



# Atlanta BeltLine Inc. Transit Task Force

FINAL REPORT





**Atlanta  
BeltLine®**

Jointly Prepared by:



**Deloitte.**

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# EXECUTIVE SUMMARY

At the core of its mission, Atlanta BeltLine Inc. (ABI) is committed to advancing transit as a key enabler that promotes economic development, provides affordable access, and connects people with opportunities to improve both individual and community prosperity. To achieve its full vision, affordable and reliable transit service must be accessible to residential, business, and recreational development along the Atlanta BeltLine. Over the past 15 years, ABI has worked collaboratively with the City, MARTA, and other key stakeholders to engage in planning, environmental, and preliminary design work to advance transit along the BeltLine.

The recent More MARTA sales tax increase and project selection process presents a critical opportunity to fund portions of the BeltLine corridor. This is an important first step to realizing the advancement of transit along the entire 22-mile loop.

ABI convened the Atlanta BeltLine Transit Task Force in June 2018, chaired by Keith Parker, President and Chief Executive Officer of Goodwill of North Georgia, to evaluate transit options for the BeltLine corridor and inform the More MARTA deliberations and future discussions of transit along the remainder of the BeltLine. The Task Force represented a cross-section of Atlanta BeltLine stakeholders and community leaders (see Chapter I). As a result of the work of this Task Force, ABI has reaffirmed that streetcar should

remain the preferred technology for transit on the Atlanta BeltLine. The Task Force also reaffirmed the need for all stakeholders to proactively advance transit along the full 22-mile BeltLine loop, including working together to identify additional funding and financing options that could be used to leverage the initial More MARTA investment.

## Discussion Summary

The Transit Task Force affirmed that any transit investment must be consistent with the City of Atlanta's guiding document, Atlanta City Design, with five core values in mind: equity, progress, ambition, access, and nature. The following top priorities for advancing transit on the BeltLine are in close alignment with Atlanta City Design:

- Addressing affordability and equity
- Providing mobility within a comprehensive citywide framework
- Fostering economic development
- Optimizing all of BeltLine's investments and integrating land use
- Integrating and managing anticipated regional population growth and connectivity
- Improving quality of life
- Increasing the Atlanta region's global competitiveness



In addition, the Task Force found that any transit investment on the Atlanta BeltLine should provide the following:

- Frequent, reliable service (5 to 7 minute headways)
- Operational speeds that are faster than the Atlanta Streetcar (5 to 25 mph)
- One to two car vehicles to accommodate capacity needs in the corridor
- Average station spacing of about one-half mile
- Quality station design that supports and integrates with existing and proposed development and the Atlanta BeltLine vision
- Competitive capital, operating, and lifecycle costs

In evaluating proposed transit technology investments for the BeltLine corridor, it was important to define the different technology and operational features of the alternatives considered – light rail transit (LRT), streetcar, and bus rapid transit (BRT). In practice, these three technology options have been applied in a variety of different environments (e.g., on-street, on abandoned freight railroad right-of-way, and hybrid settings), with very different operational characteristics (e.g., speed, frequency, station design, and spacing), for a wide range of capital costs. In short, the benefits and costs of the technology depend heavily on how the technology is designed and operated.



The Task Force reviewed national examples of how these technologies have been **applied in similar transit corridors** (i.e. abandoned freight railroad right-of-way). Additional information about example LRT, streetcar, and BRT projects in other U.S. cities, including their operating environments, service delivery, performance, obstacles encountered, and original capital costs are provided in Chapter IV.

The BeltLine is a unique corridor that offers the region a rare opportunity to deliver reliable transit service on an existing dedicated right-of-way. There are very few existing transit projects that operate in abandoned freight railroad right-of-way. While most BRT projects have been built in the U.S. using existing city streets, the Task Force reviewed two similar BRT projects that currently operate in abandoned freight railroad right-of-way. Both BRT and LRT typically operate with greater frequency during the morning and afternoon peak

(every 10 to 15 minutes) and less frequency during off-peak and weekends (every 15 to 20 minutes), using longer vehicles (2 to 4 car consists), with stations a mile apart until the alignment is within denser city boundaries. Inaccessibility created by the fairly-long distance between stations causes development to become nodal and station area-focused.

Most streetcars, by contrast, have stations about one-half mile apart, operate one car trains at a high level of frequency (every 5 to 10 minutes) daily for up to 18 to 20 hours each day, and have a development impact that tends to be corridor-focused rather than station area-focused. These operational characteristics aligned closely with the community's as well as the Task Force's vision of transit on the Atlanta BeltLine.

A comparison of capital costs (in current year dollars) was included for the LRT, streetcar, and BRT project examples to provide a true comparison of project capital costs that were most similar to the Atlanta BeltLine corridor. This comparison shows a much less obvious capital cost per mile difference between rail and bus technologies, illustrating that the capital costs of a transit project depends heavily on the application of the technology, regional markets, and corridor needs.

The Federal Transit Administration (FTA) Standardized Cost Categories were used to compare the expected capital investments for any transit project that would be built on the BeltLine. Regardless of the selected technology, the Atlanta BeltLine corridor

will require near similar levels of capital investments in the corridor to allow a project to operate. These costs include right-of-way acquisition, guideway construction, at-grade, overpass, underpass, and tunnel crossings, fills, cuts, and retaining walls, signals and communications, vehicle maintenance and storage facilities, and stations.

The Task Force agreed that connectivity challenges would exist between any bus technology and the Atlanta Streetcar that would inhibit the provision of a convenient, one-seat ride for users. In addition, over a decade of planning and environmental work has been invested in the corridor, which led to the well-documented and publicly-vetted decision to select streetcar as the preferred technology on the Atlanta BeltLine corridor.

**These key points led the Task Force to determine that streetcar should remain the preferred technology for the Atlanta BeltLine corridor.**



## Recommendations and Next Steps

The Atlanta BeltLine Transit Task Force reached a consensus that streetcar technology will best achieve the vision and goals for transit on the Atlanta BeltLine that are most consistent with Atlanta City Design. ABI recommends the use of streetcar technology as the preferred technology for the BeltLine projects advanced as part of the More MARTA Plan and future expansions of transit along the remainder of the BeltLine. To allow for the desired operational characteristics of streetcar and connections with LRT projects such as Clifton Corridor, ABI recommends consideration of a hybrid system that would operate streetcar service within the Atlanta BeltLine and existing Atlanta Streetcar corridors and transition to LRT service as it moves further out of the city core.

Following the recent approval of the More MARTA Program of Projects, it is important that the City and ABI are involved in the process to prioritize the

phasing of the More MARTA projects to ensure that the BeltLine projects can be advanced quickly and begin more detailed design and implementation. This should also strategically align with finalizing environmental reviews for the projects (which ABI has advanced with the FTA over the past three years), applying for entry into the Project Development phase, and securing federal funding through the Capital Investment Grant Program.

In addition, ABI will work collaboratively with the City, MARTA, and other project stakeholders to identify and secure the additional funding and financing that will be necessary to pursue the remaining BeltLine projects that will not be funded by the More MARTA program, in order to fulfill the Atlanta BeltLine statutory requirements to build the full 22-mile loop and achieve the full vision of the Atlanta BeltLine.





# I. OVERVIEW + INTRODUCTION

The Atlanta BeltLine is a sustainable redevelopment project imagined to connect and revitalize 45 neighborhoods around Atlanta via a 22-mile loop of old railway corridors. The BeltLine vision includes the development of affordable housing, streetscapes, parks, transit, and public art, as well as the creation of new jobs, environmental clean-up, and historic preservation activities.

## ABI Transit Goals

Transit is an essential component for the BeltLine – a key enabler that promotes economic development, provides affordable access, and connects people with opportunities to improve both individual and community prosperity. When fully developed, the BeltLine will serve as a destination where all of Atlanta’s residents and visitors can live, work, and play. To complete this vision, the Atlanta BeltLine must include affordable, convenient, and sustainable transit service to and from existing and future developments along the corridor.

Over the past 15 years, ABI has worked collaboratively with the City, MARTA, and other key stakeholders to engage in planning, environmental, and preliminary design work to advance transit along the BeltLine. Throughout this time, the Atlanta region has undertaken key strategies and investments to plan for and support economic growth, including a ½% sales tax known as More MARTA, which was approved by city voters in 2016 to fund

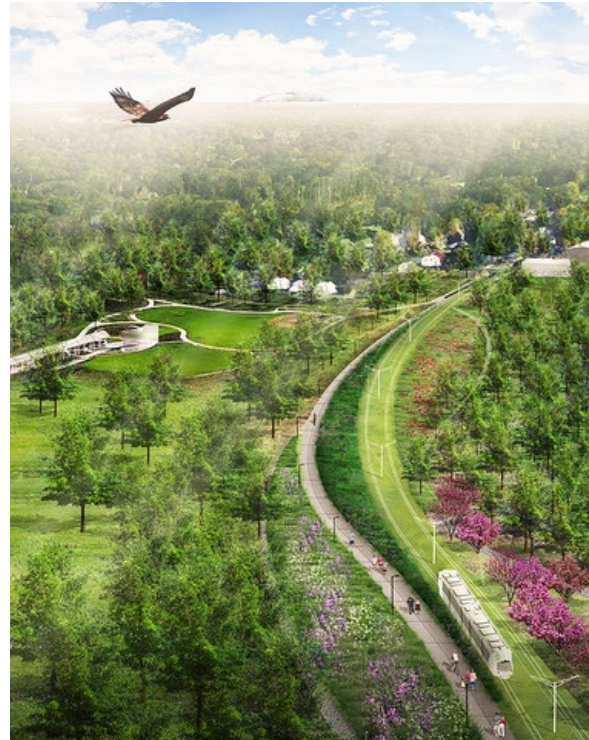
transit improvements in the City of Atlanta. As discussions around More MARTA advanced, questions surfaced about the benefits of considering different transit technologies, such as bus rapid transit and autonomous vehicles, on the Atlanta BeltLine. These questions were addressed in detail by the Transit Task Force in an effort to reengage the planning and transit communities in the Atlanta region and articulate a common vision, objectives, and commitment to transit on the BeltLine.



## The ABI Transit Task Force

In June 2018, ABI convened the Atlanta BeltLine Transit Task Force to reaffirm a common set of goals for transit on the BeltLine and revisit the technology approaches that would best meet those goals. The Task Force was chaired by Keith Parker, President and Chief Executive Officer of Goodwill of North Georgia, and included the following community leaders, planners, and transit subject matter experts:

- Dr. Meria Carstarphen, Superintendent, Atlanta Public Schools
- Ryan Gravel, Founder, SixPitch
- Clyde Higgs, Chief Executive Officer (Interim), ABI
- Henry Ikwut-Ukwa, Director of Transportation, ABI
- Ben Limmer, Assistant General Manager, MARTA
- Brian McGowan, Chief Executive Officer (Former), ABI
- Bill Morrison, Senior Vice President, Portman Holdings
- Denise Quarles, Chief City Executive, Siemens
- Chris Tomlinson, Executive Director, State Road and Tollway Authority & Acting Executive Director, Atlanta-region Transit Link Authority
- Tom Weyandt, City of Atlanta
- Dave Williams, Vice President of Infrastructure & Government Affairs, Metro Atlanta Chamber of Commerce
- Cain Williamson, More MARTA Program Management Officer, City of Atlanta



The Task Force members held five working discussions from June through September 2018 to affirm a shared vision for transit on the BeltLine that is aligned with Atlanta City Design and other key plans in the region, discuss the goals and objectives for transit service, and evaluate different technology options for transit on the BeltLine. The discussion and recommendations of the Task Force are presented in this report. The findings of this report were used to inform the MARTA Board of Directors deliberation and approval of the More MARTA program list in October 2018, which included transit projects on the BeltLine. This report will also support future activities to develop costs and program schedules for individual BeltLine transit projects that will be funded through the More MARTA sales tax and other funding sources.

## II. CONTEXT AND WORK TO DATE

Atlanta is one of the fastest growing cities in the United States, with a rich tapestry of neighborhoods, expanding industries and business development, top-rated educational institutions, and diverse cultural and recreational opportunities. Revitalization and development of areas like the BeltLine present enormous benefits for people to live, work, and thrive in Atlanta. Advancing transit along the BeltLine is a critical enabler of greater community connectivity, equity, access, mobility, and socio-economic progress. Recent plans and studies completed by ABI, MARTA, and the City of Atlanta provided an important context for the discussions and consideration of the Atlanta BeltLine Transit Task Force.

### Transit Work To-Date

Over the past 15 years, several activities have been undertaken to complete the planning and environmental work necessary to advance transit on the BeltLine.

MARTA initiated the **Inner Core Transit Feasibility Study** in 2003 to examine the viability of a major transit investment in the central portion of the Atlanta metropolitan area. This study principally evaluated transit investment on the BeltLine and the C-Loop.

Rail (streetcar or light rail) was selected as the locally preferred alternative for the Atlanta BeltLine as part of an **Alternatives Analysis** completed in 2007. This analysis included a detailed review of technologies, including bus

rapid transit, streetcar, and light rail. The analysis found that streetcar consistently outranked light rail transit due to superior overall performance in cost effectiveness. Streetcar and light rail transit consistently outperformed bus rapid transit due to superior qualitative scoring for their potential to enhance the urban environment and to support redevelopment within a half-mile of BeltLine stops. During the public outreach process, a general preference was noted for streetcar or light rail transit with an overwhelming opposition towards bus rapid transit as the preferred mode for transit.

In Collaboration with MARTA, the Atlanta BeltLine Corridor **Tier 1 Final Environmental Impact Statement** was completed in 2012. As part of this work, conceptual engineering analyses were performed that took into consideration alignments within all four zones as well as MARTA Station Connectivity and Infill Station Alternative Area design considerations. The outcome of these analyses was that either streetcar or light rail transit could be accommodated throughout the corridor. However, further examination of mode performance, in terms of system, vehicle, and infrastructure characteristics and community preference determined that streetcar would be the most appropriate mode for transit along the Atlanta BeltLine. Streetcar could be implemented at a lower cost, with shorter vehicle lengths that provide greater flexibility than light



rail in navigating the constrained geometry of the alignments. Streetcar may also result in fewer noise, vibration, and land use impacts. In addition, streetcar is better aligned with the Atlanta BeltLine operating plan, which calls for more frequent stops with shorter spacing. For these reasons, streetcar was found to be FTA and MARTA's preferred mode of technology for the Atlanta BeltLine.

The **Strategic Implementation Plan (SIP)**, adopted by the ABI board in 2013, established a framework to complete the short- and long-term elements of the Atlanta BeltLine program, including the advancement of transit along the full 22-mile loop. The SIP built on the momentum and progress made in the early phases of the BeltLine program, including the development of new permanent trails, renewed parks and greenspaces, new private real estate development, and new affordable housing opportunities.

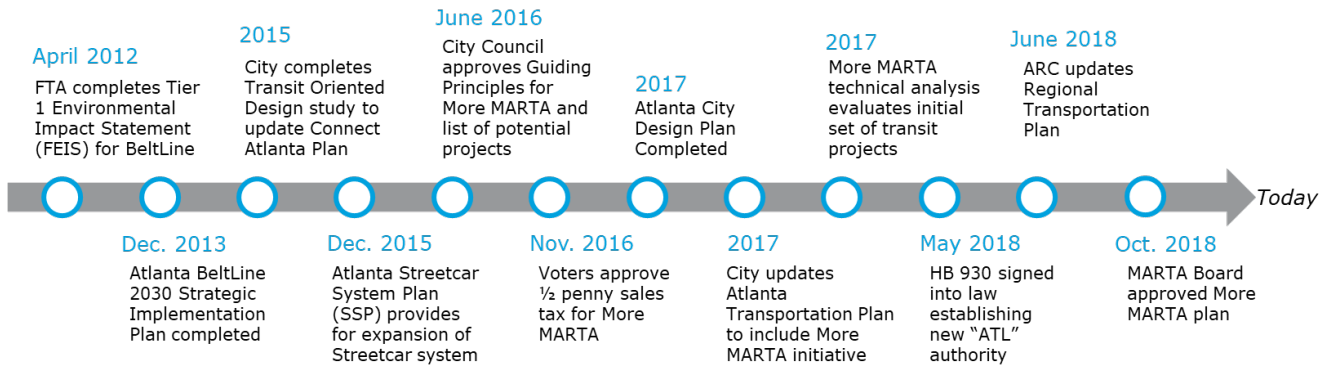
With the completion of the **Atlanta Streetcar System Plan** in 2015, ABI in collaboration with MARTA and the City established an approach to building out the streetcar network over time in a manner that is efficient, cost effective, mobility-focused, supportive of regional transit, and integrated with economic development initiatives led by the City, Invest Atlanta, and Atlanta BeltLine Inc. This included advancing streetcar along the full 22-miles of the Atlanta BeltLine. The plan built on the Concept 3 Regional Transit Vision, the Connect Atlanta Plan, the Atlanta BeltLine Subarea Master Plan, and the Atlanta BeltLine Strategic Implementation Plan.

The **Atlanta Comprehensive Development Plan (CDP)**, last updated in 2016, reflects planning priorities for transportation, including the development of transit on the BeltLine and the expansion and improvement of the streetcar system.

The City's comprehensive transportation plan known as the **Connect Atlanta Plan** provides policy direction to link transportation infrastructure with land development and coordination with regional transportation project funding plans. In 2015, the City updated the Connect Atlanta Plan to include transit oriented development (TOD) strategies and goals to promote smart growth and make efficient use of the City's transit investments. Atlanta's TOD approach centers around increasing the number of residential units within one-half mile of transit stops and creating transit supportive zoning around all transit stations.

Most recently, the City of Atlanta completed work on urban design and transportation initiatives that established guiding principles for sustainable and equitable growth in the region. The **Atlanta City Design**, published in 2017, is a strategy for the city rooted in the aspiration for Atlanta to be a beloved community, and establishes core values to guide future planning: equity, progress, ambition, access, and nature. In its working sessions, the BeltLine Transit Task Force consistently referenced Atlanta City Design as the north star in aligning its vision for transit on the BeltLine.

### Key Plans and Actions that Guide Transit Improvements in Atlanta



### Regional Context

By the start of the 20<sup>th</sup> century, the City of Atlanta had an extensive system of electric streetcars, which was later discontinued in the 1940s with the rise of the automobile. Transit in Atlanta was re-established nearly three decades later with the creation of the MARTA system by the Georgia legislature in 1965. Funded through a 1% sales tax in Fulton, DeKalb, and the City of Atlanta, MARTA began operating buses in 1972 and established a rail system in 1979. MARTA's last major rail expansion project was completed in 2000 with the extension of the Red Line to North Springs station.

The region was reintroduced to the streetcar in 2014 with the opening of a starter modern streetcar line in Downtown Atlanta. This starter service will play a critical role in advancing streetcar service along the Atlanta BeltLine and providing for increased connectivity between the BeltLine corridor, Midtown, and Downtown Atlanta. Notably, MARTA assumed operations of the streetcar from the City in 2018.

In addition, two counties that had originally declined to participate in MARTA have recently sought MARTA expansion over the past few years. In 2014, Clayton County voters approved a 1% sales tax measure to fund MARTA service in the county. In March of 2019, Gwinnett County will hold a referendum for a 1% sales tax measure to fund MARTA service in the county.

To facilitate the expansion of transit within the City of Atlanta and improve equity, access, and mobility, a new 1/2% sales tax, known as More MARTA, was approved by City of Atlanta voters in 2016. The tax is expected to generate \$2.7 billion for transit improvements within the City of Atlanta over 40 years. The MARTA Board voted in October 2018 to approve a 17-project program, which includes key portions of the BeltLine. The program proposed full funding for the northeast and southwest corridors and partial funding for the southeast corridor with a goal of working with stakeholders to identify additional funding and financing opportunities for the remaining funding gaps. ABI is working with MARTA to consider project phasing for each of these corridors. The

Task Force recognized that while More MARTA cannot fund transit along the entire 22-mile loop, the plan represents a critical first step to demonstrating transit along the BeltLine. This initial investment can be leveraged over time to identify additional resources and achieve the advancement of transit along the full 22-mile BeltLine loop.

On the state level, the Georgia legislature committed to improving regional transit in 2018 through the creation of a new transit authority for metro Atlanta. The Atlanta-region Transit Link Authority (ATL) is now responsible for regional transit planning, including the development of a Regional Transit Plan and the programming and allocation of federal and state transit resources in metro Atlanta. This renewed focus on regional transit in Atlanta is a recognition that more connected communities across the region will bolster sustainable growth. Transit advancement along the Atlanta BeltLine will require significant collaboration with the ATL as the authority begins to undertake regional planning activities.

### Key Challenges and Issues

Despite various planning efforts and initiatives to improve transit in the Atlanta region and along the BeltLine, the Task Force identified several key issues or barriers that need to be overcome to implement the vision for transit on the BeltLine, including:

- **Project Champions:** City and state leaders must maintain strong support and focus on advancing transit along the

BeltLine so that the projects are prioritized for implementation in a timely manner. As competing priorities come up, strong political leadership is needed to maintain a focus on transit and ensure that timelines for competitive grant funding, environmental reviews, and other resources are met.

- **Funding:** The More MARTA sales tax is critical, but it is not robust enough to fund all of the transit priorities in the Atlanta region nor the Atlanta BeltLine. Additional funding and financing opportunities on the federal, state, and local levels must be proactively pursued to leverage the initial More MARTA investment and advance transit along the full 22-mile loop.
- **Schedule:** ABI has a statutory mandate to complete 22 miles of transit on the BeltLine by 2030, but implementation timelines have been delayed due to a lack of funding. National Environmental Policy Act (NEPA)-required studies for FTA funding may need to be updated prior to advancement into the federal Capital Investment Grant Program. Once in the program, projects will take between 7 and 12 years to navigate the federal process and reach substantial completion. The prioritization of BeltLine transit projects for More MARTA will have a significant impact on the ultimate schedule of advancement of transit along the BeltLine.



### III. TOP PRIORITIES FOR ADVANCING TRANSIT ON THE ATLANTA BELTLINE

Any transit investment along the Atlanta BeltLine must be consistent with the City of Atlanta's guiding document, Atlanta City Design, with five core values in mind: equity, progress, ambition, access, and nature. The following top priorities for advancing transit on the BeltLine were identified by the Transit Task Force, and are in close alignment with Atlanta City Design:



#### Addressing Affordability and Equity

ABI must reinforce the goal that future benefits flowing from the Atlanta BeltLine must be available and affordable to all Atlantans, including low- and moderate-income families. This includes providing affordable housing and affordable transportation options in the corridor. ABI must advance alternative, affordable modes to driving and offer mobility options to all residents and visitors of the Atlanta BeltLine.



#### Providing Mobility within a Comprehensive Citywide Framework

A key part of the Atlanta BeltLine's vision includes delivering a convenient, affordable alternative transportation choice to city residents, employees, and visitors. Any advancement of transit along the Atlanta BeltLine must be aligned with the City's vision of One Atlanta, a city for everyone. The Atlanta

BeltLine's greatest promise is not the physical connection to neighborhoods, but the project's ability to connect these communities to the places, spaces, resources, and assets necessary for them to thrive. This includes transit as well as job centers, housing, food, greenspace, retail, and many other benefits. This promise is uniquely aligned with Atlanta City Design.



#### Fostering Economic Development

The Atlanta BeltLine is the largest, most wide-ranging urban redevelopment program currently underway in the United States. Fed by the promise of future transit service, the Atlanta BeltLine has been a catalyst for job creation and economic revitalization in previously underserved Atlanta BeltLine neighborhoods. This growth is anticipated to continue and even increase as transit is realized along the corridor. One benefit of transit, beyond accessibility and mobility, should include fostering the right kind of economic development that is strategically integrated with the transit investment and land use.



### **Optimizing All of BeltLine’s Investments and Integrating Land Use**

The Atlanta BeltLine represents a rare opportunity in the Atlanta region to deliver transit service along a dedicated corridor, without the traffic conflicts that have impacted service reliability for the Atlanta Streetcar starter line and MARTA bus service. Advancing and prioritizing transit investment on the Atlanta BeltLine will optimize our region’s existing assets and will provide a gold standard transit service to the residents and visitors of the Atlanta BeltLine.

In addition to capitalizing on our existing assets, ABI must integrate this once in a lifetime transit investment with land use development along the corridor to optimize the value and functionality of the transit investment and to accelerate the right kind of development that better addresses anticipated regional population growth over the next few decades.



### **Integrating and Managing Anticipated Regional Population Growth and Connectivity**

With the City’s population expected to nearly triple in the coming decades, growing from 465,000 to 1.2 million, neighborhoods around the Atlanta BeltLine will undoubtedly absorb a significant portion of this future growth. The type of growth and the shape it takes will be molded by strategic public investment and equitable public policy.

ABI and its public and private partners are uniquely positioned to guide this growth and make the Atlanta BeltLine accessible to all Atlantans.



### **Improving Quality of Life**

The Atlanta BeltLine is intended to create a living framework for long-term sustainability. An integral part of this framework includes delivering a convenient, affordable alternative transportation choice, which will improve air quality, public health, and access to job centers, economic opportunities, and recreational and cultural amenities. These improvements will have a meaningful impact on the overall quality of life for all Atlantans.



### **Increasing the Atlanta Region’s Global Competitiveness**

In today’s increasingly competitive environment, cities are in a race to provide amenities and services that improve quality of life and attract talent. As illustrated recently by the Amazon HQ2 search and the many recent decisions by local Atlanta businesses to locate along MARTA, transit is becoming an increasingly important amenity for cities to attract and retain talent and the businesses seeking them. Implementing reliable transit service on an existing dedicated corridor will provide a gold standard transit service, improve overall quality of life in the region, and enhance Atlanta’s global competitiveness for business retention and relocation.

## IV. TRANSIT TECHNOLOGY CONSIDERATIONS FOR THE ATLANTA BELTLINE

Future transit service along the corridor must include operational and service features that best align with the vision of the Atlanta BeltLine. According to over a decade of planning work that has been reaffirmed by the Transit Task Force, the preferred operational and service features are most closely aligned with the current Locally Preferred Alternative (LPA), streetcar.

### Key Transit Investment Features and Service Goals for the Atlanta BeltLine

The Task Force confirmed that a transit investment on the Atlanta BeltLine should provide the following:



**Frequent, Reliable Service**  
Reliable transit service operating at 5 to 7 minute headways.



**Operational Speeds Greater Than the Atlanta Streetcar**  
Faster transit service with average speeds ranging from 5 to 25 mph.



**One to Two Car Vehicles**  
Smaller vehicles operating at higher frequencies to accommodate capacity needs in the corridor.



**Short Station Spacing**  
Average station spacing of about ½ mile.



### Quality Station Design

Stations that support and integrate with existing and proposed development and the Atlanta BeltLine design vision.



### Competitive Capital, Operating, and Lifecycle Costs

Transit capital, operating, and lifecycle costs similar to peer providers that are competitive with other transit modes such as bus rapid transit.

As discussed below, these features are most closely aligned with the operational and service features often realized by urban circulator and streetcar projects.

### Evaluation of Transit Technology on the Atlanta BeltLine

The Transit Task Force evaluated three transit technology investments for the Atlanta BeltLine corridor – light rail transit (LRT), streetcar, and bus rapid transit (BRT). The Task Force defined each technology, reviewed examples of how the technologies have been applied across the U.S. in similar corridors (i.e. abandoned freight railroad right-of-way), and identified the various operational and service features that have been achieved in each of these examples.

While technologies are often discussed in rigid terms, each of the three technology options have been applied in



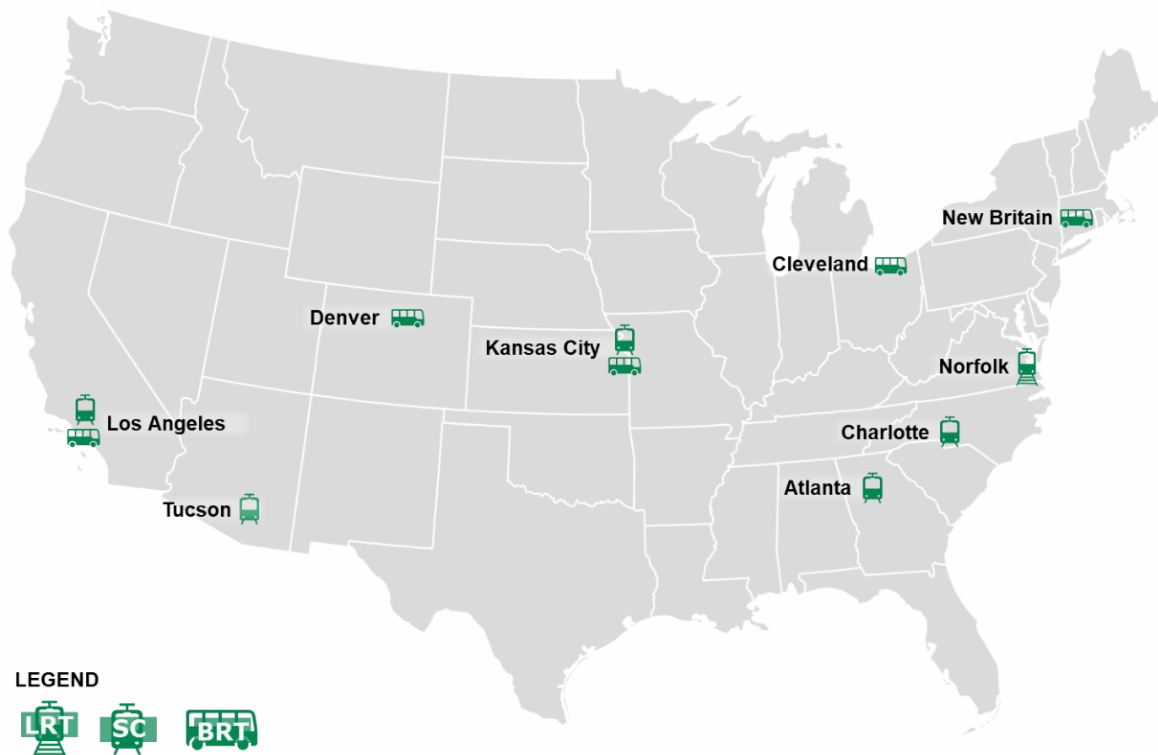
a variety of different environments (e.g., on-street, on abandoned freight railroad right-of-way, and hybrid settings), with very different operational characteristics (e.g., speed, frequency, station design, and spacing), for a wide range of capital costs. Transit technology should be considered as only one component of a more complex decision about the desired impacts and operational and service goals in the corridor.

The desired operational and service features for Atlanta BeltLine transit will ultimately be determined by how the selected technology is designed and operated and not by the technology itself. The more critical questions that should be considered are:

- What are the desired impacts or outcomes resulting from a transit investment on the BeltLine?

- What are the most important operational and service goals for transit on the BeltLine?

All three technologies have been used across the United States to achieve varying levels of the service goals and features that are desired on the Atlanta BeltLine. Some have been used to achieve these service goals more than others, but all three technologies could be applied along the BeltLine and be designed to provide the desired benefits to varying levels of success. The following sections summarize the three technologies using 11 key technology examples that have been identified as peers to the Atlanta BeltLine corridor. As described below, these examples illustrate a wide range of technology applications, service characteristics, and costs.



### Cleveland Health Line

9.3 miles  
21 vehicles (100 capacity)  
36 stations  
2008 opening  
5 min weekday headways (peak)  
Average daily ridership 14,000 (2014)

#### Quick Facts:

- Focused on commute trips, connecting destinations 24/7 at posted speed of 35 mph
- 7.1-mile BRT facility and 2.3-mile bus-oriented street improvements
- Gold standard BRT
- Spurred \$5.8B in follow-on development
- 1st transit naming rights agreement in the US

**\$24.2M/mile (\$2018)**

### LA Orange Line BRT

14.5 miles  
30 vehicles (200 capacity)  
13 stations  
2005 opening/2012 extension  
4 min weekday headways (peak)  
Average daily ridership 29,000

#### Quick Facts:

- Corridor is at capacity and takes ~1 hour to travel length of route
- Posted speed of 45mph, 6 ft intrusion fence
- Metro will add 35 crossing gates and bus/bike lane bridges by 2025; future conversion to LRT
- Limited development has occurred along the corridor

**\$33.3M/mile (\$2018) Original**

**\$60.4M/mile (\$2018) Original + Improvements**

### Connecticut CTfastrak

9.4 miles  
31 vehicles (112 capacity)  
10 stations  
2015 opening  
7 min weekday headways (peak)  
Average daily ridership 10,046 (2018)

#### Quick Facts:

- Provides frequent bus service on bus-only CTfastrak roadway
- 5 miles of abandoned railroad right-of-way
- 5 miles of bike/ped path separated by a fence
- 8 local and 4 express routes
- 30-minute travel time from Hartford to downtown New Britain

**\$67.1M/mile (\$2018)**

### Denver Mall Ride

1.42 miles, 36 vehicles (115 capacity)  
19 stations  
1982 opening  
2 min weekday headways (peak)  
Free (no fare charged)  
Average daily ridership 43,971 (2015)

#### Quick Facts:

- Stops at every intersection from Union Station to Civic Center Station
- Total one-way travel time of 14.5 minutes
- Mixed-use dedicated corridor
- Slow development growth until arrival of LRT

### Kansas City MAX

19 miles  
27 vehicles (75 capacity)  
87 stations  
2005 opening/2010 expansion  
9 min weekday headways (peak)  
Average daily ridership 6,000

#### Quick Facts:

- Increased ridership in initial corridor by 50%
- Operates in mixed traffic with signal priority at 31 intersections
- 3.75 miles of exclusive transit lanes
- Additional expansion is currently underway
- Limited development along the alignment

**\$4.1M/mile (\$2018)**

### Kansas City Streetcar

2.2 miles, 3 vehicles (150 capacity)  
16 stops, spaced every two blocks  
2016 opening/2023 expansion  
10 min weekday headways (peak)  
Free (no fare charged)  
Average daily ridership 5,645 (2017)

#### Quick Facts:

- Provides frequent transit service
- Revitalized downtown Kansas City
- Created hundreds of local jobs
- Spurred more than \$3B in development along and adjacent to the line since 2012
- Grew Transportation Development District sales tax by 64% between 2014 and 2017

**\$52.5M/mile (\$2018)**

### Atlanta Streetcar

1.3 miles  
4 vehicles (195 capacity)  
12 stops  
2014 opening  
10-15 min frequency  
Average daily ridership <1,000

#### Quick Facts:

- Starter line
- Length was limited by size of TIGER grant and available local funds
- Operates in mixed traffic
- Average <5 mph operating speed

**\$80.8M/mile (\$2018)**

### Tucson Sun Link

3.9 miles  
8 vehicles  
18 stations  
2014 opening  
10 min weekday headways (peak)  
Average daily ridership 2,613

#### Quick Facts:

- Circulator service to link five districts, including the University of Arizona
- Operates in mixed-traffic at 8-10 mph
- Ridership of 4,000 during the school year
- Created 1,500 long-term regional jobs
- Triggered \$2.85B in public and private development along the corridor

**\$57.1M/mile (\$2018)**

### Charlotte LYNX Gold Line

4.0 miles  
6 vehicles (148-195 capacity)  
17 stations  
2015 opening/2020 extension  
15 min weekday headways (peak)  
Projected avg daily ridership 4,100

#### Quick Facts:

- Serves as an urban circulator connecting downtown with areas of redevelopment
- Operates in mixed traffic at up to 25 mph
- Phase 2, currently under construction, includes catenary free operations for 0.5 miles
- Estimated 1.1M sq ft in development and \$4.7 to \$7.0M in additional property tax revenues

**\$60.0M/mile (\$2018)**

### Orange County Streetcar

4.15 miles  
8 vehicles (180 capacity)  
10 stations  
2021 opening  
10 min weekday headways (peak)  
Projected avg daily ridership 7,300

#### Quick Facts:

- Will operate in mixed traffic
- Anticipated average speed of 11 mph
- \$109M cost increase from \$299M in 2017 to \$408M in 2018 due to:
  - Tight construction market
  - Delay in signing Full Funding Grant Agreement (FFGA)

**\$98.3M/mile (\$2018)**

### Norfolk The Tide

7.3 miles  
9 vehicles (160-180 capacity)  
11 stations  
2011 opening  
10 min weekday headways (peak)  
Average daily ridership 4,500 (2018)

#### Quick Facts:

- Hybrid of urban circulator and commuter-based system
- Portions are in-street and on dedicated ROW
- Same vehicle as Atlanta Streetcar
- Generated \$532M in economic development downtown since 2011
- Increased downtown housing by 72%

**\$53.1M/mile (\$2018)**

### Light Rail Transit

LRT typically operates with greater frequency during the morning and afternoon peak (every 10 to 15 minutes) and less frequency during off-peak and weekends (every 15 to 20 minutes), using longer trains (2 to 4 car consists), with stations a mile apart until the alignment is within denser city boundaries. Inaccessibility created by longer distances between stations causes development to become nodal and station area-focused. LRT also typically has dedicated right-of-way, off-board fare collection, signal preemption and priority, and stop arrival information.

### Streetcar

Most streetcars, by contrast, have stations about one-half mile apart, operate one car trains at a high level of frequency (every 5 to 10 minutes) daily for up to 18 to 20 hours each day, and have a development impact that tends to be corridor-focused rather than station area-focused. These operational characteristics align closely with the community's as well as the Task Force's vision of transit on the Atlanta BeltLine.

### Bus Rapid Transit

While most BRT projects have been built in the United States using existing city streets, the Task Force reviewed two similar BRT projects that currently operate in abandoned freight rail right-of-way: The Orange Line BRT Line in Los Angeles and the CTfastraks BRT Line in Connecticut. Like LRT, BRT typically operates with greater frequency during the morning and afternoon peak (every 10 to 15 minutes) and less frequency during off-peak and weekends (every 15 to 20 minutes), with

stops a mile apart until the alignment is within denser city boundaries. Similar to LRT, inaccessibility created by longer distances between stops causes development to become nodal and station area-focused.



Portland, OR



Portland, OR



Cleveland, OH



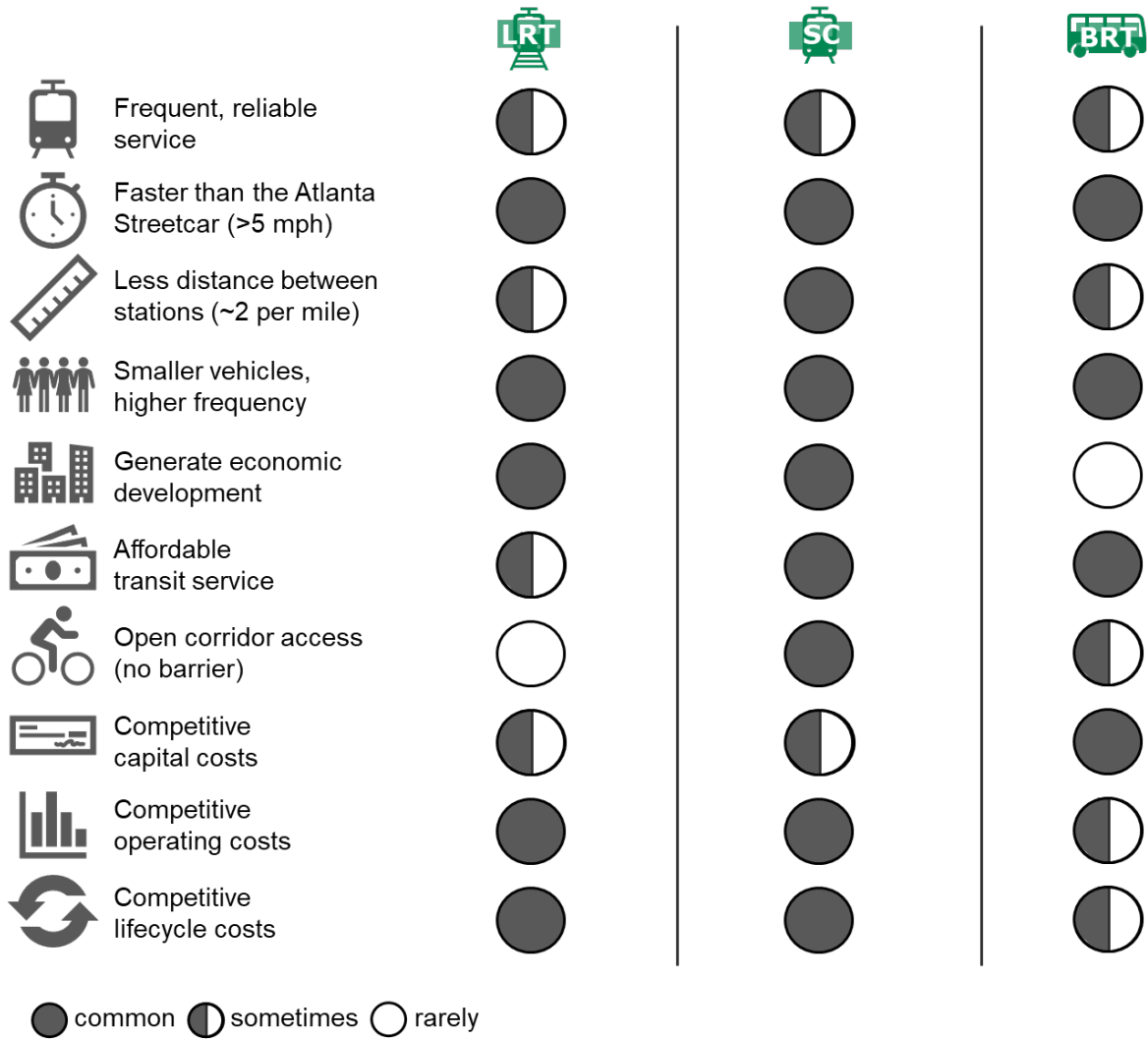
### Key Technology Comparisons

As shown in the figure on the next page, the three technologies have been applied to provide the identified service goals discussed by the Transit Task Force, with some meeting service goals more often than others. These key areas are discussed further below.

### Frequency, Speed, Stop Spacing, and Capacity

While streetcars are most common, all three technologies can be designed as an urban circulator streetcar service. All technologies can provide frequent





reliable service, operate at relatively fast speeds, include shorter stop spacing, and run smaller vehicles at a higher frequency. However, these characteristics are most commonly found in streetcar projects.

### Economic Development

In general, LRT and streetcar projects have consistently generated economic development along corridors across the country. Economic development has generally not been as significant for BRT projects when compared to LRT or streetcar. One exception to this rule is

the Health Line BRT project in Cleveland, Ohio.

### Affordability

Fare policy varies by locality and technology. In general, urban circulators, regardless of technology, are often free or low cost (\$1 fare).

### Corridor Access

Corridor access varies significantly by technology primarily due to speed and safety concerns. Both LRT and BRT often operate at higher speeds with greater station spacing, and have a

restricted corridor separated by a barrier. Streetcar is often operated in mixed-traffic alongside pedestrian and bicycle traffic without a barrier. While barriers may be required in certain areas, a primarily barrier-free service is more aligned with the Atlanta BeltLine vision.

### Capital Costs

A comparison of capital costs (in current year dollars) was included for the LRT, streetcar, and BRT project examples to provide a true comparison of project capital costs that were most similar to the Atlanta BeltLine corridor. This comparison, summarized in the figure below, shows a much less obvious capital cost per mile difference between rail and bus technologies, illustrating that the capital costs of a transit project depends heavily on the application of the technology, regional markets, and corridor needs.

### Operating and Lifecycle Costs

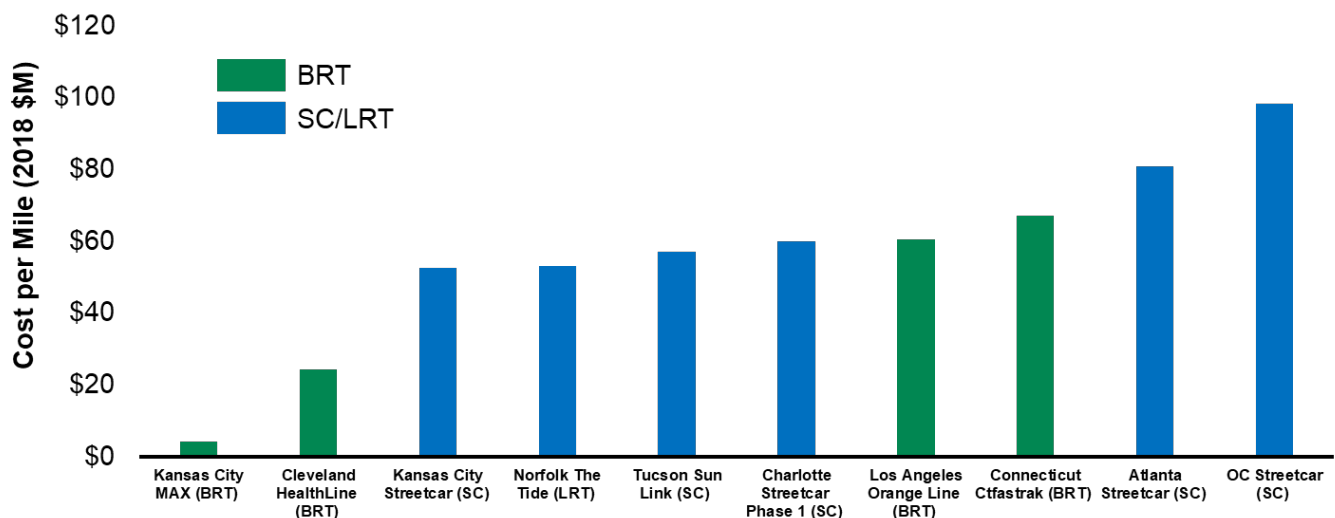
Another consideration that is often overlooked when considering technologies is long-term recurring costs

such as operating and lifecycle costs. In general, these costs are higher for BRT when compared to LRT and streetcar projects.

### Other Considerations

#### Automation

Atlanta is currently testing autonomous shuttles on the North Avenue corridor and the topic is gaining interest on the national and local levels, including being mentioned as a potential option for the Atlanta BeltLine. However, the viability of these emerging technologies remains to be seen. There are currently a number of substantial barriers to implementing autonomous shuttles on the highly-trafficked Atlanta BeltLine corridor. Autonomous shuttles would experience frequent conflicts with the high volume of pedestrians and bicyclists that use the Atlanta BeltLine, which would significantly impact service reliability. In addition, the autonomous shuttles currently being piloted do not offer adequate capacity and would have capacity limitations for future growth in the corridor.



In addition, while the topic of automation and autonomous shuttles are considered emerging topics in the transportation world, autonomous technology for rail has existed for decades. Autonomous technology in rail is fairly-common at airports; two examples are currently operating at Atlanta's Hartsfield Jackson International Airport. Automation for rail has also been applied throughout the years to varying degrees internationally, including Canada, China, Singapore, Britain, France, Denmark, Spain, and many more. However, these technologies are not compatible to the Atlanta BeltLine corridor because they require an impenetrable barrier between the rail service and other modes (roadway, bicycles, and pedestrians) for safety purposes. This would significantly increase costs and does not align with the vision of the Atlanta BeltLine.

While this technology is not a viable alternative in the near-term, any transit investment along the BeltLine should allow for operability and retrofit with future technologies, including automation, as they come on the market.

#### *Infrastructure Costs in the Corridor*

The FTA Standardized Cost Categories were used to compare the expected capital investments for any transit project that would be built on the BeltLine. Regardless of the selected technology, the Atlanta BeltLine corridor will require near similar levels of capital investments in the corridor to allow a project to operate. These costs include right-of-way acquisition, guideway construction, at-grade, overpass,

underpass, and tunnel crossings, fills, cuts, and retaining walls, signals and communications, vehicle maintenance and storage facilities, and stations.

#### *Interoperability with the Atlanta Streetcar*

The Task Force agreed that connectivity challenges would exist between any bus technology and the Atlanta Streetcar that would inhibit the provision of a convenient, one-seat ride for users. In addition, over a decade of planning and environmental work has been invested in the corridor, which led to the well-documented and publicly-vetted decision to select streetcar as the preferred technology on the Atlanta BeltLine corridor.

#### *Interoperability with Light Rail Transit*

The Transit Task Force recognized that MARTA has identified LRT for all rail technology in the More MARTA plan, including the Atlanta BeltLine portions. ABI would like to make an important distinction between the operational characteristics of streetcar compared to LRT. To allow for the desired operational characteristics of streetcar and connections with LRT projects such as Clifton Corridor, ABI recommends consideration of a hybrid system that would operate streetcar service within the Atlanta BeltLine and existing Atlanta Streetcar corridors and transition to LRT service as it moves further out of the city core.

## V. RECOMMENDATIONS AND NEXT STEPS

The Atlanta BeltLine Transit Task Force reached a consensus that streetcar technology will best achieve the vision and goals for transit on the Atlanta BeltLine that are most consistent with Atlanta City Design. ABI recommends the use of streetcar technology as the preferred technology for the BeltLine projects advanced as part of the More MARTA Plan and future expansions of transit along the remainder of the BeltLine. To allow for the desired operational characteristics of streetcar and connections with LRT projects such as Clifton Corridor, ABI recommends consideration of a hybrid system that would operate streetcar service within the Atlanta BeltLine and existing Atlanta Streetcar corridors and transition to LRT service as it moves further out of the city core.

Following the recent approval of the More MARTA Program of Projects, it is important that the City and ABI are involved in the process to prioritize the

phasing of the More MARTA projects to ensure that the BeltLine projects can be advanced quickly and begin more detailed design, engineering, and implementation. This should also strategically align with finalizing environmental reviews for the projects (which ABI has advanced with the FTA over the past three years), applying for entry into the Project Development phase, and securing federal funding through the Capital Investment Grant Program.

In addition, ABI will work collaboratively with the City, MARTA, and other project stakeholders to identify and secure the additional funding and financing that will be necessary to pursue the remaining BeltLine projects that will not be funded by the More MARTA program, in order to fulfill the Atlanta BeltLine statutory requirements to build the full 22-mile loop and achieve the full vision of the Atlanta BeltLine.







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