

Bike Signal Resource Hub Case Study – Washington, DC

General project information:

- What prompted the use of bicycle signals?
 - Washington, DC began using bike signals for more narrow uses when an exclusive bicycle phase was needed to control bicycle movements. Since then, the use has been expanded to wherever feasible to implement in compliance with the MUTCD IA-16 (i.e., wherever bicycle movements are fully protected from turning movements).
- Where were they used? (Include photos and street view link, if possible before and after.)
 - The first application was in 2010 at [16th Street, U Street, and New Hampshire Ave N.W.](#) where bicycle signals are used to facilitate a diagonal connection through a six-leg intersection. Bicyclists are given the bike signal to enter from New Hampshire Avenue N.W., position themselves in front of 16th Street N.W. traffic, and then operate concurrently with northbound/southbound 16th Street N.W. traffic to access the receiving New Hampshire Ave N.W. leg.



Figure 1. 16th Street, U Street, Tand New Hampshire Avenue N.W., Washington, DC. Source: Google Street View Imagery: (4/2022, Copyright 2023.)

- The District now has 46 locations with active bike signals, and another three in active development to be installed via upcoming projects.

Design information:

- Number of intersections
 - 46 intersections; see attached spreadsheet for specific intersections.
- Detection type used
 - Generally, bike signals are pretimed; where actuated, video is typically used. See attached spreadsheet.
- Type of bike facility and form of separation
 - See attached spreadsheet.
- How are bicycle/vehicle/ped conflicts handled?
 - No turning conflicts are permitted to conflict with a bicycle movement as per the MUTCD IA-16; no bicycle movement is allowed to run through a pedestrian movement. Bicycle movements are either run fully protected from all turning movements and concurrent with the vehicle through movement or run fully exclusive (with only a parallel pedestrian movement operating concurrently).
- Size of bike signal indications (4", 8", 12")?
 - All bike signals currently in operation are 12-inch. The District's first 4-inch bike signal will be piloted shortly.
- Key challenges/obstacles to designing and implementation?
 - Introducing complex bicycle phasing and bicycle specific clearance values using the District's 170 controllers while retaining Leading Pedestrian Intervals (LPIs) and without introducing unnecessary pedestrian or vehicle delay.
 - Accommodating the necessary signal equipment (including turning vehicle signal heads) and signage on the District's standard 20-foot signal poles and 8-foot mast arms.

Outcome Information:

- Feedback/outcome comments from public?
 - No survey has been conducted, but reception to bike signals is generally favorable on social media following the implementation of bike signals on a new PBL corridor project.
- Key successes
 - The Crosstown Cycle Track (Irving Street N.W.) and Virginia Avenue N.W. Cycle Track both utilized bike phases for the first time on center-running cycle tracks, providing much clearer instruction to bicyclists than previous center-running bikeway projects in DC.
 - Extremely complex phasing has been implemented at several recent locations to accommodate bicycle phases, including 9th Street and New York Avenue, N.W. and 15th Street and Constitution Avenue, N.W. These utilized all eight of the available phases in 170 controllers, as well as multiple overlaps and green extensions.
- Any studies or findings on collision history before/after
 - No such study has been conducted.
- What would you do differently next implementation?
 - Pending the results of the 4-inch near-side head pilot implementation, the use of 4-inch near-side heads could be expanded.
 - Certain facilities that were designed and implemented prior to the expansion of bike signals could have benefited from bike signals, rather than using signs to specify "BIKES

USE PED SIGNAL” or “BIKES USE THRU SIGNAL” (e.g., 15th Street, N.W., 20th Street, N.W., Pennsylvania Ave, N.W.)

- Pending the release of the next MUTCD, future consideration could be given to experimentation with alternate phasing schemes and signal displays that would allow low turning volumes to conflict with bicycle movements governed by bike signals (e.g., flashing yellow arrows or flashing yellow bike signals).

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