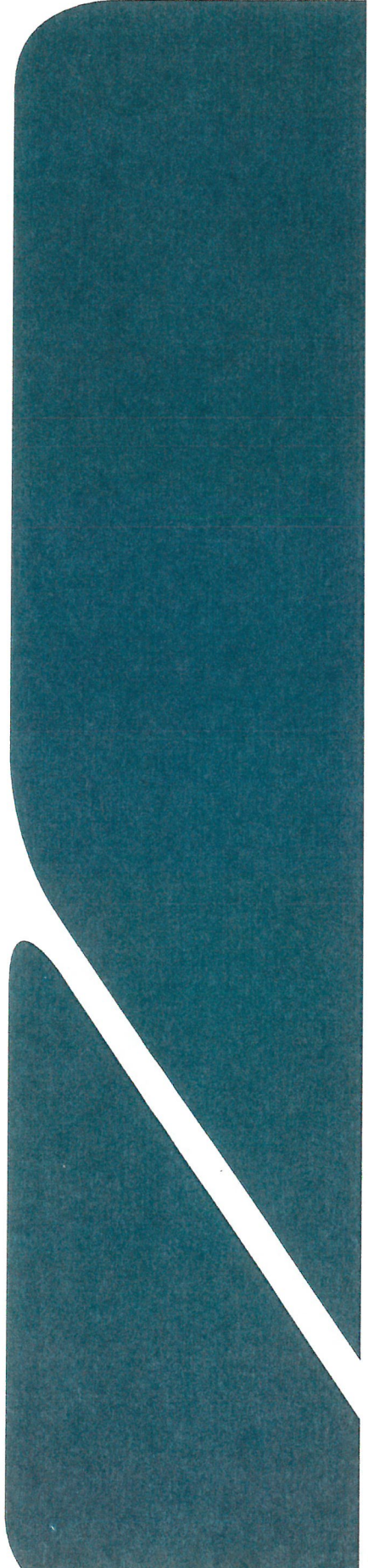
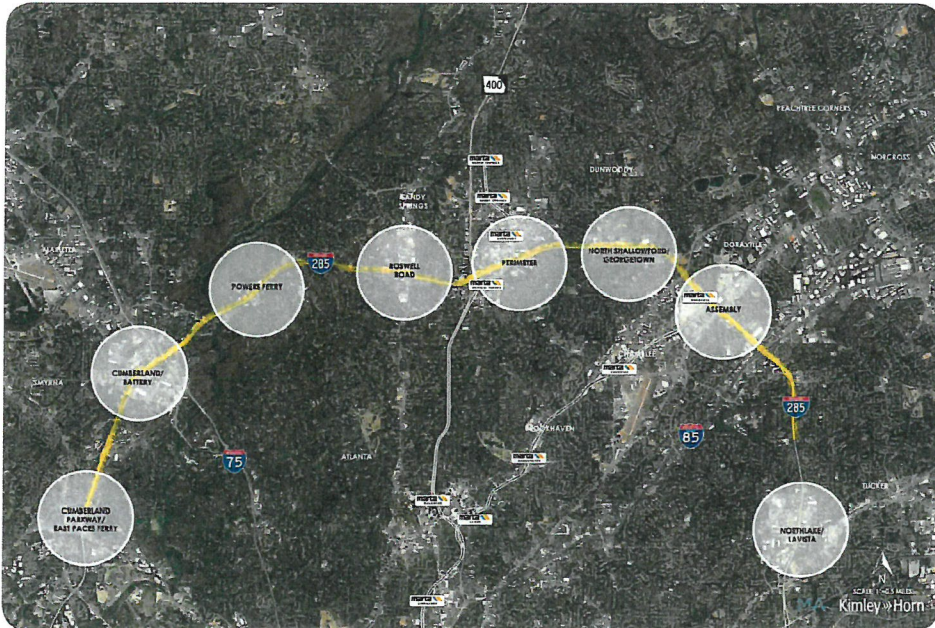


# I-285 TOP END TRANSIT FEASIBILITY STUDY

Briefing Booklet

February 2019





# I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

During the summer of 2018, Kimley Horn and Moreland Altobelli were asked to develop a high-level transit feasibility study along the I-285 “Top End” corridor from the City of Tucker in DeKalb County to the City of Smyrna in Cobb County. This effort was designed to accomplish the following three goals:

1. Facilitate discussions among I-285 Top End leaders regarding high-capacity transit feasibility
2. Compare the feasibility of a rubber-wheel transit system versus a rail-based transit system within or alongside the Top End Express lanes proposed by the Georgia Department of Transportation
3. Evaluate a series of special service district models and the revenue potential of each model (localized tax revenue) to offset construction and operational costs for an I-285 Top End transit system

The Mayors representing seven cities across three Counties agreed to fund this effort through a contract administered by the City of Brookhaven. Financial support was also provided by the Perimeter CIDs and Cumberland CID.

The following organizations partnered and were consulted as part of this effort.

## **Partner Organizations:**

City of Brookhaven  
City of Chamblee  
City of Doraville  
City of Dunwoody  
City of Sandy Springs  
City of Smyrna  
City of Tucker  
Perimeter CIDs and Cumberland CID

## **Other Coordinating Agencies:**

GDOT  
MARTA  
Atlanta Regional Commission  
ATL/GRTA/SRTA  
DeKalb County Transit Study Team  
Cobb County DOT

A kick-off meeting was conducted with the coordinating agencies in August 2018 to facilitate information sharing and discussions regarding the potential and feasibility for high-capacity transit along the Top End of I-285. At the meeting, attendees exchanged information regarding future plans, projects, and aspirations along the corridor. Project timelines were also discussed and coordinated.

A separate meeting was then held with each partner organization (generally the Mayor and City Manager) to discuss each City’s needs and perspectives relative to transit along I-285. From these conversations, the consulting team clarified and refined the project scope and presented its findings over a series of three meetings with the partner organizations.

**Summary of Findings:** The feasibility study resulted in two significant findings that are detailed in this briefing booklet.

- I. A high-capacity, rubber-wheeled transit system, utilizing the GDOT Managed lanes, is financially and operationally viable across the Top End of I-285. A rail-based system would cost approximately 8-10 times a rubber-wheeled system due to the need for additional right of way and a separate guideway.
- II. Projected revenue from a localized tax are sufficient to cover the projected operational costs (and in some cases a portion of the projected construction cost) and justify a more detailed analysis that includes ridership projections, implementation strategies, and other necessary next steps.

## Section I - Rail Based or Rubber-Wheel Based High Capacity Transit

Based on a review of traffic along the corridor; existing and future development patterns; and conversations with interested cities, CIDs, and partners, transit access along the Top End of I-285 was considered at the following eight locations from west to east as part of this feasibility study:

- Cumberland Parkway/East Paces Ferry Road
- Cumberland/US 41/SunTrust Park
- Powers Ferry Road
- Roswell Road
- Perimeter/MARTA rail connection at Dunwoody and/or Medical Center Station
- North Shallowford Road/Georgetown
- Assembly/MARTA rail connection at Doraville Station
- Northlake Parkway/Lavista Road

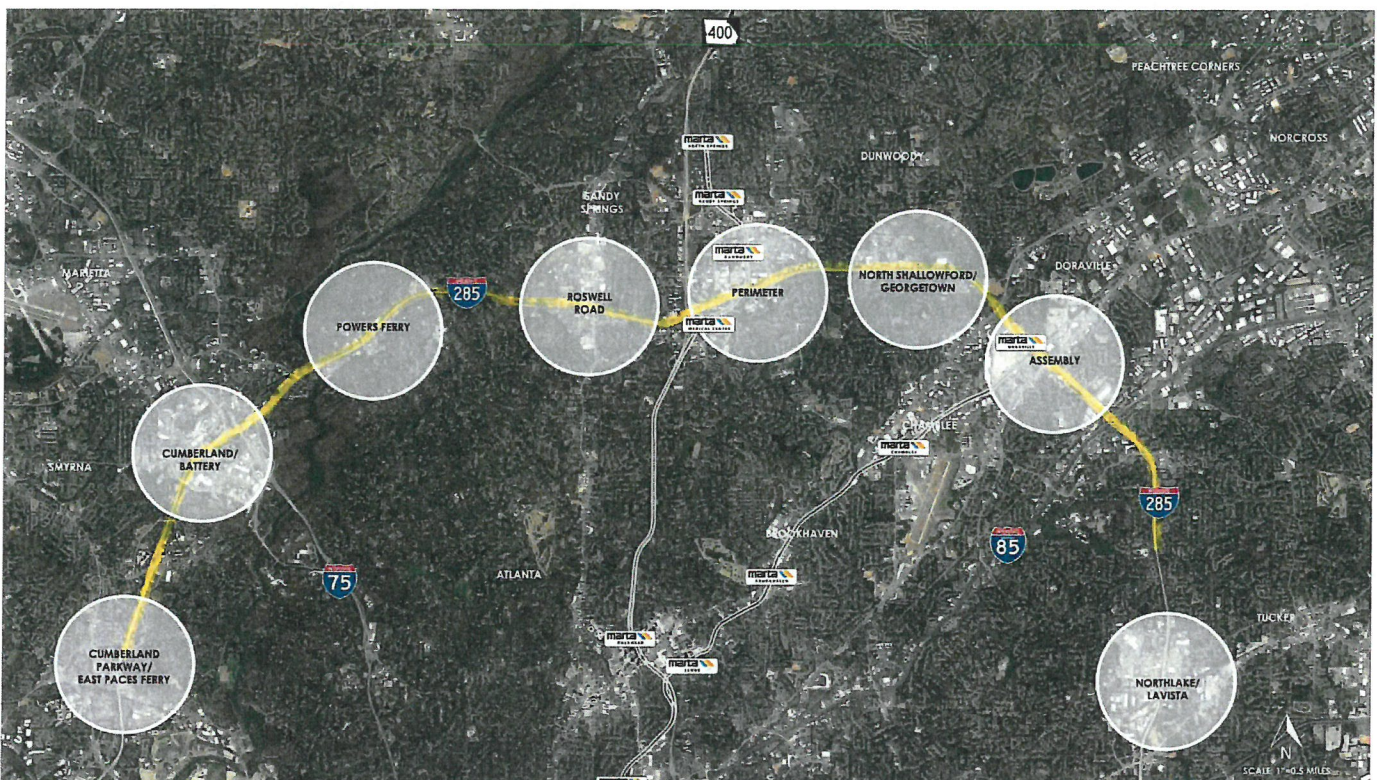


Figure 1: Potential access points for I-285 Top End transit operations

# I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

## Potential Transit Market:

While this feasibility study did not attempt to project “ridership” for a potential transit system along I-285, a component that would be required to compete for federal transit funding, the study included an assessment of the potential market for transit users along the Top End.

The team reviewed:

- Traffic counts across the Top End available from the Georgia Department of Transportation
- Current land use patterns and future plans surrounding each of the potential access areas
- The number of daily employees that work within each employment center and potential access node along the corridor
- The general direction of travel for daily employees that work within 1 mile of potential transit access points and who travel from a distance of 1 to 24 miles away

Based on this information and the potential cost of transit services, the team divided the corridor into 3 segments to best understand the relative cost and revenue potential in each parts of the corridor

- Phase 1- Assembly/Doraville Station on the east to the Battery/Cumberland on the west
- Phase 2 East- Assembly/Doraville Station to Northlake Parkway/Lavista Road
- Phase 2 West- The Battery/Cumberland to East Paces Ferry Road

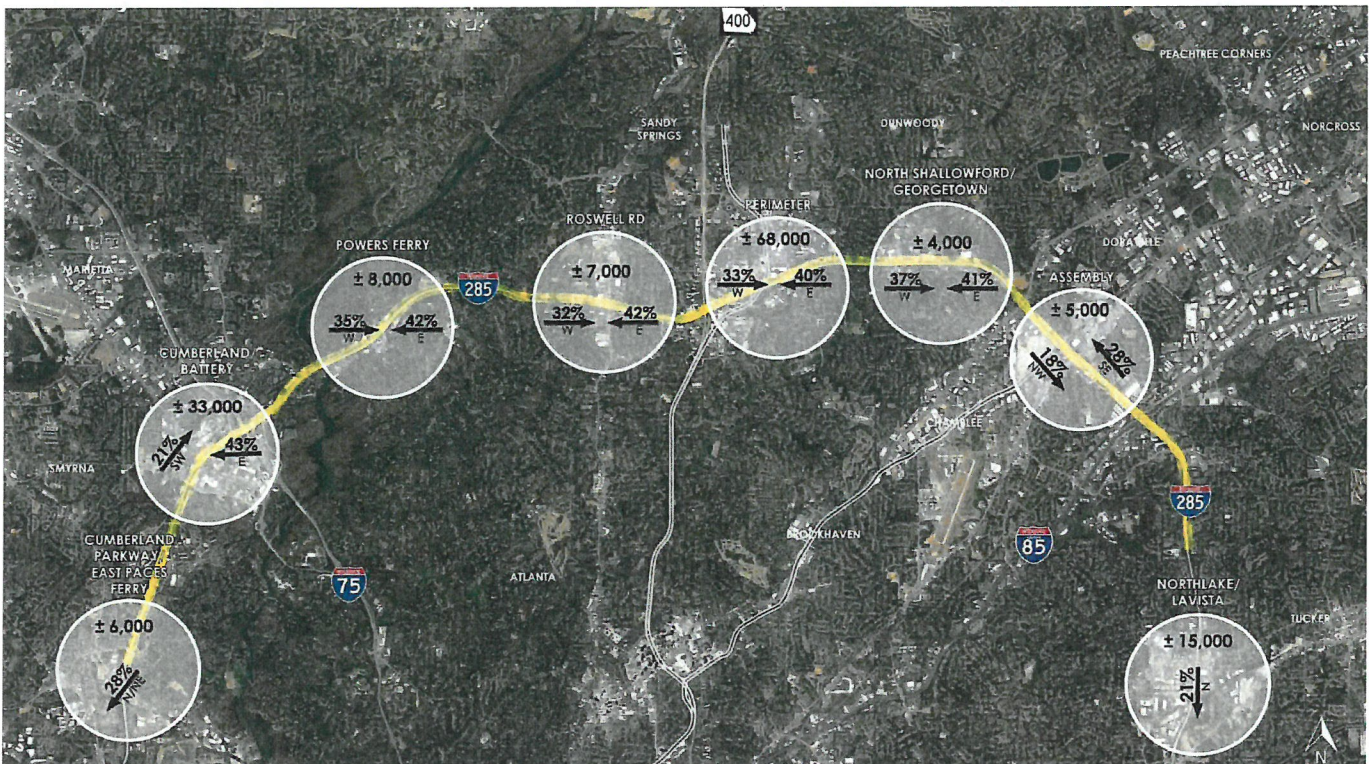


Figure 2: Employment areas

# I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

Potential station locations were then compared against the most recent, available information for GDOT's express lane entrance/exit locations. It should be noted that at the time of this feasibility study, GDOT had not finalized exact locations for express lane entrances and exits. Access points can only be assumed as the plans for Top End Express Lanes are subject to change.

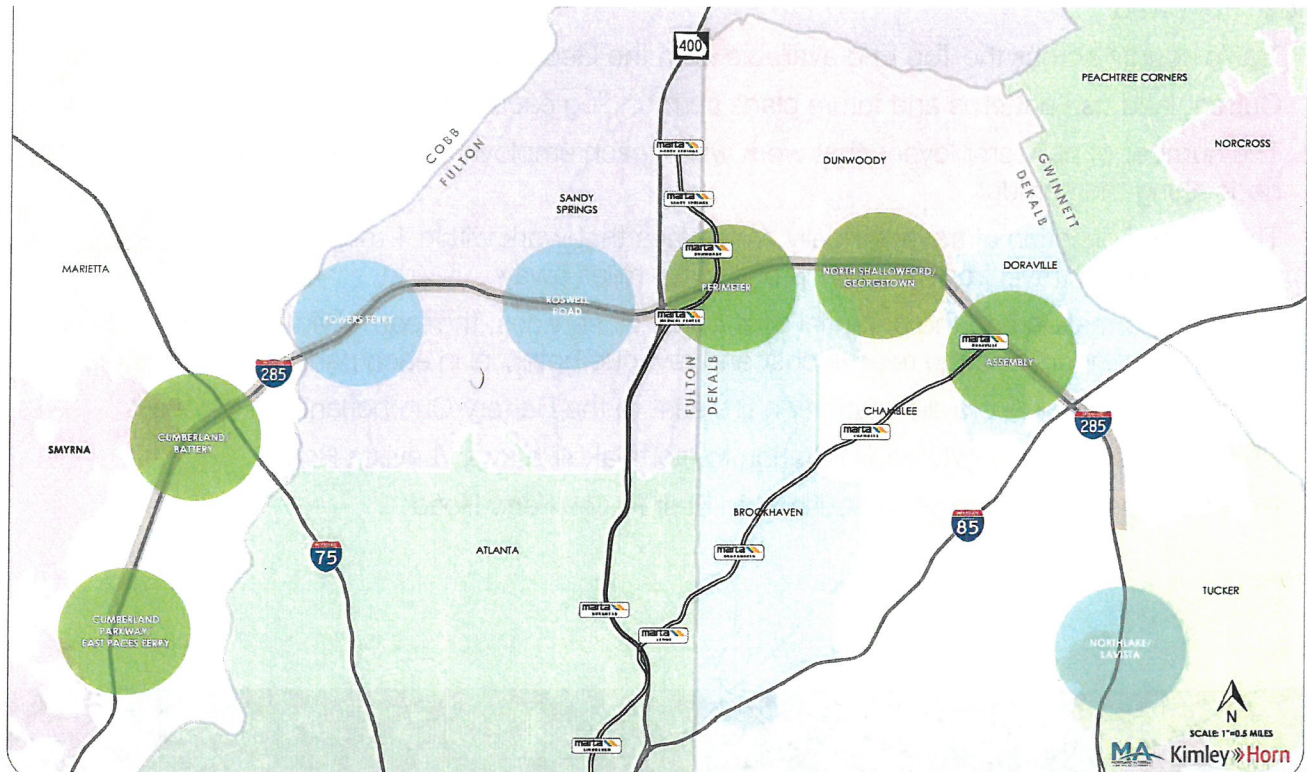


Figure 3: Green areas represent areas where existing or proposed infrastructure may be utilized as part of a potential transit system. Blue areas represent locations where this analysis assumes transit-only interchanges would need to be funded in a transit initiative.

The figure above illustrates areas where there is potential for a Top End transit service to utilize existing or planned infrastructure to access the express lane system (shown in green). There is potential that express lane access at the Doraville/Assembly node and the Cumberland/Battery node may be split into two access points (one east-bound, one west-bound). Split interchanges add a level of complexity to establishing an efficient transit system with easy off and on access to the express lanes and will result in additional project costs or running time delays.

# I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

**Cost:** Based on the analysis summarized on the preceding pages, order of magnitude costs were developed for rubber-wheel and rail-based transit systems along the Top End of I-285. Costs were developed for system construction (stations, access ramps and improvements, sitework and special conditions), start-up and vehicle replacement costs, and annual operating costs. As outlined on page 3, system costs were divided into three sections along the corridor.



CONSTRUCTION COSTS				
MODE	PHASE 1	PHASE 2 WEST	PHASE 2 EAST	TOTAL
Rubber Wheel	\$300M	\$80M	\$70-100M	\$450-480M
Rail	\$2.6B	\$0.6B	\$1B	\$4.2B

START-UP/VEHICLE COSTS				
MODE	PHASE 1	PHASE 2 WEST	PHASE 2 EAST	TOTAL
Rubber Wheel	\$7M	\$1M	\$2M	\$10M
Rail	\$30M	\$5M	\$5M	\$40M

ANNUAL OPERATING COSTS				
MODE	PHASE 1	PHASE 2 WEST	PHASE 2 EAST	TOTAL
Rubber Wheel	\$5M	\$1M	\$2M	\$8M
Rail	\$11M	\$2M	\$3M	\$16M

# I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

Several observations and conclusions can be drawn from the projected cost chart.

- The construction cost for a rail-based system is nearly **8-10x** the cost of a rubber-wheel system due to the need for additional right of way and a separate guideway.
- The start-up/vehicle replacement cost for a rail-based system is nearly **4x** the cost of a rubber-wheeled based system.
- The annual operating and maintenance cost for a rail-based system is nearly **2x** the cost of a rubber-wheeled based system.

While the rubber-wheel system can utilize and benefit from the planned express lane system, the system's construction cost is impacted by a need to build transit-only access points in up to three locations. The transit-only interchanges require approximately \$80-120 million each. New transit-only interchanges are contemplated in this analysis at Roswell Road, Powers Ferry, and Northlake Parkway.

Based on cost and feasibility comparison, project partners are interested in pursuing the next steps to test and analyze the potential for a rubber-wheeled, high-capacity transit system across the Top End of I-285. The ability to leverage the express lane system proposed by GDOT provides the necessary path and access while significantly reducing the investment cost to establish a top end transit system in the near term. Based on the principles adopted by GDOT Board, the proposed express lanes, which will be two lanes in each direction between I-85 to the east and I-75 to the west, will function at speeds in excess of 45 mph and provide the ability to maintain an efficient, predictable, high-capacity transit system.

It should be noted that the order of magnitude costs presented are based on a "premium" service, desired by the Mayors. Project costs assume a high-grade vehicle (the Wrightbus Streetcar vehicle used shown below) and headways of 10-minutes on-peak, 15-minutes off-peak. In the future, a system that is autonomous could be considered but current technologies are under development and not yet legal in the United States. However, we see great value in exploring this option in the future based on the dedicated corridor and limited number of conflicts and turning movements.



Wrightbus Streetcar, Las Vegas, NV, budgeted at \$1.3M per vehicle.



CRRC Autonomous Rail Rapid Transit Vehicle, China—not yet approved for use in the U.S.



# I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

## Section II – Special Service District Scenarios

Georgia State University's Center for State and Local Finance utilized County Geographic Information System (GIS) and property data to create a series of special service district evaluations, in consultation with the study team. The feasibility study investigated four potential special services districts most benefiting from and impacted by the potential system to ascertain the potential level of revenue that could be raised locally to offset establishment and operating costs for transit along I-285.

GSU examined the following:

- **City-based Sales Tax:** 1-cent sales tax increment within the 7 cities (citywide)
- **Special Services District Sales Tax:** 1-cent sales tax increment for an area within 1/2-mile and 1-mile of I-285 between East Paces Ferry Road on the west and Northlake Parkway/Lavista Road on the east
- **Special Service District Value-Capture:** 1-mill property tax increment for an area within 1/2-mile and 1-mile of I-285 between East Paces Ferry Road on the west and Northlake Parkway/Lavista Road on the east
- **Special Service District Value-Capture Non-Residential:** 1-mill property tax increment for an area within 1/2-mile and 1-mile of I-285 between East Paces Ferry Road on the west and Northlake Parkway/Lavista Road on the east, excluding residential (single-family, duplex, and up to 4 units per building) properties

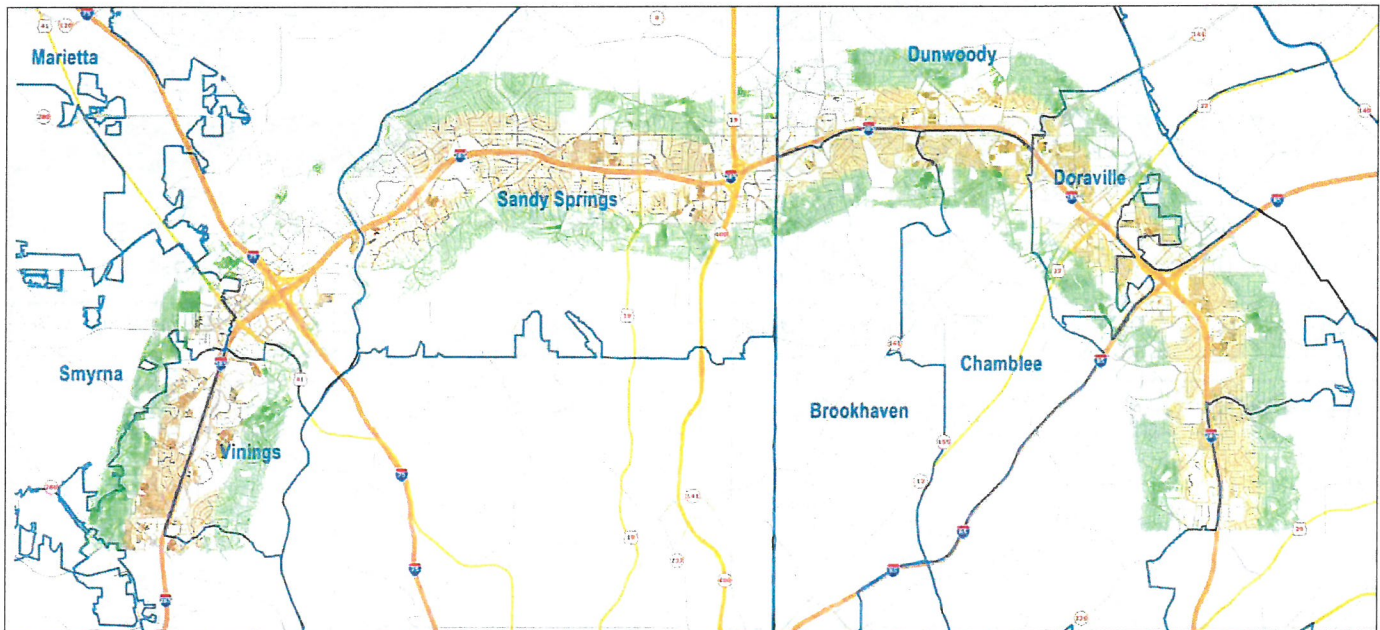


Figure 6: GIS map of 1/2 mile (yellow) and 1 mile (green) from I-285 centerline

# I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

**Discussion on Revenue:** Below is an estimate of revenue as developed by Georgia State University's Center for State and Local Finance. A more detailed memo regarding the methodology behind these estimates is attached as an Appendix.

**Figure 7: Sales Tax Models at 1% (potential annual revenue, rounded in millions)**

DEKALB COUNTY	CITYWIDE	½ MILE	1 MILE
Brookhaven	\$7.2 - \$17.7	\$0.04	\$0.07
Chamblee	\$3.9 - \$8.7	\$0.56	\$0.67
Doraville	\$1.4 - \$4.8	\$0.33	\$0.64
Dunwoody	\$6.7 - \$21.1	\$3.67	\$5.55
Tucker	\$4.8 - \$5.4	\$0.31	\$0.32
Unincorporated	No applicable boundary	\$4.74	\$6.99
<b>DeKalb Total</b>	<b>\$24.1M - \$57.7M</b>	<b>\$9.7M</b>	<b>\$14.3M</b>

FULTON COUNTY	CITYWIDE	½ MILE	1 MILE
Sandy Springs	\$24.5M	\$12.3M	\$17.1M

COBB COUNTY	CITYWIDE	½ MILE	1 MILE
Smyrna	\$10.6M-\$10.3M	\$0.94	\$2.32
Unincorporated	No applicable boundary	\$17.4	\$25.7
<b>Cobb Total</b>	<b>\$10.6M-\$10.3M</b>	<b>\$18.3M</b>	<b>\$28.0M</b>

<b>Grand Total</b>	<b>\$59.2M-\$92.5M</b>	<b>\$40.3M</b>	<b>\$59.4M</b>
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**Figure 8: Value Capture Models (at 1.0 millage rate, rounded in millions)**

DEKALB COUNTY	½ MILE	1 MILE	½ MILE non-res	1 MILE non-res
Brookhaven	\$0.14	\$0.32	\$0.01	\$0.02
Chamblee	\$0.17	\$0.30	\$0.12	\$0.18
Doraville	\$0.19	\$0.37	\$0.15	\$0.29
Dunwoody	\$1.06	\$1.81	\$0.93	\$1.40
Tucker	\$0.11	\$0.18	\$0.04	\$0.05
Unincorporated	\$0.54	\$1.11	\$0.24	\$0.39
<b>DeKalb Total</b>	<b>\$2.2M</b>	<b>\$4.1M</b>	<b>\$1.5M</b>	<b>\$2.3M</b>

FULTON COUNTY	½ MILE	1 MILE	½ MILE non-res	1 MILE non-res
<b>Sandy Springs</b>	<b>\$2.1M</b>	<b>\$3.6M</b>	<b>\$1.4M</b>	<b>\$1.9M</b>

COBB COUNTY	½ MILE	1 MILE	½ MILE non-res	1 MILE non-res
Smyrna	\$0.08	\$0.32	\$0.08	\$0.19
Unincorporated	\$1.97	\$3.08	\$1.68	\$2.34
<b>Cobb Total</b>	<b>\$2.1M</b>	<b>\$3.4M</b>	<b>\$1.8M</b>	<b>\$2.5M</b>

<b>GRAND TOTAL</b>	<b>\$6.4M</b>	<b>\$11.1M</b>	<b>\$4.6M</b>	<b>\$6.8M</b>
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Several observations and conclusions can be drawn from the charts in Figure 7 and Figure 8.

- A city-wide sales tax based on the boundaries of the partner cities could generate between \$59.2 million (based on share of population) and \$92.5 million (based on location of tax generation).
- Sales tax generated within 1-mile of I-285 could generate approximately \$59.4 million per year. For the ½ mile area, revenue estimates decrease to \$40.2 million per year.
- A property tax model that captures a portion of the increased value to local properties due in part to investment in the corridor would generate approximately \$11.1 million per year within 1-mile of I-285. If residential properties (according to the tax code) are removed, revenue decreases to approximately \$6.8 million per year.

Using \$500 million as a rough budget cost for capital and start-up expenses (including construction, start-up, and vehicle replacement for all phases), a 30-year bond would require an estimated \$28-\$32 million in annual payments (ATL legislation allows for a 30-year referendum length).

# I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

If implementation was reduced to the Phase I portion of the project from Cumberland to Doraville, the start up cost would be approximately \$300 million. A 30-year bond for that investment would require \$17-19 million in annual payments. The cost of this initial phase could be further reduced if the number of stops/stations were decreased.

Annual Operating and Maintenance Cost for all phases are approximately \$8 million per year. Assuming fare box recovery of 30% would place O&M costs in the \$5.5 million per year range.

In summary, the sales tax models could cover the complete cost of a rubber-wheeled system over a 20-25-year period, while the value-capture models based on property tax could potentially cover the maintenance and operations costs but would not create sufficient revenue to pay for the project's construction cost need.

Other revenue considerations that were not studied included Cobb, Fulton and DeKalb having an additional ATL tax which is allowed by current code (Fulton County is limited to 0.2 cents sales tax).

## NEXT STEPS

Based on input from this feasibility study's partner organizations, there are a series of next steps that should be considered.

1. Area leaders wish to develop a "Pre-Project Development Technical Analysis." The technical analysis would include a preliminary service plan with stop locations, identify necessary capital improvements at a more detailed level, review and estimate travel times, forecast potential ridership, and detail maintenance and operations costs.
2. Project leaders will need to continue to discuss and develop a funding plan based on additional financial considerations and models. Some financial models may require new local or state legislation and discussions will be needed with state and local officials to develop a model funding plan to implement and operate the envisioned system. Coordination will also be necessary with the Transit Master Plan for each County (DeKalb, Fulton, and Cobb), as well as discussions with MARTA and the Atlanta Transit Link Authority to further detail and prioritize transit along the I-285 corridor.
3. Additional physical assessments and engagement with area stakeholder will be necessary as the project moves forward. Once a preliminary plan and/or strategy is established, a physical ground survey for station locations will be needed, a more complete assessment for last-mile connectivity to and within station areas should be conducted, conceptual drawings for stations and area improvement should be developed, and a public involvement plan and/or consumer preference study is advisable. Additional time and effort may also be considered to explore new technologies and autonomous vehicles for the corridor.

# APPENDIX

## Mayor's 285 Top End Study: Summary of Rapid Transit Conceptual Cost Estimates

December 2018

### Project Description

Phase 1: The Battery to Doraville

Phase 2-West: Cumberland Parkway to The Battery

Phase 2-East: Doraville to Northlake Parkway

### Cost

#### Construction Cost

Mode	Phase 1	Phase 2-West	Phase 2 - East	Total (1+2W+2E)
BRT	\$308 million	\$79 million	With Northlake General Purpose Ramps: \$65 million	\$452 million
			With Northlake Express Lane Ramps: \$101 million	\$488 million
LRT	\$2.6 Billion	\$0.6 Billion	\$0.9 Billion	\$4.1 Billion

Includes engineering, right-of-way, and construction costs

#### Vehicle Cost

Mode	Phase 1	Phase 2-West	Phase 2 - East	Total (1+2W+2E)
BRT	\$7 million	\$1 million	\$2 million	\$10 million
LRT*	\$30 million	\$5 million	\$5 million	\$40 million

\*Includes single vehicle for light rail; vehicle cost multiplies for two- or three-car trains

#### Annual Operating Cost (Minimum)

Mode	Phase 1	Phase 2-West	Phase 2 - East	Total (1+2W+2E)
BRT	\$4.7 million	\$1 million	\$2 million	\$7.7 million
LRT	\$10.3 million	\$2 million	\$2.8 million	\$15.1 million

Includes service, administration, vehicle maintenance, station maintenance, and security on and off vehicles

### Project Assumptions

#### Guideway

- BRT vehicles operate in Express Lanes except for BRT station areas. Express lanes are constructed by others.
- LRT operates in a separate guideway over 285
  - Assumed right-of-way cost for LRT
    - Phase 1 - \$146 million
    - Phase 2-West - \$36 million
    - Phase 2-East - \$54 million

# APPENDIX

## Service Assumptions

- Single route from end-to-end
- 10-minute service 6 am to 7 pm weekdays, 15-minute service 7 pm to 12 am weekdays
- 15-minute service 7 am to 12 am Saturdays, Sundays, and Holidays
- Assumed max speed of 55 mph for BRT and LRT
- Single vehicles for BRT and LRT. For LRT, vehicle cost multiplies for two- or three-car trains

## Vehicles

- BRT – assumed \$1 million per vehicle
  - Costs range from \$500,000 to \$1.5 million
  - CRRC autonomous rail rapid transit vehicle estimated at \$2.2 million; not yet approved for use in USA
  - Manufacturing of many of the innovative vehicles implemented in the 2000s have been discontinued, including Las Vegas (Irisbus Civis) and LA Metro Orange Line (NABI)
- LRT – assumed \$5 million per vehicle

## Cost estimates prepared by:

BRT – D. Wolfred, J. Pertzsch; LRT – B. White; Operating – M. Karlsson; QC – P. Pattison

*Kimley-Horn has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. These opinions of probable project costs provided herein are based on the information known to Kimley-Horn on this project as of 12/12/2018 and represent only the Kimley-Horn's judgment as a design professional familiar with the construction industry. Kimley-Horn cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs. All project costs shown are estimated in present cost values and are not inflated to an estimated construction year. These opinion of probable project costs will vary significantly based on upon the actual project delivery method and how the transit infrastructure is constructed. It is assumed that the transit infrastructure will be built at the same time by one project team but implemented in two phases as shown above. Additional costs should be considered depending on the agency that administers this project. Since these costs were developed with no design or concept plans developed, approximate project lengths were measured for an approximately unit price/mile. No utility relocation costs were assumed, and Right-Of-Way costs are extremely rough as the consultant did not have property information, survey, or plans when compiling this OPC.*

## APPENDIX

### Memo

To: Eric Bosman and Todd Long

From: Peter Bluestone, GSU

Date: January 22, 2019

Re: Top end revenue capture estimates

The CSLF team has estimated a sales tax base and a property tax base for the seven cities and designated study regions. These estimates rely on data from the Georgia Department of Revenue, DeKalb, Cobb and Fulton counties as well as CoreLogic. The two relevant study regions for the sales tax and property tax base are at 1/2 mile and 1-mile cordon line distances from the proposed managed lanes on interstate 285. The estimated sales tax base for the cities and designated regions allows for revenue projections to be made for a transportation sales tax of varying rates.

A property tax base was also estimated. The relevant properties were identified by the standard county designations such as commercial and residential and the contributions each type makes to the property tax base was estimated. To construct the relevant property tax base parcel level data with assessments was used from each county. The relevant details of each estimation method for the various tax bases and revenue is discussed next.

The city full sales tax estimate represents the revenue from a 1 percent sales tax collected within the entire city. Most cities already receive some type of sales tax distribution from its county. But data on these distributions are limited. Only in 2018, has DeKalb county begun distributing its SPLOST directly to cities. The Georgia Department of Revenue (DOR) has data available for 7 months of these 2018 distributions. These distributions are grossed up to a full year by using the remaining monthly shares of county-wide sales tax collections, for the prior three years 2015-2017. While the 2018 data are limited, the city distributions appear to be allocated based on the city's share of county population. Note DeKalb County distributes its HOST to cities, but that distribution is based on a complex formula derived off of residential homestead values, making it not useful for our purposes.

Cobb County does not distribute its SPLOST or ESPLOST directly to cities through the DOR. Thus, the estimates for Cobb County and Smyrna rely on the city's share of county population.

Fulton County distributes its local option sales tax to its cities directly and has several years of recent data available. The estimates for Sandy Springs sales tax are based on those data from 2015-2017.

## I-285 TRANSIT FEASIBILITY STUDY BRIEFING BOOKLET

To allocate the sales tax in the 1/2 mile and 1-mile regions around the I-285 corridor, the portion of the cities commercial property in each region was used. The estimated citywide sales tax collection was based on the share of the city's commercial property within the region. For instance, the city of Dunwoody has 55 percent of all its commercial property in the 1/2-mile region. Thus, 55 percent of Dunwoody's estimated sales tax collections are allocated to this region. The Perimeter CID is included in the Dunwoody estimate. As the CID is a quasi-governmental entity, the value and share of its commercial property as well as estimated sales tax collection are listed separately.

The city of Tucker is additionally impacted by the Lavista Road boundary for the project. Much of Tucker's high valued property is near the Northlake mall area, and just south of Lavista Road. Should the eastern boundary be modified to include this property, the estimated amount of property tax and sales tax collected from Tucker would rise. The full city estimates for Tucker with in the 1/2 mile and 1 mile regions are included in the DeKalb County parcel detail tab.

Prior estimates were done that utilized only the share of the DeKalb cities commercial property to allocate sales tax from county-wide collections. Estimates were done for city sales tax collections and regional sales tax collections. These prior estimates are larger than the preferred estimates above, as the cities have a larger share of commercial property than the unincorporated area. While the unincorporated area has a greater share of county population than the cities. These prior estimates are included below the preferred estimates in both tabs for reference.

The last estimate is the regional property tax for the same 1/2 mile and 1-mile regions around the I-285 corridor. This tab lists the total market value of the various types of property in each region. The estimated revenue is from applying a millage rate of 1 to all types of property at the state mandated assessed value of 40 percent. Estimates are also included that excludes the value of residential property.

Included here is also the share of property in Cobb County that is to the Northeast of a boundary comprised of Cumberland boulevard and Spring road in Smyrna and in the unincorporated area of Cobb county.