Staten Island North Shore Alternatives Analysis Supplement Considering St. George Transit Access Options

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Background

In August 2012, MTA New York City Transit (MTA-NYCT) published the NYCT Staten Island North Shore Alternatives Analysis (SINSAA), which assessed the implementation of new or enhanced transit service along the North Shore of Staten Island (Richmond County, New York), between West Shore Plaza and St. George Terminal. The 2012 SINSAA identified and evaluated eight alternatives representing a mix of modes, routes, alignments and termini with a desired re-use of the former North Shore Railroad right-of-way for transit service.

Three of the eight alternatives were advanced and further developed as part of a Short List including: Transportation Systems Management (TSM), Electric Light Rail (LRT -St. George to West Shore Plaza), and Bus Rapid Transit (BRT – St. George to West Shore Plaza). Ultimately, after extensive analysis and stakeholder/public outreach, the 2012 SINSAA identified the BRT Alternative as the recommended and preferred alternative based on its potential to reduce travel time, improve transit access, and attract the most riders with lower costs than the LRT Alternative.

Since the publication of the SINSAA in 2012, the portion of St. George near NYCDOT's St. George Terminal has undergone significant changes. The construction of the Empire Outlets and the New York Wheel parking garage as well as resiliency-related infrastructure measures have complicated access between Nicholas Street and St. George Terminal, precluding the proposed St. George BRT terminal as originally planned.

Intent of the Document

Given these changes, this Supplement to the 2012 SINSAA (the "Supplement") builds on the substantial work that was previously completed, reassesses the potential accessibility of the SINSAA BRT and LRT alternatives to St. George Terminal, and re-evaluates those alternatives against the goals and objectives. The common alignment for the BRT and LRT alternatives west of Nicholas Street has not changed since the completion of the 2012 SINSAA and thus the focus of this updated analyses is on St. George. Conceptual transit access options for the BRT and electric LRT modes terminating near St. George Terminal are explored in this report.

Conclusion

This Supplement provides information regarding the updated LRT and BRT Alternatives and an evaluation that confirms their feasibility to access St. George and provide a terminal station at St. George with a new, dedicated ROW transit facility. Despite a slightly greater travel time and some impacts to Richmond Terrace (reduced on-street parking), the BRT Alternative still provides the greater potential to attract transit riders at a lower cost than the

LRT Alternative. Consistent with the 2012 SINSAA, the BRT Alternative remains the higher rated alternative.

The BRT Alternative was presented as the Recommended Alternative at a public meeting held at Snug Harbor on May 8, 2019 and to local elected officials in advance of the public meeting. Feedback received at those meetings and the analyses presented herein substantiates reconfirmation of the BRT Alternative as the Preferred Alternative for the Staten Island North Shore Transit project.

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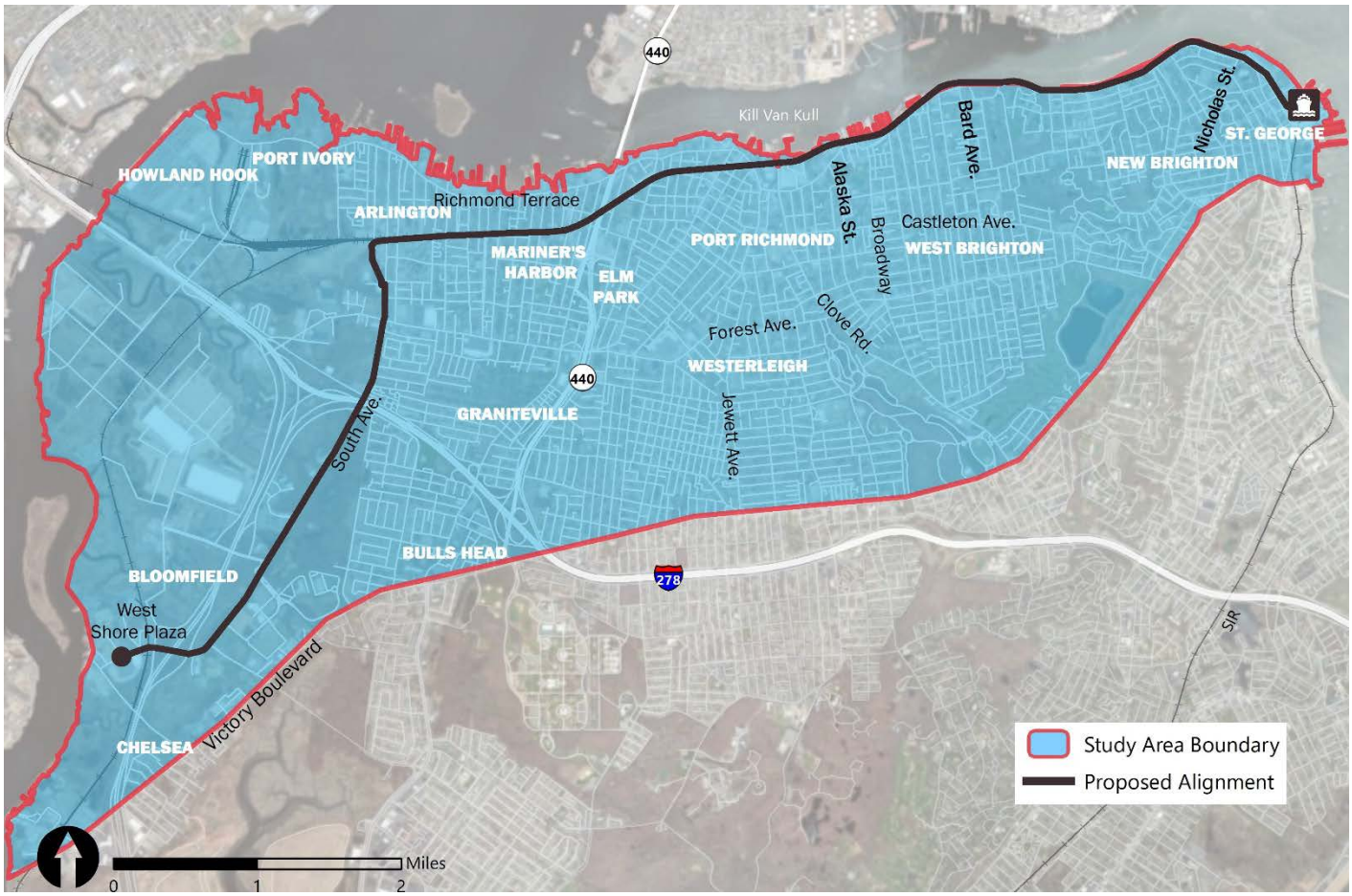
Background

In August 2012, MTA New York City Transit (MTA-NYCT) published the NYCT Staten Island North Shore Alternatives Analysis (SINSAA). The purpose of the SINSAA was to assess implementation of new or enhanced transit service along the North Shore of Staten Island (Richmond County, New York), between West Shore Plaza and St. George Terminal. The SINSAA identified a Purpose and Need as well as project Goals and Objectives resulting from an extensive review of existing and future conditions and coordination with numerous public agencies, private organizations and the public. The general study area for the SINSAA is shown in Figure 1.

The 2012 SINSAA identified and evaluated eight alternatives representing a mix of modes (heavy rail, light rail, bus, and ferry), routes, alignments and termini. The Long List Alternatives included:

- Transportation Systems Management (TSM)
- Heavy Rail along the Staten Island Railway (SIR – St. George to Arlington)
- Electric Light Rail (LRT – St. George to Arlington)
- Diesel Light Rail (DLRT – St. George to Arlington)
- Electric Light Rail (LRT – St. George to West Shore Plaza)
- Diesel Light Rail (DLRT – St. George to West Shore Plaza)
- Bus Rapid Transit (BRT – St. George to West Shore Plaza)
- Ferry/Water Taxi (Kill van Kull from St. George Terminal to Mariners Harbor)

Figure 1 - Study Area



The Long List Alternatives were evaluated against project Goals and Objectives and a Short List of Alternatives was presented at a Public Outreach meeting held in September 2011. The three alternatives advanced to the Short List of the 2012 SINSAA included:

Transportation Systems Management (TSM)

Baseline option, previously required by the FTA, that emphasizes low-cost bus transit improvements such as signalization and intersection improvements, dedicated bus lanes, shortened bus headways and bus route restructuring.

Electric Light Rail (LRT – St. George to West Shore Plaza)

Electric Light Rail service on two new tracks that would extend west along the former North Shore Railroad right-of-way (ROW) from the existing St. George Terminal to Arlington, and then along South Avenue to a new terminus at West Shore Plaza.

Bus Rapid Transit (BRT – St. George to West Shore Plaza)

This alternative would involve Bus Rapid Transit service on a new dedicated busway that would extend west along the former North Shore Railroad ROW from the existing St. George Terminal to Arlington, and then in mixed traffic along South Avenue to a new terminus at West Shore Plaza (Figure 1). Some local bus services would become feeder routes by accessing the busway via ramps at Bard Avenue and Alaska Street (Figure 2).

Figure 2 – Proposed Busway Access Ramps

The SINSAA presented a detailed analysis of the three short-listed alternatives, as shown in Figure 3. These alternatives were further refined and reviewed against the project's Goals and Objectives. Additionally, ridership forecasts were developed utilizing the MTA Regional Transit Forecasting Model (RTFM).

Figure 3 – 2012 SINSAA Short List Evaluation

	TSM	BRT	LRT
GOAL 1: Improve Mobility			
Total New Stations Served	○	●	●
Provide transit access for the transit-dependent and transit reliant	○	●	◐
Travel time Arlington to St. George	○	●	●
Provide improved transit access to the Teleport	◐	●	●
Additional intersections with potentially significant AM peak impacts	●	◐	○
Estimated Ridership	◐	●	◐
GOAL 2: Preserve and Enhance the Environment, Natural Resources, and Open Space			
Land use and wetlands impacts	●	○	○
Potential hazardous material sites impacted or acquired	●	○	○
Potential noise impacts	●	◐	◐
Number of potential impacts to parklands	●	◐	◐
Air Quality (emissions of transit mode)	◐	◐	●
Potential adverse impacts to waterfront and/or views	●	◐	○
GOAL 3: Maximize Limited Financial Resources for the Greatest Public Benefit			
Estimated capital cost	●	◐	○
Net annual operating and maintenance costs	●	◐	◐
Compatibility with NYCT equipment and operations	●	●	○
Implementation period	●	◐	○

● Most successful in meeting study goals

◐ Moderately successful in meeting study goals

○ Least successful in meeting study goals

Based on the results of this detailed analysis, it was determined that the TSM Alternative offered the lowest cost and fewest potential negative impacts. However, the TSM Alternative was also determined to be the least effective in terms of improving mobility and meeting the project goals and objectives. Both the LRT and BRT Alternatives resulted in mobility improvements and would create some potential environmental impacts. However, the BRT and LRT differed in capital cost and ridership. The BRT Alternative had a substantially lower capital cost and was forecasted to attract higher ridership than the LRT Alternative because some local bus routes would also operate on portions of the busway.

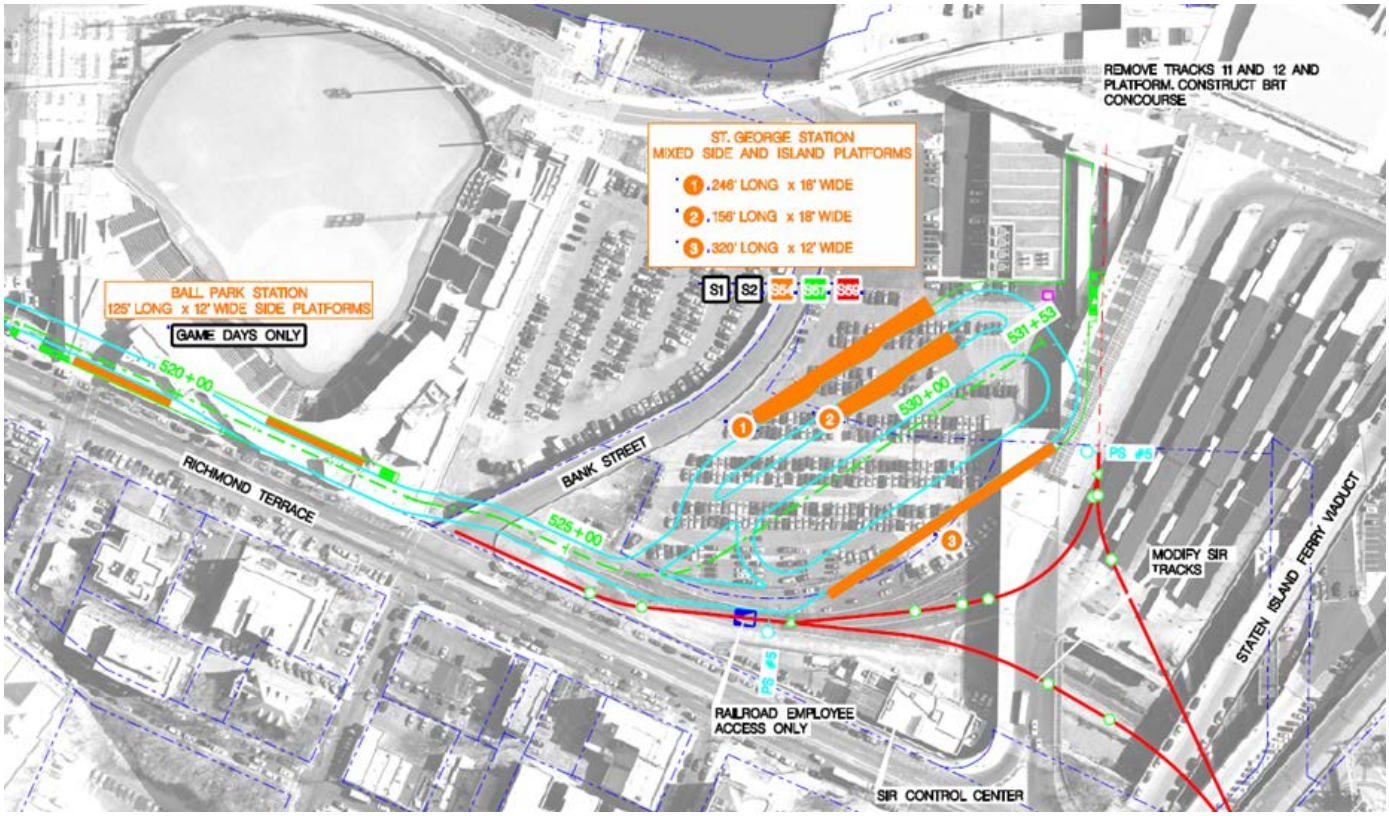
The SINSAA concluded that the BRT Alternative had the potential to reduce travel time, improve transit access, and attract new riders while having a lower capital cost than the LRT

Alternative and fewer potential negative environmental impacts. Based on these considerations, the BRT from St. George to West Shore Plaza was recommended for advancement and, with public input, was selected as the Preferred Alternative as noted in the 2012 SINSAA.

1.1 Recent Land Use Changes at St. George

As documented in the SINSAA, the proposed St. George BRT terminal station was originally planned to be located just west and north of the St. George Terminal on a former surface parking lot, providing convenient pedestrian access between the two facilities (Figure 4). Since the SINSAA was published over six years ago, the portion of St. George near NYCDOT's St. George Terminal has undergone significant changes.

Figure 4 – 2012 SINSAA BRT Alternative St. George Terminal Station



Two projects, the Empire Outlets Mall and the New York Wheel (NY Wheel) were approved by the City for development in 2013 (Figure 5). The addition of the Empire Outlets and associated parking has precluded access to the site of the planned BRT terminal. The NY Wheel and its associated structured parking facility, just west of the Richmond County Bank Ballpark, also complicated BRT access to the St. George Terminal.

Figure 5 – Recent Developments in St. George

Recent changes created a need to reconceptualize transit access in the eastern portion of the study area including the configuration of a terminal station at St. George

Raised SIR Signal House, St. George

1.2 Superstorm Sandy and Resiliency Concerns

In October 2012, the New York metropolitan area was severely impacted by Superstorm Sandy, including inundation of land and infrastructure in waterfront areas. As a result of those impacts, resiliency measures were designed and have been (or are currently being) constructed to protect key transportation assets including the Staten Island Railway (SIR) St. George Terminal Station and NYCDOT's St. George Terminal. These measures include the installation of flood walls, shifting of key infrastructure assets such as railroad signal houses, and other physical improvements that impede access to and along the former North Shore Railroad right-of-way in St. George. The SIR Clifton Shop and Yard has also undergone resiliency upgrades. As a result of these and other changes at Clifton, the current shop can no longer be considered available to a potential new light rail fleet.

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Intent of this Document

This document is being provided as a supplement to the August 2012 Staten Island North Shore Alternatives Analysis that was prepared by MTA New York City Transit. This Supplement to the 2012 SINSAA (the "Supplement") builds on the substantial work that was previously completed and to reassess transit access (BRT and LRT) to St. George Terminal considering the physical changes that have occurred.

On balance, most of the alignment has not changed since the completion of the 2012 SINSAA. The complete alignment described in the 2012 SINSAA, including the open-cut, elevated viaduct, and street-running portion on South Avenue, remains unchanged. As such, the conclusions identified in the 2012 SINSAA for the alignment of either the BRT or LRT Alternatives west of Nicholas Street remain valid (see Figure 1).

This supplement to the 2012 SINSAA reflects new existing physical conditions in St. George that were not considered in the previous Staten Island North Shore Alternatives Analysis. Conceptual transit access options for the BRT and electric LRT modes terminating near St. George Terminal are explored in this report. Accordingly, this document is focused on the portion of the alignment east of Nicholas Street involving the approaches to the St. George Terminal and the terminal facility itself.

Additionally, the 2012 SINSAA established a series of goals and objectives, as shown in Table 1. For the purposes of consistency, these goals and objectives are utilized in this report to evaluate the revised transit access options for the BRT and LRT Alternatives.

Table 1 – Goals & Objectives Identified in the 2012 SINSAA

Goals	Objectives
Improve Mobility	• Provide increased and improved travel options along the North Shore • Provide an efficient transit system that improve transfers between lines and modes • Improve transit access for transit-dependent populations • Reduce travel time for linked, Manhattan-bound trips • Improve transit reliability • Provide improved transit access to the Teleport • Reduce roadway congestion by attracting auto users to transit
Preserve & Enhance the Environment, Natural Resources & Open Space	• Improve air quality by providing transit alternatives that moderate the increase of vehicle emissions • Minimize potential adverse impacts on residential areas, businesses and the built environment from the operation of a transit mode on the North Shore • Minimize potential adverse impacts on the natural environment from the operation and construction of a transit mode on the North Shore • Maintain safe and efficient access to land uses along the North Shore
Maximize Limited Financial Resources for the Greatest Public Benefit	• Make use of existing capacity in transportation corridors, assets and infrastructure • Advance the most cost-effective transportation options • Increase revenue potential, thereby minimizing level of subsidy required • Develop transit options that use known and proven technologies suitable for use on the North Shore • Provide a transportation solution that can be implemented in a timely manner

3

2019 Updated Alternatives

3.1 Development of St. George Transit Access Options

After a review of existing construction plans for the NY Wheel and Empire Outlets, field work along the SIR and in St. George Terminal and former North Shore Railroad Right-of-Way (ROW), and consultation with public agencies and the Staten Island Borough President's Office, several transit access options were explored for BRT and LRT modes between Nicholas Street and St. George Terminal. These options considered access along Richmond Terrace, the former North Shore Railroad ROW and Bank Street. They all advanced the original principles of the BRT and LRT Alternatives, identified in the 2012 SINSAA, that included:

- a one-seat ride from West Shore Plaza;
- the provision of enough layover area to support service headways;
- the use of dedicated ROW to the maximum extent possible; and
- the siting of a station at or near St. George Terminal.

Additionally, physical feasibility, institutional feasibility, and the effectiveness in meeting the original SINSAA goals and objectives, were all factors considered in the development and the evaluation of the two options as described in Sections 3.2 and 3.3.

Physical feasibility relates to the ability to avoid physical impediments, structures, or the need to reconfigure such impediments, that might impede North Shore transit access to St. George Terminal and the creation of a station there. These impediments could include

but are not limited to: a lack of ROW; insufficient vertical or horizontal clearance; physical barriers that cannot be altered or displaced; and incompatible operational requirements.

Institutional feasibility is related to potential impacts proven to be unacceptable to the MTA or another stakeholder entity, such as security considerations or preclusion of planned resiliency projects.

Descriptions and key features of the updated BRT and LRT Alternatives, configured with the St. George access options that are most feasible and best meet the project goals and objectives, are presented below and in Section 3.4. The TSM Alternative, identified as a Short List alternative in the 2012 SINSAA, was not re-evaluated since it is no longer a Federal Transit Administration (FTA) requirement and its previous SINSAA evaluation proved it to be substantially inferior to the BRT and LRT Alternatives.

3.2 2019 Updated Bus Rapid Transit (BRT) Alternative

This alternative would provide a direct, one-seat ride to and from the St. George Terminal via two exclusive BRT lanes along the former North Shore Railroad ROW and Richmond Terrace. The eastbound BRT would utilize the former ROW up to Nicholas Street. At Nicholas Street, a new exclusive BRT ramp would be constructed to enable BRT vehicles to ascend to the grade of Richmond Terrace and enter a newly constructed, exclusive two-lane median busway (Figures 6 & 7). The existing traffic signal at Nicholas Street/Richmond Terrace intersection would be upgraded to incorporate a Transit Signal Priority (TSP)-enabled traffic signal. The BRT would travel east within the median busway for approximately one-half mile to Bay Street, where it would utilize the existing ramp B, currently used by buses today, to enter the existing bus deck at St. George Terminal and use an existing platform. The median busway could be accommodated within the existing paved width of Richmond Terrace while also maintaining the existing two lanes of traffic in each direction.

Exiting the Terminal facility, the BRT would enter the exclusive, median BRT westbound lane on Richmond Terrace, where it would travel to the Nicholas Street ramp and there descend to continue in BRT lanes along the former North Shore Railroad ROW. Upon reaching Jersey Street, the BRT would continue west in the ROW as previously planned and presented in the 2012 SINSAA (report available on the MTA website: https://new.mta.info/system_modernization/northshoreeis/nsaa_findings.

Figure 6 – 2019 Updated BRT Option

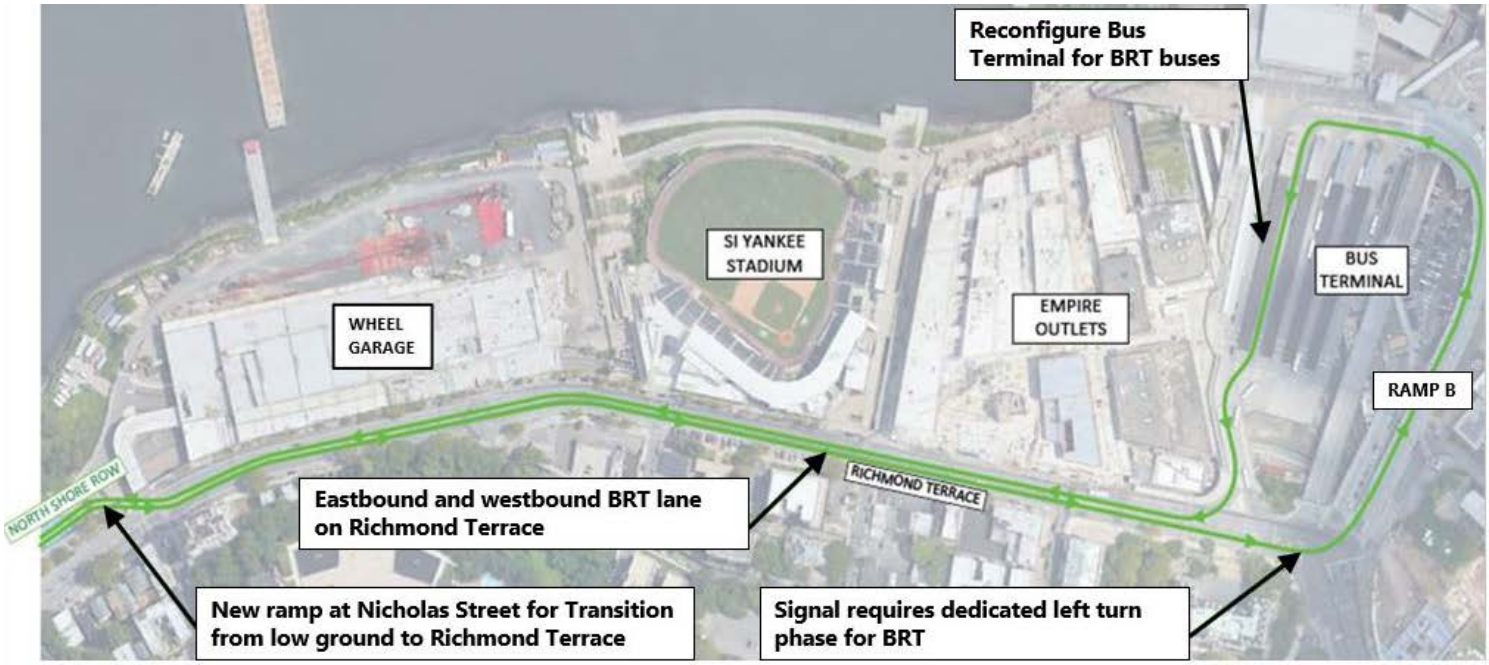
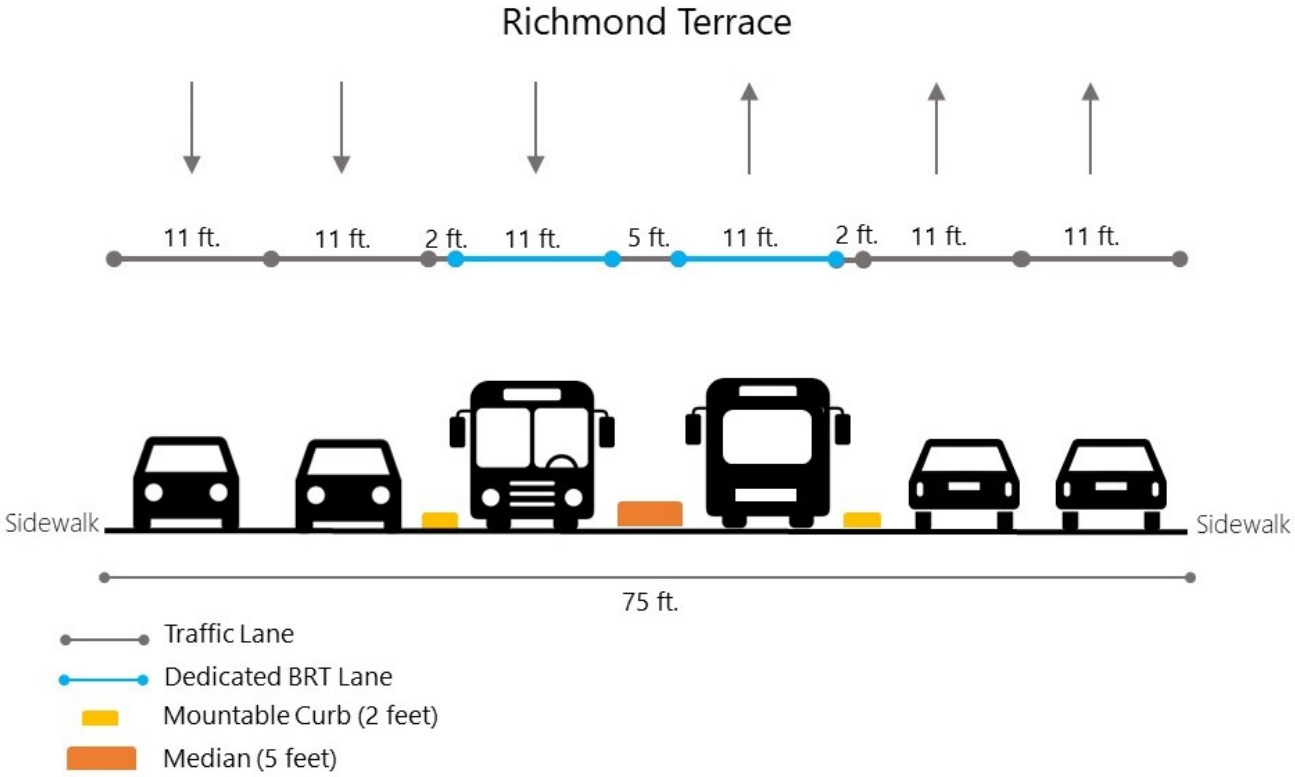


Figure 7 – Richmond Terrace Median Busway Concept



Features & Considerations

This alternative is anticipated to result in on-street parking impacts on Richmond Terrace, consisting of the loss of approximately 200 parking spaces and the existing bicycle lane for approximately one-half mile. It would also utilize the existing bus ramp B via the heavily trafficked Bay Street intersection, which provides access to the St. George Bus Terminal. Consequently, the BRT vehicles would be required to mix with other buses on this ramp. While the BRT would operate in an exclusive busway along Richmond Terrace, it would encounter traffic signals (equipped with TSP) which would have a minor negative effect on travel time. An overview of key features of this alternative are as follows:

- Creates a ramp from the former North Shore Railroad right-of-way to Richmond Terrace at Nicholas Street
- Creates a two-lane exclusive busway in the median of Richmond Terrace for 0.5 miles
- Implements TSP at all Richmond Terrace traffic signals along the median busway
- Makes use of the existing St. George bus terminal which facilitates transfers and is customer-friendly
- Results in a slightly longer travel time than 2012 SINSAA BRT due to traffic signals along 0.5-mile Richmond Terrace busway (approximately 2.5 minutes longer eastbound and just over one minute longer westbound)
- Requires reconstruction of Richmond Terrace to accommodate the exclusive two-lane median busway

Existing Nicholas Street intersection with Richmond Terrace and NY Wheel Garage. The proposed BRT ramp would be located to the left of the existing garage ramp.

3.3 2019 Updated Electric Light Rail Transit (LRT) Alternative

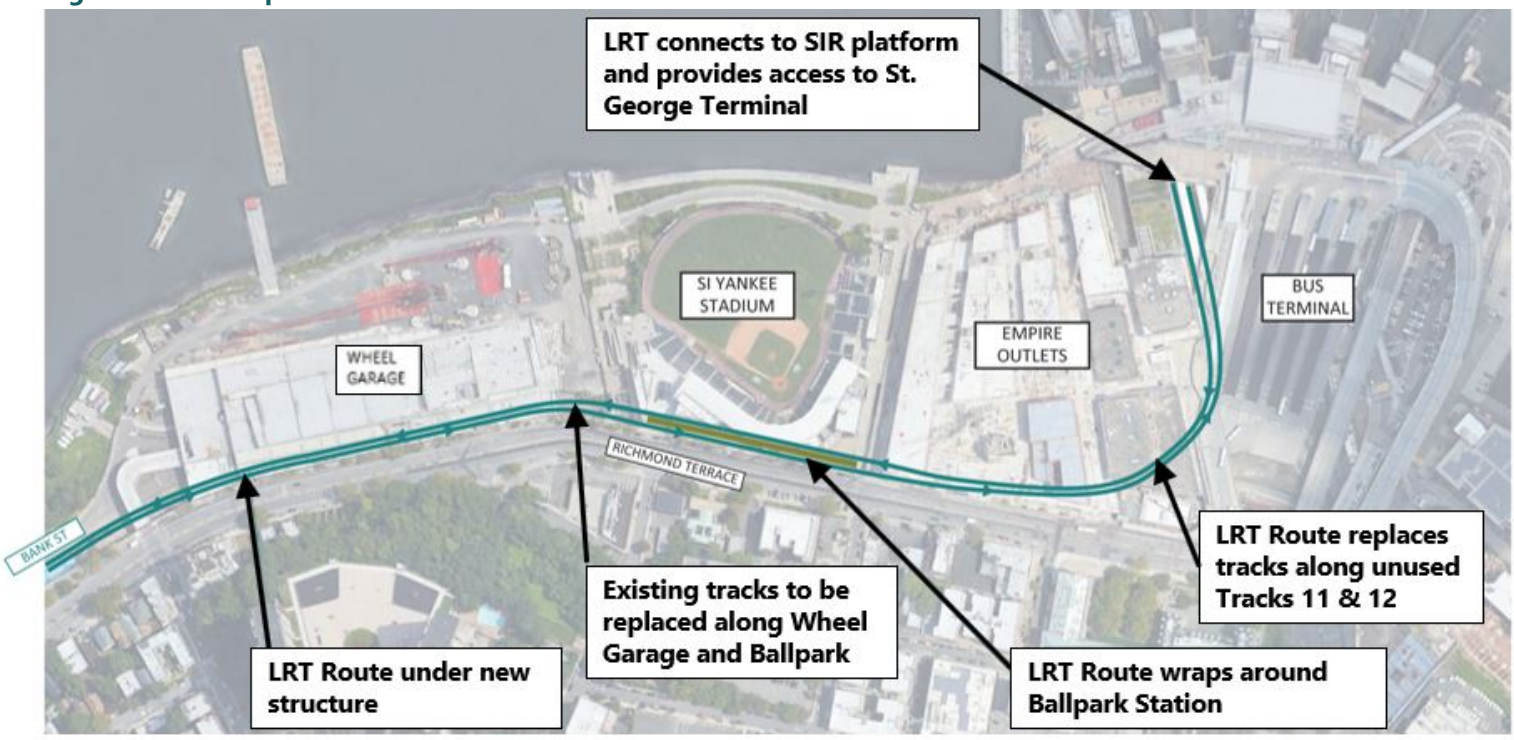
This alternative would provide a direct one-seat ride to St. George on two new tracks within the former North Shore Railroad right-of-way. The alignment would gain access to

the St. George Terminal by passing through Ballpark Station and beneath the NY Wheel Garage, Empire Outlets and the elevated St. George Bus Terminal within the former North Shore Railroad ROW (Figure 8). The alignment would terminate at Platform 6 using Staten Island Railway (SIR) Tracks 11 and 12, not currently used for passenger service, as proposed in the SINSAA. On westbound trips the LRT vehicles would follow the same route.

Due to construction of the NY Wheel Garage and the Empire Outlets and their related columns and structural walls, this alternative would require a track realignment at St. George to enable the two required LRT tracks to go through the Ballpark Station as well as a realignment of SIR's existing Track 10 and connecting wye track. The SIR tracks and other areas on the SIR level of St. George Terminal have been reconfigured since 2012 to accommodate the Empire Outlets, SIR operational facilities, and resiliency structures. The new LRT tracks through Ballpark Station would need to be embedded in asphalt both to accommodate SIR access and to enable use by rubber-tired emergency vehicles and delivery trucks.

Despite all attempts to avoid structures, this updated LRT Alternative would require alterations to existing structural columns and would require new beams to support the existing overhead bus ramps. More specifically, approximately 13 columns would need to be relocated including nine columns supporting the overhead bus deck and viaduct, two columns from Empire Outlets and two columns at Ballpark Station (see photo below).

Figure 8 – 2019 Updated LRT Alternative



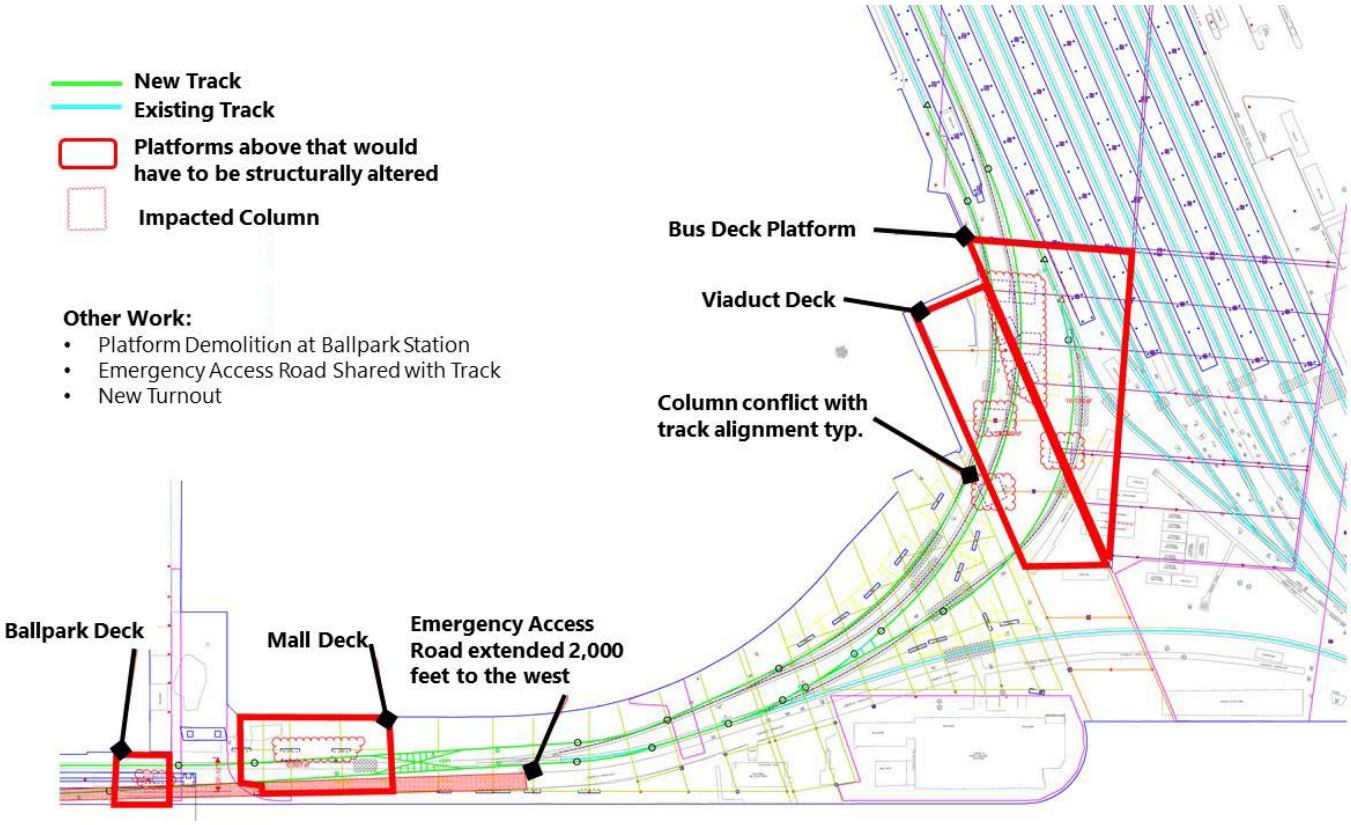
Representative conditions beneath Empire Outlets. This structural support column and others would need to be relocated to accommodate new LRT tracks.

Portions of platforms and some vertical circulation areas at Ballpark Station would need to be reconfigured. There is an existing access road used by rubber-tired SIR vehicles to access their yard area on the SIR level on the south side of the tracks. Under this option, the access road would be extended approximately 2,000 feet to the west, providing SIR with the ability to maintain access (Figure 9). SIR also uses the areas proposed for use by the LRT in this alternative. Since SIR cars and LRT cars are different sizes, the Federal Railroad Administration (FRA) would require a special safety waiver to allow joint use of this area and would likely require temporal separation[1] of the LRT and SIR vehicles on common portions of track. This could impact both SIR and LRT operations.

In addition, in 2012, it was planned that the LRT Alternative would repurpose areas of SIR's Clifton Rail Maintenance Shops to create fleet servicing and storage capabilities for the new LRT fleet. Since 2012, because of Superstorm Sandy, all areas within and adjacent to Clifton Shops have been utilized to accommodate the SIR fleet and new resiliency features. As such, the LRT Alternative would now require a newly constructed maintenance facility at a North Shore or West Shore site not yet determined.

[1] Temporal separation is defined as the operation of conventional passenger rail trains (i.e., SIR trains) and non-Federal Railroad Administration Crashworthy-compliant equipment (i.e., LRT trains) along the same route but at distinct operating windows during the day. This ensures that "light" rail vehicles trains do not operate on the same track at the same time as heavier rail equipment, which reduces the risk for collisions between these two different types of equipment.

Figure 9 – Proposed LRT Track Configuration & Modifications



Features & Considerations

A major advantage of the LRT Alternative is its maximized use of the exclusive, former North Shore Railroad and SIR ROWs. Key features include:

- Repurposes the area of Tracks 11 and 12 which are currently not in use
- Completely uses railroad or former railroad ROWs with no use of Richmond Terrace and thus no transit delays at traffic lights and no parking loss
- Makes use of the existing St. George rail terminal which facilitates transfers and is customer-friendly
- Same travel time as the SINSAA LRT Alternative
- Requires reconstruction of several structures
- Requires a new maintenance facility
- Requires an FRA operating waiver which may impact LRT and SIR operations

3.4 Comparative Matrix

This section provides a comparison of the characteristics associated with the 2019 BRT and LRT Alternatives which include:

Vehicle Travel Time

Travel time relative to the BRT and LRT Alternatives was considered. Cursory intersection delays were estimated using a combination of relevant traffic and delay data identified in the NYCEDC's North Shore Transportation Improvement Strategy (2017) and supplemented by preliminary speed runs conducted in October 2018. Estimated initial travel times were approximated and provided for alternative comparative purposes only. Travel times noted in the comparative matrix below include the additional travel time needed for each 2019 alternative because of the change in St. George access, as compared with each other and the Preferred Alternative in the 2012 SINSAA.

Parking Displacement

The removal or alterations to vehicular on-street parking were considered for the updated BRT option which would traverse Richmond Terrace. Estimations of potential parking loss are provided in Table 2, as applicable. These estimates were based on both an aerial reconnaissance, a site assessment, and a review of NYCDOT parking regulations but are subject to adjustment due to the preliminary nature of the BRT design at this time. Approximately 50 of the potentially impacted spaces are in use by NYPD. Additionally, to achieve an adequate median busway including separation from general traffic lanes, the Richmond Terrace bicycle lane would need to be removed. Bicycle lanes along Bank Street are currently planned.

Environmental/Community, Construction and Institutional Effects

Potential environmental/community issues including effects to the social, economic and built environment (e.g., potential right-of-way or community context impacts) have been considered during this screening.

Construction-related effects to the surrounding community relative to the updated alternatives as well as the ability to maintain access to the surrounding area and properties during the construction period have also been considered.

NYCT Department of Bus and SIR operational and infrastructure effects resulting from the physical alignment and operation of the BRT and LRT were also taken into consideration as noted in Table 2.

Potential Ridership

An estimate of potential ridership for each updated alternative is presented in Table 2. As part of this effort, the ridership forecasting methodology and model from the 2012 SINSAA was re-used, with slight adjustments, to maintain consistency.

Operating and Maintenance (O&M) and Capital Costs

Estimated order of magnitude O&M and construction costs are noted for each of the updated alternatives.

Table 2 – 2019 Short List Alternatives Comparative Matrix

Screening Categories	2019 BRT Option		2019 LRT Option	
Additional Travel Time (minutes)	EB: 2.5	WB: 1.1	EB: 0	WB:0
Operations	› 2 exclusive BRT lanes › No. of signalized intersections: 6 EB; 8 WB › Uses North Shore Railroad ROW and Richmond Terrace › Access: Upper level of existing bus facility at St. George Terminal › Length of Richmond Terrace BRT lanes: 2,400 ft. with mountable curb separators › New exclusive bus ramp at Nicholas St. › Mixes with existing buses at St. George Terminal		› 2 LRT exclusive tracks › No. of signalized intersections: 0 › Uses North Shore Railroad ROW › Access: SIR level at St. George Terminal › Tracks through Ballpark Station would be embedded in asphalt to accommodate SIR access › Temporal separation of LRT and SIR vehicles would need to be maintained (e.g., safety; vehicle strength differential). An FRA waiver would likely be required to operate with SIR › Maintenance would need to occur at a new LRT-only facility since SINSAA assumption regarding use of SIR Clifton shops for maintenance are no longer valid.	
Parking Displacement	Loss of approximately 200 spaces on Richmond Terrace		No on-street parking loss	
Effects	› **Resiliency:** Partially within floodplain; need to coordinate with St. George SIR resiliency plans › **Community Effects:** No change in number of Richmond Terrace traffic lanes; intersections modified with TSP; loss of approximately 0.5 miles of exclusive bicycle lane › **SIR**: No impact › **Development:** Modification of signal timing at Nicholas Street entrance/exit from NY Wheel parking deck. › **Institutional Issues:** None › **Construction:** Impacts from reconstruction of Richmond Terrace		› **Resiliency:** Within floodplain; need to coordinate with St. George SIR resiliency plans; new maintenance facility would require flood mitigation depending upon location › **Community Effects:** No change to Richmond Terrace traffic or bicycle lanes › **SIR:** Existing Clifton Shops Facility is unable to support maintenance of LRT cars especially when SIR's new R-211 fleet is delivered. SIR would lose some equipment and materials storage capacity in existing yard at St. George. › **Development:** Relocation of 2 Empire Outlet columns, 2 Ballpark Station columns and 9 NYCDOT bus deck/ramp columns; need to coordinate emergency access with Empire Outlets › **Institutional Issues:** LRT operation on SIR tracks requires FRA Shared Use Waiver and likely enforced temporal separation. › **Construction:** Impacts to SIR, NYCDOT bus deck/ramp, and Empire Outlets due to column relocations	
Potential Ridership	11,732 AM peak users		10,590 AM peak users	
Estimated O&M Costs 2010 $	$6.6 Million		$8.17 Million	
Estimated Total Cost in 2010 $	$484 Million ($656 Million less than LRT Alternative)		$1.14 Billion	

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Evaluation, Outreach & Conclusion

Evaluation

The 2012 SINSAA identified the BRT Alternative as the recommended alternative based on its potential to reduce travel time, improve access to key locations, and attract the most riders, with lower costs than the LRT Alternative. Table 3 presents the updated evaluation of the full BRT and LRT Alternatives, incorporating the updated access and terminal configurations at St. George as described in this AA supplemental report. The original goals and objectives from the 2012 SINSAA have been applied for this updated evaluation.

The analysis confirms the feasibility of the LRT and BRT Alternatives to access St. George and provide a terminal station at St. George with a new, dedicated ROW transit facility. Consistent with the 2012 SINSAA, the BRT Alternative remains the higher rated alternative. Despite a slightly greater travel time and some impacts to Richmond Terrace, the BRT Alternative still provides the greater potential to attract transit riders at a lower cost than the LRT Alternative. While impacts to Richmond Terrace in the form of reduced on-street parking would result, the same number of general travel lanes would be maintained. In addition, the updated BRT Alternative continues to provide greater accessibility to transit users because it features intermediate access points to a dedicated transit facility for bus routes that traverse a greater number of North Shore neighborhoods than could be feasibly reached by the fixed guideway LRT Alternative. Furthermore, the BRT Alternative does not result in potential long-term SIR operational impacts or impacts to SIR storage areas or columns supporting nearby structures such as the bus deck at St. George. The LRT capital cost is also greatly increased by the need to build a completely new LRT fleet maintenance facility on Staten

Island, while the buses for the BRT Alternative would be stored and maintained in existing MTA Staten Island bus depots. Finally, while both alternatives have similar environmental impacts due to a common alignment west of Nicholas Street, the LRT Alternative would have visual impacts due to the need for power structures and wires to propel the trains. Since 2012, electric buses have emerged as viable replacements for hybrid or diesel buses, and thus the BRT Alternative is now expected to have similar low impacts to air quality as the electric LRT Alternative.

Table 3 – 2019 Short List Alternatives Evaluation Matrix

	BRT	LRT
Goal: Improve Mobility*		
Total Stations Served	●	●
Access from transit dependent populations	●	◐
Travel Time from Arlington to St. George	●	●
Flexible Access to Business Parks (Teleport & Matrix Global Logistics Park)	●	◐
Intersection Impacts to St. George	◐	●
Estimated Ridership	●	◐
Goal: Preserve & Enhance the Environment, Natural Resources & Open Space*		
Potential Land Use Impacts	○	○
Potential Noise Impacts	●	◐
Potential Impacts to Parklands	◐	◐
Air Quality (Emissions)	◐	◐
Waterfront & Visual Resource Effects	◐	○
Goal: Maximize Limited Financial Resources for the Greatest Benefit*		
Estimated Capital Cost	◐	○
Operating & Maintenance Costs	◐	○
Compatibility with NYCT Operations	●	○
Implementation Period	◐	○

● Most Successful ◐ Moderately Successful ○ Least Successful

*Based on goals as evaluated in 2012 SINSAA

Outreach

Consistent with the 2012 SINSAA, the analyses presented in this Supplement were shared at the following meetings with public officials and at a public open house meeting:

- Staten Island Borough President James Oddo (October 5, 2018 and April 30, 2019)
- City Council Member Debi Rose (May 7, 2019)
- Assemblyman Charles Fall (April 23, 2019)
- Congressman Max Rose (May 10, 2019)
- Elected Officials Briefings (October 23, 2018 and May 3, 2019) attended by Council Member Debi Rose, representatives of Congressman Dan Donovan, State Senator Andrew Lanza, Assemblyman Matt Titone, State Senator Diane Savino, Assemblyman Michael Cusick, Councilmember Steven Matteo, and Nicholas Zvegintov of the Community Board 1 Transit Committee
- Public Open House (May 8, 2019)

The public information open house was held on Wednesday, May 8, 2019 at the Snug Harbor Cultural Center on Staten Island, with 50 attendees. The purpose of the public meeting was to describe the history of the project (the 2012 SINSAA), share the updated analysis and explain the recommendation for the updated BRT Alternative to be advanced to environmental review as the Preferred Alternative, and to further solicit public comment on the project for consideration in preparation of the Supplement. The opportunity for the public to comment on the project began on May 8, 2019 and ended on May 15, 2019.

The public was notified of the date, time, location, and purpose of the public meeting via advertisements published in the Staten Island Advance, AM New York, and Metro newspapers, as well as posters placed on the S40 and S44 bus routes during the period leading up to the meeting on May 8, 2019. These advertisements and posters also directed the public to the MTA information line ("511") and to the North Shore project page on the MTA website (https://new.mta.info/northshoreeis), which features information about the North Shore Transit project and provides an opportunity to comment on or ask questions about the project.

At the Public Open House, the NYCT project team presented the information contained in this Supplement. All attendees were also invited to view a series of informational boards, which presented information featured in the presentation.[2] Members of the NYCT project team were stationed at the boards and available to provide information and to respond to questions, as well as to take notes on the discussions at each board. Attendees could also provide comments on provided comment cards, via the website, or via the MTA information line.

Comments received were supportive of improved transit on the North Shore. Several comments pertaining to support for the LRT alternative focused on a desire for passenger rail on the North Shore considering perceptions that LRT would be faster, more reliable, a stronger mechanism for neighborhood revitalization, and more environmentally friendly.

[2] https://new.mta.info/sites/default/files/2019-05/AA%20Open%20House%20Presentation_for%20Website.pdf

Some comments expressed a desire for additional analyses to confirm that the BRT in Richmond Terrace (between Nicholas Street and the St. George Terminal) would be reliable, would not result in a degradation of traffic conditions in this area, and would have enough capacity to transport the expected demand. Additionally, it was requested that analyses be shared regarding BRT's ability to connect with development areas, existing bus routes and the Staten Island Ferry, as well as analyses related to the potential reduction in parking on Richmond Terrace and for excluding non-transit vehicles from the dedicated busway.

While these comments were noted, overall, the BRT Alternative, as documented in this Supplement, most effectively meets the project's goals and objectives, providing North Shore communities with greatly improved, priority transit service. Refer to Appendix A for a complete record of public comments. Many of the additional analyses requested will be evaluated in the environmental analysis phase of the project where the BRT Alternative concept will be further developed. Additional opportunities for public participation and comment will be provided as part of the environmental analysis phase, which is funded and scheduled to commence in the summer of 2019.

Conclusion

Based upon the evaluation and the feedback received during the outreach process, the BRT Alternative is re-confirmed as the Preferred Alternative for the Staten Island North Shore Transit project.

Appendix A

Public Comments Matrix

First Name	Last Name	Comment
Dan	Adams	Possibly using more ROW corridor as part of BRT. Will this be considered as part of scoping?
Dan	Adams*	Is BRT planning to get federal funds?
Dan	Adams	Are parts of ROW under water? Does EIS study this?
Dan	Adams	Who owns the ROW?
Raf	Adams	Studies have not been done since 2012? How many studies do you need to see that buses are overcrowded? Quick solution: Make a short loop from Snug Harbor to ferry for people on terrace, near ferry who are met by buses that are too packed to pick up more passengers.
Jenny	Arias	We need rapid transit like train service on the North Shore, not buses.
Linda	Baran	It was noted that ridership numbers would be updated. Will NJ be included as well as new projects such as amazon and Ikea at the matrix site on the West Shore? What is the timeframe for the environmental review? Have you looked at any of the city owned property next to Lighthouse point toward 11 buildings where the lighthouse museum is located for maintenance options? I am concerned about BRT between Nicholas street and ferry terminal ramp. Did you look at an elevated roadway option?
Alan	Benimoff	Seawall to protect against storm surge
Kathleen	Bielsa	The parking lot for the ferry is often full or nearly full on weekday mornings by 9AM - not during ball games
Christopher	Colon	Estimated build time? Connection with SIEDC West Shore Light Rail? Route to Newark Airport & Elizabeth NJT. Ridership? Could attract tourists/business travelers/cheaper than existing bus/train to Midtown for riders.
Chris	Johnson	Bus feeder routes need to use busway; are the local buses going to merge?
Diane	Keeney	BRT- please implement ASAP below development prevents any viable option. Get rid of parking. Its imperfect anyway and maybe the parking garage can pick up the slack at a better rate and add the bus lanes.
John	Long	I am not a fan of the Bus Rapid Transit proposal. I fear that after the Richmond Terrace overpass the route will be diverted to the Terrace roadway near the Sewage Treatment Plant to complete the trip to the ferry as a cheaper alternative to having to rebuild the coastal sections of the original Right Of Way, or where the at grade Footprint of the ROW is on current private property, I'm sure they would allow an elevated structure to be built on the footprint so it wouldn't impact their businesses and would help elevate transit concerns. The primary goal should be to get buses off an already congested Richmond Terrace not add them to it. I think a return to a Rail form of transit is the best option and can move more people comfortably in a timely manner then a bus. If not Heavy Rail, Light Rail should be heavily considered as an option. More buses aren't the answer in my opinion. Thank you for taking your time to read this. A very active and supportive fan of the North Shore Railroad line being reactivated for Rail Transit.

First Name	Last Name	Comment
M	McDermott	Light Rail! No BRT!
Ken	Mills	I don't mind buses because they go everywhere, but I'd love to see rail culture rejuvenated instead of truncated. Too bad this isn't another city of the US as far as mass transit it going. NYC is the only city that has a huge mass transit system including subway, elevators, bus, commuter rail. And whenever a form of transit development comes into the picture, everything gets shot down. And there are meeting this gives subtle hints that, regardless of alternatives analyze, this would-be transit development and/or project is doomed. Never will happen. London has a similar extensive mass transit system as well, but the city also has a new rail route called "the London Overground" where several national rail routes consolidated with branches where tracks, stations, and right of ways are saved with the infamous London Underground. Giving passengers and commuters varied choices, but here in America everything is delayed by meetings as a result of things that would have come; in other cities of the US "light rail transit" despite costs is being built by the passive dozens and operated fully...the PATH is considering extending their line to Newark International Airport. But guess what? Talk is cheap. It takes no time and/or meetings when condominiums are built beyond dozens and bringing in a wave of people. Costs money to push out current residents, so why should mass transit projects -- especially rail-- be problematic?
Neal	O'Connor	The BRT option has the bus travel on Richmond Terrace at Nicholas Street to the ferry -- this is no good. This is a big choke point. Anything must stay completely on the rail ROW. We should go with the LRT. It should be electric to reduce carbon footprint. LRT has a much more positive impact on communities than BRT. How is ridership higher in BRT than LRT? They are both in the same ROW? For BRT on Richmond terrace, you show 2 lanes in each direction. This does not exist at the 120th precinct. Plus the parking that you are looking to eliminate is mainly contract obligated parking of the 120th precinct's stuff. Go LRT. SIRTOA uses the tracks to ballpark to turn trains-- why the need to move the columns?
Bob	Oliveri	Consideration for bus vehicle? Need turnaround. More people moving to North Shore and need to provide more transit. Divert away from Verrazano. Jersey street to ferry-- can't use Richmond Terrace.
Hasan	Qazi	Please consider light rail instead of BRT — Staten Island needs more railroad. Light rail can help promote transit-oriented development in SI in a way no bus can, even if it is BRT — all while providing a more reliable and comfortable commute!
Gopal	Rajan	1. Bus stand/Bus stops" put signs saying No Smoking within 50 feet. Start at Staten Island Ferry terminal. When you are waiting for the late bus (10-15 mins), Smoking (second hand) is toxic. Even signs every 50 feet will get most to not do so. 2. Moving the last mile/1/2 mile. Ensure that there are small bike lanes at each bus stop. make it very cheap for MTA card holders. This will incentivize some more to use public transit systems, reduce traffic, ---, etc. 3. West Shore Plaza and SI Mall, From Richmond Terrace brand off to Richmond Avenue. More SI Mall traffic, more economic activity in SI, pays your MTA funding, etc. Adds a lot more benefit.
Gopal	Rajan*	More frequent will encourage use; need more service; bikes should be free; the s40 has problems with disorderly customers
Michael	Sherell	1. I am concerned about the BRT access point proposed for Nicholas street and Richmond Terrace. Information on that aspect should be shown in detail in future meetings. 2. Looking forward to read-able material on the website.
Claudia	Toback	1. Atlantic Salt- how will this property impact a dedicated BRT or LRT routes and the salt trucks using the terrace route? 2. No parking on Richmond Terrace from Nicholas street to Ferry Terminal- would it include the 120th precinct? 3. Suggest to not allow traffic entering Richmond Terrace especially during rush hour. Traffic lights could be eliminated

First Name	Last Name	Comment
Pedro	Torres	I don't see an alternative because this is a federal ROW. In case of an emergency, the federal government will immediately take this land away; LRT would save the environment; buses are too packed; MTA is going with the cheap alternative
Pedro	Torres*	Wondering if this is all a waste of money?; how will this affect Bay street corridor? There is already high density, bad parking, and public transportation
Pedro	Torres	BRT is not going to work; why not engines with power packs? They are used in Texas; you have to build another road; you are building a highway if you're putting a road and a ramp there
Pedro	Torres	Are you closing the 2012 study?; the SI Rail Road is the last line; with track and rail there should be no limit to weight; how many buses are needed to move 1000 people?
Pedro	Torres	proposes LRT powered by clean diesel with power packs; requires no third rail, circuit breakers houses, and no substations; LRT has lower maintenance costs and carries more people; concerned that emergency responders and others will abuse the dedicated roadway affect bus service
Barbara	Wood	Suggestion: a jitney bus running along Richmond Terrace and Bay av for a mile or 2 in both directions running more frequently but with less stops? Maybe partner with these little white jitneys I see running back and forth all day after empty of passengers as the CUNY or Staten Island College buses? In re dispatch from terminal could it be possible to abandon schedule (since most use internet to determine when next bus is coming) a time to ferry which is within a few minutes of being on time most often. it makes no sense to me to leave 50/100 or more passengers looking at empty S40 and S44 buses pulling out. Thank you for a clear, concise and informative meeting tonight. Unrelated to the agenda for this particular meeting but a transportation issue of great concern is the dangerous intersection of Richmond terrace and Stuyvesant place. Cars traveling east on Richmond Terrace have no visibility of the pedestrians in the crosswalk. Pretty much the car drivers are speeding; and M-F the cars that are parked are illegally so in the crosswalk adjacent to the hydrant. In the 4 years I have lived here I have never seen a car ticketed and this is sad for the very real possibility of human life lost. So possible solutions: 1. Eliminate parking on the curve at which point drivers view is impaired and enforce with tow. 2. Enforce through a concentrated ticketing blitz. 3. A speed bump is essential at this intersection. you have done everything else. As well as a light with no turn on red.
Judy	Yee	Will you need Coast Guard permits?
Barbara	**	What is required with this project? What is the BRT?; We should have jitneys going back and forth; what year will we see the LRT?; this is similar to what the mayor did in Manhattan with crosstown buses; how will you take away a lane out of traffic?; this could solve my problem of getting across Schuyler street
Barbara	**	Pedestrian safety concern at Richmond Terrace and Stuyvesant street; why are buses are not times to the ferry's arrival at the terminal?
Barbara	**	Light rail – that will take forever; Buses are leaving people behind at the ferry terminal; There are no food or grocery stores accessible near the north shore. Residents have to take transit or Uber; Suggested a jitney bus (?) that runs the first 2 miles of the S40 route and makes every other stop; She would like LRT best
Barry	**	Suggested combining buses and light rail on the same north shore ROW so that we could run both BRT and LRT (similar to Seattle Transit Tunnel); LRT to one destination and BRT to a different destination; Not a lot of people in the North Shore
Bill	**	Why do you want to do something with West Shore Plaza? There is going to be a new school; Empire outlets are opening their first phase in two weeks
Bill	**	Loss of parking will affect the disadvantaged: the people in public housing; no one in Staten Island is aware of the West Shore Plaza; laments the absence of Staten Islanders in the planning process; does not believe the PAC/TAC will substitute

First Name	Last Name	Comment
Brian	**	Leaning toward LRT because of lack of upkeep; bus lanes are not maintained; cars go right through; express bus redesign was terrible; DOT and MTA partnership has been garbage; we only have one SBS and it bad we don't even get to pay before we board
Cathy	**	Flooding and mobility issues; need more frequent buses. Every 1/2 hour is not enough; why isn't there an HOV lane? The s40 bus at rush hour has too many people standing; there are not enough bike lanes; buses are not accessible for wheelchairs
Christian	**	The north shore needs a rail option that can connect to the Staten Island Ferry in addition to rapid bus transit to the ferry and other boroughs; the abandoned rail line in Mariners Harbor and Port Richmond could be used to enhance transit further and it should be used.
Claudia	**	It used to be an easy walk and now I have to walk around; now the Wheel is no longer so it is now blocked off; you know they have removed the tracks; the right of way is still there; where is the bus going to go? I see instead of building tracks you are building a road. It will have to be elevated; I am very upset about the portion, south of St. George's
Claudia	**	Argued that we should turn trains around at the South Beach ROW (?) or Clifton Depot; Why can't we replace existing rail with light rail?
David	**	In terms of connecting between IRT/IRT
Dawson	**	Keep up the good progress
John	**	Vans moving people from ferries to wheel parking; not fitting in the parking and dropping people off on Richmond Terrace
Kathleen	**	Why are you conducting this study?
Ken	**	I like rail. I would like to see railroad cultural re-established in Staten Island; buses can go anywhere
Ken	**	Would rather see railcars; trains are good; Suggested extending PATH train to North Shore; Extending light rail from New Jersey over Bayonne Bridge to North Shore; Also acknowledged that buses are cheaper and more flexible
Linda	**	concern about lack of bike safety; parallel street to Richmond Terrace is up a hill and it can be difficult for people to get there; idea to create bike lanes by the waterfront;
Linda	**	Asked why we have to move columns and if it's possible; Prefers light rail
Milagros	**	The bus stops are too infrequent, and some are too far from one another on Richmond Terrace
Milagros	**	We want to see what has changed since the study?
Milagros	**	They have been changing the bus stops for the xpress bus. I have to walk too far and that is a concern for me.
Neal	**	LRT more appealing; will help neighborhoods; what the presented said was wrong about the columns; how will the bus help with more feeders?; concerns that the cops will not give up their parking spots; Borough President James Oddo has allocated 60 parking spots for them; will the BRT buses be electric buses?; we prefer light rail
Pedro	**	Light rail will preclude people and/or vehicles from going on the ROW; Suggested using diesel locomotives or locomotives with power packs (maybe he means battery powered?); Insisted that the north shore needs to be kept available as a deepwater port in the event of war or disaster; Light rail is great; Light rail will increase property values; Asked why we can't run buses under the terrace
Peg	**	Provide Light Rail same as the East Shore. Revitalize communities through light rail; beautify the waterfront

First Name	Last Name	Comment
Peggy	**	Wants light rail; Light rail is more effective; Doesn't want a bus – calls it a scam; Need 6 train cars to fit people because people can't fit on buses and are being left behind; Light rail will revitalize neighborhood; People want to live by trains because they're more attractive and efficient; Reiterated that she can't get on buses at Richmond Terrace & Lafayette because of full buses; Trains can carry more people
Peggy	**	We do not want BRT because its disastrous; we would like LRT; Staten Island has been neglected; Express bus/local bus is full especially on Richmond Terrace; prefer LRT because its more attractive; we need the best option; BRT does not connect communities
Susan	**	You are definitely not doing the Light Rail? The reason you don't want the LRT is because of the expense. Is this abuse? Its not going to start rolling for a while; Where is the funding going to come from? Is the LRT an elevated system? How does it relate to the SIR?
***	***	Light Rail!
***	***	There are businesses between Nicholas street and the viaduct. What changes are being made along that stretch? Is this just an updated 2012 SINSAA?
***	***	build a seawall and put the BRT on top;
***	***	Concerned with wheel garage capacity; almost full during regular business hours
***	***	Concerned about safe travel using the BRT ROW
***	***	Why is the North Shore greenway not being considered? concern about enforcement of ROW and not moving vehicles using the BRT lanes
***	***	Heritage park: recommended separation of grade to improve ped and bike safety
***	***	Consider a viaduct of Richmond Terrace like San Francisco
***	***	S40 and S90 bus ride have security issues; consider having police on buses; too many people using the buses and evading fares
***	***	Would there be any land acquisitions?
***	***	Explain LRT? What is your best guess of which option is better? How long does each take to construct? Are we looking at 20 years?
***	***	Buses at Lafayette and Richmond Terrace are full. 6am-6:30 bus is light but from 6:30-7:10 very crowded
***	***	Questions regarding potential land use impacts and why with both options they are least successful; pillars should not be an excuse to have trains go around; when will the BRT be constructed?
***	***	The train is good but what happens to the track?; A lot of it was affected by Sandy; when will this be constructed?

*NOTE: Multiple comments may be attributable to a single person.
**Indicates last name was not recorded or provided.
***Indicates full name was not recorded or provided.

Source: Staten Island North Shore Transit Supplemental Alternatives Analysis public open house meeting; May 8, 2019