

Bike Signal Resource Hub Case Study – City of Philadelphia, Pennsylvania

General project information:

- What prompted the use of bicycle signals?
 - Bike signals were first introduced in Philadelphia in 2018 as part of the JFK-Market protected bike lane pilot project: 16th and Market/20th and JFK. These were identified as high-conflict intersections, particularly with left-turning vehicles and bicycles as part of our [Vision Zero](#) initiative.
- Where were they used? Include photos and street view link (if possible, before and after.)
 - Island Avenue (currently under [construction](#))
 - Existing bicycle facilities [map](#)



Figure 1. 16th Street and Market Street. Source: Marvin Ta.

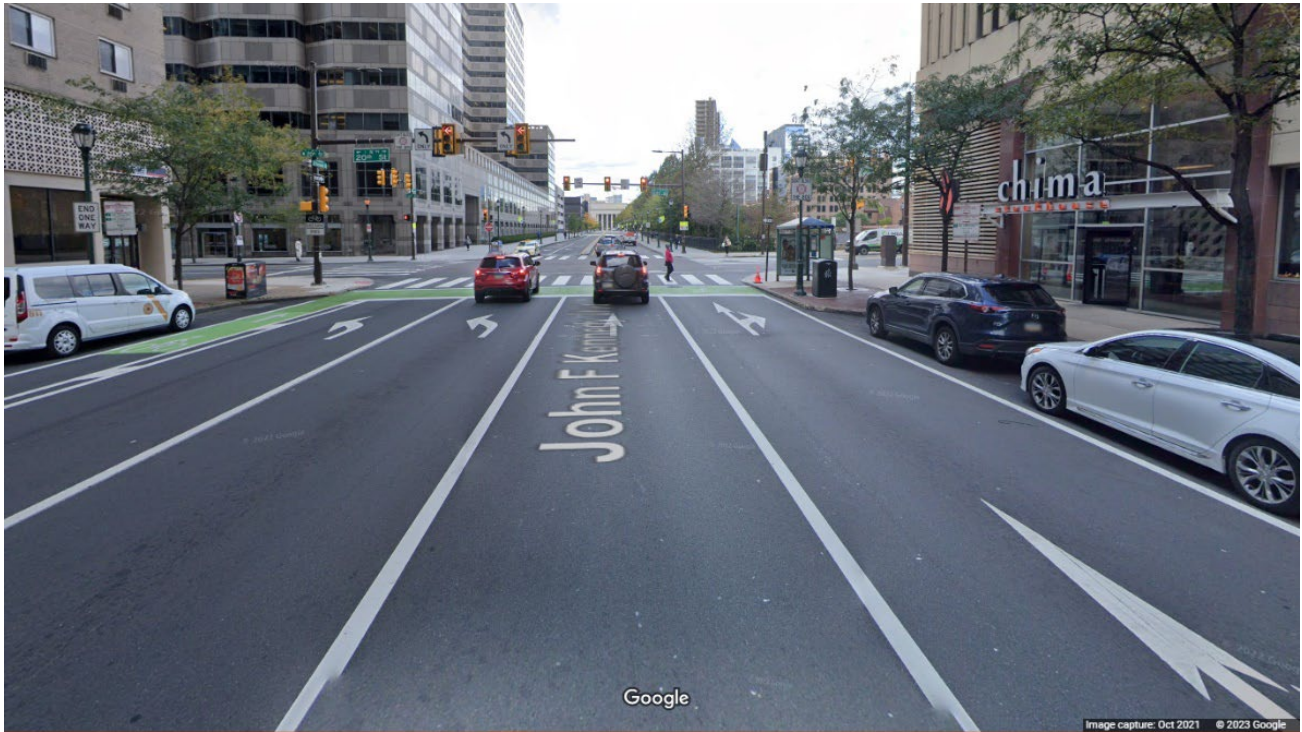


Figure 2. 20th Street and JFK Boulevard, Philadelphia, PA. Source: *Google Street View Imagery: (10/2021, Copyright 2023.)*

Design information:

- Number of intersections
 - JFK-Market (2)
 - [Island Avenue \(4\)](#)
- Detection type used
 - JFK-Market (on recall, bikes move with pedestrians)
 - Island Avenue (on recall)
- Type of bike facility and form of separation
 - JFK-Market: Parking-protected bicycle lane
 - Island Avenue: Shared-use trail (shared between pedestrians and bicyclists)
- How are bicycle/vehicle/ped conflicts handled?
 - Multiple solutions are used. See below for a few examples:
 - Exclusive bicycle phase
 - Lateral guidance markings
 - Restricting vehicular turning movements during the bicycle phase
- Size of bike signal indications (4", 8", 12")?
 - 12" farside, 8" nearside

- Key challenges/obstacles to designing and implementation?
 - Navigating the various conflicts. For the Island Avenue project, we had a shared use trail, which connected to the various intersections. This resulted in direct conflicts with pedestrians.
 - Running traffic simulations with the bicycle signals (for exclusive phases). Currently, based on research, there is no software to run this type of simulation. To work around it, an all-red phase for the duration of a bicycle phase would be added. This gives us a gauge of the impact it could have on the vehicular traffic Level of Service (vehicle delay).
 - Not a big challenge, but it's a good idea to consider using louvers in both the bicycle and vehicular traffic signals. If installed properly, this would help avoid each of the mix up of their respective signal heads.

Outcome Information:

- Feedback/outcome comments from public?
 - JFK-Market
 - Bicycle Coalition of Greater Philadelphia in [support](#)
 - NBC [article](#)
 - Island Avenue (still under construction)
- Key successes
 - Reduction in turning vehicle conflicts with bicycles
 - Ease of navigation through intersection for bicycles
 - Better emphasis of bicycle priority at these key intersections as well as added delineation for bicycle traffic (increased awareness with bike signal installed on mast arm)
- Any studies or findings on collision history before/after
 - At this time, there have been no before/after studies conducted related to the bike signals.
- What would you do differently next implementation?
 - Consider other types of bicycle detection

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