



# 3

## Final Recommendations

### 3.1 Project Objectives

At the project’s first public meeting on November 19, 2014, a clear and strong message came from participants. In order to achieve the first two of the project’s stated goals – to *improve mobility, accessibility, and safety, and consistency with Complete Streets concepts* -- a high-quality pedestrian and bicycle connection must be provided between the three pending/contemplated shared-use trails. Ideally, these connections would provide the same level of comfort and safety as the trails themselves. Those present cited several recent studies which indicate that unless trail users are provided a consistent experience across trail connections, use of the connections will be significantly less than their full potential. In particular, some of those present at the public meeting voiced concern that while parents might be willing to take their children for rides on the trails, they would not be willing to take them on the connections and into the Broadway study area if there was a perception that the connections were markedly less safe than the trails.



This issue directly addresses the study’s third goal – to *supplement the efforts of the Comprehensive Plan* – which envisions the transformation of midtown “into a socially and economically vibrant place where people in the City and surrounding region want to live, shop, work and be entertained”.

A key component will be getting families to stop in the Midtown area and support the mix of new development, including businesses and entertainment, contemplated both in the Comprehensive Plan and in the City’s BEAT (Business, Entertainment, Arts, and Technology) initiative. High-quality pedestrian and bicycle paths, as well as landscaping and lighting improvements through the corridor, are an excellent means of drawing in this key demographic. Numerous studies have documented the economic benefits of introducing shared-use trails, pedestrian safety and streetscape improvements into commercial neighborhoods.<sup>1</sup>



### 3.2 Summary of Recommendations

After the November public meeting, the project Technical Advisory Committee (TAC) extensively studied four options which might accomplish this goal while also supporting the other key components of the Comprehensive Plan for Midtown, namely strengthening multi-modal connections and improving walkability, as well as making visual and physical enhancements to the streetscape. Through internal discussions, it became apparent that another critical element of the plan would need to include the preservation of parking to support the continued use of automobiles by patrons of the businesses along the Broadway corridor. This issue was later re-emphasized during the public comment period held between August 7 and September 4 and further articulated by numerous businesses along the eastern portion of the corridor in written comments to the UCTC.

The final recommendations for consideration by the City include the following components:

- Traffic signal integration throughout the corridor;
- Pedestrian improvements and turning restrictions at key intersections where high incidence of accidents or use was found;
- Creating additional public space and safety improvements through roadway and intersection realignment;
- Additional landscaping throughout the corridor; and
- Phased separated bike lane improvements beginning in the western portion of the corridor (Phase I) with implementation on the eastern portion (Phase II) only after the Kingston School District finishes key components of their capital project and the parking concerns of the businesses in this section can be addressed by the City.

The bicycle options evaluated for the corridor included:

1. Conventional bicycle lanes – between the parking lane and the travel lanes.
2. Conventional bicycle lanes – between the parking lane and the sidewalk.
3. Separated bike lanes – between the travel lanes and the sidewalk
4. Separated bike lanes – between the parking lane and the sidewalk
5. Phased Separated bike lanes – between the parking lane and the sidewalk (recommended)

It is important to note that all of the bicycle options remove a travel lane west of Pine Grove Avenue as a means of fitting them within the existing right of way (ROW). From Pine Grove east (with the exception of parking in front of Rite Aid) parking would need to be removed from the south side of the corridor to accommodate bicycle facilities. All options require traffic signal optimization to move traffic efficiently along the corridor.



Four Typical Section Alternatives Considered:

1) Conventional Bicycle Lanes between the Parking Lane and Travel Lanes

Broadway  
O'Reilly to Foxhall



2) Conventional Bicycle Lanes between the Parking Lane and Sidewalk

Broadway  
O'Reilly to Foxhall



3) Separated Bicycle Lanes between the Travel Lane and Sidewalk

Broadway  
O'Reilly to Foxhall





4) Separated Bicycle Lanes between the Parking Lane and Sidewalk



Each of the four options included similar measures designed to address identified pedestrian deficiencies (such as missing signage or non-compliant ramps), transit improvements and streetscaping options. The detailed graphical depictions of these alternatives for the entire corridor are provided in the appendix.

3.3 Bike Facility Cost Considerations

Order-of-magnitude costs for these potential alternatives were developed and are presented in Table 3.1

Table 3.1 Cost Estimates of Alternative Bike Lanes Considered

Alternative	Price/Price Range		
Conventional Bike Lanes between parking and travel lanes	\$55,000 <sup>1</sup>	to	\$1,453,000 <sup>2</sup>
Conventional Bike Lanes between parking and sidewalk	\$1,263,000 <sup>3</sup>	to	\$1,453,000 <sup>2</sup>
Separated Bike Lanes between travel lane and sidewalk (no parking)	\$495,000		
Separated Bike Lanes between parking and sidewalk	\$475,000		

- 1) With less than 3' foot buffers (and no buffer at all) in some sections.
- 2) With 3' buffers in all sections and widening occurring equally on either side.
- 3) With 3' buffers in all sections and widening occurring only on one side, where practical.

Through the course of the dialogue, it was determined that – while conventional bike lanes situated between the parking lane and the travel lanes without the recommended 3-foot buffer would likely be the easiest (from a community acceptance and cost perspective) to implement – they would not meet the objective



of providing a safe environment for more family oriented riders nor be able to provide a high-quality trail connection. Once a FHWA-recommended 3-foot buffer was added between the parked cars and bicycles, considerable additional capital expense (ie. street widening) was needed at many sections along the corridor, making them cost-prohibitive. Conventional bicycle lanes situated between the parking lane and the sidewalk (which are **required** to have a 3-foot buffer) would be the most costly option and also fail to meet the objectives as discussed above. The additional six feet of widening would mean that the cross section would not fit in the existing roadbed for significant portions of the corridor, requiring additional street widening at considerable expense.

Separated Bike Lanes between the sidewalk and the travel lanes not separated by parking would require either that the bike lanes be raised to the elevation of the sidewalk or that delineator posts be placed between the bike lanes and the travel lanes. Either way, it was determined that this would require significant and hard-to-fund additional maintenance during the winter months.

Separated Bike Lanes between the parking lane and the travel lanes was therefore determined to be the best configuration that would meet the project objectives for bike facilities without significant cost. This facility design would require only minimal additional maintenance; however, such a facility would likely make turning onto and off of the side streets east of Pine Grove Avenue more difficult. After further investigation, it was determined that this issue could be addressed by moving the stop lines back at signalized intersections, prohibiting parking on the east side of one-way southbound side streets within 50 feet of Broadway, or by modifying the turning radii moderately at the remaining un-signalized intersections – which, upon inspection, was deemed feasible. Ultimately, the Technical Advisory Committee has recommended a phased approach to separated bike lanes as discussed above to move forward for consideration by City Council.



**Typical Separated Bike Lanes**

### 3.4 Parking Considerations

All alternatives result in some loss of parking. To the west of Pine Grove Avenue, the loss of parking would be minimal, as, west of Cedar Street, it is recommended that the four-lane cross section be reduced to three lanes, which can then accommodate the bike lanes, while from Cedar Street to Dederick Street the

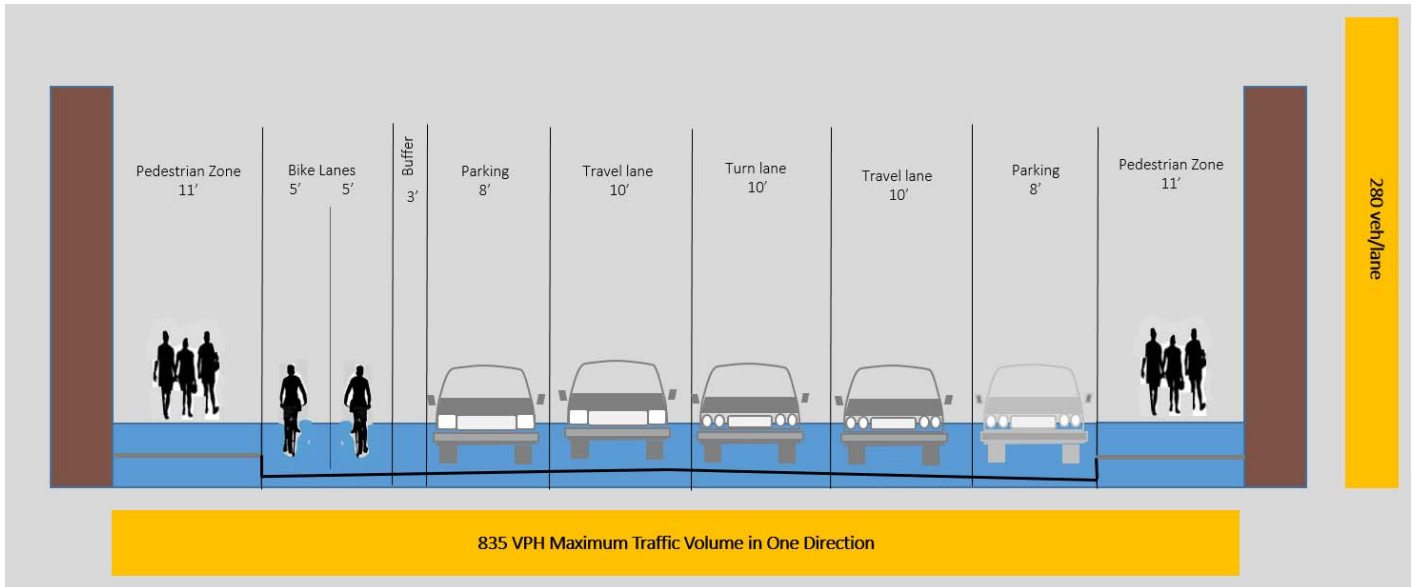


## Building a Better Broadway

### Broadway Corridor Conceptual Design Plan, Kingston, NY

existing over-wide lanes can be reduced to accommodate bike lanes without the loss of parking.

#### Proposed Cross Section of Broadway, Looking East from Liberty Street to Cedar Street



#### Proposed Section of Broadway, between Cedar and Dederick Street



Full build-out of the recommended alternative would result in a noticeable loss of parking between Pine Grove Avenue and Staples Street, where 42 of the 104 on-street parking spaces would need to be eliminated to accommodate conventional or separated bike lanes. While the parking analysis conducted for this study revealed that there is adequate reserve capacity within 500 feet to accommodate the relatively small number of surveyed parked vehicles that would be displaced, the Technical Advisory Committee (TAC) recommends that any proposed bike lane be accompanied by measures aimed at mitigating this loss of parking. These measures should include improved signage to the existing municipal parking lots along the corridor, improved parking management techniques in the municipal lots to



discourage their long-term use and more frequent turnover during business hours, working with local businesses where parking is available to obtain additional spaces, and potentially providing a direct entrance from Broadway to the municipal parking lot accessed at the intersection of Jansen Avenue and Prince Street. The TAC notes that studies of bike lanes in other cities support a finding that the facility, if constructed, may likely reduce the need for parking.

In addition, detailed intersection Synchro Analyses, which are included in the appendix, were prepared for each of the alternatives to ensure that any proposed lane reductions contemplated along the corridor would be more than offset by proposed traffic signal improvements.

### 3.5 Public Comments

The Draft Plan was presented to the public on August 6<sup>th</sup>, 2015 at Ulster Performing Arts Center in two separate sessions; approximately 60 people attended across both sessions. A meeting summary of those sessions has been included in an appendix. Overall, comments raised by attendees were largely in support of the project, although concerns raised by attendees stressed the following subjects:

- Loss of parking is a concern in certain locations and may adversely affect specific businesses as well as seriously complicate student drop offs in front of Kingston High School during the morning rush; and
- Project scheduling and coordination between construction and other major capital or planning projects in the City is critical in order to lessen potential negative impacts (I587 reconstruction, Kingston HS Capital Plan, Arts/BEAT Initiative, etc.).

The initial public comment period was set to end August 20<sup>th</sup>; however, significant concerns raised by members of the public regarding elements of the plan motivated the Mayor to request an extension of the public comment period, which was then extended to September 4, 2015. All public comments received during that period are included as an appendix to this report.

As with comments made during the August 6 public presentation, the majority of written comments submitted by the public were strongly in favor of the project. A number of comments, however, were critical of the implications of parking removal as well as potential complications that parking removal would pose for student drop-offs and pick-ups on Broadway. The loss of parking was also the subject of a petition submitted during the comment period which included several hundred signatories (approximately 300-400 at the time that the comment period closed; reported to be over 700 at latest count).



### 3.6 Revisions

In response to the concerns of businesses reflected in the public comments related to parking removal on the southern portion of Broadway east of Grand Street/Pine Grove Avenue – specifically near Pine Grove Avenue and in front of Kingston High School – the Technical Advisory Committee revised the original draft plan. The recommended plan has been modified to provide for **phasing of key elements** of the preferred alternative over a period of time. **It is recommended that the separated bike lane between Grand Street/Pine Grove Avenue and Chester Street be postponed until a later date, effectively establishing the eastern terminus of the track at Grand Street in front of the Millard building.** The majority of on-street parking in the eastern section of Broadway will therefore be maintained, with the only possible exceptions being for the accommodation of bump-outs, transit or freight loading areas which would only affect approximately two spaces on Broadway. This loss of two spaces should be considered as *potential*, as it would be determined through the preliminary and detailed design phases of implementation working in close consultation with affected parties. The proposed revisions were presented to the Kingston School Board on September 16, 2015 and received a favorable reception from Board members and the public.

In total, Phase I of the proposal would result in the loss of approximately 10 spaces west of the CSX overpass and possibly 2 spaces east of the overpass. Parking inventory and occupancy indicates that ample excess parking capacity exists throughout the corridor to handle these losses.

Shared lane marking with accompanying “In Lane” sign assembly on side streets of Prince, Hasbrouck, Foxhall and Jansen Streets should be used to connect the Kingston Point Rail Trail with the terminus of the separated bicycle lane at Prince and Grand Street (or as where otherwise determined feasible under the ongoing Kingston Connectivity Project being conducted by the City).<sup>ii</sup> Other structural elements critical to future implementation of the separated bicycle lane between Grand Street/Pine Grove Avenue and Chester Street should still be constructed under Phase I to facilitate future transition to a full separated bike lane on Broadway at a later point in time once parking issues are addressed and the Kingston High School Capital Project is complete. These elements include:

- Modify the turning radii at the intersections Broadway with Hoffman Street, Andrew Street and Staples Street, and make any necessary adjustments to the stop lines at O’Reilly Street and to parking at Brewster Street to accommodate truck and bus traffic; and
- Consider modification of sidewalk and curb on Broadway in front of 485 Broadway (Rite Aid Pharmacy) to allow for retention of these parking spaces after the is constructed. Also consider modification of curb on Broadway in





front of Andy Murphy Neighborhood Center to allow for retention of two parking spaces/loading zone/transit stop if sufficient space exists.

**Phase II** of the project, which would include completing the separated bike lane between Prince/Grand Street and East Chester Street, would commence at a later point in time to be determined after the following conditions are satisfied:

- “Stage 3” renovations of the Kingston High School Capital Project are complete, resulting in the construction of a new entrance plaza and relocation of the primary student pick-up/drop-off area from Broadway to the rear of the Salzman complex (completion anticipated no sooner than 2018);<sup>iii</sup>
- Parking management alternatives detailed under Section 3.6 of the report have been implemented by the City of Kingston and evaluated for effectiveness.

In addition, a proposed sidewalk expansion in front of UPAC was removed from the Final Draft Recommendations at the request of UPAC staff; staff was concerned that such an addition would impact drop-offs and pick-ups during events. The TAC did not feel that other comments concerns about increased traffic congestion or emergency vehicle access warranted further clarification or action; each of these concerns have been sufficiently addressed through the objective performance measurements and Synchro analysis, FHWA criteria for roadways, or other aforementioned data included in this study effort.

### 3.7 Final Draft Plan Recommendations

#### Bicycle Facilities:

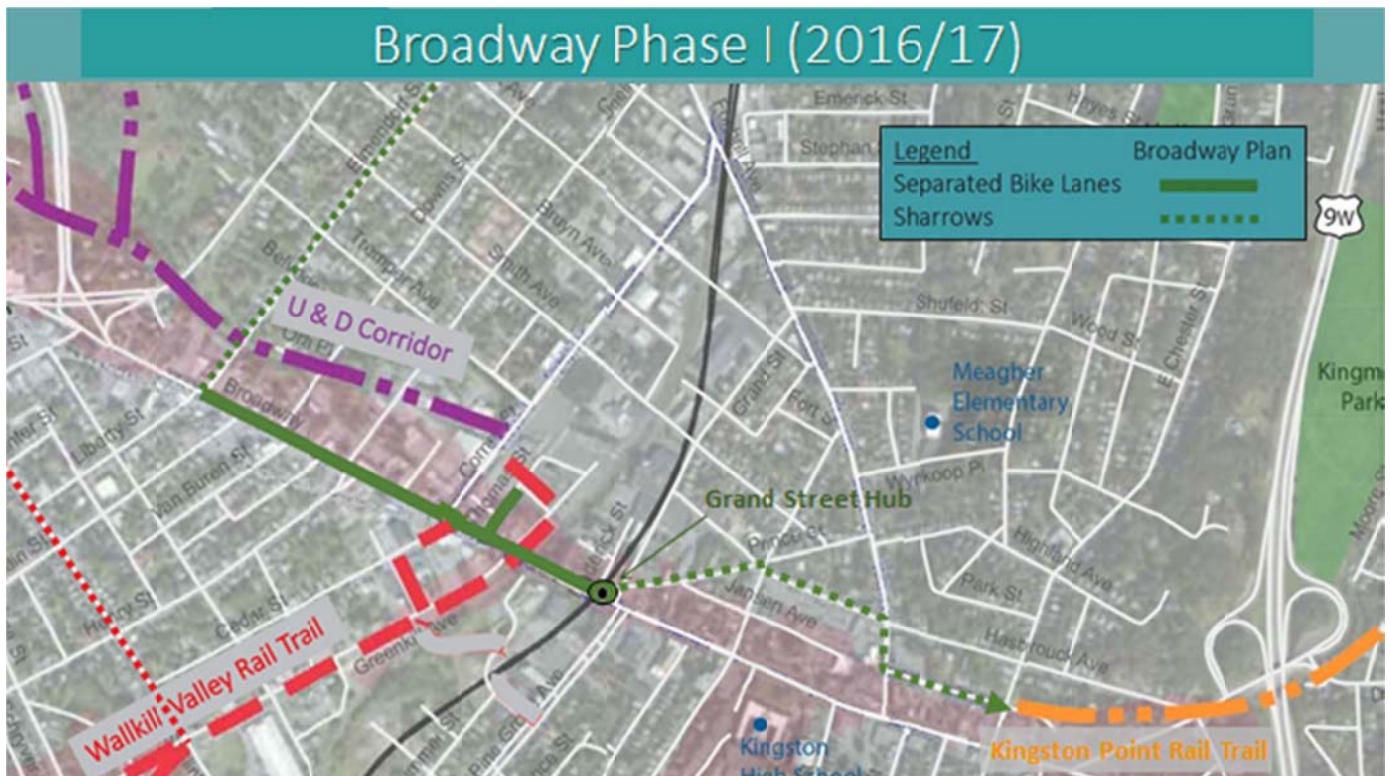
The revised plan recommends a two-phased approach to separated bike lanes along Broadway. The first phase begins at the intersection with Elmendorf Street and Liberty Street east to a terminus at Grand Street at the public space in front of the Millard Building. At this point, cyclists will be directed to cross Grand Street and utilize a shared lane system with accompanying “In Lane” sign assembly on side streets of Prince, Hasbrouck, Foxhall and Jansen Streets to connect the Kingston Point Rail (or as where otherwise determined feasible under the ongoing Kingston Connectivity Project being conducted by the City). The second phase would run from Grand Street to East Chester Street and be constructed subject to the phasing conditions described above. For Phase I, a lane reduction is proposed to improve safety, access and mobility in the corridor. This lane reduction will run from the intersections of Elmendorf Street and Liberty Street with Broadway, reducing the present four travel lane configuration to two travel lanes and a center turn lane through the length of Broadway to the intersection of Cedar Street and Cornell Street.



A bike lane spur will extend north from Broadway on Thomas Street for approximately two blocks to connect to the contemplated Wallkill Valley Rail Trail and the U&D corridor termini at the City Municipal Parking Lot bounded by Thomas Street, Cedar Street and Saccoman Lane. Additionally, a connection to the Roosevelt Park neighborhood at the Manor Place parking lot 9 is proposed via “In Lane” sign assembly and pavement markings (ie. sharrows) on the low-volume route along Elmendorf Street, North and South Manor Avenue, and Manor Place (or as otherwise determined through City-led complete streets planning initiatives). Future connections from the integrated trail system to the Stockade district will be possible via sharrows on Clinton Avenue, Fair Street or, perhaps, both as a one-way bike lane couplet. A graphic depicting the proposed and contemplated bike routes in the study area, with the bicycle facilities recommended in this study shown in green (see Broadway Phase I (2016/17) is provided below and in the appendix.

Phase I implementation would occur within the timespan necessary to be completed under implementation grants that have been secured by the City of Kingston (roughly 2017 – 2022). Phase 2 would be implemented at a point in time to be determined, allowing for adequate time for the public and local officials to evaluate Phase I changes and their levels of effectiveness.

**Final Draft Plan Alignment – Phase 1**





Final Draft Plan Recommendations

The TAC proposes the following recommendation to accompany the Final Draft Plan for bicycle facilities:

- Designate a Bike Route from the Manor Place parking lot to the intersection of Broadway with Liberty Street. New York Codes Rules and Regulations permits Bike Route Guide (D11-1) signs to be used to guide bicyclists along an unnumbered bicycle route that is part of a small local system, or that connects two places between which bicycle travel is common. The installation of W11-1 and NYW5-32P signs is proposed along with sharrows to warn drivers to watch for cyclists traveling along the Manor Place, N. Manor Avenue, S. Manor Avenue and Elmendorf Street.
- Rehabilitate Broadway from Liberty Street to Cedar Street to replace the four travel lanes and two parking lanes with two travel lanes, center turn lanes, two separated bike lanes on the north side of the road, two parking lanes and a buffer between the bike lanes and the parking lane.



Proposed Section of Broadway between Liberty Street and Cedar Street



Based on available data, this will require a minor widening of Broadway (by approximately 1 foot) between Henry Street and Cedar Street. If all of the identified improvements are implemented along this section of the corridor,



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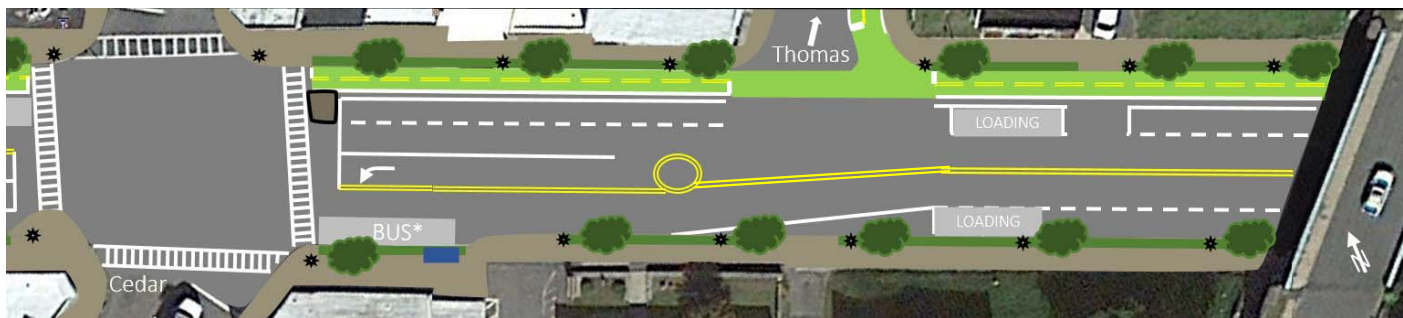
### Broadway Corridor Conceptual Design Plan, Kingston, NY

up to 8 of the existing 71 parking spaces on this section of Broadway will need to be eliminated. The remaining 63 spaces will be more than adequate to accommodate the observed parking demand of 24 vehicles.

- Rehabilitate Broadway from Cedar Street to Pine Grove Avenue to replace the two wide travel lanes and two parking lanes with two travel lanes, two separated bike lanes on the north side of the road, two parking lanes and a buffer between the bike lanes and the parking lane. Center turn lanes will be retained at the approaches to Cedar Street and Pine Grove Avenue. To preserve parking to the greatest extent possible, the eastbound Broadway right-turn lane at Pine Grove Avenue will need to be eliminated. Detailed analysis revealed that the new, combined through/right-turn lane group is not a critical movement and adequate levels of service will be provided. If all of the identified improvements are implemented along this section of the corridor, up to 5 of the existing 40 parking spaces on this section of Broadway will need to be eliminated. The TAC identified the parking and loading zone in front of Barcone's Music Store as a high priority area to retain and protect parking under any lane reconfiguration scenario. Spaces to be eliminated would therefore be on the south side of the street adjacent to the YMCA – an area that currently experiences very low parking occupancy. The remaining 35 parking spaces will be more than adequate to accommodate the observed parking demand of 13 vehicles.
- Phase I of the project would terminate the separated bike lane at the Prince/Grand Street intersection and transition cyclists to on-street facilities. The public space that currently exists in front of the Millard Building parking lot should be enhanced with a variety of landscaping elements to create a hub for cyclists. Signature amenities such as a wayfinding kiosk illustrating key features of the Broadway corridor and regional trail system, as well as possible bike fix-station, water feature/drinking fountain, and other similar amenities should be considered.



### Proposed Section of Broadway between Cedar Street and Pine Grove Avenue





## Building a Better Broadway

### Broadway Corridor Conceptual Design Plan, Kingston, NY

- Designate a Bike Route from the Grand Street termini to the Kingston Point Rail Trail via Grand Street, Prince Street, Hasbrouck Street, and Jansen Avenue. New York Codes Rules and Regulations permits Bike Route Guide (D11-1) signs to be used to guide bicyclists along an unnumbered bicycle route that is part of a small local system, or that connects two places between which bicycle travel is common. The installation of W11-1 and NYW5-32P signs is proposed along with sharrows to warn drivers to watch for cyclists traveling along the route.
- Modify the turning radii at the intersections Broadway with Hoffman Street, Andrew Street and Staples Street, and make any necessary adjustments to the stop lines at O'Reilly Street and to parking at Brewster Street to accommodate truck and bus traffic.

**Before – Broadway looking west from Greenkill Avenue**





**After – With Separated Bike Lanes, Buffer, Parking, Street Trees and New Sidewalk**



PHASE II Bicycle Facilities

The implementation of the Phase II component of the bicycle facilities is recommended to be conditioned on the ability of the City to address the concerns of the business community as they relate to parking and to include any design refinements learned from the experience with Phase I. Its implementation should also await the completion of the Kingston School District's key capital improvements at KHS.

If all of the identified improvements are implemented along this section of the corridor, up to 42 of the existing 104 parking spaces on this section of Broadway will need to be eliminated. Although the remaining 62 spaces will be more than adequate to accommodate the observed parking demand of 42 vehicles, the Technical Advisory Committee has recommended several measures along this section of the corridor to address the loss of parking. Parking management measures include adding: additional signage directing motorists to existing, nearby municipal parking lots; metered or time-limited parking in municipal lots to discourage long-term use (with appropriate accommodations for residents and business owners/employees); and potentially providing a direct entrance from Broadway into the municipal parking lot accessed from Jansen and Prince Street.

Phase II consists of the following:

- Construct a separated bicycle lane from Grand Street/Pine Grove Avenue to Chester Street along the north side of the corridor. To accommodate the



## Building a Better Broadway

### Broadway Corridor Conceptual Design Plan, Kingston, NY

facility, replace the two travel lanes and two parking lanes with two travel lanes, a separated bike lane on the north side of the road, one parking lane and a buffer between the bike lanes and the parking lane. Center turn lanes will be retained at the approaches to Chester Street. Based on available data, this will require a minor widening of Broadway (by approximately 1 foot) between O'Reilly Street and Foxhall Avenue. .

#### Phase II: Proposed Section of Broadway from CSX overpass Past Hoffman Street Illustrating those Parking Spaces that Can Be Retained



#### Phase II: Proposed Section of Broadway in Front of City Hall and Kingston High School with Parking Removed and Turning Radii Adjusted



- Rehabilitate East Chester Street from Broadway to Jansen Avenue/Kingston Point Rail Trail to replace the two travel lanes with two travel lanes, and two raised, separated bike lanes on the west side of the road. Based on available data, this will require a minor widening of East Chester Street (by approximately 1.5 feet on either side).



**Proposed Section of East Chester Street between Broadway & Jansen Avenue**



Signal Upgrades

To improve traffic capacity of the corridor and pedestrian safety, the existing traffic signals along the corridor should be upgraded. Signal upgrades should take full advantage of the latest technology to ensure that the signals are optimally coordinated to: moderate vehicle speeds, reduce travel time, and 'smooth' traffic flow by allowing for more continuous periods of green lights on the corridor. The Synchro analysis indicates that the overall delay along the corridor will be reduced, as will fuel consumption and emissions (see Detailed Measures of Effectiveness below). The signals should be equipped with 12" lenses and intersections provided with display countdown pedestrian signals. To accommodate the separated bike lanes traffic signals should be programmed to not allow cars to turn across bike lanes at the same time that bikes are permitted to proceed. This will require a separate bike phase at some intersections and the prohibition of permissive eastbound left turns and all westbound right turns across the bike lanes at Cornell Street and Grand Street. During the design of the facility, accommodations known as "two-stage turn queue boxes" should be evaluated as a means of accommodating eastbound right turns and westbound left turns from the two-way cycletrack. Otherwise, cyclists in the bike lanes will be prohibited from making westbound left turns and eastbound right turns - they may dismount and use the pedestrian signals for these movements.



The analyses shows that adjustments to the signal timing can ensure that overall Level of Service D or better conditions will continue to prevail in the corridor even when anticipated growth in traffic is factored in, and that no individual movements will operate at a Level of Service F.





**Future Conditions, No Action**

**Future Conditions, Draft Plan**

Detailed Measures of Effectiveness

Detailed Measures of Effectiveness

**Network Totals**

Number of Intersections	27
Total Delay / Veh (s/v)	17
Stops / Veh	0.33
Average Speed (mph)	8
Total Travel Time (hr)	278
Distance Traveled (mi)	2202
Fuel Consumed (gal)	303
Fuel Economy (mpg)	7.3
CO Emissions (kg)	21.17
NOx Emissions (kg)	4.12
VOC Emissions (kg)	4.91
Performance Index	235.8

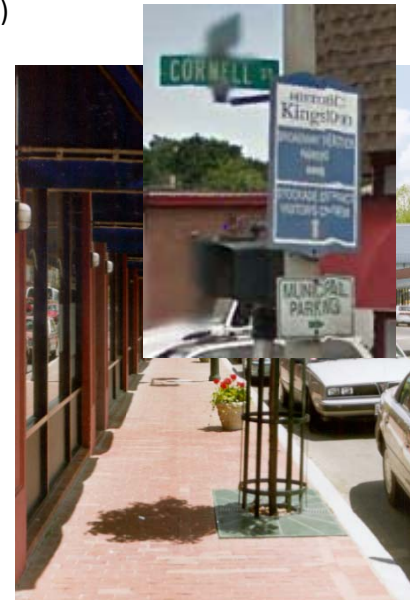
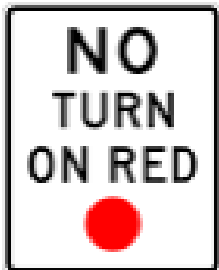
**Network Totals**

Number of Intersections	25
Total Delay / Veh (s/v)	11
Stops / Veh	0.30
Average Speed (mph)	11
Total Travel Time (hr)	203
Distance Traveled (mi)	2186
Fuel Consumed (gal)	233
Fuel Economy (mpg)	9.4
CO Emissions (kg)	16.28
NOx Emissions (kg)	3.17
VOC Emissions (kg)	3.77
Performance Index	152.0

Safety Improvements

To improve safety the following is recommended:

- Prohibit right-turns on red at the following signalized intersections:
  - Eastbound and Westbound on Broadway at Liberty Street (in response to 1 bicycle accident and 27 other accidents)
  - All approaches to the intersection of Henry Street with Broadway (in response to 2 pedestrian accidents, 3 bicycle accidents and 28 other accidents)
  - All approaches to the intersection of Cedar/Cornell Street with Broadway (in response to 2 pedestrian accidents, 2 bicycle accidents and 57 other accidents)
  - Eastbound and on Broadway at Pine Grove Avenue (in response to 1 bicycle accident and 20 other accidents)
  - All approaches to the intersection of Chester Street with Broadway (in response to 2 pedestrian accidents, and 39 other accidents)
- To allow motorists more time for decision-making, replace existing substandard signing with signs with larger letters, improved reflectivity and illumination, where feasible. It is recommended that larger lettering be used and that the font be changed to the FHWA-approved "Clearview Hwy" font.





## Building a Better Broadway

Broadway Corridor Conceptual Design Plan, Kingston, NY

### Transit Improvements

Transit operations are infrequent in the corridor (approximate 1 hour headway) and little evidence of a transit service is apparent. To better reflect the importance of transit to the corridor and the safety of its operations the following is recommended:

- Implement frequent service along the corridor connecting the Rondout with the Stockade and Hannaford Plaza, perhaps by integrating City and County services.
- Provide high profile standardized bus stops that include scheduling information and locate them at the far side of key intersections.
- Upgrade the existing bus fleet to include real-time bus arrival and departure information (with app technology), bicycle racks, and alternative fuel technology.



### Streetscape & Additional Safety Improvements

A 'streetscape' is the visual elements of a street, including the road, adjoining buildings, street furniture, trees and open spaces that combine to form the street's character and establish a sense of place. The transportation system being in the public realm offers the best opportunity to begin this "placemaking" effort. While some improvements are in evidence in the corridor, a more comprehensive effort is needed to sharpen the image. The following recommendations offer a start on what should be a continuing discussion and implementation:

- Rehabilitate the sidewalks along the corridor with a combination of bluestone (where already installed) and brick-imprint paving.
- Install attractive street furniture including bicycle racks, trash/recycling receptacles, public art and benches that encourage pedestrians and cyclists to stop and patronize local businesses.
- Plant street trees which will provide shade but not overwhelm the above or below ground infrastructure, or heave the sidewalks. Native species are preferred. Tree planters which manage storm water runoff should be incorporated, where possible. Best practices in urban tree propagation, such as CU-Structural Soil™, armored tree pits, and other measures that will help ensure healthy growth of trees with reduced impact to the surface and surrounding infrastructure, should be used.
- Existing healthy trees should be retained where possible and their hardiness improved with integration of new CU-Structural Soils and tree pits.
- Replace the existing light fixtures along the corridor with attractive, new, energy-efficient fixtures, consistent with recent improvements and which shed a warm glow on the sidewalks and buildings in the evenings when pedestrians and cyclists can enjoy the corridor after work.





## Building a Better Broadway

### Broadway Corridor Conceptual Design Plan, Kingston, NY

- Encourage sidewalk activities by allowing outdoor displays and seating and the use of public art.
- Prohibit parking between 7:00 a.m. and 11:00 a.m. in select locations (typically on the far side of unsignalized intersections) to permit commercial loading.
- Construct sidewalk bump outs at crosswalks to shorten the distance pedestrians must walk to cross Broadway in locations that do not interfere with bike lanes, bus and commercial loading zones.



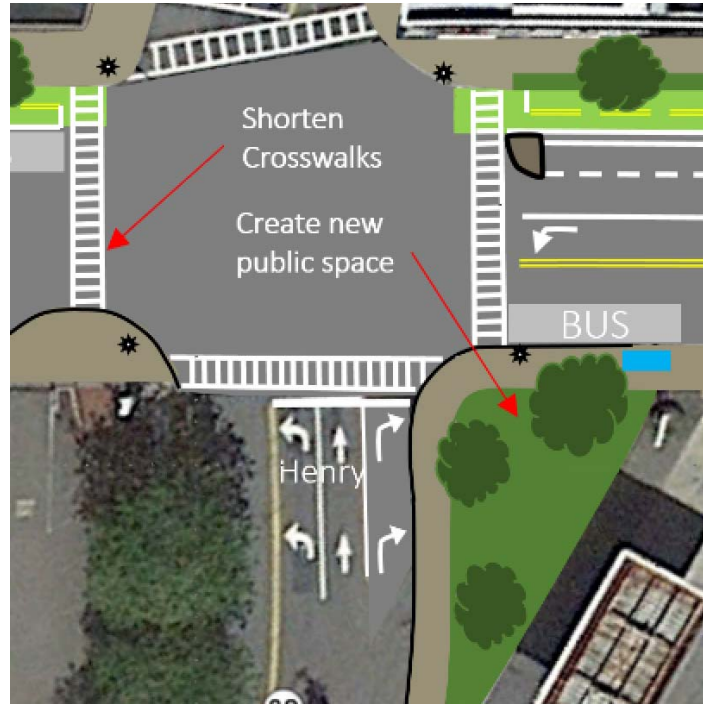
#### Typical Curb Bump Out



- Reconfigure the intersection of Henry Street with Broadway to shorten the crosswalks and to reclaim the space occupied by the northbound right-turn lane, creating a small public open space.



**Proposed Placemaking at the intersection of Broadway with Henry Street**



- Reconfigure the intersection of Pine Grove Avenue with Broadway to shorten the crosswalks and to reclaim space occupied by the northbound Pine Grove Avenue, creating a small public open space.

**Proposed Placemaking at the intersection of Broadway with Pine Grove Ave**





## Building a Better

### Broadway

#### Broadway Corridor Conceptual Design Plan, Kingston, NY

- Upgrade those pedestrian crossings without ADA-compliant pedestrian ramps, including installing truncated domes/tactile warning strips, checking that the slope and landing areas on sidewalks conforms to ADA code, and that they are the proper width. Strongly consider the use of durable materials, such as stainless steel.
- Upgrade signing of existing un-signalized crossings of Broadway so that they are all consistent with MUTCD requirements.
- Finally, conduct additional pedestrian counts at the intersection of Franklin Street with Broadway to determine whether there is sufficient pedestrian traffic crossing Broadway at that location to justify the installation of a crosswalk.



### 3.8 Cost Estimates and Implementation Strategy

Estimates for cost for the construction/implementation of the improvements identified in the pages above were prepared based on NYSDOT unit price construction costs and other available data. These cost estimates, which are summarized in the table below, do not include construction inspection services or right-of-way acquisition and assume full build-out of both phases of the preferred plan. Little, if any, right-of-way acquisition is anticipated, although some minor easements or acquisition may permit optimal modification of turning radii at Hoffman, Andrew and Staples Streets. The cost for construction inspections services can vary widely depending on the requirements placed on this effort by the various funding sources. As can be seen from the table, it is estimated that the total cost for the construction of all of the recommended improvements is \$5.5 million.

The Draft Plan and Recommendations can be implemented primarily by the federal and state grants received by the City of Kingston in the next 3-5 years. The suggested implementation order of the plan components, its accompanying project cost, potential source of funding, and timeline are found in the table below. Many of the plan components need to be implemented simultaneously (i.e. sidewalk bump outs and sidewalk infrastructure) and they would be installed on a block by block basis.



## Building a Better Broadway

### Broadway Corridor Conceptual Design Plan, Kingston, NY

NYSDOT currently has an allocation of just over \$2M under the Transportation Enhancement Program to implement the plan. The City is currently expending funds to be reimbursed by NYSEDA for the design and engineering including \$248,600 for streetscape design and engineering, \$235,400 for traffic signalization study and design, and \$520,400 to implement improvements to the traffic system, consistent with this plan. In addition, the City will be able to use some combination of CDBG, CHIPS, and Bonding to cover much of the match (\$1,000,000) required for the TEP funding. For example, approximately \$200,000 is currently available for street lights. The City will be seeking additional grant funding to fill the gap and extend this project.

Ongoing coordination with other major capital improvement and planning initiatives underway in the Broadway corridor will be crucial. These include the Kingston High School capital plan, the I587 roundabout project that NYSDOT is leading at the head of Broadway and the Kingston Connectivity project with Saratoga Associates that will enhance the Cornell St, Kingston Point Rail Trail and waterfront linkages. Involvement of the arts community and local businesses will also be critical.

Of the \$3,001,500 TEP project, the budget for construction inspection is \$301,000 of which there is a federal share of \$201,000 and a local match of \$100,000.





# Building a Better Broadway

## Broadway Corridor Conceptual Design Plan, Kingston, NY

Plan Component	Estimated Cost <sup>1</sup>	Funding Source	Timeline
Phase 1 Construction Plan Development (Elmendorf Street to Foxhall Avenue)	\$ 250,000.00	Grant Funding	Year 1
Pedestrian Study at Franklin Street	\$ 20,000	Outside Source	Year 1
Parking Study and Parking Management Plan	\$ 25,000	Outside Source	Year 1
Determine ROW Acquisition Needs, if any	\$ 15,000	Grant Funding	Year 1
Modify Turning Radii at Key intersections (Hoffman and Andrew Streets)	\$ 40,000	Grant Funding	Year 2
Prohibit Right-turns on Red (Liberty to O'Reilly Streets)	\$ 6,500	Grant Funding	Year 2
Replace Substandard Street Signs (Liberty Street to Foxhall Avenue)	\$ 26,000	Grant Funding	Year 2
Bus Stop Infrastructure (Liberty Street to Foxhall Avenue) (Bus Fleet is considered a separate project cost)	\$ 175,000	Grant Funding	Year 2
New sidewalk pavement and furniture (Liberty Street to Foxhall Avenue)	\$ 1,250,000	Grant Funding	Year 2
Trees and Landscaping (Liberty Street to Foxhall Avenue)	\$ 80,000	Grant Funding	Year 2
New Light Fixtures (Liberty Street to Foxhall Avenue)	\$ 600,000	Grant Funding	Year 2
Loading Zones (Liberty Street to Foxhall Avenue)	\$ 0		Year 2
Sidewalk Bumpouts (Liberty Street to Foxhall Avenue)	\$ 130,000	Grant Funding	Year 2
Placemaking at Henry Street, Pine Grove Avenue and Grand Street	\$ 125,000	Grant Funding	Year 2
Upgrade curb ramps to ADA requirements (Liberty Street to Foxhall Avenue)	\$ 40,000	Grant Funding	Year 2
Upgrade existing midblock pedestrian crossings (Liberty Street to Foxhall Avenue)	\$ 17,000	Grant Funding	Year 2
Upgrade Existing Traffic Signals (Liberty Street to Foxhall Avenue)	\$ 1,200,000	Grant Funding	Year 2
Separated Bike Lanes (Liberty to Pine Grove - Street Improvements to Foxhall) <i>or</i> Separated Bike Lanes (Liberty to O'Reilly Street - Street Improvements to Foxhall)	\$ 415,000 \$ 418,000	Grant Funding	Year 2
Sharrows and Signs (Elmendorf, Manor, Prince, Hasbrouck, Foxhall & Jansen) – <i>or</i> – Sharrows and Signs (Elmendorf, Manor, O'Reilly, Hasbrouck, Foxhall & Jansen)	\$ 40,000.00 \$ 40,000.00	Outside Source	Year 2
Phase 2 Construction Plan Development (Foxhall Avenue to KP Rail Trail)	\$ 150,000.00	Outside Source	Year 2
Modify Turning Radii at Key intersections (Staples Street)	\$ 20,000	Outside Source	Year 3
Prohibit Right-turns on Red (E/W Chester Street)	\$ 1,500	Outside Source	Year 3
Replace Substandard Street Signs (Foxhall Avenue to E/W Chester Street)	\$ 4,000	Outside Source	Year 3
Bus Stop Infrastructure (Foxhall Avenue to E/W Chester Street) (Bus Fleet is considered a separate project cost)	\$ 25,000	Outside Source	Year 3
New sidewalk pavement and furniture (Foxhall Avenue to E/W Chester Street)	\$ 250,000	Outside Source	Year 3
Trees and Landscaping (Foxhall Avenue to KP Rail Trail)	\$ 20,000	Outside Source	Year 3
New Light Fixtures (Foxhall Avenue to KP Rail Trail)	\$ 200,000	Outside Source	Year 3
Loading Zones (Foxhall Avenue to E/W Chester Street)	\$ -	Outside Source	Year 3
Sidewalk Bumpouts (Foxhall Avenue to E/W Chester Street)	\$ 20,000	Outside Source	Year 3
Upgrade curb ramps to ADA requirements (Foxhall Avenue to KP Rail Trail)	\$ 10,000	Outside Source	Year 3
Upgrade existing midblock pedestrian crossings (Foxhall Avenue to E/W Chester St)	\$ 3,000	Outside Source	Year 3
Upgrade Existing Traffic Signals (E/W Chester Street)	\$ 200,000	Outside Source	Year 3
Separated Bike Lanes (Pine Grove Avenue to Kingston Point Rail Trail) – <i>or</i> – Separated Bike Lanes (O'Reilly Street to Kingston Point Rail Trail)	\$ 124,000 \$ 121,000	Outside Source	TBD
<b>Total</b>	<b>\$ 5,482,000</b>		

1. Does not include construction inspection or Right-of-Way costs. Little or no ROW acquisition is expected



## Building a Better Broadway

Broadway Corridor Conceptual Design Plan, Kingston, NY

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<sup>i</sup> Protected Bike Lanes Mean Business. [https://www.sfbike.org/wp-content/uploads/2014/04/Protected\\_Bike\\_Lanes\\_Mean\\_Business.pdf](https://www.sfbike.org/wp-content/uploads/2014/04/Protected_Bike_Lanes_Mean_Business.pdf). Economic Benefits of Bicycling in Urban Environments. <http://www.marinbike.org/Resources/EconomicBenefitsOfBicycling.pdf>

<sup>ii</sup> NYSDOT TSMI 13-07 Shared Lane Marking. Policy <https://www.dot.ny.gov/programs/completestreets/repository/TSMI13-07final.pdf>

<sup>iii</sup> <http://www.khsproject.com/>