



Addendum 1

**Strategy Screening and Alternatives
Development Process and Initial Screening
Results**

September 15, 2008



A GEORGIA DOT-GRTA INITIATIVE



Addendum 1

Strategy Screening and Alternatives Development Process and Initial Screening Results

Page 76 of the report listed BRT, Express Bus, Operational Improvements and Managed Lanes as those strategies that would move forward in combinations for detailed analysis. However, if a system-wide transit change is made within the Regional Transportation Plan from a bus rapid transit (BRT) system to a regional light rail transit (LRT) system, the LRT strategy will have better potential to meet the project needs along this corridor than either the BRT or express bus system. The Atlanta Regional Commission is currently working with the Transit Planning Board to further examine the potential benefits of LRT and consider the region's ability to fund a network of LRT corridors. If this consideration results in a change to the Regional Transportation Plan away from BRT and toward LRT, revive285 top end must be ready to adapt to that change. Therefore, an LRT alternative is being developed and studied as part of the process.

Page 23 of the report stated that "Current Georgia DOT policy restricts tolling on existing roadways; therefore, this technique will not be part of the federally required TSM alternative, but it can be considered as a design option with the build alternatives." This statement is inaccurate in that tolling on existing roadways is restricted when using a Public Private Initiative. Therefore, tolling will be considered as a design option in the TSM alternative.



**Strategy Screening and
Alternatives Development
Process and Initial
Screening Results**

March 11, 2008



A GEORGIA DOT-GRTA INITIATIVE



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Strategy Screening and Alternatives Development Process and Initial Screening Results

1. INTRODUCTION

The overall objective of **revive285 top end** is to improve mobility along the northern section of I-285, located in the northern Atlanta metropolitan area. To that end, **revive285 top end** will involve the development of alternatives that meet the identified Need and Purpose Statement, development of conceptual designs, and preparation of an Environmental Impact Statement (EIS) that identifies a preferred alternative. This process includes the identification and screening of general strategies followed by a detailed evaluation of specific design alternatives.

The strategy screening and alternatives development process provides a basis for objectively evaluating the full range of potential strategies; advancing those with high potential to meet the study's need and purpose; refining the final strategies; and packaging them into alternatives that will undergo detailed analysis. This report documents the identification and screening of all potential strategies for **revive285 top end** and the process used to identify the alternatives to be carried forward for detailed analysis in the draft EIS.

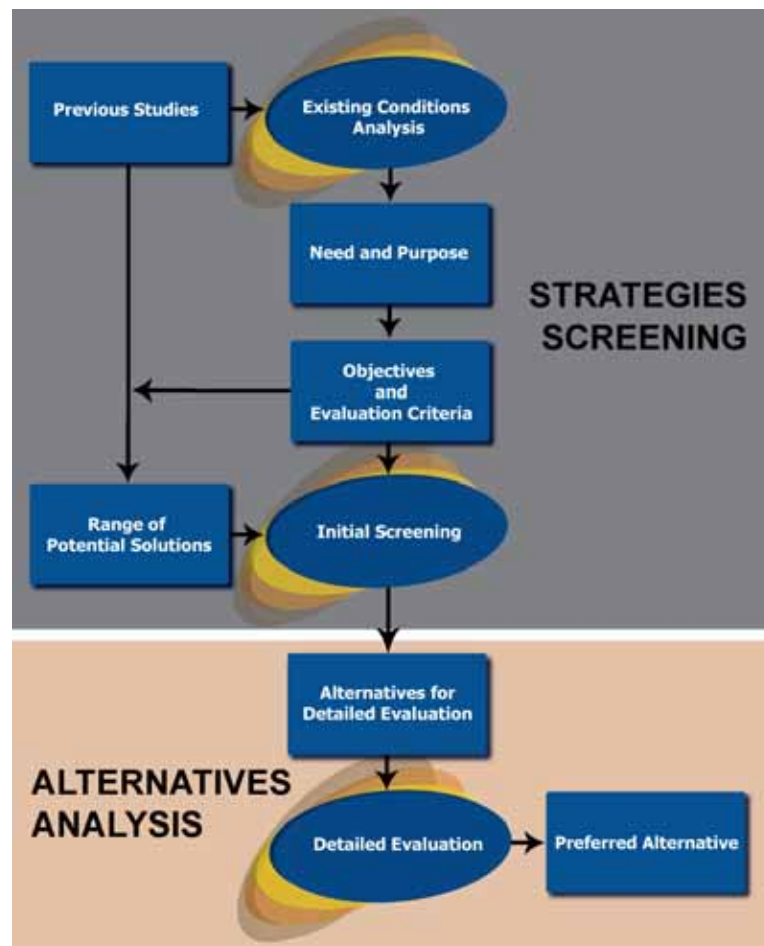
This report is organized into four sections. The next section includes an overview of the screening process, including the individual steps taken to identify, evaluate, and package alternatives. The third section provides an analysis of all potential strategies and concludes with a list of strategies being advanced to the alternatives analysis phase. The fourth section describes the development of alternatives, which are combinations of possible strategies. This report does not include a detailed analysis of those alternatives; that analysis will be included in the resulting environmental document. The final section discusses the next steps of the process.



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2. STRATEGY SCREENING AND ALTERNATIVES DEVELOPMENT PROCESS

The strategy screening and alternatives development process is designed to identify the alternatives that meet the need and purpose for the study corridor and to determine the most appropriate alternatives for detailed alternative development. The overall process includes analyzing existing conditions, defining criteria and performance measures for each objective, identifying potential transportation strategies, analyzing each strategy against the selected criteria and performance measures (using strategy characteristics, corridor conditions, and results from previous plans, programs, and studies), and identifying which alternatives should move forward for detailed evaluation during the alternatives analysis phase. Those alternatives being advanced will be subjected to a detailed evaluation before a preferred alternative is selected. The following exhibit provides a graphical representation of the strategy screening process.



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Strategies are evaluated individually against the corridor's needs and objectives and only those strategies with the best potential to meet the needs are advanced to the alternatives analysis phase. The alternatives analysis phase will build on these results by increasing the level of detail used and evaluating the alternatives against each other. The remainder of this section provides an overview of the individual steps used throughout the initial screening process.

2.1 Previous Studies and Plans

Previous studies and plans provide one basis for the identification of corridor conditions, both existing and future, and strategy characteristics as they may pertain to how a strategy may function along the study corridor. The following table identifies those previous plans and programs reviewed and how the information contained within them is used to screen strategies and identify alternatives for the detailed analysis.

Table 2.1 Previous Plans and Studies

Plan/Study	Identifies Strategies and/or Alternatives	Provides Corridor Conditions	Details Strategy Performance
<i>Envision6</i> Regional Transportation Plan	Yes	Yes	No
Atlanta Regional Commission (ARC) I-285 Corridor Transit Feasibility Study and I-285 Transit Corridor Alternatives Analysis	Yes	Yes	Yes
ARC Freight Study	Yes	No	Yes
Georgia Department of Transportation (DOT) Truck Lanes Study (ongoing)	Yes	No	Yes
Georgia DOT Managed Lane Study (ongoing)	Yes	No	Yes
DeKalb County Comprehensive Transportation Plan (CTP)	Yes	No	No
Cobb County CTP (ongoing)	Yes	No	No
I-285 Strategic Implementation Plan (ongoing)	No	Yes	Yes
Transportation Planning Board Regional Transit Vision	Yes	No	No



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2.2 Analysis of Existing Conditions

The overall strategy screening process relies on analysis of information documented in the **revive285 top end** Existing Conditions Report, including corridor conditions related to the existing and proposed network, travel patterns, and socioeconomic conditions. The **revive285 top end** team used the existing conditions to analyze how strategies may perform along the corridor based on their known characteristics. Specific existing conditions relevant to the screening of strategies include:

- Existing roadway/transit network
 - There are several substandard shoulders located under existing bridges.
 - Several bridges within the corridor have low bridge sufficiency ratings.
 - The Interstate 285 corridor consists mainly of five general-purpose lanes.
 - There are three system interchanges (I-75, SR 400, and I-85).
 - There are three existing high-occupancy vehicle (HOV) facilities on corridors that connect with the study area (I-75 and I-85).
 - There is no existing transit from east to west.
 - Express transit runs north/south along I-75 and I-85.
 - Two heavy-rail lines and two heavy-rail stations are within the corridor.
- Proposed roadway/transit network
 - Managed lanes are planned/programmed on I-75 North.
 - Arterial bus rapid transit (BRT) is planned/programmed on Buford Highway.
 - The Transit Planning Board (TPB) Vision includes light-rail transit on I-285 and three interconnecting routes (I-75 North, I-75 South, and I-85).
 - Truck-only lanes (TOLs) are planned/programmed for I-75 North.

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→ Traffic patterns¹

- The highest volumes in metro Atlanta are reported on segments of I-75, I-85, and I-285.
- The majority of trips along the corridor are 10 miles or less.
- Most crashes occur at interchanges due to congestion and increased weaving.
- The highest peak-hour volumes reflect a.m. traffic headed to employment areas at the Central Perimeter and Northside Drive/Cobb Parkway areas (Cumberland activity center).
- During the p.m. peak hour, directional traffic ranges from a 50-50 (west/east) split between Ashford Dunwoody Road and Chamblee Dunwoody Road to a 72-28 (west/east) split between U.S. 41 and I-75.
- Peak periods range from 6:30 a.m. to 9:30 a.m. and from 3:30 p.m. to 7:00 p.m.
- During the p.m. peak period, westbound I-285 queues from I-75 routinely extend to Roswell Road (more than 5 miles).
- During the p.m. peak period, eastbound I-285 queues from I-85 routinely extend to Ashford Dunwoody Road (more than 5 miles).
- Passenger car mode share is consistent regardless of time of day: passenger cars comprise a minimum of 84 percent of the vehicle mix during non-peak hours and a minimum of 88 percent of the vehicle mix during peak hours.
- Truck travel accounts for approximately 12 percent of total travel along the corridor, which equals approximately 30 percent of the total space available on the road (trucks equal a minimum of 2.5 passenger vehicles).
- The frequency of injury accidents on I-285 is 13 percent higher than the statewide average.

¹ The I-285 Strategic Implementation Plan, as referenced in the Existing Conditions Report, provides most of the detail of existing and proposed traffic patterns along the corridor.

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- Crash rates are generally higher on segments near system interchanges; truck crash rates are also higher in these areas.
- Injury crashes tend to occur near interchanges.
- Current transit mode share in the Atlanta region is 3 percent.
- ➔ Land use patterns
 - Employment is mostly contained in two centers: the Perimeter and Cumberland areas.
 - Residential land use is contained within pockets along the entire corridor.
 - The I-85 corridor to the northeast of the **revive285 top end** corridor is one of the two biggest industrial areas in metro Atlanta.
- ➔ Population and employment growth
 - Activity centers are expected to grow in both population and employment.
 - Residential areas are predominantly stable.
 - Future land use patterns are similar to existing patterns with proposed density increases in activity centers.

2.3 Development of Needs, Objectives, and Performance Measures

The Need and Purpose Statement describes what **revive285 top end** should accomplish through four need statements developed with input from the **revive285 top end** team, the Technical Advisory Committee, the Citizens' Advisory Committee, and the public. Specific objectives were defined for each need statement based on input received by the public and federal agencies to demonstrate how the **revive285 top end** study will meet the project need and purpose. Criteria and performance measures based on the objectives were developed to evaluate how well a strategy meets the defined objectives. The specific criteria and performance measures were developed through agency involvement, public input, and **revive285 top end** team analysis to measure the potential for each of the strategies.



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As previously stated, each strategy is evaluated individually against the study corridor's needs and objectives. The criteria and performance measures are based on the objectives and are used to evaluate how well a strategy meets the objective.

The criteria and performance measures are evaluated based on corridor conditions, data from previous studies, plans and programs, and typical strategy characteristics. The criteria and performance measures are identified in the following table and are further described by need/objective in subsequent sections. Throughout the remainder of this document, these needs and objectives are referred to as Needs One, Two, Three, and Four.

Table 2.2 Screening Criteria and Performance Measures

	Objectives	Criteria	Performance Measures	Information Used to Evaluate Measure
Need One: Better Manage and Minimize Traffic Congestion	<i>Improve congestion management</i>	Incident management	Potential to facilitate better incident management	Typical strategy characteristics
		Trip management	Potential to encourage trips during non-peak periods Potential to reduce trips	Typical strategy characteristics and existing trip patterns
	<i>Accommodate current and future travel demand</i>	Capacity	Potential for added capacity Flexible for modifications	Typical strategy characteristics
		Travel patterns	Does it meet current and/or projected trip types (modal choice and/or trip lengths)?	<i>Envision6</i> Regional Transportation Plan current/projected modal split and I-285 Strategic Implementation Plan average trip lengths for corridor
	<i>Reduce traveler delay</i>	Travel time savings	Potential to decrease travel times	Typical strategy characteristics
	<i>Maximize efficiency of corridor</i>	Efficiency	Potential to increase person throughput Potential to increase truck throughput Potential to provide optimal capacity	Typical strategy characteristics
Need Two	<i>Provide convenient and</i>	Accessibility	Potential to provide alternate modal access to employment	Typical strategy characteristics, census



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Table 2.2 Screening Criteria and Performance Measures

	Objectives	Criteria	Performance Measures	Information Used to Evaluate Measure
	<i>competitive travel choices</i>		areas Potential to provide alternate modal access to population areas	data
		Travel choice	Potential to provide additional mode/route choices Potential to promote the use of alternate routes or modes	Typical strategy characteristics, existing corridor modal choices
		Trip costs ²	Fuel consumption User cost (fares)	Typical strategy characteristics
	<i>Improve accessibility for transportation-disadvantaged populations</i>	Transportation disadvantaged	Potential to provide alternate modal access to areas with persons over 65 and/or areas with low vehicle availability	Typical strategy characteristics, census data
	<i>Accommodate interstate and regional trips without degrading local trip-making</i>	Quality of service	Potential to serve regional trips Potential to serve local trips Potential to address congestion on surface streets	Typical strategy characteristics, I-285 Strategic Implementation Plan documented trip patterns
Need Three: Maintain and Improve System Linkages	<i>Maintain and improve regional highway system connectivity</i>	Highway system connectivity	Number of new connections to existing highway systems Number of connections to planned/programmed projects	Typical strategy characteristics, existing corridor highway network, and planned/programmed projects
	<i>Improve linkages of regional transit system</i>	Connectivity to other transit systems	Potential to attract new transit riders Number of new connections to existing transit systems/stations of same mode Number of connections to planned/programmed transit	Typical strategy characteristics, existing corridor highway network, planned/programmed projects, and I-285 Transit Study Alternatives Analysis

² Trip costs will be assessed for the network as a whole and by individual routes.

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Table 2.2 Screening Criteria and Performance Measures

	Objectives	Criteria	Performance Measures	Information Used to Evaluate Measure
			systems/stations	
	<i>Maintain and improve freight system connectivity</i>	Connectivity to other planned truck-only systems	Number of new connections to planned/programmed projects Potential for improved connections to top freight origins/destinations	Typical strategy characteristics, existing corridor highway network, and planned/programmed projects
Need Four: Provide Safer Travel Conditions Along the Corridor	<i>Reduce potential for severe crashes</i>	Safety	Potential to separate heavy trucks from passenger vehicles Potential to reduce vehicle conflicts Potential to incorporate safety features (e.g., widened offsets to fixed objects, flattened curvatures on mainline)	Strategy characteristics
	<i>Reduce secondary impacts of incidents</i>	Traffic movement	Potential to allow for continued traffic movement Potential to redirect traffic	Strategy characteristics
	<i>Improve bicycle and pedestrian accommodations</i>	Bicycle and pedestrian safety	Potential to improve safety of connections between existing, planned, or programmed bicycle and pedestrian facilities	Strategy characteristics, planned/programmed projects

2.3.1 Need One: Better Manage and Minimize Traffic Congestion

2.3.1.1 Objective One: Improve Congestion Management

The criteria and performance measures for this objective were designed to evaluate how well a strategy may accommodate trips in the corridor and/or how well it may facilitate incident management.

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Incident Management

Within the context of this objective, incident management acknowledges that congestion is not just caused by high commute volumes. It can also be a result of crashes, breakdowns, and other unforeseen incidents that physically obstruct the roadway and diminish roadway capacity. In fact, vehicle crashes and breakdowns “account for 25 percent of the overall congestion problem” nationwide.³ Incident management, therefore, refers to a program of services and communication tools that improve responses to roadway incidents. Improving incident management can reduce the impacts of non-recurring congestion by redirecting traffic and/or improving the system’s ability to respond to or remove an incident. Strategies that can easily incorporate incident management tools into their designs meet this objective.

Trip Management

Trip management refers to all strategies that attempt to change trip-making behavior. Trip management includes encouraging trips during non-peak periods, thereby increasing the efficiency of the corridor by using otherwise unused capacity and/or reducing the overall number of trips. Examples of trip management include encouraging non-peak trips through financial incentives offered for non-peak travel or reducing trips by removing the need for a trip and/or encouraging higher occupancies in personal vehicles (thereby reducing the total number of personal vehicles).

2.3.1.2 Objective Two: Accommodate Current and Future Travel Demand

The criteria and performance measures for this objective were designed to evaluate the potential to meet future travel demands, the ability to be expanded in the future, and the suitability for current and/or projected trip characteristics.

Capacity

Higher throughputs indicate the potential to meet future capacity needs. Lower costs⁴ to change the system to meet capacity needs are indicative of more flexibility (i.e., greater ease for future expansion). Cost is

³ Balke, Kevin, PhD. “Measuring the Effectiveness and Performance of Multi-Agency Traffic Incident Management Programs.” Texas Transportation Institute, p. 1.

⁴ A cost of \$0 million to \$20 million per lane mile is considered low, \$20 million to \$50 million is considered medium, and more than \$50 million per lane mile is considered high.

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inversely proportional to flexibility in modifying a facility, meaning that a strategy with high capital cost has low modification flexibility, and vice versa.

Travel Patterns

The current travel forecasting process in place in the Atlanta area (managed by ARC) anticipates that future travel patterns will be similar to today's travel patterns, specifically trip lengths in the **revive285 top end** corridor. According to the I-285 Strategic Implementation Plan, current trip lengths along the corridor are 10 miles or less. In addition, most travel along the corridor during peak periods is to one of the two main activity centers: Perimeter and Cumberland.

2.3.1.3 Objective Three: Reduce Traveler Delay

Travel Time Savings

Traveler delay is usually caused by congestion and/or modal transfers. This objective is quantified by the likely reduction in travel time for individuals by reviewing a strategy's responsiveness to congestion and/or the number of transfers that may be required for travelers to access their destinations.

2.3.1.4 Objective Four: Maximize Efficiency of Corridor

Efficiency

This objective is measured by how well a strategy uses existing and future corridor capacity by reviewing its potential to increase person and truck throughput and provide optimal capacity.

If a strategy is likely to increase either the total number of persons or the total number of trucks moved through the corridor during a given duration, it has potential to make efficient use of the corridor. Optimal capacity can be defined as travel capacity that is utilized to its fullest without wasting available capacity. Therefore, a strategy that provides excess capacity is not very efficient. For example, adding general-purpose lanes where additional capacity is not needed is not efficient. Similarly, adding a heavy-rail system where local ridership projections only justify a bus system is not efficient. Truck throughput measures the number of trucks moved in the corridor during a given time period, with a higher number being desirable.

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2.3.2 Need Two: Improve Mobility Options for the Traveling Public

2.3.2.1 Objective One: Provide Convenient and Competitive Travel Choices

The criteria and performance measures for this objective were designed to evaluate the increase in accessibility to trip generators, the ability to provide travel choice, and the potential to reduce trip costs.

Accessibility

Accessibility refers to the ability of travelers to access residential, recreational, and employment centers. Desirable strategies should be able to target these locations.

Travel Choice

Travel choice refers to the potential to provide and/or to promote modal options. Travel choices provided by strategies or alternatives need to be reasonably similar to the convenience and travel times offered by existing services (private automobiles) to attract riders and be truly viable mobility options.

Trip Cost

Trip cost directly impacts the ability of individuals to make modal choices. Strategies that reduce trip cost (e.g., through reduced fuel consumption) are included in this calculation.

2.3.2.2 Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Transportation-Disadvantaged

“Transportation-disadvantaged” refers to people with unmet transportation needs.⁵ For the purposes of this report, transportation-disadvantaged populations are defined as those with a low percentage of vehicle availability and/or a high percentage of individuals over the age of 65. Locations with a low percentage of vehicle availability may indicate an opportunity to improve modal choice with alternate transportation options. Locations with a high percentage of individuals over the age of 65 may also indicate an opportunity to provide modal choice for older populations who are often less willing or able to drive personal

⁵ Victoria Transport Policy Institute, TDM Encyclopedia, “Equity Evaluation.” Accessed at: <http://www.vtpi.org/tm/tm13.htm>.

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automobiles due to physical ailments. A strategy that provides multimodal access to areas with low vehicle availability and/or significant populations over the age of 65 improves accessibility for transportation-disadvantaged populations.

2.3.2.3 Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Quality of Service

This objective is measured by how well it supports the original purpose of I-285, which was interstate and regional travel, while also supporting local trip generators within the corridor. As an interstate corridor, I-285 must serve the regional and interstate functions intended of the system. Accommodations for local trips are appropriate only to the degree to which they do not detract from regional and interstate trip-making.

2.3.3 Need Three: Maintain and Improve System Linkages

2.3.3.1 Objective One: Maintain and Improve Regional Highway System Connectivity

Highway System Connectivity

The top end of I-285 is only one segment of the regional highway system. This objective indicates how well a strategy will integrate with the existing and planned system of highways in the region.

2.3.3.2 Objective Two: Improve Linkages of Regional Transit System Within Study Corridor

Connectivity to Other Transit Systems

This objective indicates how well a strategy will integrate with existing and planned regional transit systems. Because there are no existing east-west transit services adjacent to the corridor, this objective is also measured by a strategy's potential to attract new transit riders. The potential for new transit riders is based on the I-285 Transit Alternatives Analysis that indicated a range of 15,000 new riders to 39,962 new riders daily for all transit strategies considered in that study. For the purposes of **revive285 top end**, less than 10,000 riders is considered low, between 11,000 riders and 20,000 riders is considered medium, and more than 20,000 riders is considered high.



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2.3.3.3 Objective Three: Maintain and Improve Freight System Connectivity

Connectivity to Other Planned Truck-Only Systems

This objective is measured by how well a strategy will integrate with existing and planned regional good movement systems and its ability to facilitate freight traffic to top freight origins and destinations. There are two critical freight trip patterns in the corridor. First, freight trips are predominantly through-trips. Second, the corridor contains two major freight destinations, both of which are on the eastern side of the corridor (the I-85 corridor and the Peachtree Industrial tank farm area). There is a need to better accommodate local delivery trips as well.

2.3.4 Need Four: Provide Safer Travel Conditions Along the Corridor

2.3.4.1 Objective One: Reduce Potential for Severe Crashes

Safety

Severe crashes are crashes that normally include injuries and/or fatalities. Research along the corridor has indicated that most fatalities occur when vehicles with differing operational patterns use the same system. For example, heavy trucks require a much longer braking distance, turning radius, and passing distance than personal vehicles. However, drivers of personal vehicles may interact with heavy trucks without knowing or acknowledging these important differences. Therefore, this objective is measured by a strategy's ability to separate heavy trucks and passenger vehicles and/or reduce vehicle conflicts. Additionally, this objective is measured by a strategy's ability to incorporate road safety features (e.g., widened offsets to fixed objects, flattened curvatures on mainline, etc.) into its design.

2.3.4.2 Objective Two: Reduce Secondary Impacts of Incidents

Traffic Movement

Secondary impacts from incidents cause congestion by blocking traffic. Therefore, if a strategy can allow for continued traffic movement and/or redirect traffic in the event of an incident, it is likely to meet this objective. Allowing for continued traffic movement requires the ability to transfer traffic flow between lanes, while redirecting traffic requires access to alternate routes through ingress and egress points (e.g., on- and off-ramps).

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2.3.4.3 Objective Three: Improve Bicycle and Pedestrian Accommodations

Bicycle and Pedestrian Movement

A strategy is measured against this objective based on whether it is likely to increase bicycle and pedestrian safety on connections between existing, planned, or programmed bicycle and pedestrian facilities. Adding sidewalks to a bridge so that pedestrians can safely cross from one side to another is an example of increasing safety on a connection between pedestrian facilities.

2.4 Identification and Analysis of Strategies

Current federal guidelines for project development require the identification and analysis of all reasonable alternatives for a project. The process of identifying these alternatives starts with the identification of all potential transportation investments (“strategies”), including non-expansion (includes federally mandated alternatives), capital investments (transit, highway capacity, and off-mainline improvements), policy recommendations, design solutions, and short-term solutions.

Strategies and alternatives to be studied as part of **revive285 top end** were developed from a variety of sources, including existing programs, plans, and policies; national Environmental Protection Agency requirements; and technical analysis. Public input was also used to help the **revive285 top end** team identify potential strategies. A brief overview of public input activities follows:

- Technical Advisory Committee (TAC) – Several meetings have been held with the TAC and included input on the need and purpose statements and potential criteria and measures.
- Citizens’ Advisory Committee (CAC) – Several meetings have been held with the CAC and included input on the need and purpose statements and potential criteria and measures.
- The general public has been engaged and its input has been solicited and received through the following efforts:
 - Online – An open-ended comment form and surveys have been available on the **revive285 top end** web site.
 - Strategies survey – A list of strategies was presented to the public, and the public was asked to review the draft results of the initial screening and provide input on whether a strategy should move forward.



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- Public meetings – Three rounds of public meetings were held, with the first round involving gathering input on project need and purpose and the second round focusing on needs, objectives, and strategies under consideration for the corridor. During the second round of public meetings, the public was asked to identify specific strategies it thought the **revive285 top end** team missed. During the third round of meetings, the strategy screening process and results were presented to the public for comment.

The full range of specific strategies and solutions identified by the public are included in Appendix A. Key input on strategies and solutions from the public and agencies is included below:

- ➔ According to the online Issues and Opportunities Survey, the top four types of improvements that respondents would like to see include interchange improvements, separation of truck traffic from regular traffic, new or improved alternate routes, and additional transit options in the corridor.
- ➔ The three strategies most preferred are transportation systems management (TSM)/transportation demand management (TDM), operational improvements, and TOLs.
- ➔ The three strategies least preferred are maglev, general-purpose lanes, and automated guideway transit (AGT).

Planned or programmed projects in the *Envision6* Regional Transportation Plan that are relevant to the **revive285 top end** area are as follows:

- ➔ BRT along I-285 between the Cumberland/Galleria area (I-75) and Perimeter Center
- ➔ Express Bus and managed lanes along I-75 North to Hickory Grove Road
- ➔ Managed lanes
 - I-285 between I-75 North and I-85 North
 - SR 400 between I-285 and McFarland Road in Forsyth County
- ➔ Interchange upgrade/capacity improvements
 - I-285 and SR 400
 - I-285 and Riverside Drive

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- SR 400 and Hammond Drive
- I-285 and Roswell Road
- I-285 and Ashford Dunwoody Road
- I-75 and Windy Hill Road

→ Roadway capacity improvements

- Johnson Ferry Road/Glenridge Drive
- Hammond Drive

2.5 Development of Alternatives

The purpose of the strategy screening process was to determine which strategies should move forward for the detailed alternatives analysis, which includes an assessment of how well alternatives satisfy the project need and the identification of social, natural, cultural, and economic environmental impacts and potential mitigation strategies. Strategies that have the best potential to meet project needs are analyzed individually and in combination with other strategies to determine which strategies have the best potential to satisfy the entire project need.

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3. STRATEGY SCREENING RESULTS

This section provides a discussion of each strategy under consideration for advancement to the alternatives analysis phase of **revive285 top end**. The strategies meeting two or more of the identified needs are recommended to be advanced for further study. The strategies are classified into categories: non-expansion alternatives, transit systems, highway strategies, operational improvements, and “off-mainline” improvements. At this phase of the process, strategies do not include specifics such as location or design. (The public has submitted detailed suggestions, which have been added to the project record and are included in Appendix A.)

3.1 Strategies Under Consideration

3.1.1 Non-Expansion Alternatives

3.1.1.1 No-Build

This alternative is required by federal regulations and provides a baseline against which to measure the effects of build strategies. The no-build alternative includes all programmed and planned projects in ARC's *Envision6* Regional Transportation Plan update except those within the study corridor.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Little or No Potential**

Objective One: Improve Congestion Management

The no-build alternative has some potential to facilitate better incident management and to encourage trips during non-peak periods, but little or no potential to reduce trips unless considerable effort is placed into TDM. However, the impact is likely to be minimal since congestion will increase as a result of anticipated population and employment growth.

Objective Two: Accommodate Current and Future Travel Demand

The no-build alternative does not allow for additional capacity and/or other modifications. Current and/or projected trip types of 10 miles or less can be served by the no-build alternative; however, anticipated congestion will reduce this benefit.

Objective Three: Reduce Traveler Delay

The no-build alternative has no potential to decrease travel times because demand will continue to increase with no modification to supply.



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Objective Four: Maximize Efficiency of Corridor

The no-build alternative offers no potential to increase person throughput or truck throughput, or to provide optimal capacity.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Little or No Potential**

Objective One: Provide Convenient and Competitive Travel Choices

The no-build alternative does not provide alternate modal access to population and employment centers, nor does it provide additional mode or route choices. The no-build alternative may promote the use of alternate modes if considerable effort is placed into TDM strategies. It does not reduce fuel consumption.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

The no-build alternative does not provide alternate modal access to transportation-disadvantaged populations.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

The no-build alternative has little impact on local and regional trips in the short term, and the impact is likely to decrease as demand along the corridor increases. Additionally, the no-build alternative does not address congestion on surface streets unless considerable efforts are placed into minor operational improvements.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

The no-build alternative does not provide new connections to existing highway systems.

Objective Two: Improve Linkages of Regional Transit System

The no-build alternative does not provide new connections to existing transit systems or stations. Additionally, the no-build alternative offers only limited potential to attract new transit riders.

Objective Three: Maintain and Improve Freight System Connectivity

The no-build alternative does not offer new connections to planned or programmed truck-only facilities, nor does it improve connections to top freight origins or destinations.

Strategy Screening and Alternatives Development Process and Initial Screening Results

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

The no-build alternative has no potential to separate heavy trucks from passenger vehicles. It offers limited potential to reduce vehicle conflicts and incorporate road safety features into its design.

Objective Two: Reduce Secondary Impacts of Incidents

The no-build alternative has limited potential to allow for continued traffic movement and/or redirection of traffic in the event of an incident.

Objective Three: Improve Bicycle and Pedestrian Accommodations

The no-build alternative has no potential to increase the safety of existing, planned, or programmed bicycle and pedestrian connections.

Conclusion: Although the no-build alternative does not meet any of the identified needs, as a federally required strategy it will be carried forward as an alternative for detailed analysis.

3.1.1.2 Federal Transit Administration New Starts Baseline

The Federal Transit Administration (FTA) New Starts Baseline alternative provides a basis for comparing the costs and benefits of a major new transit project with the costs and benefits of lower-cost improvements to existing transit in the corridor. The New Starts Baseline alternative should represent the “best that can be done” to improve transit service in the corridor without major capital investment in new infrastructure. At a minimum, the New Starts Baseline must include all relatively low-cost transit improvements, such as traffic engineering, enhanced bus service, and other transit operational changes, and modest capital improvements, such as reserved lanes, park-and-ride lots, and transit terminals. Ultimately, the New Starts Baseline should demonstrate the extent to which transportation problems can be solved without a major capital investment from New Starts.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Little or No Potential**

Objective One: Improve Congestion Management

The FTA New Starts Baseline alternative has no potential to facilitate better incident management or to encourage trips during non-peak periods. However, it does have potential to reduce trips if bus service is provided along the corridor. The I-285 Alternatives Analysis study indicated demand along this corridor that may be served by the bus service. However, the I-285 Alternatives Analysis study also indicated that without a dedicated facility, demand for transit is slight.

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Objective Two: Accommodate Current and Future Travel Demand

The FTA New Starts Baseline alternative does not allow for additional capacity and/or other modifications. Bus service may meet current and/or projected trip types of 10 miles or less; however, as stated above, without a dedicated facility, demand is slight.

Objective Three: Reduce Traveler Delay

The FTA New Starts Baseline alternative has no potential to decrease travel times because demand continues to increase with no modification to supply.

Objective Four: Maximize Efficiency of Corridor

The FTA New Starts Baseline alternative offers some potential to increase person throughput with bus service; however, the impact to overall person throughput will be minimal as demand will be slight. This strategy will have little or no impact on truck throughput, and will not provide optimal capacity because buses will be underutilized.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Potential**

Objective One: Provide Convenient and Competitive Travel Choices

The FTA New Starts Baseline alternative can provide alternate modal access to population and employment centers and can provide additional mode or route choices. The FTA New Starts Baseline alternative may promote the use of alternate modes, but demand for non-dedicated facilities is slight. This alternative may reduce fuel consumption by reducing trips; however, this impact will be minimal because of limited demand for a non-dedicated facility.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

The FTA New Starts Baseline alternative may provide alternate modal access to transportation-disadvantaged populations with new service routes.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

The FTA New Starts Baseline alternative can serve local trips and reduce surface street congestion in the short term; however, this service will likely decrease as travel demand along the corridor increases and impacts the viability of bus service.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

The FTA New Starts Baseline alternative does not provide new connections to existing highway systems.



Strategy Screening and Alternatives Development Process and Initial Screening Results

Objective Two: Improve Linkages of Regional Transit System

The FTA New Starts Baseline alternative provides new connections to existing transit systems or stations. However, the FTA New Starts Baseline alternative offers only limited potential to attract new transit riders once congestion along both the corridor and surface streets limits the viability of bus service.

Objective Three: Maintain and Improve Freight System Connectivity

The FTA New Starts Baseline alternative does not offer new connections to planned or programmed truck-only facilities, nor does it improve connections to top freight origins or destinations.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

The FTA New Starts Baseline alternative has no potential to separate heavy trucks from passenger vehicles. It offers limited potential to reduce vehicle conflicts and incorporate road safety features into its design.

Objective Two: Reduce Secondary Impacts of Incidents

The FTA New Starts Baseline alternative has limited potential to allow for continued traffic movement and/or redirection of traffic in the event of an incident.

Objective Three: Improve Bicycle and Pedestrian Accommodations

The FTA New Starts Baseline alternative has no potential to increase the safety of existing, planned, or programmed bicycle and pedestrian connections.

Conclusion: Although the FTA New Starts Baseline alternative does not meet any of the identified needs, as a federally required strategy it will be carried forward as an alternative for detailed analysis.

3.1.1.3 Transportation System Management (TSM)

Federal guidance recommends the review of a TSM alternative that contains projects and programs designed to maximize the efficiency of existing transportation resources. This alternative includes *Envision6* Regional Transportation Plan programmed and planned projects outside of the study corridor, minor improvements within the corridor, upgraded local bus service, and management techniques such as improved signalization. The following section highlights key TSM techniques.

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3.1.1.3.1 Price Management

Price management, often called congestion pricing, is a management strategy in which people traveling during off-peak hours receive discounts on existing tolls. Correspondingly, those traveling during peak hours pay premium tolls. The primary purpose of price management is to decrease congestion of new or existing systems by spreading out demand and reducing congestion at peak hours.

According to U.S. DOT's Federal Highway Administration (FHWA), price management has been successfully implemented for SR 91 in California, where toll charges are based on congestion on the adjacent freeway. The SR 91 toll increases as delay on the freeway increases. After the first year of revenue service in 1995, 80,000 customers obtained transponders to access SR 91. A subsequent study conducted at California Polytechnic State University suggested that the time saved by using SR 91 instead of the freeway is more valuable to motorists than the toll fee.

Current Georgia DOT policy restricts tolling on existing roadways; therefore, this technique will not be part of the federally required TSM alternative, but it can be considered as a design option with the build alternatives.

3.1.1.3.2 Truck Restrictions

Truck restrictions refer to a variety of regulations placed on heavy trucks. According to FHWA's Freeway Management and Operations Handbook, the primary purposes of truck restrictions are to improve traffic operations, improve safety, and reduce peak-period congestion. Restrictions can include prohibiting trucks from using certain lanes or routes, limiting freight truck travel to specific times of day, or setting speed limits specific to heavy trucks. For example, through-trucks are currently restricted from using I-75, I-85, and I-20 inside I-285 unless they are serving a destination inside I-285. In addition, Georgia law restricts trucks with more than six wheels to the two most right-hand lanes (O.C.G.A. 40-6-52 [b]).

3.1.1.3.3 Intelligent Transportation Systems

Intelligent transportation systems (ITS) use a variety of technologies to enhance the operation of an area's transportation system. ITS tools include advanced traffic signal operations, vehicle detectors, closed-circuit television cameras, ramp meters, and communication of real-time transportation information through dynamic message signs, dedicated web sites, and telephone information numbers. The primary purpose of ITS strategies is to improve system operations through system management and condition communications. ITS applications for incidents, emergency management, and traveler advisories can be applied on arterials, freeways, and transit systems.

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Georgia DOT's ITS is known as Georgia NaviGator and covers 140 freeway miles in the metro Atlanta area. The NaviGator system includes a traffic management center, freeway management components, advanced traveler information systems, and an incident management program, all of which provide real-time data to the traveling public. Ramp meters are an additional Georgia NaviGator component currently under construction. Other ITS devices in the study corridor include variable message signs.

3.1.1.3.4 Improved Signage

According to FHWA's Freeway Management and Operations Handbook, highway signage provides necessary information to the traveling public and may be static or have a changeable message. Clear highway signage improves driver information and reduces driver workload, thereby improving safety. Applications for improved signage include:

- Traveler guidance
- Traffic management and diversion
- Warning of adverse conditions
- Control during construction and maintenance operations
- Special-use lane and roadway control

Signs are easily damaged by impacts or vandalism. Over time, their visual quality degrades as a result of dirt and normal reflectivity deterioration. New sign materials are highly reflective and do not require special lighting.

3.1.1.3.5 Incident Management

Incident management refers to a coordinated, multi-agency, multi-jurisdictional response to highway traffic disruptions. Incident management increases the operating efficiency and safety of a highway by systematically reducing the time needed to detect, respond to, and clear a traffic incident while managing the affected flow until full capacity is restored. Additionally, motorists who may be affected by the secondary impacts of the incident can access the information they need to make informed trip-making decisions. These techniques involve a variety of entities, including law enforcement, fire departments, 911 dispatch, towing and recovery entities, emergency medical services, HAZMAT, transportation agencies, and media.

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According to Georgia Traffic Incident Management Enhancement task force data, for every minute one lane is blocked, it takes three to seven minutes to recover free traffic flow once the lane is cleared. Incident management techniques reduce these secondary impacts by efficiently responding to and clearing traffic incidents. Techniques currently in use in the corridor include the Highway Emergency Response Operators incident response units dispatched by the Georgia DOT Transportation Management Center.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Little or No Potential**

Objective One: Improve Congestion Management

The TSM alternative has potential to facilitate better incident management and to encourage trips during non-peak periods. However, the potential is reduced in the future as congestion increases as a result of anticipated population and employment growth. TSM is unlikely to reduce trips because it has little to do with overall demand.

Objective Two: Accommodate Current and Future Travel Demand

The TSM alternative does not allow for additional capacity and/or other modifications, nor does it serve current and/or projected trip types of 10 miles or less.

Objective Three: Reduce Traveler Delay

The TSM alternative has no potential to decrease travel times as demand continues to increase with no modification to supply.

Objective Four: Maximize Efficiency of Corridor

The TSM alternative offers no potential to increase person throughput. However, TSM strategies do have the potential to increase truck throughput and/or provide optimal capacity through truck restrictions and/or congestion pricing. However, the potential is reduced as congestion increases as a result of population and employment growth.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Little or No Potential**

Objective One: Provide Convenient and Competitive Travel Choices

The TSM alternative does not provide alternate modal access to population and employment centers, nor does it provide additional mode or route choices. Additionally, the TSM alternative does not promote the use of alternate modes or reduce fuel consumption.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

The TSM alternative does not provide alternate modal access to transportation-disadvantaged populations.



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Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

The TSM alternative has little impact on local and regional trips in the short term, and this impact is likely to decrease as demand along the corridor increases. Additionally, the TSM alternative does not address congestion on surface streets unless considerable efforts are placed into signage and minor operational and/or ITS solutions; however, the impacts from these will diminish as congestion continues to grow.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

The TSM alternative does not provide new connections to existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

The TSM alternative does not provide new connections to existing, planned, or programmed transit systems or stations. Additionally, TSM offers only limited potential to attract new transit riders.

Objective Three: Maintain and Improve Freight System Connectivity

The TSM alternative has limited potential to offer new connections to planned or programmed truck-only facilities. One approach could be the implementation of truck lane restrictions. However, these restrictions would not improve connections to top freight origins or destinations.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

The TSM alternative can separate heavy trucks from passenger vehicles. It offers potential to reduce vehicle conflicts and incorporate safety features into its design.

Objective Two: Reduce Secondary Impacts of Incidents

The TSM alternative has limited potential to allow for continued traffic movement and/or redirection of traffic in the event of an incident through the use of ITS. However, it will likely have less benefit as congestion increases.

Objective Three: Improve Bicycle and Pedestrian Accommodations

The TSM alternative has no potential to increase the safety of connections between existing, planned, or programmed bicycle and pedestrian facilities.

Strategy Screening and Alternatives Development Process and Initial Screening Results

Conclusion: Although the TSM strategy does not meet any of the identified needs, as a federally recommended strategy it will be carried forward as an alternative for detailed analysis.

3.1.1.4 Transportation Demand Management (TMD)

TDM refers to strategies that reduce demand for transportation resources to maximize the efficiency of the existing infrastructure. TDM strategies are designed to reduce transportation demand during peak hours, reduce the quantity of single-occupancy vehicles (SOV), and/or reduce overall trip-making. Some strategies include offering commuters alternate modes of transportation, providing incentives to travel at off-peak times, or requiring development plans to incorporate traffic impact policies.

Current TDM strategies in use along the study corridor have been implemented by the Clean Air Campaign, ARC, and transportation management associations in the area. These strategies include the following:

- Discounted transit passes
- Ride-matching for car and vanpools
- Vanpool and carpool subsidies
- Guaranteed ride home program for carpool, vanpool, and transit users
- Personalized commute information

Additional information is provided below for other potential TDM strategies considered in this process.

3.1.1.4.1 Carpools/Vanpools

Carpools and vanpools manage transportation resource demand by reducing SOV trip-making. When people share cars or vans, vehicles are removed from the network. Carpools and vanpools are most often used for local or regional home-to-work trips. Vanpools are often subsidized by employers.

3.1.1.4.2 Teleworking

Teleworking is a work arrangement in which employees are not required to commute to a central location to perform their job. Instead, employees use information technologies and telecommunications to perform their work from home or a nearby location, thereby eliminating the commute trip.

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According to the 2004 American Interactive Consumer Survey conducted by The Dieringer Research Group, the number of employed Americans who performed any kind of work from home for at least one day a year to full-time increased from 41.3 million in 2003 to 44.4 million in 2004, representing a 7.5 percent growth rate.⁶

3.1.1.4.3 Flex Time

Flex time, sometimes called alternate work hours, is a working arrangement where employers allow or encourage employees to alter their work day from the typical 9:00 a.m. to 5:00 p.m. shift. When commuters arrive earlier or work later, peak-period trip-making and congestion can be reduced.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: Little or No Potential

Objective One: Improve Congestion Management

TDM will not influence or facilitate improved incident management since it has no influence on roadway design. However, it does address congestion management because it is designed to reduce trip-making, especially during peak hours.

Objective Two: Accommodate Current and Future Travel Demand

TDM strategies do not impact capacity, and because they are not infrastructure-based, they are very flexible to modifications. Additionally, TDM strategies are able to impact current and projected trip types because they encourage flex time and teleworking.

Objective Three: Reduce Traveler Delay

TDM strategies have limited potential to decrease travel time because travelers are still bound by existing congested conditions. By removing some single-occupancy vehicles from the road, TDM strategies have some potential to reduce congestion, but this impact is minimal.

Objective Four: Maximize Efficiency of Corridor

TDM strategies have the potential to increase person throughput by increasing carpool and vanpool usage. However, they have no direct ability to increase truck throughput on the corridor. TDM can help to achieve optimal capacity because it encourages travel outside of peak hours when the corridor has unused capacity.

⁶ The Telework Coalition, accessed at <http://www.telcoa.org/id33.htm>.

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Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Little or No Potential**

Objective One: Provide Convenient and Competitive Travel Choices

TDM strategies can provide alternate modal access to employment and population areas through the use of carpools, vanpools, and teleworking. However, TDM strategies do not provide alternate route choices to employment and population areas. They do promote the use of alternate modes through tools such as the subsidization of bus passes and the creation of vanpools. Overall, however, the impact of TDM strategies is minimal. TDM strategies allow users to reduce fuel consumption. There are no user costs for tools such as teleworking and flex time, but the subsidized user fee for vanpool riders is typically \$50 per month.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

TDM strategies have the potential to improve accessibility for transportation-disadvantaged populations by providing alternate modal access to elderly populations or those without access to a vehicle.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

TDM strategies can serve both regional and local trips, as well as address congestion on surface streets.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

TDM strategies do not provide any new connections to existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

TDM strategies do not provide any new connections to existing, planned, or programmed transit systems or stations.

Objective Three: Maintain and Improve Freight System Connectivity

TDM strategies do not provide any new connections to planned or programmed truck-only systems, nor do they improve connections to top freight origins and destinations.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

TDM strategies will not separate heavy trucks from passenger vehicles, nor will they reduce vehicle conflicts. Additionally, they do not incorporate road safety features into their implementation. TDM can, however, reduce traffic volumes or shift travel patterns, thereby improving safety.

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Objective Two: Reduce Secondary Impacts of Incidents

TDM strategies do not allow for continued traffic movement or traffic redirection in the event of a traffic incident.

Objective Three: Improve Bicycle and Pedestrian Accommodations

TDM strategies do not increase the safety of connections between existing, planned, or programmed bicycle and pedestrian facilities.

Conclusion: Singularly, TDM does not adequately address any of the identified needs. However, it does have the potential to enhance the effectiveness of other strategies and is advanced to the detailed alternatives analysis phase as a supporting strategy.

3.1.2 Transit Systems

Transit systems such as subways and buses provide an alternative to the private passenger vehicle and are capable of moving large numbers of passengers and connecting high-density residential and employment centers. With a dedicated facility, transit systems can provide consistent and predictable trips because they are not impacted by congestion on the general highway network.

Transit systems usually require government subsidization. Up-front capital costs are so high that large transit ventures are often unprofitable for a private entity. In addition to capital costs, operations and maintenance costs also require public subsidies. In the United States, revenue collected at the fare box typically covers only a portion of total operations and maintenance costs.

Federal guidelines indicate that conclusions from previous studies, such as the I-285 Alternatives Analysis, can be used to narrow potential alternatives. The I-285 Alternatives Analysis concluded that BRT is the appropriate transit solution for the I-285 corridor. However, a variety of potential transit strategies were considered in the **revive285 top end** study to identify which transit strategies best meet the **revive285 top end** project needs. The following table provides an overview of these strategies.

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Table 3.1 Transit Strategy Details

Transit Option	Unit Cost/ Mile	Purpose	Distance Between Stations	Right-of-Way/ Alignment	Typical Headway	Capacity Seated/Max.	Typical Operating Speed	Typical Max. Speed
Heavy-Rail	\$100 million to \$200 million	Local Regional	½ mile to 3 miles	Dedicated	5 minutes to 10 minutes	360 persons to 480 persons/720 persons to 960 persons	25 miles per hour (mph) to 65 mph	70 mph
Light-Rail	\$25 million to \$100 million	Local Regional	½ mile to 1 mile	Mixed traffic Dedicated	5 minutes to 15 minutes	75 persons to 225 persons/ 120 persons to 360 persons	15 mph to 55 mph	70 mph
BRT	\$2 million to \$55 million	Regional	¼ mile to 1 mile	Mixed traffic Dedicated	5 minutes to 15 minutes	40 persons to 60 persons/ 60 persons to 120 persons	15 mph to 55 mph	Posted speed limit
Express Bus	N/A	Regional	N/A	Mixed traffic	15 minutes to 30 minutes	40 persons to 45 persons/ 45 persons to 60 persons	35 mph to 55 mph	Posted speed limit
Monorail	\$50 million to \$100 million	Circulator/ local	½ mile to 1 mile	Dedicated	5 minutes to 15 minutes	60 persons to 80 persons/ 120 persons to 160 persons	20 mph to 30 mph	60 mph
AGT	\$25 million to \$50 million	Activity center Local	¼ to ½ mile	Dedicated	2 minutes to 5 minutes	20 persons to 30 persons/ 40 persons to 60 persons	10 mph to 25 mph	40 mph
Maglev	\$100 million to \$200 million	Regional Intercity	2 miles to more than 10 miles	Dedicated	15 minutes to 1 hour	180 persons to 900 persons/ 180 persons to 900 persons	150 mph to 250 mph	310 mph

Sources: Characteristics of Urban Transportation Systems, Seattle Monorail Project Initial Capital Cost Estimate, GAO: Mass Transit Bus Rapid Transit Shows Promise

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The following section provides a more detailed description of each transit strategy, existing corridor conditions that influence how the strategy may work in the corridor, and each strategy's potential to meet the project needs.

3.1.2.1 Heavy-Rail Transit

Heavy-rail transit is an electric railway with the capacity for a large number of passengers. It is characterized by high speed and rapid acceleration, single- or multi-car passenger vehicles operating on grade-separated fixed rails, separate rights-of-way that exclude all other vehicular and foot traffic, sophisticated signaling, and high platform loading. The fare system for this type of transit can vary between a flat-fare and a distance-weighted fare system wherein a rider pays a fare proportional to the distance traveled. MARTA is an example of a flat-fare heavy-rail system in metro Atlanta (one fare is \$1.75). There are two MARTA lines and two MARTA stations in the study corridor. No other heavy-rail investments in the corridor are planned or programmed. Other examples of existing heavy-rail systems in the United States include the Miami-Dade Metrorail and the Washington Metro.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: Little or No Potential

Objective One: Improve Congestion Management

Heavy-rail systems are not a part of the highway, and therefore they have no impact on improving highway incident management techniques. Heavy-rail is not likely to encourage non-peak trips on the corridor because it is not affected by normal peak-hour vehicle congestion and will provide a similar level of service at peak and non-peak hours. Heavy-rail does offer potential to reduce vehicle trips by providing an alternate modal choice, but it is constrained by the likeliness of a low percentage of total trip capture, lower operating speeds, and the limited frequency of service characteristic of any transit strategy.

Objective Two: Accommodate Current and Future Travel Demand

Heavy-rail systems have the potential to meet future travel demand by adding or removing trains to match demand. Heavy-rail is not easily modified due to its high capital cost, which is approximately \$100 million to \$200 million per mile of construction. Heavy-rail can address current and projected trip types of 10 miles or less.

Objective Three: Reduce Traveler Delay

Heavy-rail systems may reduce travel times by providing reliable service and operating independently of the roadway, but only for those trips made using the heavy-rail system.

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Objective Four: Maximize Efficiency of Corridor

Heavy-rail has potential to increase person throughput on the corridor as a result of a large vehicle capacity. Heavy-rail will not increase freight throughput on the corridor because it is not designed to move freight. Heavy-rail systems have potential to operate at optimal capacity by adding or removing trains to match demand, thereby consuming unused capacity as necessary. However, low ridership demand may prevent operating at optimal capacity, since available supply may go unused.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Potential**

Objective One: Provide Convenient and Competitive Travel Choices

Heavy-rail provides a convenient and competitive modal choice for accessing high population and employment areas, since stations will likely be located in the densest residential and employment centers. Heavy-rail systems provide additional mode and route choices for travelers. Because heavy-rail is capable of higher speeds and operates in dedicated right-of-way, the resultant time savings can promote its use as an alternate mode of transportation. Heavy-rail systems allow users to reduce fuel consumption. The price of a heavy-rail fare in other U.S. metropolitan areas is \$1.25 to \$2.00.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Heavy-rail systems can serve transportation-disadvantaged populations with alternate modal access by providing a transportation alternative to the personal vehicle.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Heavy-rail can accommodate service for regional trips without impacting the highway capacity needed for local trips. However, heavy-rail would not serve interstate trips. Heavy-rail systems may also address congestion on parallel surface streets by replacing local vehicle trips; however, this benefit may be offset by the vehicle traffic generated by the stations and the likely low mode share of any transit strategy.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

Heavy-rail systems serve transit passengers only and do not provide new connections to existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

It is likely that new heavy-rail systems would attract new transit riders in the study area because 15,000 to 39,962 riders per day are projected for transit options in the corridor. Although potentially systems could connect to the existing MARTA heavy-rail transit system, the necessary transfers between other modes and

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heavy-rail lines would yield inefficient linkages. For example, a new heavy-rail system could connect to the North MARTA line and the Northeast Spur in Doraville, but it would require more transfers than a bus solution in the I-285 corridor. Heavy-rail systems would not connect to the planned or programmed BRT transit systems/stations in the study corridor.

Objective Three: Maintain and Improve Freight System Connectivity

Heavy-rail systems do not improve freight or vehicle connectivity because they serve transit passengers only and will not connect to any planned or programmed truck-only systems. Heavy-rail systems will not improve connections to top freight origins and destinations.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

Heavy-rail systems operate separately from the highway and therefore do not separate heavy trucks from passenger vehicles, reduce vehicle conflicts, or incorporate road safety features in their design. Like all transit options, however, heavy-rail can provide safety benefits by reducing vehicular traffic and provide incident management benefits for drivers switching to transit when incidents occur.

Objective Two: Reduce Secondary Impacts of Incidents

Heavy-rail systems operate separately from the highway and therefore do not allow for continued traffic movement or redirection in the event of a traffic incident. Like all transit options, however, heavy-rail can provide safety benefits by reducing vehicular traffic and provide incident management benefits for drivers switching to transit when incidents occur.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Heavy-rail systems will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities. However, safe bicycle and pedestrian facilities could be incorporated into station design.

Conclusion: Heavy-rail only has the potential to meet Need Two and is not advanced as an alternative for detailed analysis.

3.1.2.2 Light-Rail Transit

Light-rail transit service uses passenger rail cars operating singly or in short two- to three-car trains on fixed rails with some or the entire route on exclusive right-of-way. Light-rail vehicles are typically driven electrically with power drawn from an overhead electric line, but do not need to be grade-separated from intersecting

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roads. An example of an existing light-rail system in a community similar to metro Atlanta in density and size is Dallas Area Rapid Transit (DART) in Dallas, Texas. This light-rail system serves approximately 64,000 trips per day using 45 miles of track.

The Transit Planning Board (TPB) is a partnership created by the Atlanta Regional Commission, Metropolitan Atlanta Rapid Transit Authority, and Georgia Regional Transportation Authority that is charged with establishing and maintaining a seamless, integrated transit network for the Atlanta region. TPB's future vision for regional transit includes a light-rail solution along the top end of I-285 connecting to a regional light-rail transit system. Although not currently part of the Atlanta region's adopted long range plan (*Envision6*), the TPB vision includes LRT along I-75, I-285 North and I-85 North.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: Little or No Potential

Objective One: Improve Congestion Management

Because light-rail systems are not part of the highway system, it is not likely that they will impact the use of highway incident management techniques. Similarly, they will not encourage non-peak trips on the corridor because they are not affected by normal peak-hour vehicle congestion and provide users with a similar level of service during peak and non-peak hours. Light-rail may reduce the number of vehicle trips by providing an alternative to drivers of single-occupancy vehicles, but is constrained by the likelihood of a low percentage of total trip capture, lower operating speeds, and the limited frequency of service characteristic of any transit strategy.

Objective Two: Accommodate Current and Future Travel Demand

Light-rail systems can meet future travel demand by adding or removing trains as necessary to match demand. Light-rail is more flexible to modifications than heavy-rail, but is still constrained by relatively high capital costs of approximately \$25 million to \$100 million per mile. Light-rail systems can accommodate current and projected trip types of 10 miles or less, but only for those trips made using the light-rail system.

Objective Three: Reduce Traveler Delay

Light-rail may reduce traveler times by operating separately from congested highways and roads, thereby offering predictable travel times.

Objective Four: Maximize Efficiency of Corridor

Light-rail has the potential to moderately increase person throughput on the corridor because of its medium vehicle capacity. Light-rail will not increase freight throughput on the corridor because it is separated from the highway and is not designed to move freight. Light-rail systems do not allow for optimal capacity because unused space on the tracks cannot be used by other vehicles.



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Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Potential**

Objective One: Provide Convenient and Competitive Travel Choices

Light-rail provides a convenient and competitive modal choice for accessing high population and employment areas, since stations are likely to be located in the densest residential and employment centers. Light-rail provides an additional modal choice, and is likely to promote the use of alternate modes of transportation because it is not affected by congestion and provides time savings. Light-rail systems allow users to reduce fuel consumption. The price of light-rail fares in other U.S. metropolitan regions often varies by distance traveled, starting at approximately \$1.25.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Light-rail systems serve transportation-disadvantaged populations by providing a transportation alternative to the personal vehicle.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Light-rail would accommodate service for regional trips without impacting the highway capacity needed for local trips. However, it would not accommodate interstate trips. It offers limited potential to address congestion on parallel surface streets by replacing local vehicle trips; however, this benefit may be offset by the vehicle traffic generated at stations, the time cost of passengers making multiple transfers to reach their destinations, and the likely low mode share of any transit strategy.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

Light-rail systems do not offer new connections to existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

The transfers necessary to connect light-rail with the existing MARTA system prevent it from linking seamlessly. Light-rail will likely attract new transit riders (transit ridership projections are 15,000 to 39,962 riders per day in the corridor), but this is tempered by the time cost and hassle associated with intersystem transfers.

Objective Three: Maintain and Improve Freight System Connectivity

Light-rail does not improve freight connectivity because it serves passengers only and will not connect to any planned or programmed truck-only systems in the corridor. Likewise, because light-rail does not carry freight, it will not improve connections to top freight origins and destinations.

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Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

Light-rail does not reduce the potential for severe crashes or their secondary impacts by separating heavy trucks from passenger vehicles and/or reducing vehicle conflicts. Additionally, light-rail does not have potential to incorporate road safety features in its design. This is because any light-rail option will be separate from the highway and will have no bearing on preventing traffic incidents.

Objective Two: Reduce Secondary Impacts of Incidents

Light-rail systems are separate from the highway and therefore will not mitigate the secondary impacts of highway incidents through continued traffic movement or redirection of traffic. Like all transit options, however, light-rail can provide safety benefits by reducing vehicular traffic and by providing incident management benefits for drivers switching to transit when incidents occur.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Light-rail systems will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities. However, safe bicycle and pedestrian facilities could be incorporated into station design.

Conclusion: Light-rail only has the potential to meet Need Two and is not advanced as an alternative for detailed analysis. However, there exists a possibility that LRT may be added to future regional plans and, therefore, should not be precluded by improvements along I-285.

3.1.2.3 Bus Rapid Transit (BRT)

BRT is a system of dedicated busways that reduces travel time for buses by removing them from the transportation network. BRT systems can reduce travel time for all users by removing buses from general-purpose lanes. In addition, BRT can enhance bus efficiency through boarding process improvements. An example of an extensive BRT system is operated by the Port Authority of Allegheny County in Pittsburgh, Pennsylvania. Three BRT lines – the South, East, and West Busways – comprise approximately 18 miles of dedicated bus-only facilities. Combined, the three lines make 50,000 average weekday trips. BRT is the locally preferred alternative for the study corridor, as adopted by ARC. There are no BRT systems in operation in Atlanta. However, BRT projects are planned along I-285 between I-75 and SR 400, along I-75 outside the Perimeter, and along Buford Highway (an arterial BRT system).

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Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Potential**

Objective One: Improve Congestion Management

Because BRT systems are separate from general-purpose highway traveling lanes, they are not likely to impact the use of highway incident management techniques. BRT will not encourage non-peak trips on the corridor because it is not affected by normal peak-hour vehicle congestion and will provide a similar level of service to users during peak and non-peak hours. BRT may reduce the number of vehicle trips by providing an alternate modal choice to single-occupancy vehicle drivers, but it is constrained by the likelihood of a low percentage of total trip capture, lower operating speeds, and the limited frequency of service characteristic of any transit strategy.

Objective Two: Accommodate Current and Future Travel Demand

BRT can meet future travel demand by adding or removing buses to match demand. BRT is flexible to modification due to relatively low capital costs (\$2 million to \$55 million per mile) that are significantly lower than some transit options. BRT can accommodate current and projected trip types of 10 miles or less.

Objective Three: Reduce Traveler Delay

BRT may reduce traveler delay, but only for those trips made using the BRT system.

Objective Four: Maximize Efficiency of Corridor

BRT may increase person throughput on the corridor because of its large vehicle capacity. BRT will not increase freight throughput on the corridor because it is not designed to move freight. BRT does not have the potential to provide optimal capacity because its dedicated lanes are bus-only and excess capacity cannot be used by other vehicles.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Potential**

Objective One: Provide Convenient and Competitive Travel Choices

A BRT system provides a convenient and competitive modal choice for accessing high population and employment areas. BRT provides an additional modal choice and promotes alternate modes of transportation through travel time savings because it operates in a dedicated facility. BRT allows users to reduce fuel consumption. The price of BRT fares in other U.S. metropolitan regions is \$1.25 to \$2.25.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

BRT systems can serve transportation-disadvantaged populations with alternate modal access.

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Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

BRT can accommodate regional trips without impacting the highway capacity needed for local trips. However, it will not accommodate interstate trips. It may address congestion on parallel surface streets by replacing local vehicle trips; however, this benefit may be offset by the vehicle traffic generated by the stations and the likely low mode share of any transit strategy.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

While it does not offer new connections to existing, planned, or programmed highway systems, light-rail can provide connections to planned BRT projects along I-285 between I-75 and SR 400 and along I-75 outside the Perimeter, and to an arterial BRT along Buford Highway.

Objective Two: Improve Linkages of Regional Transit System

It is likely that BRT will attract new transit riders because it will provide new service to centers of dense residential and commercial activity. In fact, the I-285 Alternatives Analysis predicts high ridership for BRT systems of 39,900 persons per day. The transfers necessary to connect BRT with existing heavy-rail transit prevent it from linking seamlessly.

Objective Three: Maintain and Improve Freight System Connectivity

BRT will not improve freight connectivity because it serves transit passengers only and does not connect to any planned or programmed truck-only systems. Likewise, it will not improve connections to freight origins and destinations.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

BRT systems do not reduce the potential for severe crashes or their secondary impacts by separating heavy trucks from passenger vehicles and/or reducing vehicle conflicts. BRT has some potential to incorporate road safety features into its design.

Objective Two: Reduce Secondary Impacts of Incidents

Any BRT option will be separate from the highway and will have no bearing on preventing traffic incidents or mitigating their secondary impacts through continued traffic movement or redirection of traffic. Like all transit options, however, BRT can provide safety benefits by reducing vehicular traffic and by providing incident management benefits for drivers switching to transit when incidents occur.



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Objective Three: Improve Bicycle and Pedestrian Accommodations

BRT systems will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities. However, safe bicycle and pedestrian facilities could be incorporated into station design.

Conclusion: BRT offers the potential to meet Needs One, Two, and Three and is advanced as an alternative for detailed analysis.

3.1.2.4 Express Bus (With and Without Stations)

Express bus service reduces the time of longer trips by operating long distances without stopping. It is especially effective when used during heavy peak commuting hours in major metropolitan areas. Express buses can be run on existing lanes or in managed lanes. The major difference between an express bus system and a BRT system is that express buses do not operate in dedicated lanes. This impacts service delivery, because express bus performance is constrained by the quality, cleanliness, and congestion of non-dedicated facilities. Express bus service can include dedicated ramps, park-and-ride facilities, and transit stations. Examples of express bus systems include park-and-ride routes operating on freeways between suburban parking lots and a central business district, or express buses that provide local service with frequent stops on the outlying portions of a route but limited or no stops closer to the central business district. In metro Atlanta, the Georgia Regional Transportation Authority, MARTA, Cobb Community Transit, and Gwinnett County Transit currently provide express bus service to downtown and midtown Atlanta from locations such as Marietta, Cumming, Union City, and Newnan.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: Little or No Potential

Objective One: Improve Congestion Management

Express bus systems are not likely to impact highway incident management techniques because they use existing lanes. Additionally, express buses are not likely to encourage non-peak trips on the corridor because they are designed to provide peak-hour commuter service. Express bus systems may reduce the number of vehicle trips by removing single-occupancy vehicle drivers, but this is constrained by the likelihood of a low percentage of total trip capture, lower operating speeds, and the limited frequency of service characteristic of any transit strategy.

Objective Two: Accommodate Current and Future Travel Demand

Express bus systems may meet future travel demand by adding or removing buses to match demand. These systems have high modification flexibility because they do not require separate right-of-way, have no

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fixed capital cost, and have a low marginal cost for additional bus service. Because of the long-distance nature of express bus service, it will not accommodate current and projected trip types of 10 miles or less.

Objective Three: Reduce Traveler Delay

Express bus service is constrained by the same congestion impacting general-purpose traffic, except where HOV lanes are available.

Objective Four: Maximize Efficiency of Corridor

Express bus service will increase person throughput in the corridor due to vehicle capacity, but it has no potential to increase freight throughput because it is designed to move passengers only. Finally, express bus systems allow for optimal capacity because excess capacity on the general-purpose lanes used by express buses can be used by other vehicles.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: Potential

Objective One: Provide Convenient and Competitive Travel Choices

Express bus service provides a convenient and competitive modal choice for accessing high population and employment areas. Express bus service provides an alternate modal choice to users, but offers limited route options (typically linking suburban park-and-ride lots to high-density employment areas). Express bus systems allow riders to reduce fuel consumption. The price of an express bus fare in other U.S. metropolitan regions is approximately \$1.25 to \$2.00.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Because of its limited route options, express bus service has a low potential to provide alternate modal access for transportation-disadvantaged populations.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Express bus systems can accommodate service for regional trips, but have limited ability to accommodate service for local trips because of the regional scale of express bus routes. Express bus systems have no impact on congestion on parallel surface streets because they do not provide an alternative for short local trips (10 miles or less).

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Potential to Meet Need Three – Maintain and Improve System Linkages: **Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

While express bus systems would not offer new connections to existing or planned federal or state highway systems, they could connect to existing and planned express bus systems along I-75 and I-85, planned Buford Highway BRT service, and MARTA stations.

Objective Two: Improve Linkages of Regional Transit System

Express bus service has a high potential to attract new transit riders if operated in managed lanes. The I-285 Alternatives Analysis predicted high express bus ridership of 39,900 persons per day. However, express bus is limited in its ability to attract new transit riders because it is inherently suited to specific target audiences such as commuters.

Objective Three: Maintain and Improve Freight System Connectivity

Express bus will not improve freight connections because it will not connect to any planned or programmed truck-only systems. Likewise, it will not improve connections to freight origins and destinations.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

Express bus systems would not separate heavy trucks from passenger vehicles and/or reduce vehicle conflicts. Express bus has some potential to incorporate road safety features into its design.

Objective Two: Reduce Secondary Impacts of Incidents

Express bus uses existing lanes and therefore does not have potential to incorporate incident management techniques into its design that allow for continued traffic movement or redirection of traffic in the event of an incident. Like all transit options, however, express bus facilities can provide safety benefits by reducing vehicular traffic and by providing incident management benefits for drivers switching to transit when incidents occur.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Express bus systems will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities. However, safe bicycle and pedestrian facilities could be incorporated into station design.

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Conclusion: Express bus service has the potential to meet Needs Two and Three and is advanced as an alternative for detailed analysis.

3.1.2.5 Monorail

A monorail is an elevated electric railway for transit vehicles operating singly or in multi-car trains. The vehicles are suspended from or straddle a guideway formed by a single beam, rail, or tube. A monorail may be quieter than steel wheel or rail systems such as heavy-rail and light-rail transit, but poses unique challenges for switching and emergency response. The only publicly operated monorail that functions as a transit system in the United States is the Las Vegas Monorail. The fare for one ride is \$5. The Las Vegas Monorail is an example of AGT because its cars are not operated by drivers. The privately owned monorail at Walt Disney World in Lake Buena Vista, Florida, may be the most well-known monorail. This monorail carries approximately 150,000 persons per day on roughly 14 miles of track.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Little or No Potential**

Objective One: Improve Congestion Management

Because monorail systems are not part of the highway, they are not likely to impact the use of highway incident management techniques. Similarly, a monorail has little potential to encourage non-peak trips on the corridor because it will likely provide a similar level of service during peak and non-peak hours. It has the potential to reduce the number of vehicle trips by replacing vehicles on the road, but is constrained by the likelihood of a low percentage of total trip capture, lower operating speeds, and the limited frequency of service characteristic of any transit strategy.

Objective Two: Accommodate Current and Future Travel Demand

A monorail can accommodate future needs with the addition or removal of trains to match demand. However, a monorail system requires a high capital cost (typically \$50 million to \$100 million per mile) and therefore is relatively inflexible to modification. Like most other transit options being considered for the corridor, a monorail offers the potential to address current and/or projected trip types of 10 miles or less.

Objective Three: Reduce Traveler Delay

A monorail has some potential to reduce traveler delay but this is constrained by the likelihood of a low percentage of total trip capture, lower operating speeds, and the limited frequency of service characteristic of any transit strategy.

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Objective Four: Maximize Efficiency of Corridor

Monorail systems have some potential to increase person throughput along the corridor due to medium vehicle capacity. A monorail will not increase freight throughput because it is separated from the highway and is only designed to move passengers. A monorail does not provide optimal capacity because other vehicle types cannot utilize unused capacity on a monorail facility.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Potential**

Objective One: Provide Convenient and Competitive Travel Choices

Monorail systems provide an additional modal choice for accessing high population and employment areas. While a monorail operates in a separate right-of-way, low speeds and a lack of travel time savings will not promote its use. Monorail systems allow riders to reduce fuel consumption. The price of monorail fares in other U.S. metropolitan regions is \$0 to \$5.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Monorail systems could serve transportation-disadvantaged populations by providing alternate modal access.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

A monorail system has little or no potential to accommodate service for regional trips, but good potential to accommodate service for shorter local trips. It offers some potential to address congestion on parallel surface streets by removing vehicles from the roads, but this benefit will likely be offset by increased vehicle traffic in station vicinities and the likely low mode share of any transit strategy.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

Monorail systems would not connect to existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

Monorail systems would not connect to existing, planned, or programmed transit systems. A monorail does have the potential to attract new transit riders (transit ridership projections are 15,000 to 39,962 riders per day in the corridor) by providing a new transit service to key residential and employment centers.

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Objective Three: Maintain and Improve Freight System Connectivity

Monorail systems do not move freight and will not connect to any planned or programmed truck-only systems. Likewise, a monorail will not improve connections to freight origins and destinations.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

Monorail systems are separate from the highway and would not reduce the potential for severe crashes by separating heavy trucks from passenger vehicles, reducing vehicle conflicts, or incorporating road safety features into their design.

Objective Two: Reduce Secondary Impacts of Incidents

Monorail systems have no bearing on preventing traffic incidents or mitigating their secondary impacts through continued traffic movement or redirection of traffic. Like all transit options, however, monorail systems can provide safety benefits by reducing vehicular traffic and by providing incident management benefits for drivers switching to transit when incidents occur.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Monorail systems will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities. However, safe bicycle and pedestrian facilities could be incorporated into station design.

Conclusion: A monorail system only offers potential to meet Need Two and is not advanced as an alternative for detailed analysis.

3.1.2.6 Automated Guideway Transit (AGT)

AGT is generally comprised of single- or multi-car trains operating on a grade-separated fixed electric railway without an onboard human operator. Service may be on a fixed schedule or in response to a passenger-activated call button. AGT is typically used as a “people mover” in downtown areas. Examples of downtown people mover systems include the Detroit People Mover in Detroit, Michigan, and the Metromover in Miami, Florida. These systems have an average daily ridership of approximately 10,000 persons and 28,000 persons per day, respectively. AGT systems may be any technology, including monorail, light-rail, or maglev. The computer-operated, rubber-tire shuttle between terminals at Hartsfield-Jackson Atlanta International Airport is a local example of AGT.

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Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Little or No Potential**

Objective One: Improve Congestion Management

Because AGT systems are not a part of the highway, they are not likely to impact the use of highway incident management techniques. Similarly, AGT has little potential to encourage non-peak trips in the corridor because it is likely to provide a similar level of service during both peak and non-peak hours. AGT has potential to reduce the number of vehicle trips by providing a medium-capacity alternate modal choice separate from the highway, but it is constrained by the likelihood of a low percentage of total trip capture, lower operating speeds, and the limited frequency of service characteristic of any transit strategy.

Objective Two: Accommodate Current and Future Travel Demand

AGT offers potential to accommodate future high travel demands by allowing for the addition or removal of rolling stock to match demand. However, because AGT requires a fixed guideway (\$25 million to \$50 million per mile), flexibility is low. AGT typically does not serve the 10-mile trip types that the corridor primarily accommodates. However, it is well-suited to local trips within activity centers.

Objective Three: Reduce Traveler Delay

AGT has the potential to reduce traveler delay by providing an alternate modal choice separate from the highway.

Objective Four: Maximize Efficiency of Corridor

AGT has the potential to increase person throughput by providing a medium-capacity alternate modal choice. AGT has no potential to increase freight throughput on the corridor because it is separated from the highway and is designed to move passengers only. AGT systems cannot provide optimal capacity because other vehicles are not able to use AGT facilities.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Potential**

Objective One: Provide Convenient and Competitive Travel Choices

AGT provides an additional modal choice but is not likely to promote the use of alternate modes, since dedicated right-of-way travel time savings are offset by low operating speeds. AGT systems allow riders to reduce fuel consumption. The price of a fare on AGT systems in other U.S. metropolitan areas is \$0 to \$0.50.

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Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

AGT systems can improve accessibility for transportation-disadvantaged populations with alternate modal access.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

While AGT could accommodate short, local trips, it is not likely that it will provide regional or interstate connectivity. It offers some potential to address congestion on parallel surface streets if it replaces short, local vehicle trips; however, this benefit could be offset by vehicle traffic generated at stations.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

AGT systems will not provide connectivity to any existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

AGT systems will not provide connectivity to any existing, planned, or programmed transit systems. AGT could attract new transit riders by providing new transit service where there currently is none (transit ridership projections are 15,000 to 39,962 riders per day in the corridor); however, AGT is limited in its ability to attract additional riders because it is inherently suited to specific trip types (e.g., short trips to access a specific activity center).

Objective Three: Maintain and Improve Freight System Connectivity

AGT systems do not improve freight connections because they will not connect to any planned or programmed truck-only systems.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

AGT does not reduce the potential for severe crashes or their secondary impacts by separating heavy trucks from passenger vehicles, reducing vehicle conflicts, or incorporating road safety features into its design. This is because any AGT option will be separate from the highway and will have no bearing on preventing traffic incidents.

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Objective Two: Reduce Secondary Impacts of Incidents

AGT systems cannot mitigate the secondary impacts of incidents through continued traffic movement or redirection of traffic. Like all transit options, however, AGT can provide safety benefits by reducing vehicular traffic and by providing incident management benefits for drivers switching to transit when incidents occur.

Objective Three: Improve Bicycle and Pedestrian Accommodations

AGT systems will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities. However, safe bicycle and pedestrian facilities could be incorporated into station design.

Conclusion: AGT systems only offer the potential to meet Need Two and are not advanced as an alternative for detailed analysis.

3.1.2.7 Maglev

Maglev (short for “magnetic levitation”) systems are a form of trains that suspend, guide, and propel vehicles using electromagnetic force to eliminate wheel-to-rail frictional forces. Maglev requires dedicated right-of-way and is generally associated with very high speeds. Urban maglevs are also under development for low- and medium-speed applications. Currently, there are no operating maglev systems in the United States. Japan and China have maglev trains in revenue service and open to the public. Due to high speeds, maglev is optimally suited for long-distance, intercity trips, but has also been considered for shorter urban trips of approximately 30 to 40 miles.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: Little or No Potential

Objective One: Improve Congestion Management

Because maglev systems are not a part of the highway, they have little or no potential to improve highway incident management. Similarly, maglev has little potential to encourage non-peak trips on the corridor because it will likely provide a similar level of service during both peak and non-peak hours. It can reduce the number of vehicle trips by providing an alternate modal choice to drivers of single-occupancy vehicles making regional trips, but it is constrained by the likelihood of a low percentage of total trip capture and limited frequency of service characteristic of any transit strategy.

Objective Two: Accommodate Current and Future Travel Demand

Maglev has the flexibility to accommodate future needs through the addition or removal of rolling stock to match demand. Maglev requires a high capital cost (typically \$100 million to \$200 million per mile) and

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therefore is relatively inflexible to modification. However, because of the long distance required to maximize the potential of maglev, it does not address current and/or projected trip types, which are 10 miles or less along the corridor.

Objective Three: Reduce Traveler Delay

Maglev has the potential to reduce travel time, since it operates at high speeds and is separate from the highway system.

Objective Four: Maximize Efficiency of Corridor

Maglev may provide additional person throughput along the corridor due to its large vehicle capacity, but, as mentioned, does not serve the short corridor trips that are most common to the study area. Because maglev is a high-cost strategy with a fixed guideway that cannot be used by other vehicles, it is unable to provide optimal capacity. It will not offer the potential to increase freight throughput on the corridor because it is separate from the highway and is designed to move passengers only.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Potential**

Objective One: Provide Convenient and Competitive Travel Choices

Maglev provides an alternate modal choice for accessing high population and employment areas in the study corridor. Maglev systems allow riders to reduce fuel consumption. The cost of a maglev fare is unknown at this time.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Maglev systems could provide a transportation alternative to transportation-disadvantaged populations, but this is constrained by the large regional scale of maglev technology.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Maglev systems can accommodate interstate and regional trips, but have little potential to accommodate local trips because of their high operating speed. Maglev offers no potential to address congestion on parallel surface streets.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

Maglev systems will not connect to existing, planned, or programmed highway systems.

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Objective Two: Improve Linkages of Regional Transit System

Maglev systems will not connect to existing, planned, or programmed transit systems. Maglev offers the potential to attract new transit riders by providing a new transit service that does not currently exist (transit ridership projections are 15,000 to 39,962 riders per day in the corridor), but it will be limited by the transfer process required to link with existing transit.

Objective Three: Maintain and Improve Freight System Connectivity

Maglev systems will not provide new freight connections because they will not connect to any planned or programmed truck-only systems.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

Maglev systems do not reduce the potential for severe crashes by separating heavy trucks from passenger vehicles, reducing vehicle conflicts, or incorporating road safety features into their design. This is because any maglev option will be separate from the highway.

Objective Two: Reduce Secondary Impacts of Incidents

Maglev systems would have no bearing on mitigating the secondary impacts of traffic incidents through continued traffic movement or redirection of traffic. Like all transit options, however, maglev can provide safety benefits by reducing the amount of vehicular traffic and by providing incident management benefits for drivers switching to transit when incidents occur.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Maglev systems will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities. However, safe bicycle and pedestrian facilities could be incorporated into station design.

Conclusion: Maglev systems only offer potential to meet Need Two and are not advanced as an alternative for detailed analysis.

3.1.3 Highway Capacity Strategies

Highway capacity strategies include strategies that will add lanes along I-285. These include adding more general-purpose lanes, modifying existing lanes, and/or implementing managed lanes. The following table provides an overview of these strategies, followed by a more detailed description of each strategy.



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Table 3.2 Highway Capacity Strategy Details

Strategy	Typical Unit Cost/Mile ⁷	Purpose	Right-of-Way/Alignment
General-Purpose Lanes	\$6 million to \$8 million	Provide capacity for all users	Dedicated
Operational Improvements	\$25 million to \$300 million per project	Improve traffic operations and safety in a specific location (e.g., off-ramp improvement, collector-distributor lane, system-to-system interchange)	Dedicated
Managed Lanes			
Express Lanes	\$5.5 million to \$6.5 million	Provide capacity for regional trips (trips longer than 10 miles)	Dedicated
HOV Lanes	\$8 million to \$10 million	Increase travel time savings; ensure more predictable travel times; increase person throughput in a corridor	Dedicated
TOLs	\$8 million to \$9 million	Improve freight movement; separate heavy trucks and passenger vehicles; improve safety	Dedicated
Toll Lanes (Electronic)	\$8 million to \$10 million per mile \$25 million to \$35 million per toll plaza	Make capacity on the HOV system available to SOV users, providing them with both travel time savings and more predictable travel times; increase person throughput in a corridor	Dedicated

Source for costs: Florida DOT

3.1.3.1 General-Purpose Lanes

General-purpose lanes are lanes with no constraints on use such as a required toll or occupancy requirement. Currently in the **revive285 top end** area, five lanes are provided in each direction. Through the I-75 interchange, I-285 transitions from five lanes to two lanes westbound approaching the interchange and from three lanes to five lanes eastbound leaving the interchange. Through the I-85 interchange, I-285 transitions from five lanes to three lanes eastbound approaching I-85 and from three lanes to five lanes westbound leaving the I-85 interchange. A sixth lane exists on I-285 between the following interchanges:

➔ I-285/I-75 interchange and New Northside Drive

⁷ All unit costs per mile are for one lane in each direction.



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- ➔ Roswell Road and I-285/SR 400 interchange
- ➔ Ashford Dunwoody Road and Chamblee Dunwoody Road
- ➔ North Peachtree Road and Peachtree Industrial Boulevard
- ➔ Peachtree Industrial Boulevard and Buford Highway

It is the vision of Georgia DOT that no additional general-purpose lanes be added in the metro Atlanta area. Further, according to the Transportation Research Board's Highway Capacity Manual, each additional general-purpose lane (over a total of five lanes) provides less additional capacity than existing lanes as a result of inherent increases in lane changing and weaving.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Potential**

Objective One: Improve Congestion Management

General-purpose lanes can easily incorporate incident management techniques into their design. Additionally, general-purpose lanes have little influence to encourage non-peak vehicle trips, except to the extent that peak-hour congestion is high enough to cause drivers to avoid peak-hour travel. Independent of other strategies, general-purpose lanes are not likely to reduce the number of trips because adding new lanes increases trip-making capacity, potentially inducing additional trips spurred by latent demand.

Objective Two: Accommodate Current and Future Travel Demand

General-purpose lanes provide additional capacity and are highly flexible to modifications because the marginal cost of an additional lane is low (\$6 million to \$8 million per lane mile). General-purpose lanes can address the short trip types (10 miles or less) that characterize the corridor.

Objective Three: Reduce Traveler Delay

General-purpose lanes have the potential to reduce travel time through added capacity, though this benefit will likely diminish over time due to increased traffic resulting from latent demand and expected population and economic growth in the region.

Objective Four: Maximize Efficiency of Corridor

Further, general-purpose lanes have the potential to increase person and truck throughput with additional capacity. However, person throughput is ultimately constrained by the number of vehicles occupying roadway space and the number of passengers per vehicle. General-purpose lanes allow optimal capacity, since unused space can be used by additional vehicles.



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Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: Little or No Potential

Objective One: Provide Convenient and Competitive Travel Choices

General-purpose lanes do not provide alternate modal access to population and employment areas, nor do they provide additional mode or route choices to users because they are currently the only choice along the study corridor. To the extent that additional general-purpose lanes eliminate stop-and-go traffic and facilitate efficient vehicle operating speeds, they reduce fuel consumption. There is no direct user fee for general-purpose lanes.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

General-purpose lanes do not provide a transportation alternative to transportation-disadvantaged populations, because users must still have access to a car.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

General-purpose lanes could accommodate regional and local trips, but are likely to have little or no potential to address congestion on parallel surface streets because they are separate from the local street network.

Potential to Meet Need Three – Maintain and Improve System Linkages: Little or No Potential

Objective One: Maintain and Improve Regional Highway System Connectivity

General-purpose lanes do not offer new connections to existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

General-purpose lanes will not attract new transit riders because they are designed to serve personal vehicles. General-purpose lanes do not offer new connections to existing, planned, or programmed transit systems.

Objective Three: Maintain and Improve Freight System Connectivity

General-purpose lanes do not offer new connections to planned or programmed truck-only projects. They may, however, improve connections to top freight destinations since general-purpose lanes are used by freight vehicles.

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Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

General-purpose lanes do not have the potential to separate heavy trucks from passenger vehicles or to reduce vehicle conflicts. The potential of general-purpose lanes to reduce collisions is merely a function of reduced congestion. They do offer potential to incorporate road safety features into their design.

Objective Two: Reduce Secondary Impacts of Incidents

General-purpose lanes can facilitate the mitigation of secondary impacts from incidents by allowing for continued traffic movement and/or redirection of traffic.

Objective Three: Improve Bicycle and Pedestrian Accommodations

General-purpose lanes will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities.

Conclusion: General-purpose lanes only have the potential to meet Need One and are not advanced as an alternative for detailed analysis.

3.1.3.2 Operational Improvements

Operational improvements include strategies that are site-specific and intended to improve traffic operations and safety in a specific location. These local improvements can also improve conditions across the broader network.

Operational improvements under consideration are described below and assessed as a group for their potential to meet project needs. The strategies identified under the TSM category may also be considered as operational improvements.

3.1.3.2.1 Collector-Distributor Lanes

Collector-distributor (CD) lanes are one-way lanes that run parallel to the freeway, providing access to multiple ramps. On- and off-ramps connect to the CD lane instead of the main freeway, thereby improving access while maintaining smooth travel flow in the freeway lanes. The primary purpose of CD lanes is to improve safety and operations by reducing weaving movements. Some examples of CD lanes in Atlanta include the system on I-75 South that provides access to Northside Drive and Howell Mill Road, and the system on I-85 near Sugarloaf Parkway. Typical costs for CD lanes are \$6 million to \$8 million per mile for a two-lane, one-way CD lane, not including potential overpass reconstruction or right-of-way costs.

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3.1.3.2.2 Interchange Improvements

Interchanges are areas where traffic enters and exits the freeway. Interchanges are typically the locations of the most congestion and frequent crashes caused by inherent vehicle lane changes and conflicts. Therefore, improvements to interchanges often have significant benefits to the overall freeway system. According to FHWA's Freeway Management and Operations Handbook, the merging and weaving associated with interchanges negatively affect traffic flow. Improvements can be made to increase the capacity and safety of weaving sections and the ramps that comprise the interchange. Depending on the interchange layout and the distances between adjacent interchanges, capacity may be increased, safety may be improved, and weaving operations may be improved by the addition of auxiliary lanes and other widening efforts or by redesigning the interchange and ramps. Interchange improvement costs have a wide range (\$25 million to \$300 million) because they can be small (off-ramp improvement) or large (major system interchange such as Moreland Interchange). Several intersection improvements are currently planned in ARC's Regional Transportation Plan and are referenced in the Existing Conditions Report.

3.1.3.2.3 Access Point Removal

Eliminating access points involves permanently closing ramps used to enter or exit the freeway at a specific street. The primary purpose for eliminating access points is to address severe safety problems that cannot be mitigated through other operational strategies. Another benefit of removing access points is improved mainline operations. There is little cost associated with these improvements, but permanent ramp closure is rarely implemented because it can substantially impact traffic patterns and may shift traffic to upstream or downstream ramps.

The following section discusses the potential for operational improvements, including those described above, to meet project needs.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Potential**

Objective One: Improve Congestion Management

Operational improvements have the potential to facilitate better incident management because incident management techniques can easily be incorporated into their design. However, operational improvements do not encourage trip-making during non-peak periods. Additionally, operational improvements will not reduce the number of trips because they make trip-making easier.

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Objective Two: Accommodate Current and Future Travel Demand

Operational improvements do not provide additional mainline capacity, but can be flexible to modification if capital costs are low. Operational improvements are unique in that project costs have a very wide cost range (up to \$300 million per project). Further, they address current and projected trip types along the corridor by improving interchanges and on- and off-ramps.

Objective Three: Reduce Traveler Delay

Operational improvements can reduce traveler delay by eliminating merge and weave areas that cause slowing and congestion.

Objective Four: Maximize Efficiency of Corridor

Operational improvements have the potential to increase person and truck throughput by freeing bottlenecks and increasing speeds at existing merge and weave locations. Operational improvements provide optimal capacity by decreasing merge/weave and delay at bottlenecks, thus maximizing existing capacity.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Little or No Potential**

Objective One: Provide Convenient and Competitive Travel Choices

While operational improvements do not provide alternate modal access to population and employment centers, they provide additional route choices. They do not promote the use of alternate modes of transportation, but may promote the use of alternate routes if operational improvements are made on routes where existing operational challenges reduce demand. By reducing stop-and-go traffic associated with bottlenecks, operational improvements reduce fuel consumption. There is no direct cost to users of facilities with operational improvements.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Operational improvements do not provide alternate modal access to transportation-disadvantaged populations because users must have access to a car.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Operational improvements accommodate both regional and local trips and decrease congestion on parallel surface streets by reducing delay and queue lengths.

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Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

Operational improvements offer no new connections to existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

Operational improvements offer no new connections to existing, planned, or programmed transit systems. They also do not connect to existing transit stations, nor do they attract new transit riders.

Objective Three: Maintain and Improve Freight System Connectivity

Operational improvements do not offer new connections to planned or programmed truck-only projects. However, operational improvements can improve connections to freight origins and destinations because they serve freight traffic in addition to general-purpose traffic.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Potential**

Objective One: Reduce Potential for Severe Crashes

While operational improvements do not separate heavy trucks from passenger vehicles, operational improvements will improve or eliminate weave areas, thereby reducing vehicle conflicts. In addition, road safety features can be incorporated into their design.

Objective Two: Reduce Secondary Impacts of Incidents

Additionally, operational improvements can allow for continued traffic movement and/or redirection to mitigate the secondary impacts of a traffic incident.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Operational improvements will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities.

Conclusion: Operational improvements have the potential to meet Needs One and Four and are advanced as an alternative for detailed analysis.

3.1.3.3 Managed Lanes

Managed lanes are lanes for which operational strategies (tolling, occupancy requirements, vehicle type restrictions, etc.) are implemented and managed in response to changing conditions (congestion, time of

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day, etc.). Managed lanes may involve using more than one operational strategy. Access to managed lanes is typically restricted through the use of physical barriers.

There is broad support for managed-lane strategies among transportation agencies in Atlanta. In 2007, ARC adopted a set of managed-lane policies to guide regional transportation planning. Key recommendations in the policies include using congestion management as the primary objective in designing future managed-lane systems and achieving congestion management goals through any combination of operational/design options and tools such as pricing, eligibility, or access.

In 2005, the Georgia State Road and Toll Authority (SRTA) completed feasibility studies for the implementation of high-occupancy toll (HOT) and truck-only toll (TOT) facilities in the metro Atlanta region. The studies found that TOT and HOT lanes are potentially feasible and beneficial to the regional transportation system and its users on highways and on the local road network. The Georgia SRTA studies recommended that any regional or corridor study of managed lanes include HOT and TOT concepts.

Georgia DOT is also currently investigating the implementation of a range of lane management strategies in metro Atlanta. This study will produce a Managed Lane System Plan, the intent of which is to establish feasible corridors for managed-lane implementation, develop preliminary concepts and costs, establish potential revenue streams, and establish a managed-lane implementation priority. This study is scheduled to be completed in the summer of 2008.

The following section describes several managed-lane techniques and their potential to meet the project needs.

3.1.3.3.1 Express Lanes

According to FHWA's Freeway Management and Operations Handbook, express lanes may be open to all vehicles, but access is limited, thereby reducing conflicts and better facilitating longer-distance travel (usually more than 10 miles). Access is not necessarily restricted by type of user, although it may be in situations where direct-connect ramps are provided exclusively for bus or carpool use. Examples of express lanes include those used in Maryland and New Jersey to better accommodate interstate or regional travel and separate truck freight from local traffic. Express lanes can be a part of general-purpose lane design and/or a managed-lane approach that charges tolls to users.

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Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: Little or No Potential

Objective One: Improve Congestion Management

Express lanes do not easily incorporate incident management into their design. On their own, express lanes will not reduce peak-hour trip-making because they are designed to improve the peak-hour performance of regional routes. By adding capacity, it is unlikely that express lanes will reduce the number of trips.

Objective Two: Accommodate Current and Future Travel Demand

Express lanes are highly flexible to modification because the marginal cost of an additional lane is low (\$5.5 million to \$6.5 million per lane mile). However, express lanes do not address current or projected trip types along the I-285 corridor, which are 10 miles or less in length.

Objective Three: Reduce Traveler Delay

Express lanes have the potential to reduce travel time for drivers traveling long regional distances.

Objective Four: Maximize Efficiency of Corridor

Express lanes can increase person and truck throughput by freeing general-purpose lane capacity. However, person throughput is ultimately constrained by the number of vehicles occupying space on the roadway and the number of passengers per vehicle. Additionally, because of the limited number of access points for express lanes, unused capacity is not easily utilized, thereby interfering with the potential of the strategy to allow for optimal capacity.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: Little or No Potential

Objective One: Provide Convenient and Competitive Travel Choices

Express lanes do not provide alternate modal access to population and employment areas, nor do they provide additional modal choice to users. However, express lanes do provide an additional route choice to regional drivers. This benefit is minimized by current travel patterns, which indicate that most trips along the corridor are 10 miles or less in length. To the extent that express lanes eliminate stop-and-go traffic and facilitate efficient vehicle operating speeds, express lanes reduce fuel consumption. There is no direct user fee to access express lanes.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Express lanes do not provide a transportation alternative to transportation-disadvantaged populations because they only accommodate those with access to a car.



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Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Again, due to their regional scale, express lanes have the potential to accommodate regional trips, but not to accommodate local trips or address congestion on parallel surface streets.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

Express lanes do not offer new connections to existing, planned, or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

Express lanes do not offer new connections to existing, planned, or programmed transit systems. Express lanes will not attract new transit riders because they are designed for drivers.

Objective Three: Maintain and Improve Freight System Connectivity

Express lanes do not offer new connections to planned or programmed truck-only systems. Additionally, they do not improve connections to top freight destinations, unless trucks are permitted to use them.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

While they are not designed to separate heavy trucks from passenger vehicles, express lanes can reduce dangerous vehicle conflicts by limiting access to the facility. They offer potential to incorporate road safety features into their design.

Objective Two: Reduce Secondary Impacts of Incidents

If express lanes are fully separated from general-purpose lanes, they offer little or no potential to reduce the secondary impacts of incidents by allowing for continued traffic movement and/or traffic redirection in the event of an incident.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Express lanes will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities.

Conclusion: Express lanes have little or no potential to meet any of the project needs and are not advanced as an alternative for detailed analysis.

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3.1.3.3.2 HOV Lanes

HOV lanes are reserved for vehicles with at least two passengers and provide travel time savings and more predictable travel times. The HOV lane management concept emphasizes person movement rather than traditional vehicle movement. It offers multi-person vehicles the opportunity to travel in reserved lanes that preserve higher operating speeds and more reliable travel times. In addition, buses and motorcycles are often permitted to use HOV lanes. Successful HOV lanes in Washington State show substantial time savings when compared to general-purpose lanes, greater reliability, and success in moving large numbers of passengers during peak hours.⁸ Existing HOV lanes in the Atlanta area are located along an 18-mile section of I-20 (east of I-75/I-85) and 60 lane miles on I-75/I-85 (inside I-285). Many cities, such as Washington, DC, and New York City have chosen to raise the threshold vehicle occupancy levels and have applied three or more (HOV 3+) or four or more (HOV 4+) standards to certain facilities.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Potential**

Objective One: Improve Congestion Management

Incorporating incident management techniques into HOV lane designs can facilitate better incident management. HOV lanes also have the potential to reduce the number of vehicle trips by reducing the number of single-occupancy vehicles on the road. However, because HOV lanes do not provide a benefit during uncongested non-peak periods, they do not encourage trip-making during non-peak periods. Combining HOV lanes with other management techniques, such as congestion pricing, could help encourage trip-making during non-peak periods.

Objective Two: Accommodate Current and Future Travel Demand

An HOV system can address current and projected trip types of 10 miles or less, has high potential to add capacity, and is flexible to modifications because the marginal cost of an additional lane is low (\$8 million to \$10 million per lane mile).

Objective Three: Reduce Traveler Delay

HOV lanes have high potential to reduce travel time for users by providing a dedicated facility separate from general-purpose lanes.

⁸ Washington State Transportation Center and Washington State DOT. "HOV Lane Performance Monitoring: 2000 Report" (2000).

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Objective Four: Maximize Efficiency of Corridor

An HOV system can increase person throughput by moving a higher number of passengers per vehicle through the corridor and freeing general-purpose capacity. However, HOV lanes do not increase truck throughput, except to the extent that they free space for trucks in general-purpose lanes. HOV lanes do not inherently allow for optimal capacity, because only vehicles with two or more passengers are permitted in these lanes. However, combining HOV lanes with other lane management techniques, such as congestion pricing, could maximize efficiency of the corridor.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Little or No Potential**

Objective One: Provide Convenient and Competitive Travel Choices

An HOV system does not provide alternate modal access to population and employment areas, nor does it provide additional mode choice to users. HOV lanes do, however, provide additional route choice. HOV lanes can reduce fuel consumption by reducing the number of vehicles and reducing stop-and-go traffic. There is no direct fee for using HOV lanes.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

HOV lanes do not provide alternate modal access to transportation-disadvantaged populations because they only serve those with access to a car.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

HOV lanes accommodate regional, interstate, and some local trips. However, they do not address congestion on parallel surface streets.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

New HOV lanes would provide several new connections to existing, planned, or programmed HOV systems on I-75 and I-85.

Objective Two: Improve Linkages of Regional Transit System

HOV lanes will not connect to transit systems or attract new transit riders.

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Objective Three: Maintain and Improve Freight System Connectivity

HOV lanes will not connect to planned or programmed truck-only facilities, nor will they improve connections to top freight origins/destinations.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

HOV systems do not separate heavy trucks from passenger vehicles, nor do they eliminate vehicle conflicts. They offer some potential to incorporate road safety features into their design.

Objective Two: Reduce Secondary Impacts of Incidents

If HOV lanes are not barrier-separated from general-purpose lanes, they offer potential to reduce the secondary impacts of incidents by allowing for continued traffic movement and/or traffic redirection in the event of an incident.

Objective Three: Improve Bicycle and Pedestrian Accommodations

HOV lanes will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities.

Conclusion: HOV lanes have the potential to meet Needs One and Three. Combining HOV (occupancy management) with other lane management techniques will have a better potential to meet these needs and as such HOV lanes are advanced as an alternative for detailed analysis as part of a managed-lane system.

3.1.3.3.3 TOLs

According to FHWA's Freeway Management and Operations Handbook, a TOL is a lane primarily intended for the use of heavy trucks or 18-wheelers. TOLs are separated from vehicular traffic lanes, and can be mandatory, voluntary, or tolled. The New Jersey Turnpike features two separated roadways: one reserved for passenger cars only, and the other open to both commercial and non-commercial traffic.

The Georgia DOT Statewide Truck Lanes Needs Identification Study, currently under final review, explores the need and feasibility of implementing TOLs on sections of interstate and other limited-access highways across the state including I-285. Preliminary findings from the study conclude that truck lanes do not solve congestion along the corridors studied. In addition, the study does not recommend implementing standalone truck lanes. Finally, the study does recommend managing truck eligibility in managed-lane systems.

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Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Little to No Potential**

Objective One: Improve Congestion Management

By incorporating incident management techniques into their design, truck-only lanes offer the potential to improve incident management, but have little or no potential to reduce the number of overall trips or encourage trips during non-peak periods because they operate independently of general-purpose lanes. In addition, the Statewide Truck Lanes Needs Identification Study found that TOLs do not reduce congestion. However, truck restrictions used in combination with other lane management strategies may have some potential to address congestion during non-peak periods.

Objective Two: Accommodate Current and Future Travel Demand

TOLs provide additional capacity, have high modification flexibility due to their low cost (\$8 million to \$9 million per lane mile), and address current and projected freight trips. Heavy trucks passing through the Atlanta region are required to use I-285 as their route if they are not making local deliveries.

Objective Three: Reduce Traveler Delay

TOLs may help reduce travel time for TOL and general-purpose lane users through added capacity; however, this could be limited by the amount of new capacity that is consumed as a result of latent demand along the corridor.

Objective Four: Maximize Efficiency of Corridor

TOLs will likely increase truck throughput and may increase person throughput by freeing capacity in general-purpose lanes. Truck-only lanes do not allow for optimal capacity because unused capacity cannot be used by general-purpose vehicles. Further, the Statewide Truck Lanes Needs Identification Study found that managing truck use through a managed-lane system is more efficient.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Little or No Potential**

Objective One: Provide Convenient and Competitive Travel Choices

TOLs do not provide alternate modal access to population and employment areas, nor do they provide additional modal choice to users. However, TOLs do provide route choice to truck drivers. Truck-only lanes may reduce fuel consumption by decreasing stop-and-go traffic. The price of TOL user fees, if any, is unknown at this time.



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Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

TOLs do not provide alternate modal access to transportation-disadvantaged populations because they do not serve general-purpose passengers.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

TOLs will accommodate regional, interstate, and some local trips. TOLs will not address congestion on parallel surface streets due to the interstate scale of most truck traffic.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

While they will not provide new connections to existing highways, TOLs will connect to at least one planned TOL facility along I-75.

Objective Two: Improve Linkages of Regional Transit System

TOLs will not provide new connectivity to transit systems or attract new riders.

Objective Three: Maintain and Improve Freight System Connectivity

TOLs serve freight exclusively, will connect to planned or programmed truck-only systems, and will improve connections to top freight origins and destinations. However, this connection can also be made with a managed-lane system that allows trucks in addition to other vehicles meeting eligibility requirements.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little to No Potential**

Objective One: Reduce Potential for Severe Crashes

Truck-only lanes offer good potential to separate heavy trucks from passenger vehicles and some potential to reduce vehicle conflicts if TOLs have on- and off-ramps that are independent of general-purpose lanes, which may reduce the potential for severe crashes. In addition, they offer potential to incorporate road safety features into their design.

Objective Two: Reduce Secondary Impacts of Incidents

If not barrier-separated, toll lanes may have limited potential to allow for continued traffic movement and/or traffic redirection in the event of a traffic incident.

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Objective Three: Improve Bicycle and Pedestrian Accommodations

TOLs will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities.

Conclusion: Truck-only lanes only have the potential to meet Need Three and are not recommended for advancement. However, truck provisions or restrictions within a comprehensive managed-lane system should be a consideration in all managed-lanes scenarios.

3.1.3.3.4 Toll Lanes

Toll lanes are a type of managed lane that use pricing to reduce travel demand and generate new revenue. Tolls can be applied on HOV lanes, TOLs, and/or express lanes. A high-occupancy toll (HOT) allows vehicles lacking the number of passengers required for free use of the HOV facility to pay a toll to use the facility. For example, an HOV facility requiring two passengers for free use would allow drivers of single-occupancy vehicles to use the facility for a fee. The HOT lane management concept emphasizes maximizing vehicle movement on existing infrastructure along with person movement by providing free or reduced-price service to HOVs. It offers both single- and multi-person vehicles the opportunity to travel in reserved lanes assigned to preserve higher operating speeds and more reliable travel times.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Potential**

Objective One: Improve Congestion Management

Toll lanes can facilitate better incident management by incorporating incident management techniques into their design, encourage trips during non-peak periods by using congestion pricing strategies, and reduce overall vehicle trips by increasing the cost of trip-making (thereby reducing demand).

Objective Two: Accommodate Current and Future Travel Demand

Toll lanes are flexible to modification due to their low capital cost (\$8 million to \$10 million per lane mile, \$25 million to \$35 million per toll plaza) and can accommodate current and projected trip types of 10 miles or less.

Objective Three: Reduce Traveler Delay

Toll lanes can reduce traveler delay by providing additional capacity; however, the tolling process can increase delay if toll collection is inefficient.

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Objective Four: Maximize Efficiency of Corridor

Toll lanes have the potential to increase person and truck throughput by freeing capacity on general-purpose lanes. However, person throughput is ultimately constrained by the number of vehicles occupying space on the roadway and the number of passengers per vehicle. Toll lanes can achieve optimal capacity through congestion pricing.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Little or No Potential**

Objective One: Provide Convenient and Competitive Travel Choices

Toll lanes will not provide alternate modal access to population and employment areas, but will provide additional route choice to users. Toll lanes can reduce fuel consumption by reducing trips and stop-and-go traffic. Toll fees to use the toll lanes vary widely in other U.S. metropolitan areas.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Toll lanes do not have the potential to provide alternate access to transportation-disadvantaged populations because they are designed to serve cars.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Toll lanes have the potential to accommodate service for local, regional, and interstate trips but do not address congestion on surface streets.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

A toll lane system would provide a new connection to one planned TOL/HOV project on I-75 outside the perimeter.

Objective Two: Improve Linkages of Regional Transit System

Toll lanes would not connect to transit systems or attract new transit riders.

Objective Three: Maintain and Improve Freight System Connectivity

If heavy trucks are eligible to use them, toll lanes could connect to planned or programmed truck-only systems and improve connections to top freight origins and destinations.

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Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: **Little or No Potential**

Objective One: Reduce Potential for Severe Crashes

Toll lane systems do not separate heavy trucks from passenger vehicles, do not reduce vehicle conflicts, and offer limited potential to incorporate road safety features into their design.

Objective Two: Reduce Secondary Impacts of Incidents

If not barrier-separated, toll lanes may have limited potential to allow for continued traffic movement and/or traffic redirection in the event of a traffic incident.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Toll lanes will not increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities.

Conclusion: Toll lanes have the potential to meet Needs One and Four in combination with other strategies being advanced. They are easily incorporated into other strategies being considered and are therefore advanced as a support strategy to be considered as part of other alternative combinations.

3.1.4 “Off-Mainline” Improvements

3.1.4.1 Surface Street Improvements (New and Existing Roadways)

Surface street improvements on routes in proximity to I-285 can relieve congestion, improve safety, and better accommodate local trip-making in the study area. Surface street improvements may include widening existing roadways or constructing new roadways. Costs for these improvements vary considerably depending on the scope of improvements and the functional class of the parallel facility being widened or constructed. Surface street construction costs range from \$5.6 million per mile for arterials (one lane in each direction) to \$11.3 million per mile for freeways (two lanes in each direction). These cost estimates do not include right-of-way costs or reconstruction of existing facilities such as bridges or overpasses.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: **Little or No Potential**

Objective One: Improve Congestion Management

While they have potential to facilitate better incident management by incorporating incident management techniques into their design, surface street improvements do not directly impact highway incident

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management. They will not encourage non-peak trips or reduce overall trips because they will improve the driving experience at all hours.

Objective Two: Accommodate Current and Future Travel Demand

Surface street improvements provide additional capacity through additions such as new lanes or turn lane storage, and are moderately flexible to modification due to their relatively low capital cost. Surface streets primarily serve local trips and will address trips of 10 miles or less that are typical of the study corridor.

Objective Three: Reduce Traveler Delay

Surface street improvements can reduce traveler delay by providing new capacity.

Objective Four: Maximize Efficiency of Corridor

Surface street improvements can provide optimal capacity by removing local trips from the mainline, thereby freeing capacity for regional trips. Another benefit is an increase in person and truck throughput by increasing capacity.

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: Little or No Potential

Objective One: Provide Convenient and Competitive Travel Choices

While they do not provide alternate modal access to population and employment areas, surface street improvements can provide additional mode and route choices through bus-friendly design. For example, low-cost improvements such as queue jumper lanes at intersections can enhance bus operations when designed into surface street upgrades. Surface street improvements can reduce fuel consumption by allowing vehicles to operate at efficient speeds and reducing inefficient stop-and-go conditions. There are no direct user fees to drivers for taking advantage of surface street improvements.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Surface street improvements provide a transportation alternative to transportation-disadvantaged populations by accommodating transit and non-motorized modes in their design.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Surface street improvements serve local trips and reduce congestion on surface streets, but they accommodate regional trips on a limited basis and do not serve interstate trips at all.

Strategy Screening and Alternatives Development Process and Initial Screening Results

Potential to Meet Need Three – Maintain and Improve System Linkages: Little or No Potential

Objective One: Maintain and Improve Regional Highway System Connectivity

While surface street improvements can provide connections to existing highways, they do not provide new connections to planned or programmed highway systems.

Objective Two: Improve Linkages of Regional Transit System

Surface street improvements can provide connections to existing highways, but they do not provide new connections to planned or programmed transit systems. Further, they do not attract a significant number of new transit riders because surface street improvements are not a transit solution, although surface street improvements can provide enhanced access to transit stations.

Objective Three: Maintain and Improve Freight System Connectivity

Surface street improvements may improve connections to top freight origins and destinations if they are designed to accommodate freight traffic to local businesses.

Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: Little or No Potential

Objective One: Reduce Potential for Severe Crashes

Surface street improvements do not have the potential to separate heavy trucks and passenger vehicles and/or reduce vehicle conflicts because they are located off the highway. They do offer the potential to incorporate road safety features into their design.

Objective Two: Reduce Secondary Impacts of Incidents

Surface street improvements allow for continued traffic movement and/or redirection off the highway in the wake of a traffic incident. Additionally, surface street improvements would have some potential to improve safety on the streets within the corridor.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Surface street improvements have the potential to increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities through sidewalk improvements and the addition of bicycle lanes.

Conclusion: Surface street improvements have little or no potential to meet any of the project needs as a standalone strategy. However, they are easily incorporated into other strategies being

Strategy Screening and Alternatives Development Process and Initial Screening Results

advanced, and are therefore advanced as a supporting strategy to be considered as part of other alternative combinations.

3.1.4.2 Bicycle and Pedestrian Safety Improvements

Bicycle and pedestrian improvements in the study area will allow local trips to be made on bicycle or by foot, thereby reducing trips in personal vehicles. These could include sidewalk widening and streetscaping for pedestrians and the addition of bicycle lanes or dedicated bicycle paths for bike riders. Bicycle and pedestrian improvements are not suitable for I-285 itself, but may provide benefit on the surrounding surface streets.

Potential to Meet Need One – Better Manage and Minimize Traffic Congestion: Little or No Potential

Objective One: Improve Congestion Management

Bicycle and pedestrian improvements will not facilitate better incident management since bicycle/pedestrian facilities are separated from the highway. Additionally, they do not encourage non-peak period trips because they offer the same level of service at peak and non-peak hours. Bicycle/pedestrian improvements will not significantly reduce overall trips in the study corridor because of low mode share.

Objective Two: Accommodate Current and Future Travel Demand

Bicycle and pedestrian improvements do not provide significant new capacity because it is likely that the mode share of bicyclists will be low. Because of low capital costs and right-of-way requirements, bicycle and pedestrian strategies are quite flexible. However, bicycle/pedestrian improvements could address the current and projected trip type of 10 miles or less if facilities provide access to key destinations.

Objective Three: Reduce Traveler Delay

Bicycle and pedestrian improvements are not likely to reduce travel time for users.

Objective Four: Maximize Efficiency of Corridor

Bicycle and pedestrian improvements will have no effect on optimal capacity, since other vehicles cannot use bicycle/pedestrian infrastructure and low mode share will not free mainline capacity. Additionally, they do not increase person or truck throughput because they are not designed to accommodate cars or heavy trucks.



Strategy Screening and Alternatives Development Process and Initial Screening Results

Potential to Meet Need Two – Improve Mobility Options for the Traveling Public: **Little to No Potential**

Objective One: Provide Convenient and Competitive Travel Choices

Bicycle and pedestrian improvements provide alternate modal and route access to population and employment areas by making bicycling and walking more feasible in the corridor. Users will consume no fuel and no direct user fee is charged to users.

Objective Two: Improve Accessibility for Transportation-Disadvantaged Populations

Bicycle/pedestrian improvements can provide additional route choices and alternate choices to transportation-disadvantaged populations because they are intended to serve those who do not have access to a car or choose not to use one.

Objective Three: Accommodate Interstate and Regional Trips Without Degrading Local Trip-Making

Bicycle and pedestrian improvements can serve shorter local trips, but do not serve regional or interstate trips. Additionally, as a result of low mode share, bicycle and pedestrian improvements will not decrease surface street congestion.

Potential to Meet Need Three – Maintain and Improve System Linkages: **Little or No Potential**

Objective One: Maintain and Improve Regional Highway System Connectivity

Bicycle and pedestrian improvements do not provide new connections to existing, planned, or programmed highway systems because bicycles are prohibited from using the interstate.

Objective Two: Improve Linkages of Regional Transit System

Bicycle and pedestrian improvements will not attract new transit riders in any meaningful quantity, although increased bicycle/pedestrian access to transit stations may encourage a limited number of new transit riders.

Objective Three: Maintain and Improve Freight System Connectivity

Because they are not intended to serve heavy trucks, bicycle/pedestrian improvements do not connect with planned or programmed truck-only projects, nor do they improve connections to top freight origins and destinations.

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Potential to Meet Need Four – Provide Safer Travel Conditions Along the Corridor: Little or No Potential

Objective One: Reduce Potential for Severe Crashes

Bicycle and pedestrian improvements do not separate heavy trucks from vehicles, reduce vehicle conflicts, or have potential to incorporate road safety features into their design.

Objective Two: Reduce Secondary Impacts of Incidents

Bicycle and pedestrian improvements do not allow for continued traffic movement or redirection in the wake of a traffic incident because they do not accommodate motorized vehicles.

Objective Three: Improve Bicycle and Pedestrian Accommodations

Bicycle and pedestrian improvements will increase safety on connections between existing, planned, or programmed bicycle and pedestrian facilities through sidewalk improvements and the addition of bicycle lanes.

Conclusion: Bicycle and pedestrian improvements only have potential to meet Need Two and are not advanced to the alternatives analysis stage as a standalone strategy. However, they are easily incorporated into other strategies being advanced, and are therefore advanced as a supporting strategy to be considered as part of other alternative combinations.

3.2 Strategies Advanced

As stated, specific criteria and performance measures developed through agency involvement, public input, and **revive285 top end** team analysis are used to objectively assess each potential strategy against the identified needs. Only strategies that are federally mandated or recommended, have the best potential to meet identified needs, or serve as design/support options are moved forward to the detailed alternatives analysis phase, wherein combinations of strategies are analyzed in detail. These strategies are described below.

3.2.1 Federally Mandated or Recommended

To comply with federal guidelines/regulations and to establish a baseline against which to measure the effects of build strategies, the following strategies are moved forward for detailed analysis:



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- No-build alternative
- FTA New Starts Baseline
- TSM

3.2.2 Best Potential to Meet Project Needs

The remaining strategies fall into two categories of improvements: transit and highway. Based on the initial screening, only the transit strategies actually meet Need Two – Improve Mobility Options for the Traveling Public. As such, a transit strategy will have to move forward for any of the alternatives to meet all the project needs. After reviewing the potential to meet the project needs, the following two transit strategies were found to have significantly better potential to meet the project needs and are recommended to move forward in combination with other strategies:

- BRT
- Express Bus

However, there are discussions among state and regional transportation planning partners regarding the long-term benefits of the currently planned regional BRT system versus a regional light-rail transit (LRT) system. If a system-wide transit change is made within the Regional Transportation Plan to a regional LRT, the LRT strategy will have better potential to meet the project needs along this corridor than either the BRT or express bus system. Therefore, it is recommended that BRT be designed as a fixed guideway transit system that incorporates both BRT and LRT engineering design standards. This would allow the conversion to light rail, either during the course of this process or later, when capacity demands warrant such conversion.

In addition, there are design options that would enhance the express bus transit operations, including dedicated ramps, park-and-ride facilities, and transit stations. Each of these options should be considered as part of the design of the express bus system.

Among the highway capacity strategies, four strategies have significantly less potential to meet the project needs and are recommended to be set aside. These include general-purpose lanes, express lanes, TOLs, and toll lanes. As stated previously, both HOVs and TOLs have better potential to meet the project need and purpose if part of a comprehensive managed-lane strategy. This leaves the following strategies to move forward in combination with others for the detailed analysis:

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- Operational improvements
- Select managed-lane strategies (including vehicle eligibility, tolling, and occupancy requirements)

3.2.3 Support Strategies

Although the following strategies have limited to no potential to meet the project needs, they can supplement or improve the potential of other strategies to meet the project needs:

- TDM
- Surface street improvements
- Bicycle/pedestrian improvements

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4. ALTERNATIVES FOR ADVANCEMENT

The preceding section of this report identified strategies that possess the greatest potential for meeting the identified needs for the **revive**285 *top end* corridor. None of the individual strategies have good potential to meet two or more of the identified needs independently; therefore, the strategies will be advanced in combination as alternatives for detailed evaluation. This section more specifically identifies the viable alternatives being advanced, including required alternatives and build alternatives.

4.1 Mandated Alternatives

As previously stated, several non-expansion strategies will be advanced as required by FHWA and FTA guidelines. These include the following:

- No-build alternative (i.e., the “do nothing” alternative)
- FTA New Starts Baseline alternative
- TSM alternative

4.2 Build Alternatives

The build alternatives are developed from the strategies to be advanced as identified in the previous section of this report and include:

- BRT (as a fixed guideway transit)
- Express bus
- Operational improvements
- Managed lanes

As mentioned in Section 3, none of the identified strategies independently meets all four of the corridor needs. At best, each strategy meets two or three of the four identified corridor needs. For example, the express bus strategy addresses Needs 2 and 3, but not Needs 1 and 4. Operational improvements address

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Needs 1 and 4, but not Needs 2 and 3. Therefore, the study advances combinations of those identified strategies to fully address the identified corridor needs.

In this corridor, BRT and express bus strategies are not complementary, but rather provide duplicative services since each is a means of providing east-west transit along the corridor. Therefore, any alternative that includes BRT should not include express bus, and vice versa. Additionally, every build alternative should include either express bus or BRT to reasonably address all the corridor needs (specifically Need 2, which deals with mobility options).

Similarly, every build alternative should include operational improvements since it is the only strategy that fully addresses Need 4, which deals with improving safety along the corridor. Therefore, considering these factors, logical build alternatives should contain:

- BRT or express bus
- Operational improvements

Build alternatives may also include managed lanes. The logical combinations of these strategies, then, are as follows:

1. BRT and operational improvements
2. Express bus and operational improvements
3. BRT, operational improvements, and managed lanes
4. Express bus, operational improvements, and managed lanes

Each potential alternative and its ability to address the corridor's needs is discussed below. This analysis relies on and builds upon the analyses described in Section 3 of this report.

1. BRT and Operational Improvements

This combination of strategies will provide a viable transit option in the corridor that will be unaffected by congestion and incidents in general-purpose lanes. The BRT element will significantly enhance regional transit connectivity by connecting to express bus service on I-85 and I-75 and with planned arterial BRT service along Buford Highway. Operational improvements directly address congestion and safety needs.

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This alternative at least partially addresses all four primary corridor need statements and, therefore, is advanced. Design should address fixed guideway transit standards and not preclude LRT.

2. Express Bus and Operational Improvements

This combination has the potential to meet all project needs. The express bus component, although limited to operating in existing general-purpose lanes, has the potential to meet Needs 2 and 3 especially with the addition of special design features. Operational improvements, as stated has very good potential to meet Needs 1 and 4.

3. BRT, Operational Improvements, and Managed Lanes

With the addition of managed lanes, this alternative further addresses the system connectivity and congestion management needs of the corridor. Therefore, this alternative is advanced. Design should address fixed guideway transit standards and not preclude LRT. The managed lanes should also allow for truck connections.

4. Express Bus, Operational Improvements, and Managed Lanes

This combination of strategies presents the opportunity to operate express bus service via managed lanes. As long as these managed lanes are managed to ensure uncongested flow, this will allow for transit travel times comparable to BRT. This alternative at least partially addresses all four corridor needs and is advanced. The managed lanes should also allow for truck connections.

4.3 Supporting Strategies

In the preparation of design plans, each build alternative being advanced for detailed evaluation may also have certain supporting strategies to be considered and/or evaluated. It is recommended that each build alternative consider the following, as appropriate.

- ↳ Lane management strategies
 - Occupancy requirements
 - Truck use restrictions and eligibility
 - Tolls

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- Off-mainline improvements
 - Surface street improvements
 - Bicycle and pedestrian improvements

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5. NEXT STEPS

The immediate next step is to more specifically define the design criteria and assumptions that will be used in developing each of the alternatives. A technical memorandum titled Detailed Definition of Alternatives will be prepared outlining the design options, typical sections, project limits, access points, transit station locations, and lane management assumptions. This information will help guide the preparation of concept design plans. Specific geometric considerations include:

- At-grade configurations
- Elevated sections
- Tunneled or depressed sections
- Fixed guideway transit design (applicable for both BRT and LRT)



Appendix A

Public Participation



A GEORGIA DOT-GRTA INITIATIVE



Appendix A – Public Participation Tools

Strategy Screening and Alternatives Development Process

1. IDENTIFY PROJECT NEED/CORRIDOR PROBLEMS

→ Round 1 Public Information Open Houses

- *Environmental Issues and Concerns Dot Exercise:* Meeting participants were provided with stickers consistent with environmental constraints map legend and asked to identify any additional environmentally sensitive areas on the Environmental Constraints Map. This input provided the project team with a more complete picture of the surrounding environment.
- *Prioritize Need and Purpose Dot Exercise:* Meeting participants were provided with three colored dots and asked to “choose” the top three issues/concerns identified on the “Project Need” displays that they felt should be addressed by **revive285 top end**. Participants were told that the project team is still researching additional “needs” and the choices may change.
- *Court reporter:* The court reporter was present to document verbal comments.
- *I Was Unable to Attend, But Would Like to Provide Input Survey:* This survey was made available on the project website and at the public meeting. It was designed to capture the same input as the meeting exercises from persons unable to attend the meeting.
- *The Tell Us What You Think Survey:* This survey provided to attendees at the meeting and made available on the project website was designed to gather input on key issues along the project corridor and general public participation efforts.
- *Flip Chart:* A flip chart was made available at the “Project Need Station” during this meeting to capture comments from the public regarding the project need and purpose and existing conditions.

→ Round 2 Public Information Open Houses

- *Project Need and Objectives Dot Exercise:* The project needs and objectives exercise was interactive. The public was asked to use four colored dots provided the project team to select the one objective for each project need that they felt was the most important. This input helped the project team evaluate whether a proposed solution will meet the most important project needs and determine whether the project team is on track developing a solution that is supported by the public.

- **Project Need/Issues and Opportunities Survey (online):** This survey was posted on the project website in November 2006 and was designed to gather input on project issues and opportunities and



Appendix A – Public Participation Tools

Strategy Screening and Alternatives Development Process

project activities. This survey was discontinued in February 2007 and replaced with the online Issues/Opportunities Survey posted in March 2007. The questions on the survey pertaining to area issues and opportunities were the same as the previous survey. However, questions regarding current project activities (PI) were removed and made into a separate survey.

- **Project Need and Purpose Survey (online):** This survey was posted on the project website in March 2007. The public was asked to “prioritize” the project needs identified by the project team to identify the top needs they felt should be addressed by *revive285 top end*.
- **Telephone Survey:** A total of 600 telephone interviews were conducted between June 23 and June 30, 2006 to gather input on public perception on a number of issues related to the project, including corridor issues and opportunities.
- **Stakeholder Interviews/Briefings:** Completed stakeholder interviews/briefings to provide stakeholders with a description of project and gather input on issues and concerns and existing conditions in the corridor.
- **Technical Advisory Committee (TAC) Meeting (October 19, 2006; December 18, 2006):** The TAC was asked to review the NEPA need and purpose guidelines and the project need and purpose. The TAC was also asked to provide input regarding additional data sources that should be considered by the project team during the analysis of existing conditions.
- **Citizen Advisory Committee (CAC) Meeting (July 12, 2007):** The CAC was provided with copies of the Project Need and Purpose (draft) and encouraged to provide comments by completing the Project Need and Purpose Survey and Area Issues and Opportunities Survey (either via hard copy provided or online).
- **Agency Scoping Meeting (December 4, 2006):** Several federal, state, and local agencies participated in this scoping meeting. Participants were provided with a copy of the draft need and purpose. Discussions during this meeting centered around project-related issues, including corridor needs.
- **Two-day Agency Work Session (April 26 – 27, 2006):** A two-day work session was completed with the various resource agencies (federal, state, and local) to gather input on a variety of issues related to the project, including area issues and opportunities as well as corridor needs.



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Strategy Screening and Alternatives Development Process

2. IDENTIFY STRATEGIES/SOLUTIONS

→ Round 2 Public Information Open Houses

- *Strategies Exercise:* For the strategies exercise, the public was asked to review a set of informative display boards that detailed the strategy screening process and provided examples of strategies under consideration. The public was also asked to review the draft results from the project team's initial strategies screening and key considerations associated with each strategy, which were included on the exercise survey. The survey asked the public to provide their thoughts on whether strategies should be considered for additional study after reviewing this information. The survey also asked the public to identify missing strategies and possible combinations of strategies. This input was useful in validating or challenging the project team's findings and identifying oversights in the project team's initial screening of potential strategies.
- *Court Reporter:* A court reporter was present to document verbal comments.
- *Comment Cards:* Comment cards and pens were provided on the tables in the center of the room for the public to provide comments, ideas, and thoughts on any aspect of the project.

→ **Strategies Survey (online):** This survey was posted on the project website in May 2007. The public was asked to review the draft results from the project team's initial strategies screening and key considerations associated with each strategy, which were posted online. The survey asked the public to provide their thoughts on whether strategies should be considered for additional study after reviewing this information.

→ **Stakeholder Interviews/Briefings:** Completed stakeholder interviews/briefings to provide stakeholders with a description of project and gather input on possible solutions for the corridor.

→ **TAC Meeting (March 19, 2007):** The TAC was asked to review the proposed strategy screening process; to provide input on the project goals/objectives, and to identify potential evaluation criteria and/or measures that could be used to analyze whether strategies met the goals and objectives.

→ **TAC Meeting (June 7, 2007) Take Home Survey:** The TAC was asked to review the screening process and evaluation criteria and provide input on missing criteria/measures and recommended strategies through take home survey.

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Strategy Screening and Alternatives Development Process

- **Telephone Survey:** A total of 600 telephone interviews were conducted between June 23 and June 30, 2006 to gather input on public perception on a number of issues related to the project, including possible solutions.
- **Citizen Advisory Committee (CAC) Meeting (July 12, 2007):** The CAC was provided with a Draft Results of Strategies Screening (matrix). Project team members provided a thorough explanation of the matrix. CAC members were encouraged to review this information and provide comments to the project team via e-mail, the project website, or via the U.S. mailing address. An online discussion forum was also established for the CAC and a thread dedicated to additional strategies/solutions was established to open a dialogue on this matter.
- **Agency Scoping Meeting (December 4, 2006):** Several federal, state, and local agencies participated in this scoping meeting. Discussions during this meeting centered around project-related issues, including possible corridor solutions.
- **Two-day Agency Work Session (April 26 – 27, 2006):** A two-day work session was completed with the various resource agencies (federal, state, and local) to gather input on a variety of issues related to the project, including possible corridor solutions.

3. IDENTIFY ALTERNATIVES (COMBINATIONS OF STRATEGIES)

- **Round 2 Public Information Open Houses**
 - *Strategies Exercise:* The survey provided for this exercise (as described above) asked the public to identify missing strategies and possible combinations of strategies.
 - *Court Reporter:* A court reporter was present to document verbal comments.
 - *Comment Cards:* Comment cards and pens were provided on the tables in the center of the room for the public to provide comments, ideas, and thoughts on any aspect of the project.
- **Strategies Survey (online):** This survey was posted on the project website in May 2007. The public was asked to review the draft results from the project team's initial strategies screening and key considerations associated with each strategy, which were posted online. The survey asked the public to identify missing strategies and possible combinations of strategies.

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Strategy Screening and Alternatives Development Process

- **Stakeholder Interviews/Briefings:** Completed stakeholder interviews/briefings to provide stakeholders with a description of project and gather input on possible solutions for the corridor.
- **TAC Meeting (June 7, 2007) Group Exercise:** Each group was asked to combine strategies to create alternatives, prioritize their alternatives, and present the results to the entire TAC.
 - Combination of tolled express lanes across the entire corridor; express bus across the corridor with stations/stops at I-75/I-285, between Lake Forrest Drive and Roswell Road, along the MARTA North Line near Perimeter Center Parkway, and at the MARTA Doraville Station; tolled truck lanes across the corridor; and a parallel facility that connects Mount Vernon Highway and New Peachtree Road
 - HOV lanes for two passengers or more combined with express bus that tie into the planned improvements on I-75 and span the entire corridor (Note 1: operational improvements should be included in all alternatives, specifically the Perimeter Center flyover bridge, bus ramps, and HOV ramps). (Note 2: TDM should be included as a part of all alternative strategies).
 - HOT toll lanes and TOLs with variable pricing to limit time of day spanning the entire corridor with access points at I-75/I-285, between Roswell Road and Glenridge Connector, at Ashford Dunwoody Road, and at I-85/I-285; CD lane system from I-75/I-285 to Roswell Road and from Ashford Dunwoody Road to I-85/I-285; TDM should be included as a part of all alternative strategies
 - Tolled express lanes spanning entire corridor; BRT that ties in with the planned improvements on I-75 and spans the entire corridor with stations near I-75/I-285 and Roswell Road and access to the existing Dunwoody, Sandy Springs, and Doraville stations; TOLs tying into planned improvements on I-75 and spanning entire corridor
 - BRT spanning the entire corridor; up to four general purpose lanes in each direction spanning the corridor; operational improvements along entire corridor
 - Parallel facility north of I-285 spanning entire corridor; operational improvements along entire corridor (remove Riverside Drive access)
 - Tolled HOV lanes spanning corridor with limited access points at New Northside/Northside Drive, GA 400, Ashford Dunwoody Road, Peachtree Industrial Boulevard, and I-85/I-285; tolled TOLs spanning the entire corridor; CD lane system from GA 400 to N. Shallowford Road; interchange

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improvements at the Roswell Road, GA 400, Ashford Dunwoody Road, and I-85/I-285 interchanges; BRT system from I-75/I-285 terminating at the Doraville MARTA station

– Lane Additions/Enhancements

Improve inadequate ramp and merge lengths

Widen the Riverside Drive bridge to five lanes

Add a lane at the GA 400 North exit to I-285 East

Add a lane at the I-285 West exit to Peachtree Industrial Boulevard

Add a lane at the I-285 West exit to Peachtree-Dunwoody

Double-deck for HOV lanes

Double-deck for general purpose lanes

Restripe the I-285 East exit to Peachtree Industrial North to make exit-only

Convert existing HOV lanes to TOLs

Provide a four-lane and two left-turn lanes on Riverside Drive, plus better turn lanes to access ramps for right turns

– Interchange Improvements

I-285/Riverside Drive turn lane

I-285/Buford Highway

I-285/I-75

I-285/I-85

I-285/Peachtree Industrial Boulevard

I-285/Glenridge Drive

I-285/GA 400

I-285/Peachtree Dunwoody at GA 400

I-285/Roswell Road

I-285 West/Chamblee Dunwoody Road

Reconfigure parallel on- and off-ramps (I-285/Peachtree Industrial, I-285/Ashford-Dunwoody, I-285/Peachtree-Dunwoody, and I-285/GA 400)

– General Purpose Lanes

Add five or more lanes in each direction on I-285



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Add three general purpose lanes and three CD lanes

– Transit

Double-deck for transit

Light-rail transit down middle to connect with MARTA

BRT lane in each direction

- ➔ **TAC Meeting (September 2007):** Reviewed initial results of strategy screening report.
- ➔ **CAC Meeting (late September 2007):** Reviewed initial results of strategy screening report.
- ➔ **Agency Scoping Meeting (September 2007):** Reviewed initial results of strategy screening report.
- ➔ **FHWA-FTA Briefing (October 2007):** Met with Federal Transit Administration and Federal Highway Administration upper management to provide an update on the project status, gather input and feedback regarding project alternatives, and to address critical issues.
- ➔ **Round 3 Public Information Open Houses (October 2007):** Reviewed initial results of strategy screening report.
- ➔ **Transit Planning Board Coordination Meeting (January 2008):** Met with Transit Planning Board (TPB) to determine the status of the TPB Vision, to review the data used to determine appropriate transit technologies for *revive285 top end*; and to determine how better to coordinate TPB activities with *revive285 top end*.