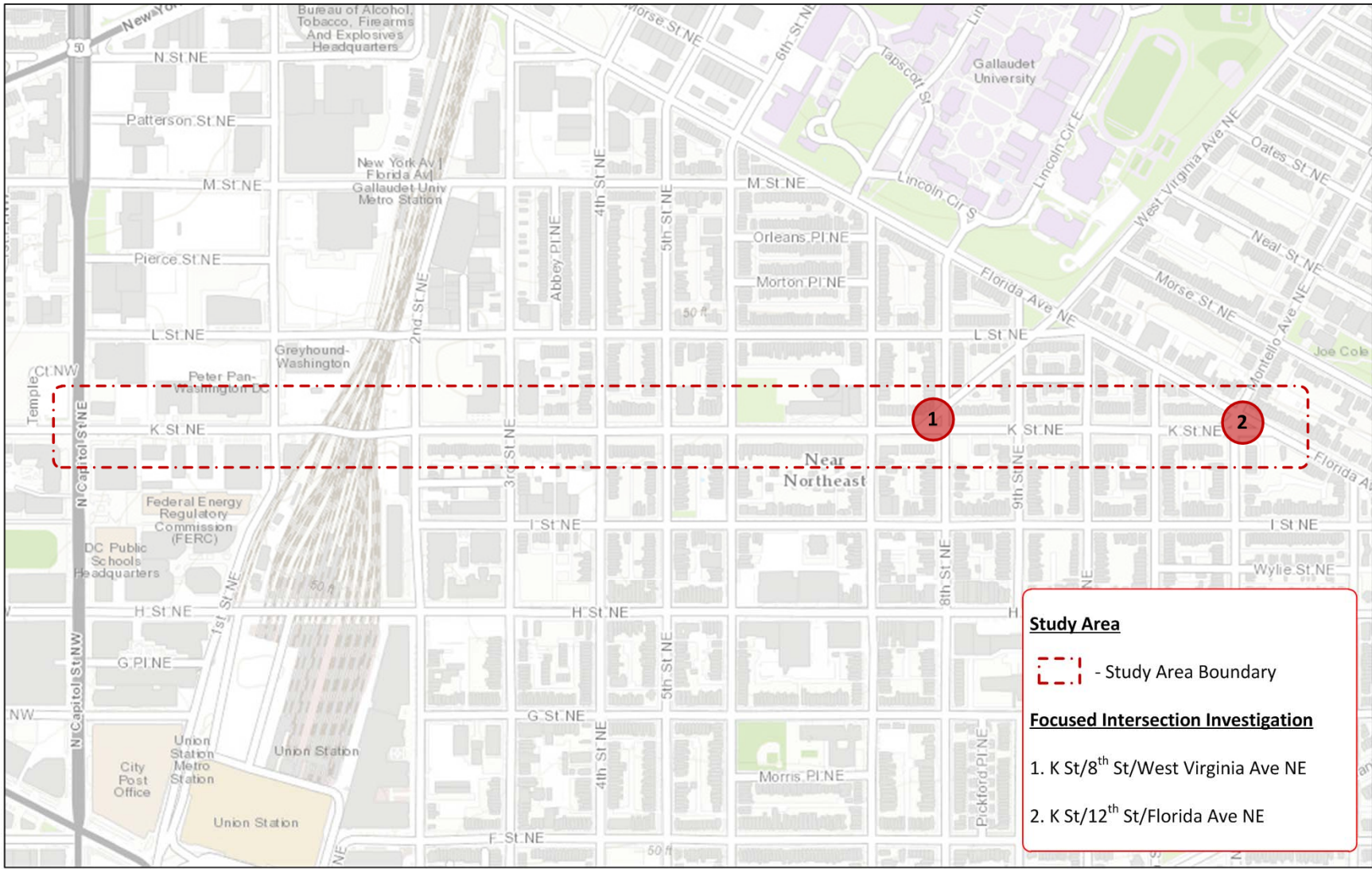
# Study Goals

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## *What brought us here?*

- Resolution passed by ANC 6C in April 2016 to request corridor study of K Street NE from North Capitol Street to Florida Avenue NE
- DDOT initiated Corridor Safety Assessment to provide comprehensive analysis of safety concerns, including speeding and vehicular crashes
- Assessment includes evaluation of crash history and existing traffic operations along the K Street NE corridor
- Additional focus assessments conducted at the intersections of K Street/8<sup>th</sup> Street/West Virginia Avenue NE and of K Street/12<sup>th</sup> Street/Florida Avenue NE due to additional concerns raised regarding the traffic control and intersection geometry
- DDOT presented results of study at ANC 6A and 6C Transportation and Public Space Committee meetings in May 2017. ANC 6C Committee asked DDOT to refine the proposed “Road Diet” treatment to minimize removal of on-street parking.

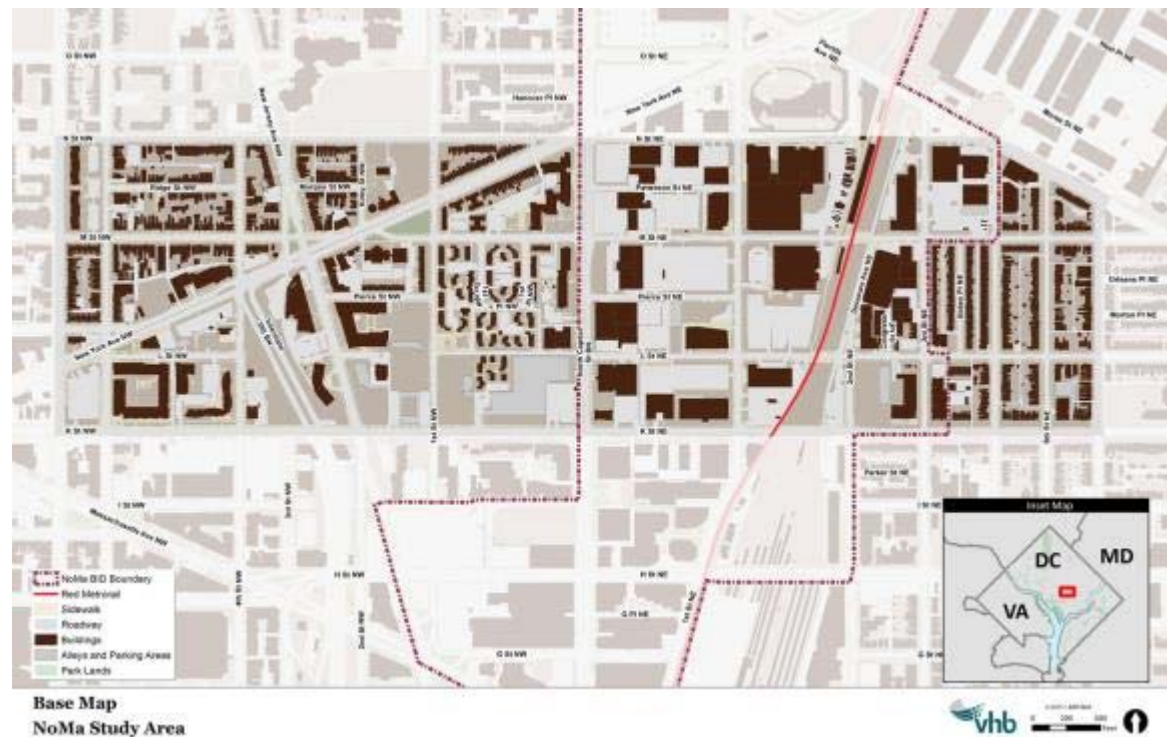
# Study Area



# Additional Studies

## *NoMa Bicycle Network Study*

- DDOT currently working on the NoMa Bicycle Network Study, which reviews the existing transportation plans and development projects for relevance to bicycle network consistency, travel demand, and safety in the study area.
- DDOT and the project team will create a design concept for each of the four east-west corridors in the study area (K, L, M, and N Streets between 6<sup>th</sup> Street NW and 6<sup>th</sup> Street NE).





# **CORRIDOR-WIDE RECOMMENDATIONS**



# Corridor Recommendations

*What are the proposed improvements to mitigate the safety concerns?*

- Several treatments can be applied to the K Street NE corridor to enhance multimodal safety, including providing drivers with enhanced warning signs to hazards, implementing lane and turn restrictions, and increasing driver expectancy
- Improvements include installing new signage and pavement markings, realigning signal heads, and trimming back trees and other foliage
- Three candidate alternatives to calm traffic along K Street NE corridor
  - ANC 6C asked DDOT to refine the “Road Diet” alternatives to minimize parking impacts along the corridor
  - Additional alternative proposed to include bicycle lanes along K Street NE, as recommended in DDOT’s moveDC Plan
  - Goals: to slow vehicle speeds, reduce aggressive driving behaviors, and reduce pedestrian crossing distance where feasible
- Focus on corridor east of 2<sup>nd</sup> Street NE due complicating factors at western end (e.g., rail underpass, commercial activity)

# K Street NE Corridor Treatments

- Road Diet – Treatment #1: Minimum Warranted Turn Lanes  
Reduce cross-section to single travel lane in each direction, including peak periods
  - Install exclusive left-turn lanes only where warranted using DDOT Design Manual standard (>100 left turns in peak hour)
  - Left turn lanes on 2 approaches, both in the eastbound direction:
    - Eastbound K Street NE at 6<sup>th</sup> Street NE
    - Eastbound K Street NE at 8<sup>th</sup> Street NE
  - Retain 171 full-time on-street parking spaces (currently, 216 existing parking spaces are provided in off-peak periods)



# Corridor Treatments

## Road Diet – Treatment #1: Minimum Warranted Turn Lanes

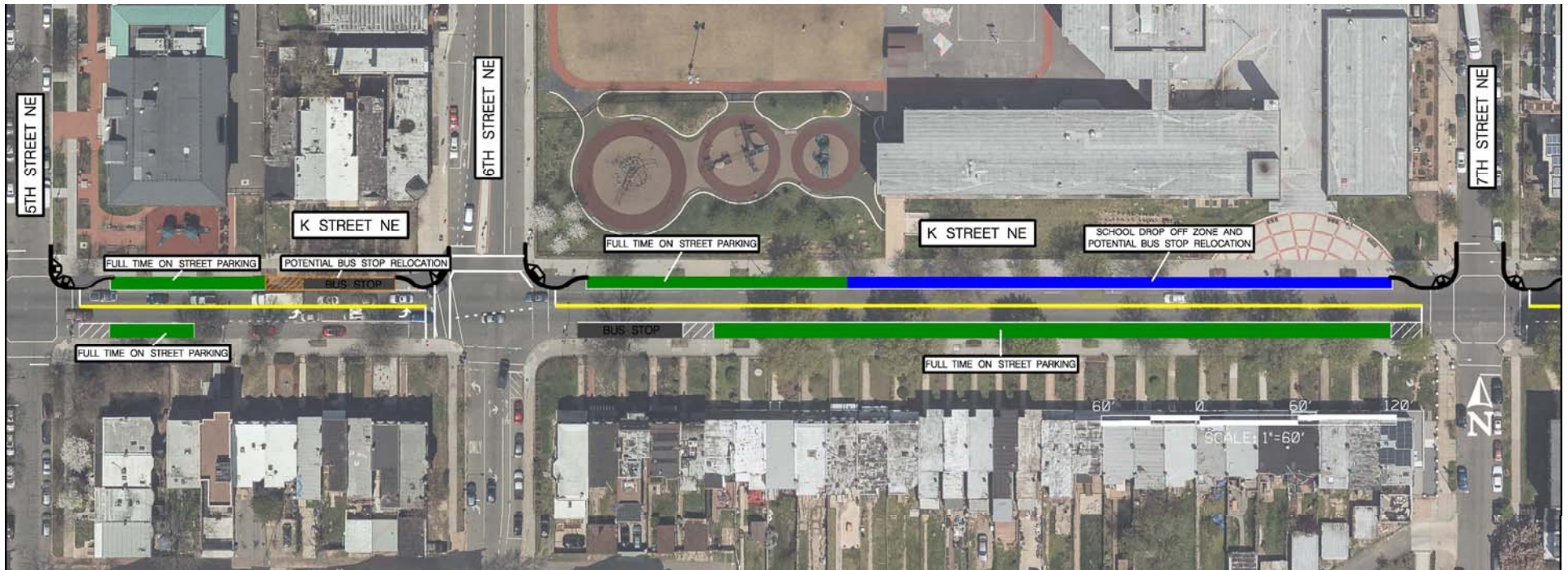
K Street NE: 200 block to 400 block



# Corridor Treatments

## Road Diet – Treatment #1: Minimum Warranted Turn Lanes

### K Street NE – 500 block to 600 block





# Corridor Treatments

## Road Diet – Treatment #1: Minimum Warranted Turn Lanes

K Street NE – 700 block to 900 block





# Corridor Treatments

## Road Diet – Treatment #1: Minimum Warranted Turn Lanes

K Street NE – 1000 block to 1200 block



# K Street NE Corridor Treatments

- Road Diet – Treatment #2: Recommended Turn Lanes w/ Intersection Transitions
  - Reduce cross-section to single travel lane in each direction, including peak periods
  - Install exclusive left-turn lanes where warranted using a lower volume standard ( $\geq 70$  left turns in peak hour) and engineering judgment
  - Permit lane transitions at intersections using puppy tracks
  - Left turn lanes on 5 approaches on K Street NE:
    - Westbound K Street NE at 4<sup>th</sup> Street NE
    - Eastbound K Street NE at 6<sup>th</sup> Street NE
    - Eastbound K Street NE at 8<sup>th</sup> Street NE
    - Westbound K Street NE at 8<sup>th</sup> Street NE
    - Eastbound K Street NE at 10<sup>th</sup> Street NE
  - Retain 155 full-time on-street parking spaces (currently, 216 existing parking spaces are provided in off-peak periods)



# Corridor Treatments

## Road Diet – Treatment #2: Recommended Turn Lanes w/ Intersection Transitions

K Street NE: 200 block to 400 block





# Corridor Treatments

## Road Diet – Treatment #2: Recommended Turn Lanes w/ Intersection Transitions

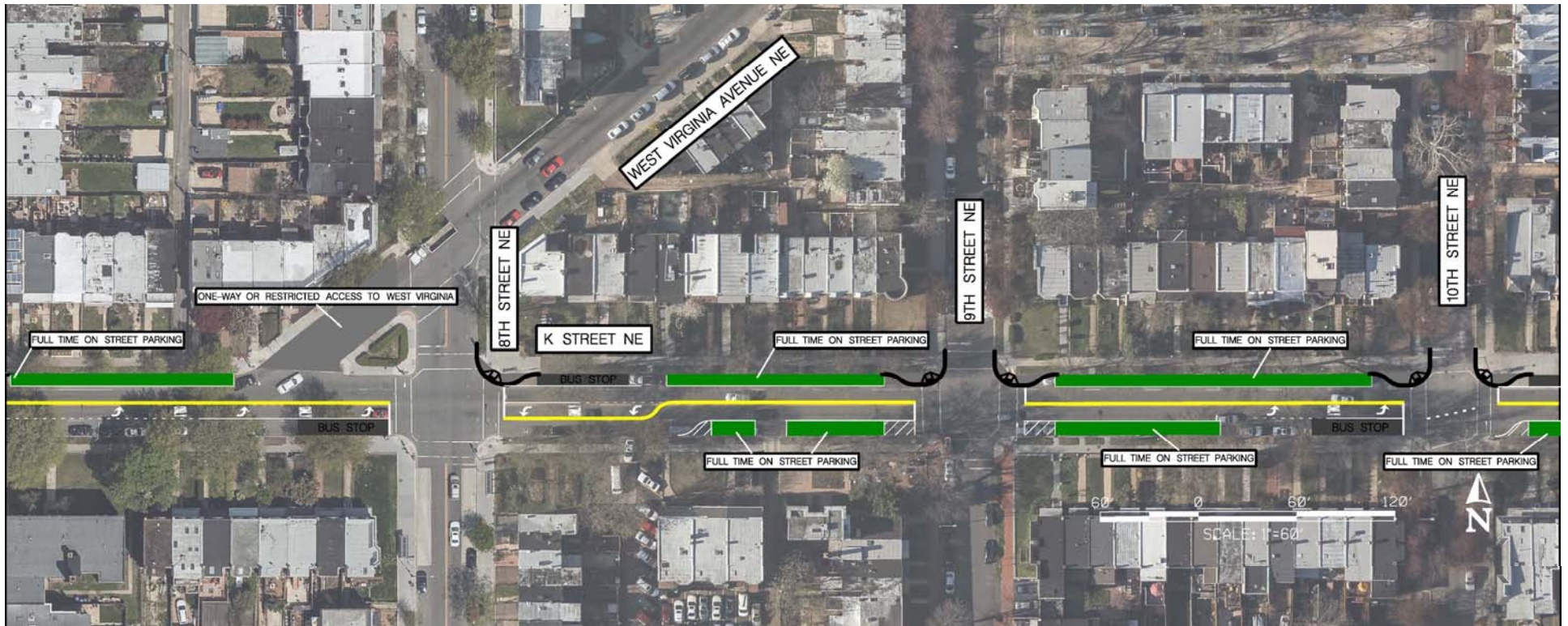
K Street NE – 500 block to 600 block



# Corridor Treatments

## Road Diet – Treatment #2: Recommended Turn Lanes w/ Intersection Transitions

K Street NE – 700 block to 900 block

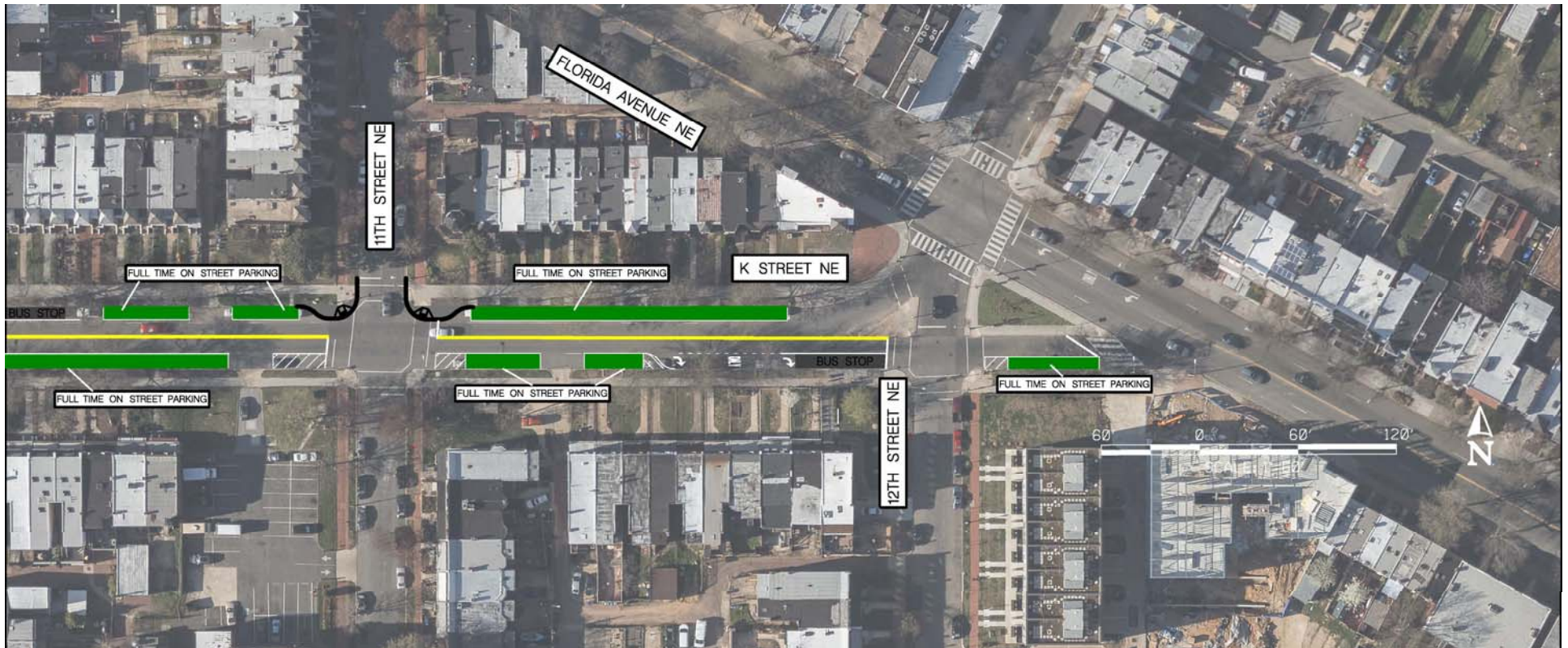




# Corridor Treatments

## Road Diet – Treatment #2: Recommended Turn Lanes w/ Intersection Transitions

K Street NE – 1000 block to 1200 block



# K Street NE Corridor Treatments

- Road Diet – Treatment #3: Recommended Turn Lanes w/ Midblock Transitions
  - Reduce cross-section to single travel lane in each direction, including peak periods
  - Install exclusive left-turn lanes where warranted using combination of lower standard ( $\geq 70$  left turns in peak hour) and engineering judgment
  - Where feasible, use midblock lane transitions to align lane geometry at intersections
  - Left turn lanes on 5 approaches on K Street NE:
    - Westbound K Street NE at 4<sup>th</sup> Street NE
    - Eastbound K Street NE at 6<sup>th</sup> Street NE
    - Eastbound K Street NE at 8<sup>th</sup> Street NE
    - Westbound K Street NE at 8<sup>th</sup> Street NE
    - Eastbound K Street NE at 10<sup>th</sup> Street NE
  - Retain 144 full-time on-street parking spaces (currently, 216 existing parking spaces are provided in off-peak periods)



# Corridor Treatments

## Road Diet – Treatment #3: Recommended Turn Lanes w/ Midblock Transitions

K Street NE: 200 block to 400 block



# Corridor Treatments

## Road Diet – Treatment #3: Recommended Turn Lanes w/ Midblock Transitions

K Street NE – 500 block to 600 block





# Corridor Treatments

## Road Diet – Treatment #3: Recommended Turn Lanes w/ Midblock Transitions

K Street NE – 700 block to 900 block





# Corridor Treatments

## Road Diet – Treatment #3: Recommended Turn Lanes w/ Midblock Transitions

K Street NE – 1000 block to 1200 block



# K Street NE Corridor Treatments

- Road Diet – Treatment #4: Bike Lanes, as recommended by moveDC
  - Study recommends potential east-west bike lanes on K Street NE
  - Eliminates on-street parking on south side of street, lane width repurposed to allow for bike lane in each direction
  - Maintains parking and school drop-off zone on north side of the street
  - Curb extensions on north side of roadway reduce road width and pedestrian crossing distances across K Street
  - Retain approximately 110 full-time on-street parking spaces (currently, 216 existing parking spaces are provided in off-peak periods) if bike lanes installed along entire corridor



# Corridor Treatments

Road Diet – Treatment #4: Bike Lanes, as recommended by moveDC



# Corridor Treatments

Road Diet – Treatment #4: Bike Lanes, as recommended by moveDC





# **INTERSECTION FOCUS AREAS**





# K St at 8<sup>th</sup> St NE

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## *Existing Concerns*

- During evening peak period, eastbound queues were observed on K Street NE due to drivers waiting to turn left onto West Virginia Avenue NE. Queues on West Virginia Avenue NE extend from the intersection with Florida Avenue NE. Eastbound queues on K Street NE were observed to spillback into the intersection with 7<sup>th</sup> Street NE
- Aggressive driver behavior was observed, including drivers blocking westbound K Street NE, using the southbound lane of West Virginia Avenue NE to join the northbound queue, and tailgating as drivers allowed very small gaps for other vehicles to join the queue
- During the morning peak period, drivers traveling on southwestbound West Virginia Avenue NE were observed coming to a rolling stop at the stop sign as they turned right onto westbound K Street NE. Some drivers continued without stopping when an adequate gap was available on westbound K Street NE

# Focus Intersections

## K Street / 8th Street / West Virginia Avenue NE

### Prior Supplemental Traffic Safety Evaluations

- Conducted Stopping Sight Distance (SSD) Evaluation
  - Evaluated sight distance for vehicles on 8<sup>th</sup> Street at West Virginia Avenue NE
  - SSD did not meet minimum requirement for southbound vehicles on 8<sup>th</sup> Street
- Conducted speed study on 8<sup>th</sup> Street NE
  - 85<sup>th</sup> percentile speeds were within acceptable range for posted speed limit and roadway classification



Diagram showing limited SSD for southbound vehicles on 8<sup>th</sup> Street NE

# Focus Intersections

## K Street / 8th Street / West Virginia Avenue NE

### Additional Sight Distance Analysis

- Intersection Sight Distance (ISD) on West Virginia Ave NE at 8<sup>th</sup> Street NE
  - To meet minimum ISD requirements, on-street parking would have to be eliminated on both sides of the roadway in the 1000 block of 8<sup>th</sup> Street NE
    - ~7 spaces on east side of 8<sup>th</sup> Street NE
    - ~10 spaces on west side of 8<sup>th</sup> Street NE

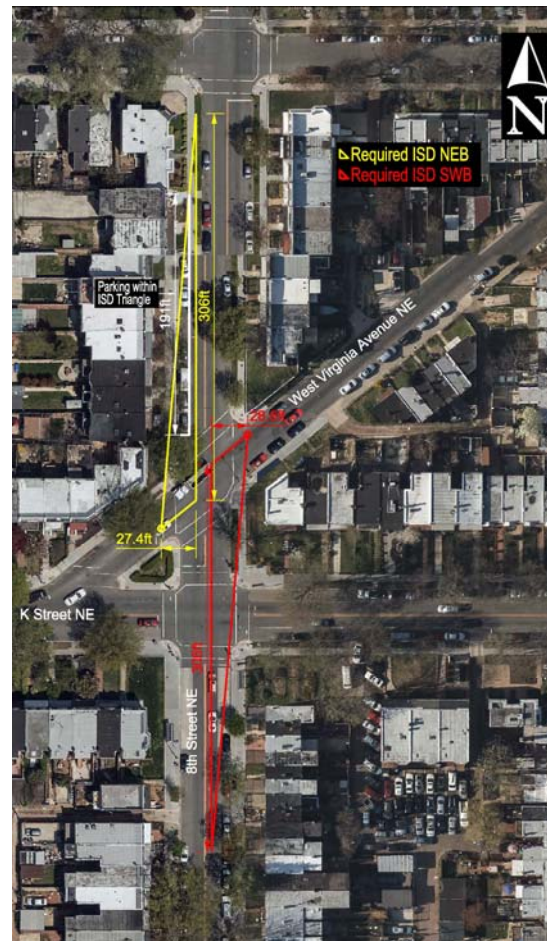


Diagram showing required ISD looking left from West Virginia Ave and impacts to parking

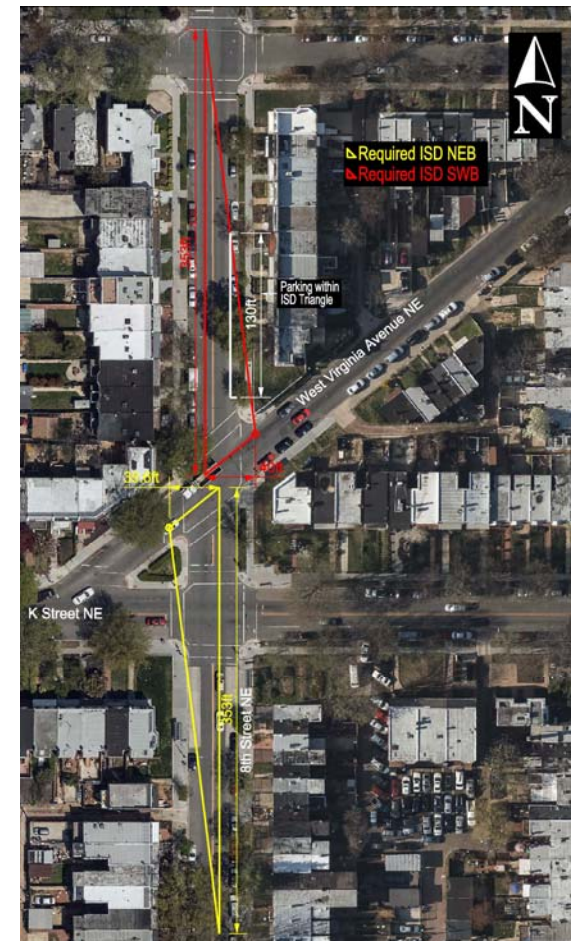


Diagram showing required ISD looking right from West Virginia Ave and impacts to parking



# Focus Intersections

## K Street / 8th Street / West Virginia Avenue NE

### Prior Recommendations

- Restripe the northbound approach of 8<sup>th</sup> Street at West Virginia Avenue NE to include a separate through lane and right-turn only lane
- Evaluate signal timing options at the intersection of West Virginia Avenue/Florida Avenue NE to improve the queuing along northbound West Virginia Avenue NE during the evening peak period
- Consider converting West Virginia Avenue “stub” to one-way or closing the segment to vehicular traffic entirely

# Focus Intersections

## K Street / 8th Street / West Virginia Avenue NE

### Additional Recommendations

- Trim foliage on east side of roadway to improve sight distance
- Remove 1-2 parking spaces on west side of roadway to improve sight distance
- Remove south leg crosswalk at 8<sup>th</sup> St / West Virginia Ave intersection
- Trim hedge height in traffic island to 3 ft or lower to improve sight distance
- Install word message warning sign: "RIGHT TURNS WATCH FOR CROSS TRAFFIC"



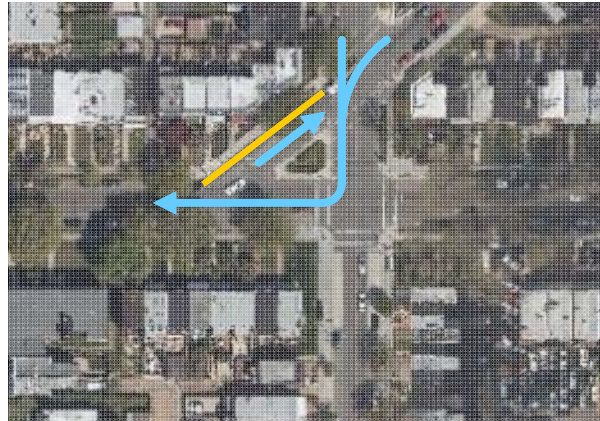


# K St at 8<sup>th</sup> St NE

**Alternative # 1**  
Southbound Traffic Only



**Alternative # 2**  
Northbound Traffic Only



**Alternative # 3**  
Segment Closed to Traffic



- Potential On-street Parking
- New Traffic Pattern
- ▨ Segment Closed to Traffic



# K St at 8<sup>th</sup> St NE

## Alternative # 1 Southbound Traffic Only

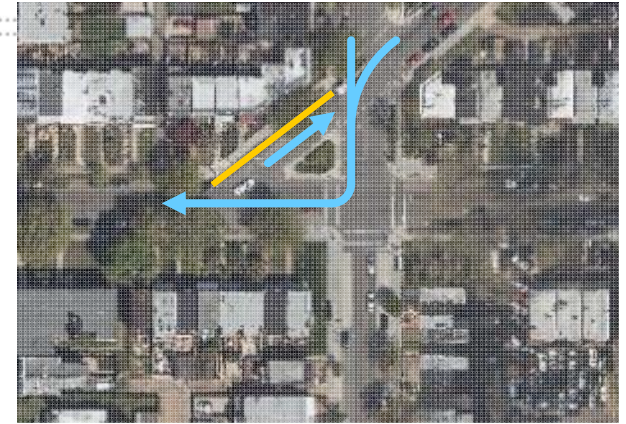


*Convert West Virginia Ave NE segment to one-way southbound*

- Addresses sight distance issues for northbound vehicles on West Virginia Avenue NE at 8<sup>th</sup> Street NE
- Reduces number of conflicting movements and potential crashes at the 8<sup>th</sup> Street / West Virginia Ave intersection
- Shifts eastbound left turns from an unsignalized intersection (K St/West Virginia Ave) to a signalized intersection (K St/8<sup>th</sup> St)
- Provides additional storage for queuing left-turning vehicles on EB K Street
- Best traffic operations outcomes of the three alternatives
  - No reduction in LOS, reduced delay and queuing compared to existing
- Doesn't specifically address rolling stops for right-turning vehicles on SB stub
- Avoids putting additional traffic onto short SB approach to 8<sup>th</sup>/K intersection

# K St at 8<sup>th</sup> St NE

Alternative # 2  
Northbound Traffic Only



*Convert West Virginia Ave NE segment to one-way northbound*

- Eliminates rolling stops for right-turning vehicles from SB West Virginia Avenue onto K Street
- No reduction in LOS, but substantially increased queuing compared to existing conditions
- Doesn't address SD issues for northbound left-turning and through vehicles on West Virginia Avenue at 8<sup>th</sup> Street NE
- Short SB 8<sup>th</sup> Street segment between K Street and West Virginia Avenue is not well suited to additional traffic volume and queues

# K St at 8<sup>th</sup> St NE

Alternative # 3  
Segment Closed to Traffic



*Close West Virginia Ave NE segment in both directions*

- Eliminates rolling stops for right-turning vehicles from SB West Virginia Avenue onto K Street
- No reduction in LOS, but substantially increased queuing compared to existing conditions
- Short SB 8<sup>th</sup> Street segment between K Street and West Virginia Avenue is not well suited to additional traffic volume and queues
- Maximizes new traffic activity at K Street/8<sup>th</sup> Street intersection, which is an existing bus transfer and high-activity pedestrian intersection



# K St at 12<sup>th</sup> St NE

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## *Existing Concerns*

- The lack of pavement markings on the 1200 block of K Street NE leads to driver confusion over the number of travel lanes as drivers approach the yield-controlled intersection at Florida Avenue NE. The lane configuration and potential for multiple lanes of traffic merging on Florida Avenue NE contributes to elevated traffic speeds and sideswipe crashes
- Aggressive driver behavior was observed on eastbound K Street NE, including drivers quickly accelerating upon receiving a green signal at the intersection with 12<sup>th</sup> Street NE in an effort to quickly reach the intersection ahead of traffic on southeastbound Florida Avenue NE. Drivers were also observed driving aggressively as they jockeyed for position in the queue on eastbound K Street at Florida Avenue NE
- Drivers were observed queuing adjacent to one another in the 1200 block of K Street NE in order to make dual rights onto Florida Avenue NE. This led to sight-distance concerns for drivers adjacent to the curb
- During the evening peak period, queuing on eastbound K Street NE was observed to spillback through the intersection
- Several drivers were observed making the illegal northbound left-turn from 12<sup>th</sup> Street to K Street NE past the channelizing island/pedestrian refuge

# K St at 12<sup>th</sup> St NE

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## *Prior Recommendations*

- To reduce driver confusion and improve sight distance, restripe the eastbound approach of K Street at Florida Avenue NE to include a single 11-foot wide travel lane, and install flexpost delineators to reinforce the reduced width of the travel lane
- Restripe the eastbound approach of K Street at 12<sup>th</sup> Street NE to include a separate through/left-turn lane and right-turn only lane and install advanced lane use signage to properly position eastbound vehicles in advance of the Florida Avenue NE intersection (note: this lane configuration may change if road diet is implemented)
- Convert the eastbound approach of K Street at Florida Avenue NE from yield control to stop control to better manage traffic speeds and regulate merging behavior
- Modify the existing triangular channelizing median at the K Street/12<sup>th</sup> Street NE intersection to include additional pavement markings and flexposts to limit illegal northbound left-turns

## *Additional recommendations*

- Slightly realign the eastbound approach to create additional deflection and reduce vehicle speeds
- Maintain a 35-40 foot parking lane on eastbound K Street between 12<sup>th</sup> Street and Florida Avenue NE

# K St at 12<sup>th</sup> St NE





# Next Steps

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## *Where do we go from here?*

- DDOT to finalize NoMa Bicycle Network Study and determine proposed cross-section for K Street NE.
- Notice of Intent (NOI) required for any changes to traffic control and/or parking. NOI opens 30-day public comment period.
- DDOT will likely move forward with proposed improvements at focus intersections (1<sup>st</sup>/2<sup>nd</sup> Street NE, 7<sup>th</sup> Street NE, 8<sup>th</sup> Street/West Virginia Avenue NE, and 12<sup>th</sup> Street/Florida Avenue NE) while the overall corridor recommendations are finalized.

## *Questions?*

- Contact Emily Dalphy ([emily.dalphy@dc.gov](mailto:emily.dalphy@dc.gov))
- For comments or questions related to the NoMa Bicycle Network Study, contact Darren Buck ([darren.buck@dc.gov](mailto:darren.buck@dc.gov)) or visit <http://nomabicyclestudy.com/>