Accessible Pedestrian Signals

Program Status Report

November 2015

Program Overview

The New York City Department of Transportation (NYC DOT) installs Accessible Pedestrian Signals (APSs) to assist pedestrians who are blind or have low vision in crossing the street. These devices provide information in non-visual formats, such as audible tones, speech messages, and vibrating surfaces, to alert vision-impaired pedestrians when the "walk" phase is available at a given intersection.

As of November 1, 2015, there are APS units installed at 131 intersections citywide, 33 of which were installed over the past year. A list of these locations is included in this report and is available on NYC DOT's website at www.nyc.gov/dot.

As was required by NYC Administrative Code Section 19-188 of 2012, NYC DOT was installing APS units at each corner of 25 additional intersections each year. Starting January 1st, 2016, the new Local Law is requiring NYCDOT to install APS units at each corner of 75 additional intersections each year. The agency works closely with the Mayor's Office for People with Disabilities (MOPD) and the visually impaired community, such as the group Pedestrians for Accessible and Safe Streets (PASS), to identify intersections which present a crossing difficulty for persons with visual impairments. NYC DOT is also guided by the Americans with Disabilities Act Accessibility Guidelines (ADAAG) to consider APS units for new traffic signal installations and alterations, and considers locations that are recommended by constituents and elected officials.

NYC DOT establishes a ranked priority list of intersections for the installation of APSs based on established criteria, including but not limited to off-peak traffic presence, current traffic-signal patterns and the complexity of the intersection's geometry, including crossing distance. These criteria are set forth by the National Cooperative Highway Research Program (NCHRP) and the most recent version of the federal Manual on Uniform Traffic Control Devices (MUTCD). Final scores are based on the individual crosswalk and intersection scores for each location, and ultimately determine priority for installation. This report includes the list of the one hundred (100) top-ranked intersections as of November 1, 2015.

Cost and Funding Sources

The cost per intersection averages approximately **$26,396**. For the 33 intersections where APS were installed over the past year, the total cost was $871,077.

The baseline estimated cost to furnish and install an APS unit on an existing pole is $985. A typical quadrant intersection would require eight units, meaning that the estimated cost per intersection is at least $7,880. In many instances, an intersection may require additional work that increases the cost of the installation. For example, most intersections do not have pedestrian signal poles at the location required for APS installation (i.e., adjacent to a pedestrian ramp) requiring the construction of new poles at additional cost. Other factors, such as utilities located underneath the intersection, may add to the total cost of installation. Overall, the costs for each intersection varies depending on the number of additional poles needed,

geometry and complexity of the intersection.

Funding for the installation of APS devices comes from NYC DOT's annual signal construction contract, which is funded by the Consolidated Local Street and Highway Improvement Program (CHIPS). CHIPS provides New York State funds to municipalities to support the construction and repair of highways, bridges, highway-railroad crossings, and other facilities that are not on the state highway system. Funding allocations to municipalities are calculated annually by the New York State Department of Transportation (NYSDOT) according to formulas specified in Section 10-c of the State Highway Law.

Recommendations for Improvements and Availability of New Technology

NYC DOT is continuously researching new technologies and instituting updates to enhance the APS program. The agency in recent years replaced the last remaining older types of APSs, which provided "birdcalls" from overhead speakers mounted on the pedestrian signal to alert visually impaired pedestrians when it is safe to cross. These older devices were louder, emitted a noise with every walk display regardless of pedestrian demand, and used a different bird call for each crossing, which confused the user. In addition, the older devices did not provide crossing information as new types of APS units do.

The new type of APS unit used by NYC DOT was tested and approved for use in New York City in 2011, and features a distinct rapid ticking tone that can be adjusted based on the needs of a specific intersection. They also feature a raised vibrating tactile arrow at the pedestrian pushbutton location, which a user can find by a locator tone. These units are installed in close proximity to each pedestrian crossing ramp so that there is no confusion which APS unit is for which crossing. Upon pushing the button, the arrow will vibrate and there will be a rapid percussive tone or audible message when the "walk" signal is displayed.

NYC DOT is constantly evaluating new technologies for use in the APS program. We currently have a contract with the University Transportation Research Center (UTRC). This multi-year UTRC contract provides NYCDOT ongoing research and development programs pertaining to urban Intelligent Transportation Systems (ITS) deployment. One of the tasks under this contract is to research "**Pedestrians and Cyclists Safety Using ITS Technologies in NYC**". The purpose of this task is to gather knowledge about all new and innovative technologies and methodologies and determine the most useful countermeasures that could be used in NYC to reduce pedestrian/cyclist injuries, conflicts, crashes and fatalities to meet the goals of the Mayor's "Vision Zero" Action Plan.

Specific attention will be given to the smartphone technologies associated with APS units. Research will be conducted to determine the latest and most innovative technologies currently being implemented nationally and internationally and under what conditions these new technologies are most beneficial for New York City.

The final outcome of this task will be a report providing a method to objectively look at each potential measure and come up with a recommendation to decide under what conditions each countermeasure should be used. NYC DOT will continue to evaluate the potential uses of new technologies on the market to assist blind and low vision individuals in navigating the city's roadways.

Some recommendations for enhancing NYC DOT's APS program include, but are not limited to:

- Continued evaluation of the structure of the APS program for possible improvements to staffing and funding levels and sources.
- Further research of new technologies to enhance the APS program.
- Continued dialogue with blind and low vision advocacy groups.
- Participation in any future USDOT Vehicle-to-Infrastructure testing opportunities that will offer positioning and computing capabilities to a traveler and the ability to interact with infrastructure, utilizing systems that communicate with roadside equipment using many tools, including dedicated short range communications (DSRC), 3G, 4G, Wi-Fi and Bluetooth.

Accessible Pedestrian Signals Locations in New York City

As of November 1, 2015

Location	Borough
Avenue of the Americas and 23rd Street (Selis Manor)	Manhattan
Park Avenue and East 59th Street (Lighthouse)	
Lexington Avenue and East 59th Street (Lighthouse)	
Third Avenue and East 59th Street (Lighthouse)	
Central Park West and West 65th Street (South Leg)	
Columbus Avenue and West 65th Street	
Seventh Avenue and West 23rd Street	
West 34th Street between Eighth Avenue and Ninth Avenue (midblock)	
Fifth Avenue and East 23rd Street	
Broadway and West 23rd Street	
Stone Street and Whitehall Street	
Lexington Avenue and East 52nd Street	
Seventh Avenue and West 32nd Street	
York Avenue and East 62nd Street	
Eighth Avenue and West 55th Street	
West 57th Street between Sixth Avenue and Seventh Avenue	
West 23rd Street between Fifth and Sixth Avenues	
West 57th Street midblock between Eighth and Ninth Avenues	
Broadway and Bowling Green	
Gold Street and Beekman Street	
Gold Street and Spruce Street	
Fulton Street and Gold Street	
St. James Place and James Street	
Edgecombe Avenue and West 164th Street	

Madison Street and Jefferson Street	Manhattan
Maiden Lane and Front Street	
East End Avenue and East 85th Street	
Fifth Avenue and East 58th Street and Grand Army Plaza	
Battery Place and Washington Street	
Washington Square South and Thompson Street	
Third Avenue and East 72nd Street	
Central Park West and 65th Street (North/East/West Legs)	
Greenwich and Barclay Street	
Amsterdam Avenue and West 113th Street	
27th Avenue and Eighth Street (Goodwill Industries of NY and NJ)	Queens
Hillside Avenue and 256th Street	
Little Neck Parkway and 86th Avenue	
Queens Boulevard (WB) and Woodhaven Boulevard	
Woodhaven Boulevard (NB) and LIE Entrance Ramp	
Queens Boulevard (EB) and Woodhaven Boulevard	
Marathon Parkway and 57th Avenue	
36th Avenue and 23rd Street	
Queens Boulevard and 58th Street	
Northern Boulevard and 211th Street	
Francis Lewis Boulevard and 35th Avenue	
Seneca Avenue and Cornelia Street	
Clintonville Street and Locke Avenue	
Merrick Boulevard and 231st Street	
Jamaica Avenue and 196th Street	
Myrtle Avenue and 82nd Street	
Queens Boulevard and Queens Borough Hall	

Castleton Avenue and Brighton Avenue (SI Center for Independent Living Inc.)	Staten Island
Brielle Avenue and Gansevoort Boulevard (Susan E. Wagner High School)	
Castleton Avenue and Bard Avenue	
Forest Avenue and Bement Avenue	
Victory Boulevard and Eddy Street	
Howard Avenue and Hillside Avenue	
Targee Street and Naples Street (235' North of Venice Street)	
Richmond Terrace and Sharpe Avenue	
Tompkins Avenue and Hill Street	
Kappock Street and Knolls Crescent	Bronx
Bronxwood Avenue and East 219th Street	
Bronxwood Avenue and East 220th Street	
Morris Park Avenue and Albert Einstein College of Medicine (midblock)	
Grand Concourse and Fordham Road	
Goulden Avenue and Lehman College High School	
Valentine Avenue between East Tremont Avenue and East 178th Street	
Webster Avenue between East Tremont Avenue and East 178th Street	
East 163rd Street and Rogers Place	
Mace Avenue and Colden Avenue	
White Plains Road and Lydig Avenue	
Pelham Parkway North and Laconia Avenue	
Astor Avenue and Colden Avenue	
Bartow Avenue and Co-Op City Boulevard and Bay Plaza Boulevard	
Pelham Parkway N/S Service Roads and Williams Bridge Road	
Co-Op City Boulevard and Carver Loop East	
Co-Op City Boulevard and Rombouts Avenue and Carver Loop West	

Bailey Avenue and West 234th Street and Bailey Place	Bronx
Boston Road and East 212th Street / Pearsall Avenue	
Bedford Avenue between Avenue I and Campus Road (midblock)	Brooklyn
Jay Street and Metrotech Roadway (South Leg)	
Adams Street between Fulton and Johnson Streets (midblock)	
Adams Street / Boerum Place and Fulton Street	
Atlantic Avenue and Boerum Place	
Jay Street and Metrotech Roadway (North Leg)	
Adams Street / Boerum Place and Livingston Street	
Court Street and Livingston Street	
Flatbush Avenue with Fulton Street and Nevins Street	
McDonald Avenue and Ditmas Avenue	
Smith Street and Livingston Street	
Court Street and Schermerhorn Street	
Boerum Place and Schermerhorn Street	
Atlantic Avenue and Nevins Street	
Fifth Avenue and 89th Street	
Ditmas Avenue and East 5th Street	
Jay Street and Willoughby Street	
Cadman Plaza West and Montague Street	
Livingston Street and Bond Street	
Livingston Street and Hoyt Street	
Atlantic Avenue and Hoyt Street	
Court Street with Remsen and Joralemon Streets	
Church Street and McDonald Avenue (New York Industries for the Blind)	
Atlantic Avenue and Smith Street	
Church Avenue and Dahill Avenue (New York Industries for the Blind)	

14th Avenue and 36th Street (New York Industries for the Blind)	
Flushing Avenue and Skillman Street	
Atlantic Avenue and Court Street	
Jay Street / Smith Street and Fulton Street	
Atlantic Avenue and Bond Street	
Boerum Place and State Street	
Schermerhorn Street and Nevins Street	
Nostrand Avenue and Erasmus Street	
Court Street and State Street	
Livingston Street and Nevins Street	
New Utrecht Avenue and 62nd Street	
Pennsylvania Avenue and Freeport Loop	
Flatlands Avenue and East 107th	
DeKalb Avenue and Hudson Avenue	Brooklyn
Hanson Place and St. Felix Street	
Hillel Place and Campus Road (North Side)	
Fourth Avenue and 39th Street	
Flatbush Avenue and Willoughby Street	
Flatbush Avenue and Dekalb Avenue	
Fourth Avenue and 44th Street	
Fourth Avenue and 55th Street	
Third Avenue and 33rd Street	
Fourth Avenue and 45th Street	
Fourth Avenue and 9th Street	
86th Street and Bay 22nd Street	
Cropsey Avenue and Bay 35th / 24th Avenue	
Cropsey Avenue and Bay 49th Street	

One hundred top ranked intersections for new accessible pedestrian signals

As of November 1, 2015

Please note that the list of the one hundred (100) top ranked intersections for new APS units will fluctuate as new locations are added and evaluated based on the prioritization criteria described above.

Rank	Location	Borough
1	St. Nicholas Place and West 155th Street / Edgecombe Avenue / Harlem River Drive	Manhattan
2	Fulton Street and Water Street	Manhattan
3	Crosby Avenue and Westchester Avenue / Edison Avenue / Buhre Avenue	Bronx
4	Flatbush and Glenwood Avenues (east leg) / East 29th Street	Brooklyn
5	Seventh Avenue / Broadway and West 45th Street	Manhattan
6	First Avenue and East 31st Street (Actual location is 1st Avenue between East 30th and East 33rd Street--330' North of East 30th Street)	Manhattan
7	Hoyt Street and Fulton Street	Brooklyn
8	Flatbush and Nostrand Avenues / Hillel Place	Brooklyn
9	Broadway and West 175th Street	Manhattan
10	Flatbush and Glenwood Avenues (west leg)	Brooklyn
11	Boston Road and East Gun Hill Road	Bronx
12	East 33rd Street and Park Avenue	Manhattan
13	Broadway and Dyckman Street	Manhattan
14	Springfield Boulevard and Union Turnpike	Queens
15	Lenox Avenue and West 145th Street	Manhattan
16	40th Road and Main Street	Queens
17	Main Street and Northern Boulevard	Queens
18	First Avenue and East 23rd Street	Manhattan
19	West 34th Street between Fifth Avenue and Sixth Avenue	Manhattan
20	Graham Avenue (between Maujer Street and Scholes Street)	Brooklyn
21	Jamaica Avenue and Springfield Boulevard	Queens
22	Bond Street / DeKalb Avenue and Fulton Streets	Brooklyn

23	Beekman Street and William Street	Manhattan
24	First Avenue and East 28th Street	Manhattan
25	Fulton Street and Lafayette Avenue	Brooklyn
26	St. Nicholas Avenue and West 125th Street	Manhattan
27	Kissena Boulevard and Sanford Avenue	Queens
28	First Avenue and East 34th Street	Manhattan
29	Lenox Avenue and West 125th Street	Manhattan
30	DeKalb Avenue and Flatbush Avenue	Brooklyn
31	Dean Street and East New York Avenue / Sackman Street	Brooklyn
32	Eighth Avenue and West 50th Street	Manhattan
33	Eighth Avenue and West 51st Street	Manhattan
34	Fulton Street and Utica Avenue	Brooklyn
35	Fifth Avenue and East 124th Street / West 124th Street	Manhattan
36	East 52nd Street and Rutland Road / Remsen Avenue	Brooklyn
37	First Avenue and East 20th Street	Manhattan
38	Seventh Avenue and West 34th Street	Manhattan
39	Amsterdam Avenue and West 114th Street	Manhattan
40	Broadway and DeKalb Avenue	Brooklyn
41	Avenue U and Ocean Avenue	Brooklyn
42	Marginal Street and West 125th Street	Manhattan
43	Bay 32nd Street and Cropsey Avenue /	Brooklyn
44	Beekman Street and Nassau Street	Manhattan
45	Ninth Avenue and West 50th Street	Manhattan
46	First Avenue and East 30th Street	Manhattan
47	Northern Boulevard and Parsons Boulevard	Queens
48	Fourth Avenue and 59th Street	Brooklyn
49	Broadway and East 14th Street	Manhattan
50	Sixth Avenue and West 14th Street	Manhattan

51	Avenue J and Brooklyn Avenue	Brooklyn
52	Eighth Avenue and West 57th Street	Manhattan
53	Broad Street and Stone Street	Manhattan
54	Amsterdam Avenue and West 125th Street	Manhattan
55	Tenth Avenue and West 50th Street	Manhattan
56	Ninth Avenue and West 51st Street	Manhattan
57	41st Road and Main Street	Queens
58	Elder Avenue and Kissena Boulevard	Queens
59	Bedford Avenue and Lafayette Avenue	Brooklyn
60	Tenth Avenue and West 51st Street	Manhattan
61	Main Street and Roosevelt Avenue	Queens
62	Gold Street and Maiden Lane	Manhattan
63	Franklin Avenue and Lafayette Avenue	Brooklyn
64	Edward L. Grant Highway and West 169th Street	Bronx
65	199th Street and Hillside Avenue	Queens
66	48th Avenue and Clearview Expressway N/B Service Road	Queens
67	Fourth Avenue and 36th Street	Brooklyn
68	110th Avenue and Sutphin Boulevard	Queens
69	East 178th Street and Valentine Avenue	Bronx
70	Boston Road and East 213th Street / Bouck Avenue	Bronx
71	Clove Lake Place and Clove Road	Staten Island
72	221St Street and Hempstead Avenue	Queens
73	94th Street and Corona Avenue	Queens
74	Flatbush Avenue and Lafayette Avenue	Brooklyn
75	Crescent Street and Fulton Street	Brooklyn
76	Cherry Street and Rutgers Street	Manhattan
77	Dean Street and Rochester Avenue	Brooklyn
78	Kings Highway and Ocean Avenue	Brooklyn

79	Beach 102nd Street and Rockaway Beach Boulevard West Leg	Queens
80	First Avenue and East 33rd Street	Manhattan
81	Dekalb Avenue and South Portland Avenue	Brooklyn
82	Eighth Avenue / Frederick Douglass Boulevard and West 125th Street	Manhattan
83	Washington Square East and Washington Square South	Manhattan
84	Avenue D and East Third Street	Manhattan
85	Dewey Avenue and East Tremont Avenue	Bronx
86	40th Avenue and Vernon Boulevard	Queens
87	Arthur Kill Road and Sharrotts Road	Staten Island
88	Watchogue Road and Willow Road East	Staten Island
89	Fourth Avenue and Union Street	Brooklyn
90	Beach 102nd Street and Rockaway Beach Boulevard East Leg	Queens
91	Nostrand and Glenwood Avenues	Brooklyn
92	Flushing Avenue and Warsoff Place	Brooklyn
93	First Avenue and East 18th Street	Manhattan
94	Bogart Street and Flushing Avenue	Brooklyn
95	Avenue Z and East 6th Street	Brooklyn
96	260th Street and Little Neck Parkway	Queens
97	Burke Avenue and Yates Avenue	Bronx
98	72nd Street and Eliot Avenue	Queens
99	Nevins Street and State Street	Brooklyn
100	Bronxwood Avenue and East 221st Street	Bronx