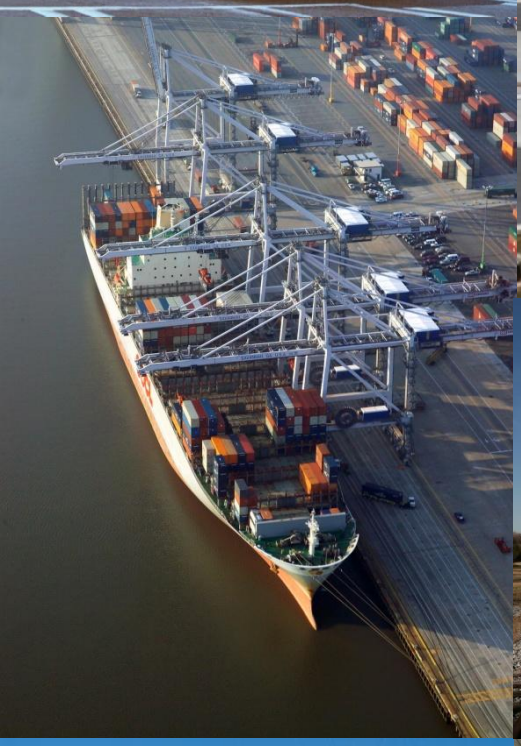
STATEWIDE STRATEGIC TRANSPORTATION PLAN 2010-2030

April 2010

Georgia Department of Transportation



Statewide Strategic Transportation Plan

2010-2030

APPROVED:

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Sonny Perdue, Governor

State of Georgia

Date_____

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Bill Kuhlke, Chairman

Georgia Department of Transportation

Date_____

Submitted April 10, 2010

Contents

I. Executive Summary

Over the past few decades, Georgia's population and economy grew rapidly, and our unique world-class transportation assets were critical to that success. The Port of Savannah, Hartsfield Jackson International Airport, five major Interstate highways, and Georgia's extensive network of Class 1 freight-rail assets (third largest in the country) have positioned the state as a major gateway for East Coast logistics. These assets also support mobility and high quality of life for all of Georgia's citizens. Over 98 percent of all Georgians live within 20 miles of a four-lane or Interstate highway. Our roads are the best maintained in the country and among the safest in the Southeast. In regards to transit, metro Atlanta has an extensive rail system, which was among the first of the new urban systems in the nation. Cities and towns in the rest of the state have done much with limited resources. In fact, Georgia has one of the largest rural transit networks east of the Mississippi.

However, rather than investing to preserve and extend our competitive advantage in transportation, Georgia has been under-investing and "coasting" on past success. Today, Georgia invests less than the national average as a share of its GDP and devotes fewer resources per capita to transportation than any US state except Tennessee.[1] The lack of investment and improvement to these assets has clearly eroded the state's transportation performance on measures that drive economic competitiveness. In metro areas, many of the most glaring performance issues are congestion related. Congestion places a direct financial burden on families through wasted time, wasted fuel (referred to as "congestion costs"), and reduced trip reliability. It also restricts potential places for employment. For employers, congestion shrinks the pool of available talent (i.e., the number of workers that can reach a potential job site within 45 minutes) and erodes supply-chain efficiency. In rural areas, performance is improving on most measures, but key gaps remain around highway safety, economic development, and access to the state's transportation network.

At current funding levels, performance will continue to deteriorate, threatening our ability to compete for jobs and growth in the future. As early as 2012, Georgia's motor-fuel dollars could prove insufficient to match future federal transportation funds. But even if Georgia finds a way to match federal dollars and invests all of them wisely, existing state and federal resources will not stretch far enough. Over the next 20 years, congestion costs across all of Georgia's metro areas will increase dramatically, and many transit services will be reduced or eliminated due to lack of operating funds. In metro Atlanta, congestion costs will double, and the pool of talent available to employers within 45 minutes will shrink by 33 percent compared

1 2006 FHWA and National Transit Database statistics

with today. Medium-sized cities in Georgia will go from being attractive, convenient places to live to having congestion levels similar to Charlotte, Miami, or even Atlanta. Rural areas will see little expansion of the Governor's Road Improvement Program (GRIP) or other freight corridors. Finally, freight-oriented businesses and commercial shippers will experience far more delays and less reliability in their supply chains, as much needed investments in capacity and capability are out of reach. Overall, Georgia's leadership position in freight and logistics—and the 1 in 10 jobs that freight supports—will be at risk.

SETTING A NEW COURSE

Alternatively, a new investment strategy supported by additional resources could transform our transportation network and create over $480 billion in GDP growth for Georgia over the next 30 years and generate up to 425,000 new jobs. These new resources should be invested across three broad categories:

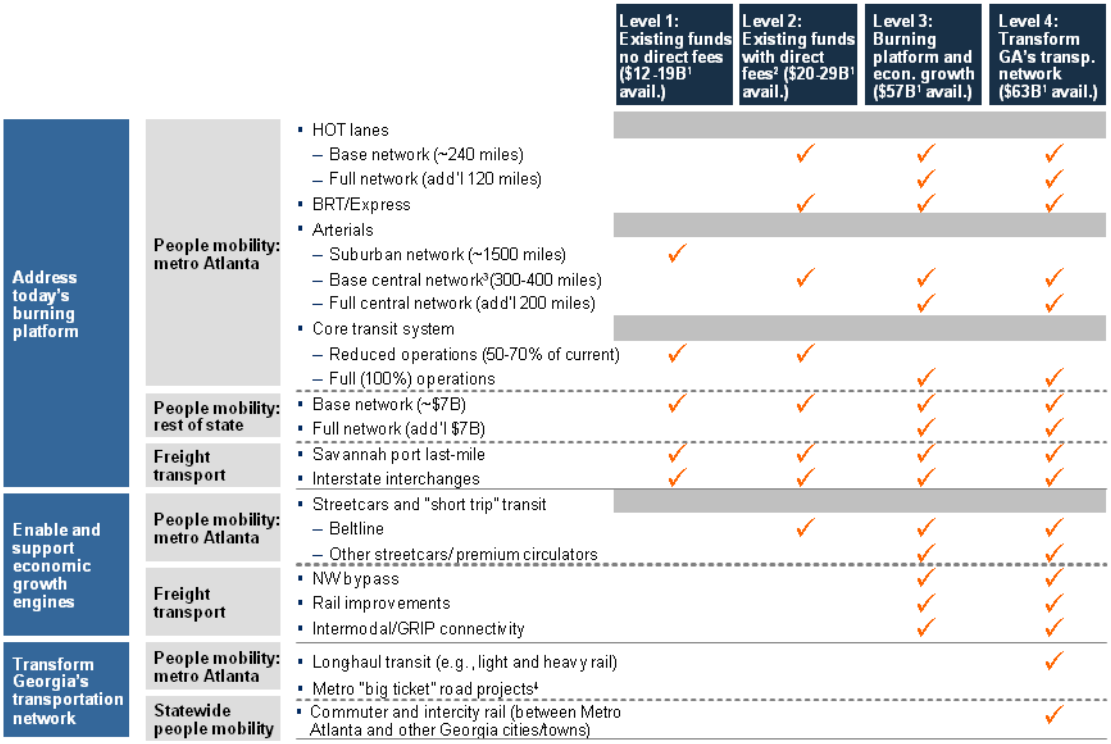
1. **Statewide freight and logistics.** By investing $15 billion over the next 20 years in new limited-access bypasses, rail capability improvements, GRIP corridors that align with high-volume freight routes, and improvements that address the worst bottlenecks and connectivity gaps on the network, the state could generate $100-115 billion in additional GDP growth and 90,000 new jobs.

2. **People mobility in metro Atlanta.** In metro Atlanta, the formula for reducing congestion costs, improving trip reliability, and addressing "shrinking talent pools" for employers has three equally important components: demand management; supply expansion focused on employment centers and reliable modes; and better matching the supply and demand by coordinating transportation investment with future development patterns. The reliable modes with the highest return for the state have a "dual purpose" infrastructure, like "managed lanes." Dual-purpose investments are those that can be used by both car drivers (90+ percent of all commuters in any region-wide scenario) and transit users (e.g., Bus Rapid Transit, express bus, and vanpools). Managed lanes are lanes where drivers pay tolls in exchange for a reliable minimum travel speed. In some of the major employment centers, transit ridership is very high and is critical to their continued growth. As a result, the strategy for Atlanta also includes rail transit and emphasizes the following priorities: first, keep the core rail system operating efficiently; then, expand "short haul" lines that connect to the core (e.g., streetcars, trolleys, short-distance light rail "loops"); finally, as resources become available, add longer-haul rail (e.g., suburban light rail, commuter and intercity rail) selectively to transform the network over time. The investment required in new capacity is ~$29-36 billion, with ~$8-11 billion coming from tolls and other user fees (e.g., parking fees). The benefit is up to ~250,000 jobs and $170 billion in GDP growth.

3. **People mobility in rest of state.** People mobility in rural areas and medium-sized cities is well supported by the current network, though continued investment to fund the long-range plans is critical. New capacity and safety needs are estimated at ~$14 billion over the next 20 years. In the

urban areas, demand management and coordinating transportation investment with development patterns will also be critical—adding 30-50 percent additional impact for every dollar invested. Taken together, these investments and policy enhancements result in 89,000 additional new jobs and $49 billion in GDP.

INVESTMENTS INCLUDED BY FUNDING LEVEL



1 In 2008 dollars through 2030; available resources allocated towards CapEx and O&M costs; O&M costs through 2040 add an additional $1B to Level 3 and $2B to Level 4

2 Direct fees include tolls and parking fees.

3 "Base central network" means the arterial road improvements are focused on employment centers. However, some suburban arterial road investments would also be made.

4 Metro "big ticket" road projects include a tunnel connecting GA 400 and I-675, a tunnel from I-75 to I-85 under the top end of I-285, and a "cap" from the Brookwood Interchange to I-20 over the Downtown Connector.

Source: Kimley-Horn; team analysis

Collectively, these transformational investments represent ~$65 billion in new capacity across multiple transportation modes over the next 20-30 years (capital and operations). These investments complement planned investments in maintenance and operations of the existing highway and transit system, and serve as competitive differentiators that can keep Georgia on the leading edge of mobility for people and goods. Further,

the investments described above have been prioritized or tiered, so they can be phased in over time as flexible, new resources become available.[2] For example, if Georgia is limited to existing, road-specific funds or tolls, nearly all available dollars will be deployed for road and highway programs that address what data shows are today's worst problems or "the burning platform."[3] These investments are the most cost-effective given the way Georgia's cities and towns have developed, and they are consistent with the legal restrictions on the state's funding sources. However, if additional sources come online that can be flexed across modes, Georgia can "support future growth engines" and "transform the network" in ways not currently possible. This means substantial investments in freight, transit improvements in metro areas, and over time, an intercity passenger rail program that connects our state.

The time to act is now. Georgia has a clear plan to transform its transportation network, dramatically improve performance, and as the state emerges from the recession, reclaim its job-growth lead in the South and US. The stakes are high—425,000 new jobs and $480 billion in economic benefit are on the table. Early and robust investment in our transportation network is a proven and vital way to secure Georgia's future economic leadership and prosperity.

2 System performance was measured using a regional model. The value of individual projects must be determined using more detailed project analysis.

3 While some federal funds can be flexed to transit, it would not be enough to address today's core transit system needs, as flexed funds would then no longer be available for other needed uses. Additionally these federal funds could not be used for operations and maintenance which is the funding category most in need of additional funds.

II. Introduction

The recent economic downturn facing Georgia and the United States is now widely recognized as the most severe global recession since the Great Depression. Though the exact timing and strength of economic recovery remains up for debate, Georgia should grasp the opportunity with a proactive approach to securing our future prosperity. The state must present its citizens, Georgia's businesses, and prospective businesses thinking of re-locating here with a realistic and sustainable plan for boosting their productivity and supporting future growth. On transportation specifically, this plan must take full advantage of current assets, managing their preservation scientifically and maximizing their operational efficiency. At the same time, it must create new capacity, new modes of travel, new supply-chain capabilities for efficiently moving freight, and encourage transportation efficient development patterns.

THE STATE'S APPROACH TO STRATEGIC TRANSPORTATION PLANNING

By wisely investing in transportation improvements, Georgia has an opportunity to create up to 425,000 jobs over the next 20 years and $480 billion in GDP growth over the next 30 years. This document describes in depth the business case for this opportunity. It also serves as the fiscally constrained Statewide Strategic Transportation Plan (SSTP) as defined in Code Section 32-2-22(a)(6) . This "business case" is an investment strategy developed by following a strategic-planning process that is outcome-driven, return-on-investment oriented, and based on best practices from the public and private sectors. This strategic methodology is distinctly different from past approaches that revolve around a "call for projects" to spend transportation dollars within predetermined categories. This re-oriented process is known as "Investing in Tomorrow's Transportation Today" (or IT3) and began in the fall of 2008 with five key steps:

FIVE KEY STEPS TO A STRATEGY-DRIVEN APPROACH

1. ***Set goals and objectives based on what is important to our "customers" (the citizens and businesses that use and depend on our transportation network)***
2. ***Identify how customer needs are likely to change in the future and how Georgia's competitors are positioned respond.***
3. ***Design an investment strategy that meets these needs and stays ahead of competitors, while delivering the highest return to taxpayers.***
4. ***Financially constrain the strategy, to align it with available funds.***
5. ***Relax the constraint and define the minimum funding required for competitiveness.***

This report describes the outcome and conclusions that resulted from following each of these steps. It also describes some of the core analytics that underpin those conclusions and outcomes. To make the process and its analytics easy to follow, each step in the process is represented by a chapter in this document.

OUTLINE OF THE REPORT

- Chapter 1: Goals and objectives
- Chapter 2: Meeting customer needs and the competitive landscape
- Chapter 3: Cost-effective strategies for achieving performance
- Chapter 4: Strategy with current resources and expected performance
- Chapter 5: Strategy with additional investment and expected performance
- Chapter 6: Conclusion

FRAMEWORK FOR MPOS AND LOCAL GOVERNMENTS IN THE SSTP

This report is the current statewide transportation strategy. Over the course of the next few years, the report's long-term SSTP and business case will be integrated within the long-range plans developed by Metropolitan Planning Organizations (MPOs) and local counties consistent with the federal transportation planning process. Through the federal process, MPOs and the state cooperatively develop regional long and short term transportation plans. The long range plan includes a balanced mix of projects over a minimum planning horizon of 20 years. The short range plan allocates funding for the highest priority projects in the near term (not less than 3 years). The short range plan must be consistent with the long range objectives and must be financially balanced by year. Upon adoption of the plans by the respective MPOs and the Governor, the short range plan is included without modification into the State Transportation Improvement Program (STIP). Final action on the plans is taken by FHWA and FTA. It should be simple to achieve alignment of all the key transportation stakeholders, since the eight planning factors required by federal law for MPOs align well with the statewide strategy described here.[4]

That said, there are a few areas where collaboration and partnership with local governments will be even more important than in the past. First, the state will be more focused than before on how transportation investments in metro areas affect three performance measures: annual congestion costs,[5] number of people taking reliable trips per day (peak hour), and average number of workers who can reach major employment centers within 45 minutes. The expectation is that MPOs and metro counties interested in state and federal resources will articulate how their proposed plans improve results on these metrics.

4 The eight planning factors described in Federal law include supporting economic vitality and competitiveness, increasing safety, increasing security, increasing access for people and freight, protecting the environment and coordinating transportation improvements with planned economic development patterns, enhancing integration and connectivity across the system and across modes, promoting efficient management and system operation, and emphasizing preservation of the existing system.

5 The Texas Transportation Institute focuses on congestion cost per peak traveler, which captures a similar notion.

Second, some of the state's future policy and investment priorities (e.g., demand management, transit, coordinating transportation investment with development patterns, first- and last-mile connectivity) will require a new type of partnership between the state and local governments for successful implementation.

Overall, there are five specific areas where partnership with MPOs and local counties will be critical.

1. **Demand management.** Congestion occurs because too many vehicles are trying to use a roadway at the same time. "Demand management" is a suite of tools and policies that encourage people to travel at less-congested times, to use less-congested facilities (e.g., transit or less-congested roads), to use carpooling or vanpooling, to combine activities into a single trip or to not take a trip at all (e.g., telecommute to work). By far the most effective of these tools is the use of price signals (e.g., variable tolls, variable parking prices) to convey the true cost of using transportation assets, particularly during peak travel periods—known as "congestion pricing." This SSTP describes a substantial commitment in state and federal funds over the next 20 years to support demand management mechanisms, particularly managed lanes that will employ targeted congestion-pricing strategies. In metro areas where these systems have been successfully implemented (e.g., Dallas, Washington, San Francisco, San Diego, Los Angeles), the MPOs have been actively involved in the design of the congestion-pricing solution and the integration of highway pricing with the transit strategy.

   The state will seek a similar response in the Georgia metro regions that will benefit from the state's investment in managed lanes or similar systems. Ideally, MPOs and metro counties will go even further, complementing this SSTP, by reviewing policies in the urban area for parking, especially where transit is available or could be available in the future.[6] Finally, local governments can use a host of other tools: promoting transportation alternatives directly or working with interested local employers on carpool and vanpool programs, telecommuting, and flexible workweeks. Many metro areas in Georgia are already taking action through Transportation Management Associations or programs like the Clean Air Campaign of Georgia.

2. **Regional and local transit planning.** If new funding becomes available, this strategy gives an important role to transit. Though the state and federal government will continue to play a part in operating and supporting transit (e.g., GRTA operates Xpress buses, GDOT administers federal transit support for small metro areas and rural areas), regional and local officials should take the lead in creating a broad transit vision that expands reliable access to employment and activity centers, mitigates congestion costs, and supports more efficient development patterns. Any such vision should address work and non-work trips and articulate mode options and other service characteristics by corridor, consistent with projected densities, expected ridership, load factors, and cost-effectiveness (e.g., benefit-to-cost ratio). This is already starting to happen. For example, the Transit Planning Board (now the Regional Transit Committee housed at ARC) in metro Atlanta created Concept 3 and now is prioritizing options, and developing proposals for a

6 Numerous studies point to under-pricing of parking as a key driver of congestion and air-quality problems in urban areas.

governance structure. Other systems (e.g., Athens, Savannah, Rome, Augusta, etc.) in the state are in the process of updating their transit-development plans.

In the next planning period, the state will expect regions and counties to prioritize these transit investments. The state will be particularly interested in how large-scale plans (e.g., those with capital budgets greater than $1 billion over the next 20 years) will prioritize projects within two investment categories: "long haul" transit and "short haul" transit. Long-haul investments are the "arteries" of a transit network, connecting major origins and destinations at high speeds and over longer distances. Short-haul investments are the "capillaries": streetcars, trolleys, short-distance light rail, or local buses that cover the last mile of a commute trip or that enable those living and working in dense centers to get to lunch, the doctor, or the grocery store without getting into a car. Finally, there is an expectation that state and local governments have clear operating plans for their systems and governance approaches—not just capital strategies. For example: How many private sector jobs will be directly or indirectly supported? What are projected fare-recovery ratios? How does this compare to benchmarks? and What revenue sources and operational improvements will close the long-term, ongoing operating gap? Answers to these and other key questions should be used when designing and developing transit solutions to ensure that the public investment is successful and sustainable.

3. **Local and regional considerations for planned state investments.** As the state hones in on specific investments—particularly in Interstate and state-highway corridors—the MPOs and counties should advise on current and future development patterns along the corridor, the expected future location of new employment and activity centers (based on reasonable forecasts), affiliated changes to trip patterns, changing needs of shippers or local freight haulers, and any resulting implications for design, function, and alignment. For example, it may be economical for the state to broaden a right-of-way acquisition or change the design of an Interstate bridge to support future light-rail transit (e.g., SR 400 designed to accommodate MARTA or the Downtown Connector which was designed to accommodate the MARTA Civic Center station).

4. **Last-mile connectivity for people and freight.** Though the Interstates, the state highway network, the ports, the Class 1 rail assets, and the airports are powerful economic assets, they lose that value if congestion on the local and regional arterial grid prevents people or shippers from reaching their final destination efficiently. The same principle applies in rural areas where bridge weight capacity can be an issue, particularly for freight movement. The MPOs and counties should be full partners with the state in identifying these bottlenecks and in designing an end-to-end solution that moves people and freight efficiently to and from the airports, state and Interstate networks, and other major transportation hubs.

5. **Coordination of transportation investment with development patterns.** Demographic shifts, changing housing-market demand, and increased concern about the environment will all catalyze Georgia's metro areas to develop differently in the next 20 years than they did in prior decades. Thus, for the state

and MPOs to achieve desired returns for taxpayers' transportation dollars, such investments will need to be coordinated with current and emerging development patterns. Since local governments have primary responsibility for land-use planning, zoning, and permitting, they must take the lead in developing the granular policies, plans, and design standards that will support and encourage mixed uses and residential density in metro employment centers. These regional and local government policies have a strong influence on potential returns, thus the strength of the MPO or county response in this regard will be considered a factor in future state-investment decisions.

This SSTP lays out a path for Georgia to create ~425,000 jobs and ~$480 billion in economic benefits over the next 20-30 years only if three conditions hold. First, Georgia must create effective ways to invest more resources in transportation infrastructure than it does today. Current resources invested are well below the levels Georgia historically invested in transportation. If left to decline, there will be limited ability to invest in freight/GRIP corridors, resulting in congestion costs more than doubling across the state. Second, the state will need the partnership with regional and local governments in the five areas described above, focused on the goals and objectives outlined in the next chapter.

Finally, the GDOT Director of Planning hopes this document will inform and guide the overall public dialogue away from the input-based methods of spending government funds to a new paradigm of results-based investments in public infrastructure to support economic growth. GDOT looks forward to continuing this transportation dialogue with members and leaders of the General Assembly, the Governor, and our planning partners.

1.0 Goals and objectives

"If you don't know where you are going, any road will get you there."

—Lewis Carroll

The process of developing goals and objectives for the Statewide Strategic Transportation Plan began last year, with the launch of Governor Sonny Perdue's initiative: Investing in Tomorrow's Transportation Today (IT3). IT3 used a collaborative, inclusive, and data-driven process to develop a set of transportation goals and objectives. The process started with best practices observed in other states, as well as other parts of the world. Then these best practices were integrated with the "Georgia customer" perspective, which addresses the question "What do Georgia's citizens and businesses expect and need from their transportation network?" The resulting customer profiles and how they translated into goals, objectives, and performance measures for the transportation system are described below.

1.1 UNDERSTANDING GEORGIA'S CUSTOMERS

Customer needs are the natural and most appropriate place to start for the state's goal setting. Key questions to address are: What do Georgia's citizens and businesses expect and need from their transportation network?; What levels of performance will attract and keep businesses and talent in Georgia's economy?; What characteristics or features in a transportation system will make Georgia an attractive place to live?; and What will it take in terms of investment to drive growth across the state? To answer these questions, interviews were conducted with top business leaders and corporate site-location consultants (companies that help the world's largest companies decide where to locate headquarters and major manufacturing/distribution facilities). MPOs, State Transportation Board members, state agencies, representatives of local governments, representatives from the Port of Savannah, and other major freight interests were also interviewed. Finally, multiple "listening sessions" were held during the summer and fall of 2008 across the state to hear directly from the people of Georgia.

Attracting new businesses/Retaining existing businesses

Potential customers are critical to understand but often overlooked. This strategy is shaped by the decision factors for businesses that could locate in Georgia but have not yet chosen to do so. These same factors are also critical to retaining Georgia's existing businesses and ensuring the state is their preferred location for expansion.

Interviews with business leaders and the site-location consultants they hire revealed that when making location decisions, companies consider four categories: workforce availability, operating environment, accessibility/proximity to customers and suppliers, and quality of life. Clearly, transportation can affect the score in all of these categories. Exhibit 1 below shows this explicitly. For example, companies that are deciding where to locate often determine "workforce availability" by the number of workers that can reach a potential site within 30-45 minutes. In a congested metro area or in a rural area that lacks access to a four-lane highway or Interstate, this pivotal number is cut short. Similarly, businesses might explicitly require access to Interstates or access to Class 1 rail lines or a number of direct flights between two cities to determine sufficient proximity to customers and suppliers. Finally, they also factor in their likely ability to attract and retain talent, so measures like average commute time matter.

Exhibit 1

FACTORS AFFECTING COMPANY LOCATION DECISIONS

Category evaluated	Sample metrics companies use relevant to transportation	Implications for "what businesses expect"
Workforce availability	▪ Number/availability of qualified workers within 30-45 minute catchment area of a site	▪ Expand available talent pools around employment centers
Operating environment	▪ Cost of doing business ▪ Business tax climate	▪ Balance "adequate funding" with "low overall tax burden"
Accessibility/ proximity to customers and suppliers	▪ Access to interstates, major highways, or freight rail lines ▪ Average time-in-transit to key customers or suppliers ▪ Reliability of time-in-transit to key customers or suppliers	▪ Expand access to efficient, reliable, high-capacity infrastructure that connect key origins and destinations
Quality of life	▪ Average commute time ▪ Cost of living	▪ Ensure acceptable reliable commutes ▪ Access to affordable transportation

The decision-making process for business location choice has obvious implications for Georgia's transportation plan. A lagging transportation system will depress the overall score a state gets when it is explicitly ranked against competitors, and this in turn will depress the number of jobs our state can generate. Rural areas lacking access to Interstates and multi-lane highways have long recognized this fact. Today's metro areas have a similar problem, though the issue is deteriorating infrastructure performance, not access. Hence, meeting the expectations of today's businesses and future businesses that come to Georgia means our state has to deliver ample access and performance levels that are in line with peer states and regions.

All of this access and performance has to be delivered within a "funding envelope" that keeps Georgia's overall tax burden competitive. This is why throughout this SSTP, the focus is on getting the most out of Georgia's

existing transportation infrastructure and finding new capacity solutions that are the most cost-effective. The strategy also calibrates proposed investment levels by explicitly benchmarking Georgia's investment in transportation relative to competitors on a per capita basis and as a share of GDP.

The expectations of today's citizens and businesses

Based on the interviews with businesses, citizens, local officials, and transportation planners across the state, four groups have been identified as using the transportation network today. Though some of these segments have similar underlying needs, variations in their living environments may require different transportation solutions. A short description, or "profile," of what these customers expect is below.

Commercial users. This group expects goods and freight to move efficiently, affordably, and safely, from origin to end-customer (i.e., from first to last mile). They need transportation infrastructure with sufficient capacity and connectivity to support supply-chain efficiency and reduced time to market. Transportation investments, should facilitate goods movement throughout the state and beyond its borders, using all available modes.

Rural residents. These residents want to be able to get to activity centers—for both work and play—easily any time of the day. Infrastructure access and quality should be at a level that enables prospective employers to locate in their areas. Like other residents, they want to be able to travel safely and get to their jobs affordably, irrespective of fuel prices.

Medium-sized city residents. These residents want to get to town for work or leisure easily, considering the time of day. They want a safe transportation network that keeps the "personality" of where they live and enhances it. Transportation investments, they believe, should help their communities grow efficiently and keep them from becoming congested. Finally, they want to be able to affordably get to their jobs, even if fuel prices are high.

Urban residents. Residents in large urban areas want to get to work reliably, safely, and in an acceptable timeframe, generally defined as 45 minutes. They value accessibility to the things they need and enjoy, as well as a clean environment: Transportation should not make their air unsafe to breathe or add to the number of smog days. There are a growing number of urban residents who seek alternative modes of transportation as a lifestyle choice. Like all other residents, they believe transportation should enhance the places they live and keep their cities economically competitive. Because the cost of driving a car can be particularly high in large cities (e.g., wasted time and fuel from congestion, parking costs, tolls, etc.), "affordable transportation" often means access to transit, carpool lanes, bike and pedestrian facilities, vanpool programs, or other ways of getting to work.

All of these groups share an expectation that public resources will be invested in the most efficient way possible.

1.2 TRANSLATING CUSTOMER NEEDS INTO GOALS AND OBJECTIVES

Through combining best practices, developing an understanding of customer needs, and the completion of stakeholder interviews, the state adopted four transportation goals, which are supported by ten more specific, measurable performance objectives. An overview of these goals and objectives can be seen in Exhibit 2 below. It also displays the performance measures the state will track to check progress against the goals.

Exhibit 2

GOALS, OBJECTIVES, AND PERFORMANCE METRICS

Goal	Objective	Performance Metric
1 Supporting Georgia's economic growth and competitiveness	Improved access to jobs, encouraging growth in private-sector employment, work force	▪ Average number of workers reaching major employment centers by car in 45 minutes* ▪ Average number of workers reaching major employment centers by transit in 45 minutes*
	Reduction in traffic congestion costs	▪ Annual congestion cost*
	Improved efficiency, reliability of commutes in major metropolitan areas	▪ Average commute time* ▪ Number of people taking reliable trips per day (peak hour)*
	Efficiency and reliability of freight, cargo, and goods movement	▪ Travel times between Georgia "gateways" and key origins and destinations ▪ Supply-chain costs by corridor (cost of congestion + direct inventory cost + obsolescence cost)
	Border to border and interregional connectivity	▪ Interstate share of vehicle miles traveled (VMT) ▪ % of population within 20 miles of a 4-lane highway
	Support for local connectivity to statewide transportation network	▪ % of state transportation funding spent on local roads
2 Ensuring safety and security	Reduction in crashes resulting in injury and loss of life	▪ Number of traffic fatalities
3 Maximizing the value of Georgia's assets, getting the most out of the existing network	Optimized capital asset management	▪ % of state highways with pavements that meet or exceed minimum standards ▪ % of state bridges that meet or exceed minimum standards ▪ % of transit assets in "Good Repair"
	Optimized throughput of people and goods through network assets throughout the day	▪ Peak-hour freeway VMT* ▪ Peak-hour freeway speed: managed lanes, HOV vs. general purpose* ▪ Freeway accident clearance time* ▪ Peak-hour mode split (total/markets served by transit) ▪ Operating cost per unlinked passenger trip by mode ▪ Operating cost per passenger mile by mode
4 Minimize impact on the environment	Reduce emissions, improve air quality statewide, limit footprint	▪ Exceedances of federal 8-hour ozone standard

*This metric is obtained for Metropolitan Atlanta only.

2.0 Meeting customer needs and the competitive landscape

"I skate to where the puck is going, not where it has been."

—Wayne Gretzky

The prior chapter defined the State's goals and objectives based on the transportation needs of Georgia's citizens and businesses today. In this section, changing customer needs are examined, as well as what Georgia's key competitors (e.g., North Carolina, Texas, Virginia, Florida)[7] are doing to meet the needs of their customers.

2.1 MEETING CUSTOMER NEEDS

The growth challenge. One of the first challenges Georgia's transportation network will have to meet on behalf of its customers is "keeping up with demand." Many of the performance gaps on our transportation network today came about because investment levels and capacity additions were inadequate relative to demand growth, and there is a real risk that this pattern will be repeated in the future. Over the next 20 years[8], Georgia's population is expected to grow by 4.6 million people, or 1.9 percent a year. In terms of employment, Georgia is expected to add 2.2 million jobs across the state, which translates into employment growth of 2.1 percent per year. Though this growth rate is somewhat lower than what is expected for a few peer states, it is close to the growth Georgia has produced in the past and nearly double what is expected for the US as a whole.

"Everywhere-to-everywhere commute patterns." The second challenge is meeting the increasingly dispersed nature of travel patterns. For a variety of reasons, jobs and people have increasingly settled in suburbs and a smaller share has located in traditional "downtown" areas. Today, only 21 percent of jobs in US metro areas are within three miles of the Central Business District (CBD). Meanwhile, nearly 45 percent of jobs are at least ten miles away from the CBD.[9] In metro Atlanta, this disperse employment pattern is even more evident. Roughly 63 percent of jobs are more than ten miles away from the CBD. The result is that the traditional "radial" commute patterns (traveling from suburb to an urban core) are no longer the norm in metro areas. It is difficult to design and pay for a transit network that is relevant or convenient for such disperse

7 These states were selected because they often compete "head-to-head" for jobs with Georgia. Also, along with Georgia, they have led the US and the South in GDP and job growth.

8 Source: US Census Bureau. Forecast is from 2010 to 2030.

9 Brookings Institution report.

development patterns, particularly if the network relies on rail. In rural areas disperse development and long distances to job and activity centers also pose a challenge, particularly for paratransit and other demand-response transit systems.

The silver lining on this "complex trip pattern" cloud is that employers are moving to more "distributed" and flexible models in the workplace. Many accept or even encourage telecommuting or flexible schedules during parts of the week. Transportation strategies that build on this by encouraging people to travel to work at off-peak times will be more cost-effective than those that do not. However, as successful as these programs have been in Georgia, they are only one piece of the multi-faceted approach that is necessary.

As trip patterns have become more dispersed and complex at the system level, they are also more fluid for individuals. Labor turnover has accelerated in the US economy in the past few decades, and today a typical worker changes jobs every two to three years. Hence, a worker that moves to Gwinnett County initially for a job at Gwinnett Place may need to travel to Clayton County three years from now for a different job. If congestion is too severe and there is limited rapid transit available, every time a worker changes employers, he or she will need to change residences. Alternatively, that family will not pursue the job in Clayton County and will limit their search to jobs closer to home.[10] To maximize the opportunities available to families, a transportation network must connect major population and employment centers together, rapidly and reliably, and encourage residential mixes in major employment centers.

Aging of the population. The impact of aging on federal Social Security and healthcare programs has been discussed widely in policy circles, but far less has been said about how aging will impact transportation. Today, 15 percent of Georgia's population is above age 60. However, it will reach 18.5 percent by 2020 and 21 percent by 2030. One of the most significant implications of an older population is that the number of total non-work trips (e.g., trips to the grocery store, doctor, etc.) will grow faster than the number of total work-trips. With appropriate planning and demand management, these non-work trips can be shifted in metro areas so that they occur outside of congested, peak commuting hours.

In addition, an older population is more likely to want or need alternatives to driving themselves. In urban areas and in some smaller towns, increased transit options and pedestrian-oriented infrastructure will be critical to meeting this need. Mixed-use "livable centers" where shopping, banking, and medical care are within easy walking distance are already growing in popularity with retirees. In dense urban areas, these centers could be further enabled by adding short-haul rail transit, such as streetcars, trolleys, or other in-town light-rail solutions. These improvements complement traditional local bus service while supporting additional residential density in a corridor. Finally, an older population will result in an increase for "on-demand" or paratransit services. In both rural and urban areas, these services are the most expensive to provide and require substantial subsidies per rider. Enabling livable centers, efficiently coordinating human services transportation, and

10 This is the flip side of "shrinking talent pools." From the perspective of an individual or his/her family, congestion and lack of transit shrinks the number of available jobs that are within 30-45 minutes reach.

ensuring that mainstream transit services are highly accessible to older people will reduce the burden these "on-demand" services have to absorb.

Increased concern for environmental impacts. It is not only retiring Baby Boomers who will be interested in livable communities and transit. "Generation Y" (also known as "Echo Boomers") has similar preferences. Relative to their parents, Generation Y is more concerned with protecting the environment, more willing to take transit, and more interested in neighborhoods that have shopping, employment, and other activities close by. So while the bulk of housing choice in the future will still be single-family homes in suburban areas (since that is the bulk of today's housing stock), cities and towns that offer well-designed "live, work, play" communities with transit will have a competitive advantage in attracting tomorrow's workforce. How large the supply of livable communities will need to be is an open question. The answer will probably depend in part on the direction of environmental policy at the federal level. At this point, it appears that new federal policies will seek to reduce or constrain growth in VMT.

International freight trends. Globalization and other international freight trends are creating new opportunities for Eastern port states like Georgia. First, the US manufacturing sector continues to shift from the Northeast and Midwest to the Southeast and Southwest. Second, Asian exporters with US-bound cargo will probably continue choosing Savannah and other East Coast ports over the more congested, less reliable ports on the West Coast. Further, the decision by the Government of Panama to deepen the Panama Canal and upgrade its capabilities by 2014 will cut shipping times from Asia to Savannah and allow even larger ships to bypass West Coast ports.

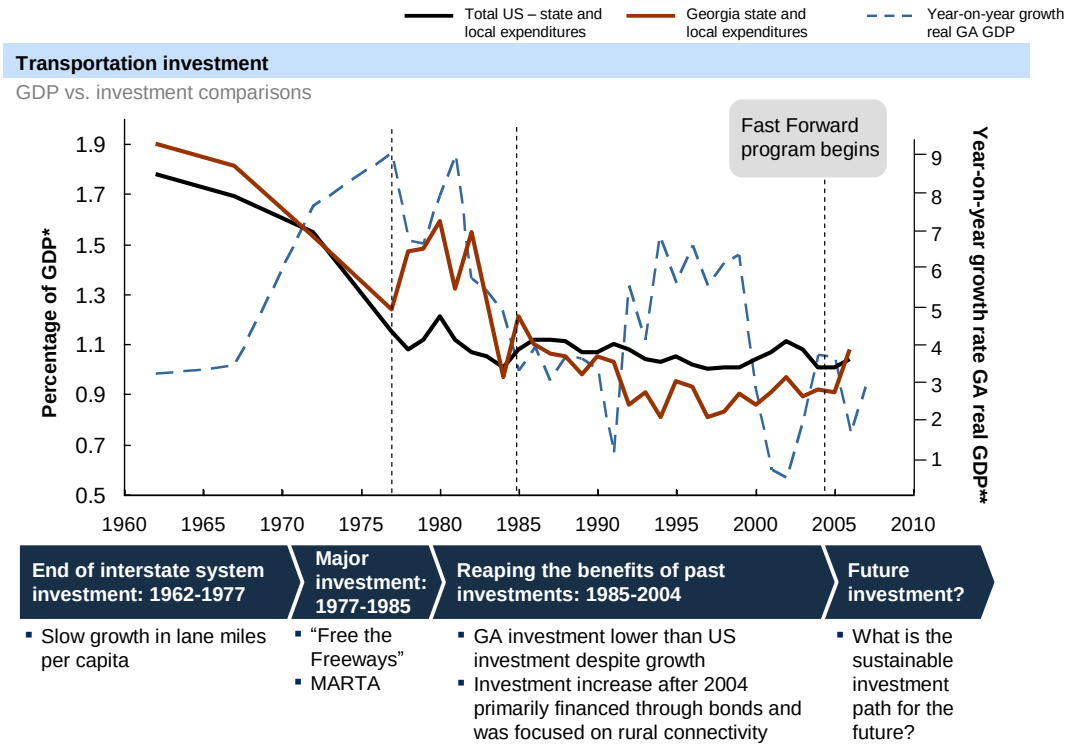
To capitalize on these opportunities, Georgia must continue upgrading its port capabilities and adding the required capacity to and from the ports. Upgrades to Georgia's ports are clearly moving ahead with the planned $1.2 billion deepening of the navigation channel at the Port of Savannah. However, Georgia will also need to invest in capability and capacity "outside the Port gates" to keep freight flows efficient and reliable, both to points within and beyond Georgia's borders. This includes rail access across the state, such as the Cordele Inland Port project. Finally, it is important to take advantage of opportunities to make upgrades that have the effect of improving freight and transit at the same time.

2.2 COMPETITOR ACTIONS

Current customer trends—increasingly complex commuting patterns, the aging of the population, shifting freight patterns—require innovative approaches, particularly in light of over-subscribed public resources. The challenge is even greater in the Southeast, where resources are just as scarce and population growth has been significantly higher. As will be described below, our competitor states have recognized this challenge and embraced it. They have elected to invest and use their funds to keep pace with growth and pursue innovative solutions to current transportation problems and emerging needs.

Exhibit 3

TRANSPORTATION INVESTMENT VS. GDP



* Used 5-year Compound Annual Growth Rate (CAGR) to estimate 2001 and 2003 local expenditures data

** GA real GDP growth rate assumptions: 1962-1977, used 30-year average CPI rate forecasts from 2000-2030 and subtracted from nominal GA GDP growth rate from 1962-1977. 1978-2007, used GA real GDP growth rate

Source: US Bureau of Economic Analysis, US Census Bureau, Georgia Department of Audits and Reports (FY 2003-06)

Investing to keep pace with growth. For nearly half a century, Georgia's economy has created prosperity for citizens and businesses throughout the state, and the decision to invest and create world-class transportation infrastructure clearly was central to that success. Exhibit 3 above illustrates this well. It displays Georgia's investment in transportation infrastructure as a share of GDP (red line) relative to the rest of the United States (black line). From the 1960s through most of the 1980s, the red line is consistently above the black one—meaning Georgia consistently invested more of its GDP in transportation infrastructure than the rest of the United States. During this period, Georgia created a phenomenal set of assets that have been the backbone of the state's success: the world's busiest airport, the fourth-largest and fastest-growing US port, the largest intermodal facility on the East Coast, a substantial transit investment in MARTA, an extensive Interstate system, and the largest rail network in the Southeast. These investments took full advantage of Georgia's "corner store location" (i.e., cargo in Georgia is always within two days of 80 percent of the US industrial and commercial centers). Businesses expanded and new companies moved to the state at record rates. The blue line on the chart shows real GDP growth in Georgia. Despite deep recessions that occurred in other parts of the US during the 1970s and 1980s, real GDP growth in Georgia during this infrastructure build-out period never

dipped below 2 percent. Occasionally, it even spiked as high as 9 percent. Clearly, transportation infrastructure over this period was meeting a key goal described in Chapter 1: Supporting economic growth and competitiveness.

However, that started changing in the late 1980s and early 1990s. Just as population and GDP began surging again, Georgia's investment posture began to resemble a company pursuing a "harvest" strategy (i.e., relying on past-investment success rather than actively preparing for the future). The black line is above the red from 1985 to 2005. Since capacity did not expand to keep up with growth during that period, traffic congestion began overwhelming the network. By the late 1990s, Atlanta's metro area was developing a reputation for congestion and air-quality issues. In 1998, Federal transportation funding in several Georgia counties surrounding Atlanta was frozen for capacity-adding[11] projects until the area could demonstrate a conforming transportation plan. Negative press ensued, and Georgia's reputation as a place that is "poised for growth" was called into question. The launch of Governor Perdue's Fast Forward Program in 2005 brought Georgia's investment as a share of GDP back to the national average for the first time since 1992. But fully addressing the scale and scope of the state's 20-year legacy of under-investment on a sustainable basis will require a long-term strategic plan (like this one) and other tools that Fast Forward did not have available: new, flexible revenue sources that can be invested in multi-modal approaches, demand management and other policies that support the investments, and project-delivery models that use public-private partnerships to control costs and share risk. Georgia now has the opportunity to put all of those elements in place.

Seizing this opportunity is critical to ensuring that Georgia does not cede any more competitive ground. Georgia's "peers" (e.g., Texas, North Carolina, Virginia, Florida) and other competitor states did not under-invest or "harvest" in the last 20 years. Instead, they increased revenues for transportation and are maintaining that commitment looking ahead. By 2006, state and local governments in Georgia combined invested only $380 per person (excluding bonds) in transportation. This was about half the national average and far less than what Texas ($730 per person), Florida ($730 per person), Virginia ($630 per person), and North Carolina ($500) have been investing. Across the whole United States, only Tennessee invests fewer dollars per capita ($354) than Georgia.

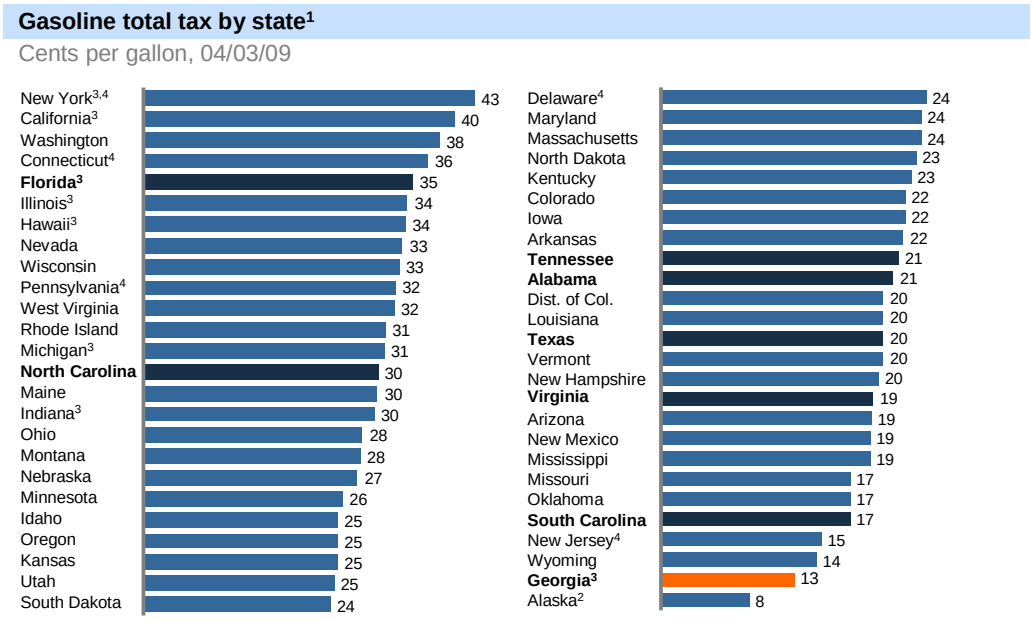
The way other states generate this revenue is straightforward. They draw on more sources by employing expansive toll programs, toll credits, and sales taxes and license and tag fees dedicated to transportation. By contrast, Georgia relies primarily on motor-fuel taxes as its sole funding source. Morever, motor-fuel taxes in this state are limited in use by the constitution to road and bridge improvements. In addition, other states collect significantly more from motor-fuel taxes than Georgia. Exhibits 4 and 5 illustrate this more specifically. Exhibit 4 shows Georgia gasoline-tax collections relative to other states as of Spring 2009. At that time, only Alaska ranked lower in 2009, and they funded much of their transportation from their general fund. Georgia's

11 Non-exempt projects

motor-fuel tax collection varies every six months. On January 1, 2010, the motor-fuel tax dedicated to transportation in Georgia was 14.5 cents per gallon[12].

Exhibit 4

GEORGIA MOTOR-FUEL TAX COLLECTION VS. PEER STATES



1 Totals inclusive of all excise taxes, various petroleum-business taxes, sales taxes specifically on gasoline/diesel, Underground Storage Tank (UST) taxes, inspection fees, environmental assurance fees, etc. Does not include federal 18.4 cpg excise tax on gasoline.

2 Alaska's 8 cpg state gas tax was suspended through 8/31/09.

3 Eight states charge sales taxes on fuel: California, Florida, Georgia, Hawaii, Illinois, Indiana, Michigan, and New York; price per gallon calculated based on AAA average prices as of 4/3/09 as compiled by the American Petroleum Institute. Georgia figures updated in fall of 2009 by Georgia DOT.

4 Five states have a gross-receipts tax or oil-franchise tax on gasoline and diesel: Connecticut, Delaware, New Jersey, New York, and Pennsylvania.

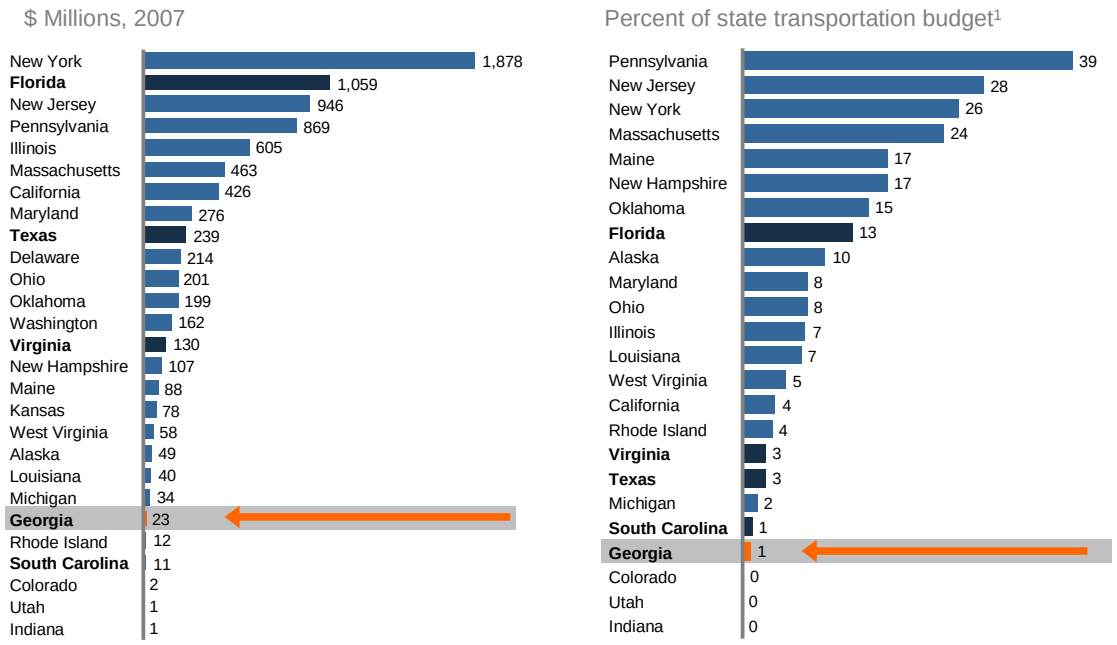
Source: American Petroleum Institute; Citibank

A similar story can be seen in Exhibit 5 with toll revenues. Georgia's small toll program today is limited to only one state highway (GA 400) and results in $23 million per year in revenue. By contrast, Virginia currently generates $130 million per year in tolls; Texas, $239 million; and Florida, over $1 billion. All of these states will generate even more revenue in the future, as they have planned many new toll projects.

12 14.5 cents includes both the excise and sales tax on motor fuel

Exhibit 5

TOLL REVENUE BY STATE



1 Budget in fiscal year 2008; toll revenue from 2007

Source: National Governors Association "How States and Territories Fund Transportation," 2009

Solutions to meet future customer needs. Not only are Georgia's competitors raising more revenue for transportation, they are investing it in programs that will support their future growth and meet the future transportation needs of their citizens and businesses. Virginia, Florida, and Texas, for example, are looking to managed lanes and Bus Rapid Transit (BRT) to meet the growing demand for reliable trips and the engineering challenge of dispersed, everywhere-to-everywhere travel patterns. Eight additional states in 27 cities across the country have either deployed managed lanes already (e.g., Colorado, Minnesota, California, Utah) or will be doing so in the near future. Similarly, 14 states are actively developing BRT solutions, with the largest program already underway in Los Angeles (230 miles of BRT).

The rationale in many of these states for pursuing both managed lanes and BRT on a large scale is to create a rapid and reliable network that is relevant and usable by a majority of commuters within a 10-15 year time frame. The programs have also had a positive and significant impact in practice when implemented. For example, Miami's managed toll lanes on I-95 have more than doubled travel speeds in the corridor for both the users of the toll lane and the users of the "free," general-purpose lanes[13]. Similarly, BRT projects like the Silver

13 Peak-hour speeds in Miami's I-95 corridor have gone from less than 20 mph before implementation to an average of 56 mph in the managed lane and 42 mph in the free, general-purpose lanes.

Managed lanes are used by buses, carpools, and cars. Car drivers pay a toll that is dependent on congestion levels. In exchange, they receive a guaranteed minimum speed.

Bus Rapid Transit is about replicating rail's characteristics (e.g., fast, reliable trip times, stations, pre-pay boarding, dedicated right-of-way in congested areas) on a bus system. This BRT system in South America uses both stations and dedicated right-of-way.

Line in Boston have led to a 70 percent increase in transit ridership and new development along the corridor. Finally, metro areas in other states are complementing their managed-lane systems and BRT networks by adding targeted rail investments in particular corridors, with an eye toward shaping future development patterns even further.

On the freight side, Eastern states are making large investments in maritime and inland ports and in the surface infrastructure that connects the ports "outside the gates" (see profiles in Appendix 2). Unfortunately, programs like these are out of reach for Georgia if the state is to be limited to today's resources. To remain the "Gateway of Choice" for freight and logistics, and to be seen by all future employers as "poised for growth" and recovery, Georgia cannot continue to under-invest and risk falling behind its competitors.

3.0 Cost-effective strategies for achieving performance

"Nobody spends somebody else's money as carefully as he spends his own."

—Milton Freidman

Now that goals, customer needs, and competitors' actions have been defined, it is time to develop the investment strategy itself. Because resources are constrained, the first requirement is to get the most performance possible out of the existing transportation network. The second is to add capacity where it will create the most benefit, irrespective of mode (mode neutrality), as funding eligibility allows[14]. The third is to implement the respective plans developed for aviation, ports, and state-owned rail. The fourth is coordinating transportation investment with development patterns.

3.1 GETTING THE MOST OUT OF EXISTING INFRASTRUCTURE

The intuitive notion of "getting the most out of the network Georgia already has" supports all four transportation goals described in Chapter 1. Three program areas are foundational for getting the most value out of existing infrastructure: maintenance, safety, and demand management in urban areas. An overview of the strategies underlying each follows.

Maintenance and capital asset management strategy

Ensuring that the Department protects and maximizes the operation of today's network is the first step to determining the level of investment required for infrastructure. Toward this end, the Georgia Department of Transportation recently established the office of Organizational Performance Management. The program's objective is to build a robust and scientifically valid decision-support process that meets Georgia's mobility needs at the least possible cost. This program will build upon the foundation of GDOT's current inspection and management programs for roads and bridges, and include other infrastructure components such as signs, signals, drainage structures, roadway markings, and 540 miles of state owned rail, on a planned step-by-step basis. The crucial management policy determination in this effort is setting the condition and performance-level

[14] Because Georgia relies so heavily on motor-fuel taxes and motor-fuel taxes can only be invested in "roads and bridges" under the Georgia constitution, the "financially constrained" strategy cannot be truly "mode neutral." However, two of the strategies that consider additional resources in Chapter 5 (those corresponding to level 3 and level 4 funding) are mode neutral.

targets for each class of infrastructure components. These target levels are set to optimize the state's investments. Current projections for maintenance, operational, and safety needs for Georgia over the next 20 years requires a $16-19 billion investment.

One significant change coming from the program will be moving away from the "worst first" method of infrastructure replacement to a more scientific methodology that targets investment where the risk to mobility is greatest. Several other state DOTs, including Michigan, Florida, Ohio and Utah, have secured important benefits through similar comprehensive asset management programs. Chief among these benefits is the ability to make future maintenance investments lower and more predictable. Combined with rigorous life-cycle cost analysis, the science-based process also acts to promote streamlined project design and implementation.

On the transit side, the state's approach to maintenance and operations is to maintain a "state of good repair" on the equipment it operates (e.g., GRTA buses). Further, the state will prioritize maintaining existing systems and services (provided they meet accepted industry performance benchmarks) ahead of expanding and creating new transit services. Though most transit service is actually operated and financed by county governments, the state expects that local governments are exercising the same prioritization. For example, it would not make sense for counties in metro Atlanta to build new light-rail lines that connect one suburban county to Downtown or Midtown, if the region's core heavy-rail system (which now supports 250,000+ trips per day[15]) is not able to handle current passenger loads because of budget constraints that reduce headways and cause system breakdowns. In light of this, addressing the expected shortfalls in current transit operating funds should be a top priority for state and local governments.

Safety

Georgia DOT is required by federal law to develop and maintain a Strategic Highway Safety Plan. The Department has teamed with the Governor's office to initiate the *Governor's Strategic Highway Safety Plan* to fulfill the federal requirement to maximize and leverage all of the state's safety funding resources. The overriding goal is to reduce the number of fatalities and serious injuries that occur on the state's roadways.

The strategic plan brings together the state's leadership in engineering, education, enforcement and emergency services to establish statewide goals and emphasis areas. The current goal is to reduce the number of fatalities by forty (40) annually and to support the national goal of reducing highway fatalities by one-half by 2030. The primary GDOT role is to provide the engineering component of the plan that covers ten identified emphasis areas. Details of the plan can be viewed at www.gahighwaysafety.org/shsp/shsp2009final.pdf. The GDOT Strategic Highway Safety Plan Initiatives are as follows:

15 Source of estimate is APTA's 2009 second-quarter report. The figure refers to the number of unlinked trips on an average weekday.

Prevent Vehicles from Departing the Roadway or Lane

- Shoulder rumble strips
- Centerline rumble strips

Minimize the Consequence of Leaving the Road

- Crash impact attenuators
- Cable barrier systems

Improve Design and Operation of Intersections

- Identified intersection improvements
- Traffic signal compliance

Optimize Pedestrian Safety

- Pedestrian countdown timers new program
- Design accommodation for pedestrians at signalized intersections

Reduce Vehicle–Train Crashes

- Railroad crossing warning devices and hazard elimination

Support Safety on Local Routes (Off-System Program)

- Off-system support and implementation

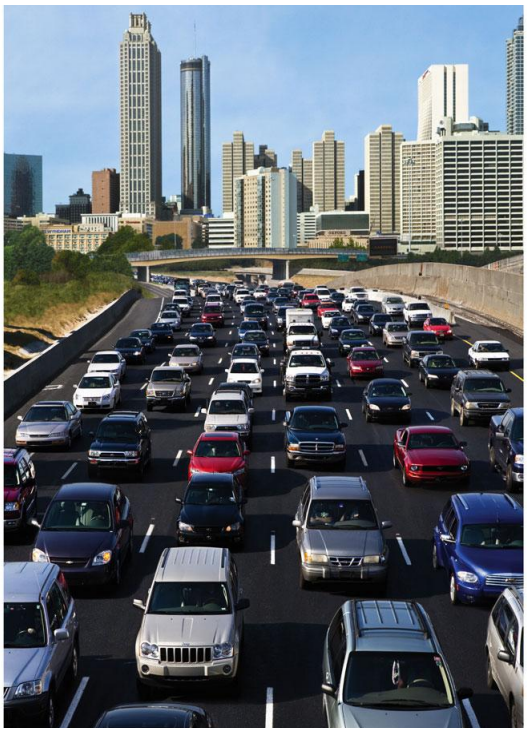
Streamline Administration

- Safety management system crash records

In addition, the Department has volunteered to implement the Integrated Safety Management Process (ISMP), which will ultimately lead to a broader "Comprehensive Safety Plan" that includes the Governor's Office of Highway Safety, Federal Highway Administration, Georgia Regional Transportation Authority, Department of Motor Vehicle Safety, MPOs, local governments, and the law-enforcement community. For more details on GDOT's Safety Action Plan, please see http://wwwb.dot.state.ga.us/dot/operations/traffic-safety-design/subunit/safemgt.shtml.

Demand-management in urban areas

Demand-management programs reduce the need to invest in new transportation infrastructure by "smoothing out" asset utilization. This may mean diverting commuters and commercial traffic to off-peak times of day and less-congested modes (e.g., transit, vanpooling) and facilities, or encouraging people to telecommute or carpool instead of driving alone. The pictures on the following page represent the dramatic effect such measures can have on traffic congestion. The picture on the right includes the same number of people as the picture on the left; however, the picture on the right depicts the number of commuters and the space they would occupy if they were commuting on a bus or via a vanpool or carpool.



As Chapter 2 indicated, demand management on the Interstates through managed toll lanes are a significant trend around the country. This SSTP also envisions an expansive managed toll-lane program for metro Atlanta that combines 770 miles of new capacity with demand management (through tolls that vary with congestion levels and time of day). The benefits of these programs relative to others will be described in more detail in the "New Capacity" subsection. Another reference document that provides more detail on how managed lanes will be implemented in Georgia is the Georgia Managed Lane Study which can be found at www.dot.ga.gov/informationcenter/programs/studies/Pages/default.aspx.

There are, however, other demand-management tools and programs that are important for Georgia. Intelligent Transportation Systems (ITS) and Travel Demand Management (TDM) are two of the most significant "nonpricing" programs.[16] GDOT should continue to invest in ITS infrastructure in order to ensure the most effective use of our transportation network. GDOT has done well with ITS infrastructure starting prior to the 1996 Olympic Games. However, increased investment in new ITS applications and a steady commitment to ITS maintenance is critical to its ongoing success. Going hand-in-hand with the need for ITS applications is a continued investment in incident management. Over 50% of the congestion in the Atlanta region is caused by non-recurring incidents. Incident management increases the operating efficiency, safety and mobility of the highway by systematically reducing the time to detect and verify an incident occurrence; implementing the appropriate response; safely clearing the incident while managing the affected flow until full capacity is

16 Not only do these programs help relieve daily congestion, they can also assist in disaster response (i.e. Katrina & gas shortages) by providing information about alternative routes and alternatives to driving into work.

restored; and providing motorists with enough information about the incident to make knowledgeable decisions. The TIME Task Force working in conjunction with GDOT TMC (Traffic Management Center) is a national leader in incident management. The TIME (Traffic Incident Management Enhancement) is intended to develop and sustain a region-wide inter-agency incident management program to facilitate the safest and fastest roadway clearance solution, lessening the impact on emergency responders and the motoring public. Clearly, GDOT should continue its support for the TIME Task Force. GDOT continues to receive numerous awards for the HERO (Highway Emergency Roadway Operators) program, Georgia Navigator website and an aggressive 511 traffic information hotline. These programs must be expanded as our state continues to grow.

Commute Option/TDM programs today are implemented throughout Georgia by the Clean Air Campaign (CAC) in cooperation with Community Improvement Districts (CID) and Employer Service Organizations (ESOs). These organizations work directly with employers to promote carpooling and transit. In metro Atlanta, the Atlanta Regional Commission also plays a coordinating role, working with the ESOs, CIDs, and CAC Program to offer ride-matching and "Guaranteed Ride Home" programs. Collectively, these organizations work with more than 1,650 employers in Georgia. This program is administered in other metropolitan areas throughout the state by the GDOT Division of Planning.

Because of the benefits these programs offer, GDOT has supported expansion of the Clean Air Campaign's TDM program to Columbus, Macon, Augusta, Rome, and Athens where CAC carries out the same mission that began in metro Atlanta. Employer partnerships in these areas increased 62 percent from January to October 2009, which equates to approximately 50 employers, including successful programs at military installations and other large employers. In addition, the Department is pursuing the use of TDM/Commute Options to help reduce congestion in the vicinity of major, long-term construction projects. These successful programs will need sustained financial support to continue current efforts and to expand as warranted.

Pedestrians & Bicycles

Accommodating pedestrian and bicycle travel can reduce automobile trips in congested urban areas and encourage tourism in rural areas. The integration of bicycle and pedestrian facilities into the broader transportation network improves the safety, accessibility, and efficiency of the system. The accommodation of bicycle and pedestrian trips are fundamental to meeting many of the goals for economic growth, quality of life, safety, and environmental protection.

Since the early 1990s GDOT has worked towards increasing bicycle and pedestrian initiatives through a Bicycle & Pedestrian Program. The Bicycle & Pedestrian Program pursues goals established in the Georgia Bicycle & Pedestrian Plan:

- Promote bicycling and walking as mobility options in urban and rural areas of the state;
- Develop a transportation network of primary bicycle routes throughout the state to provide connectivity for intrastate and interstate bicycle travel;

- Promote establishment of U.S. numbered bicycle routes in Georgia as part of a national network of bicycle routes;
- Encourage economic development opportunities that enhance bicycle and pedestrian mobility;
- Promote non-motorized transportation as a means of congestion mitigation;
- Promote non-motorized transportation as an environmentally friendly means of mobility;
- Promote connectivity of non-motorized facilities with other modes of transportation.

The Department has developed a number of statewide planning documents to provide guidance for bicycle and pedestrian facilities, including the Georgia Bicycle & Pedestrian Plan (1998), the Pedestrian & Streetscape Guidelines (2003), the Bicycle & Pedestrian Safety Action Plan (2008, coordinated with the Governor's Office of Highway Safety), and other internal policies or guidelines.

3.2 STRATEGIES FOR NEW-CAPACITY INVESTMENT

While maximizing and maintaining the existing network is important, it will not be enough. Our competitors are investing aggressively in transportation infrastructure capacity and operations. Substantial new capacity must also be added in Georgia to close critical performance gaps in urban areas and to allow rural areas to participate in the job growth opportunity statewide in freight and logistics. Since different parts of the state have different problems or "performance gaps" to address, this report discusses new-capacity investment strategies by customer segment.

Freight-oriented businesses

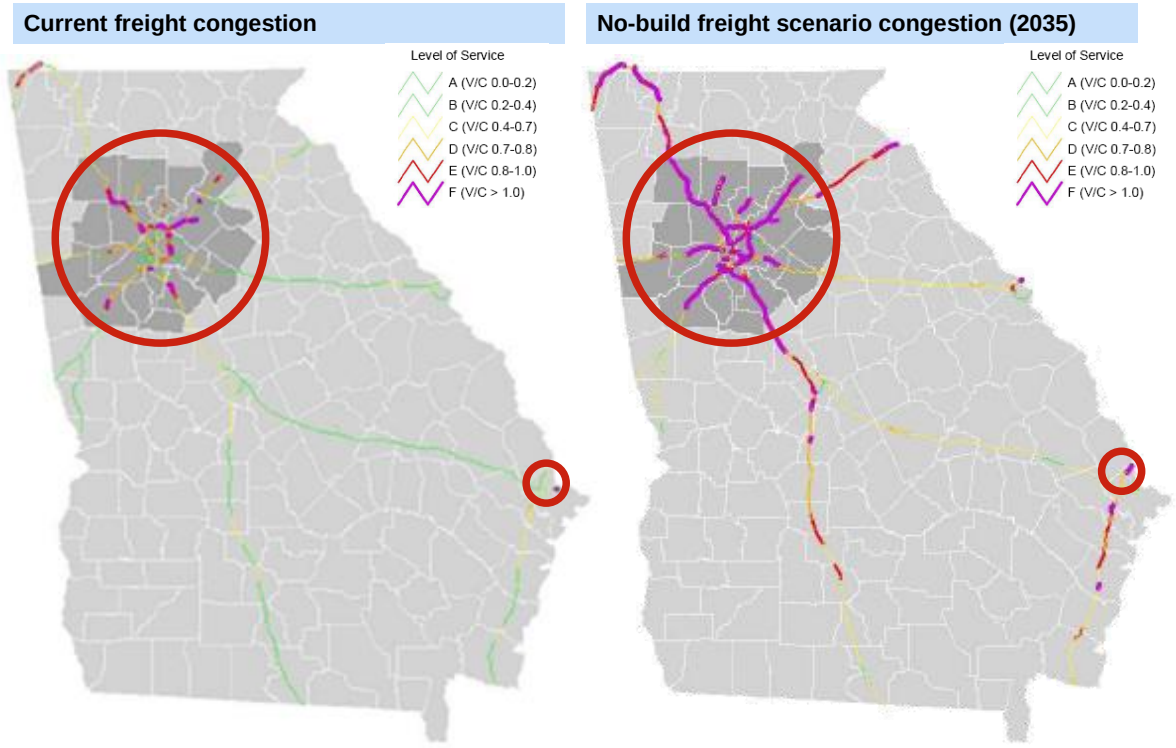
By examining freight transport throughout Georgia, a primary objective was to evaluate which new capacity or network-improvement programs would most significantly decrease supply-chain costs and improve reliability for shippers. Our work built upon the vision and mission created by the Commission for New Georgia (CNG). The CNG Freight and Logistics Task Force engaged relevant industries to better understand their needs and how the state can support their freight transportation activities. As a result of this work, the task force articulated a logistics vision for the state: "Georgia will be the global gateway of choice, providing reduced time to market, superior supply-chain efficiency, and reliability from origin to end customer." The task force also determined the state mission for achieving this vision: "The state, in partnership with the private sector and local and federal governments, will identify and promote the implementation of activities that improve the capacity, capability, and connectivity for today's supply chains." With these statements in mind, this planning effort set out to determine the highest-performing programs required to capture the full growth and job opportunity in freight and logistics.

The largest freight flows through and within Georgia were identified using the 2007 National Transearch database of freight origin and destination pairs. Three hubs of activity emerged from the data: metro Atlanta, metro Savannah, and the Macon-Augusta corridor. Through interviews with shippers and analysis of the

network, a few things were clear about connectivity and network capacity. First, metro Atlanta and Savannah are well connected inter-regionally and border-to-border through the Interstate system. However, both have first- and last-mile challenges getting freight to the Interstates from major freight hubs or distribution centers. For example, Highway 17 and other facilities that connect the Port to I-95 are highly congested, creating headaches for shippers as well as the commuters that also use that route. A better solution that directly connects shippers from the Interstate to the Port is sorely needed. Similar bottlenecks getting to the Interstate from large shipping and distribution centers in metro Atlanta also exist and will be identified as part of the Statewide Freight and Logistics Plan which is under development.

Exhibit 6

FREIGHT CONGESTION TODAY AND IN 2035



Source: Georgia Truck Lane Study, 2005

Second, the entire Atlanta region has become a statewide bottleneck due to high congestion and the fact that nearly all Georgia Interstates pass through it. Exhibit 6 above is taken from the Georgia Truck Lane Study and illustrates this well. The figure on the left is congestion on the Interstate network today and the figure on the right is the 2035 projection. The purple and red show the most congested segments of the network, which are today concentrated in metro Atlanta. Roughly 40 percent of total truck miles on metro Atlanta Interstates are from "through" traffic. These trucks do not have any reason to go through metro Atlanta, except that the Interstates route them that way and there is no alternative limited-access facility to get them around. The

industry has made adjustments to avoid traveling through Atlanta during peak periods whenever possible, but there is substantial truck traffic that is unable to make that adjustment. The addition of an alternative limited access facility could eliminate the trucks traveling through Atlanta in the peak period and get them around the city.

Third, there are a few inter-regional connectivity gaps on Georgia's network, despite our extensive Interstate system. For example, the "Fall Line Freeway" corridor between Macon and Augusta has not been completed. Selective completion of other GRIP corridors that align with high-volume freight corridors could make sense and is being evaluated as part of the Statewide Freight and Logistics Plan.

After examining the underlying travel data, congestion patterns, and network structure, the next step was identifying potential program types that would improve capacity and reduce overall time to market. The analysis focused on pathways to and from major hubs and gateways (e.g., from the Port of Savannah to the Tennessee border at I-75 North) and considered a variety of potential programs: Interstate widening, new limited-access facilities, interchange improvements, railway improvements, and first- and last-mile connectivity to the Interstate system. A northwest bypass around metro Atlanta (running from Macon toward LaGrange, to the Tennessee border) was tested as an alternative path to I-75 between Macon and the Tennessee border. Additional GRIP corridors were also evaluated for priority in completing and ultimate upgrading to limited-access facilities, potentially in conjunction with a future intermodal facility. For first- and last-mile connectivity, the focus is on one with clear statewide significance: last-mile connectivity between I-95 and the Port of Savannah.

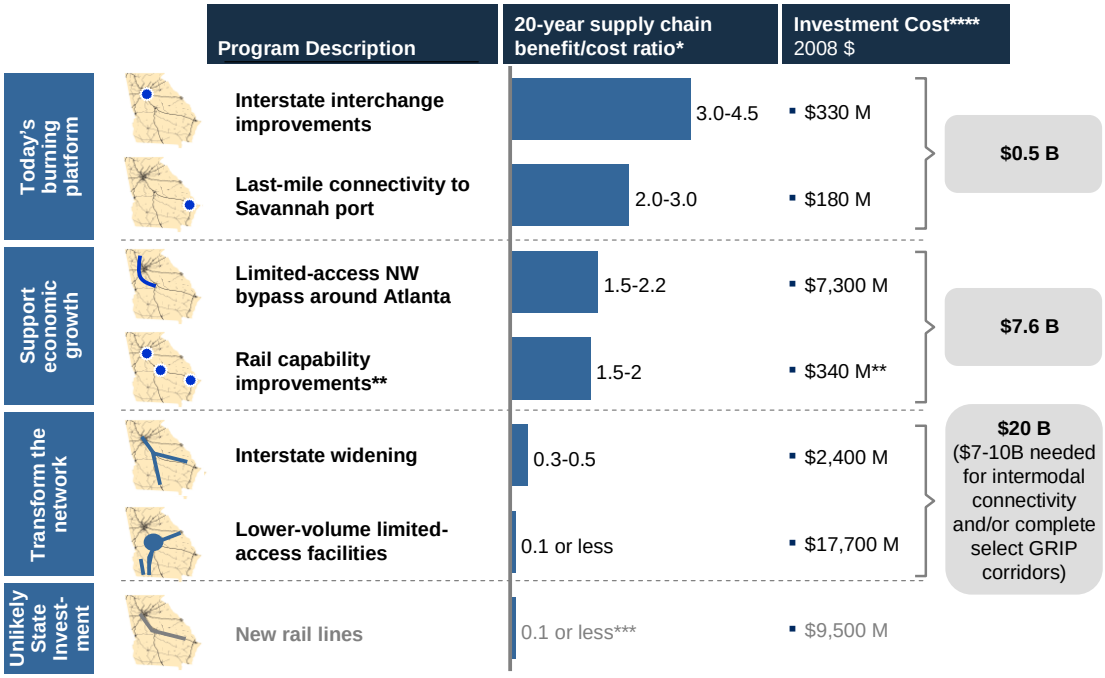
The impact of each program was assessed by calculating the potential travel-time savings that investments might generate, the volume of freight that would travel over those facilities, and the value of the time saved based on "total supply-chain costs" for typical commercial shippers. Total supply-chain costs include the transportation costs (fuel, driver time, and vehicle depreciation), the inventory "carrying" cost of the cargo, and the depreciation in value of the cargo for every hour that it is delayed. By accounting for all of these costs, the savings from reducing freight delay by an hour often ranges from $50-75, depending on the value and nature of the cargo. Exhibit 7 below shows the relative impact of each program on total supply-chain costs, given the affected freight volumes and the value of time saved. To make it easy to compare programs that have different levels of investment, all benefits were factored by the investment cost.

Based on these results, analysis shows that interchange improvements and last-mile connectivity are "burning platform" investments to be made even in the most limited funding scenario. These programs had benefit-to-cost ratios ranging from 2-4 based on supply-chain benefits alone. These and other projects in this category will also have significant benefits for commuters in terms of reducing congestion costs and improving safety. The Northwest bypass was by far the highest-performing limited-access facility evaluated. Its benefit-cost ratios of 1.5-2.2 were in line with those of the rail capability improvements. They are in the high-priority "support future growth" category. Finally, the state should preserve the option to create a new intermodal facility with the

supporting limited-access facilities it might require. These programs would "transform the network" and be worth pursuing if there is private-sector interest and sufficient funding available.

Exhibit 7

COST-EFFECTIVENESS OF FREIGHT INVESTMENT PROGRAMS



* Benefits based on improved supply-chain connectivity (reduced inventory, obsolescence, and transportation/congestion costs) through 2030; one hour of improved connectivity valued at $50-75. Benefits from bypasses and other limited-access facilities exclude potential GDP benefit.

** Benefit-cost ratio shown reflects rail grade separations; Investment cost represents larger investment allocation for a broader set of rail capability improvements.

*** Benefit of new rail lines estimates based on effect of highway widening along same corridors.

**** Investment cost includes capital cost and operating cost from estimated year of opening to 2030.

Source: Transearch 2007; Kimley-Horn; "Value of Time for Commercial Vehicles in Minnesota," 2005; "Value Analysis of Truck Toll Lanes in California," 2007; "Perceived Value of Time for Truck Operators," 2000; team analysis

Atlanta people mobility

The assessment of customer needs from the prior chapters and the benchmarking relative to competitors[17] make clear that the state should focus its investment dollars in metro Atlanta on three performance areas: improving the number of people who can reach a major employment center within 45 minutes; increasing the number of people taking "reliable" trips per day; and reducing the financial burden that congestion imposes on

17 See Appendix 1

families through wasted hours and fuel (i.e., "congestion costs"). Two steps were involved in designing this strategy:

1. Assessing the impact of individual programs on these three performance areas

2. Testing different ways to combine these programs, to maximize overall returns

The second step is important because different programs within metro Atlanta serve different purposes, and the idea is to find the combination that scores the best on all three metrics for the least cost. For example, transit projects will score well on increasing the number of reliable trips, but less well on reducing congestion costs. Arterial road improvements will have the opposite profile. A portfolio could achieve "balance" by including both programs, but the chief question is how much resource to include for each program.

Impact of individual programs in metro Atlanta. To test the impact of individual programs in metro Atlanta, the Atlanta Regional Commission's (ARC) travel-demand model was used. This model simulates the effect of different potential investment programs, given today's transportation network and where future jobs and employment are expected to be. The model provided outcomes associated with 10 different investment programs along three key metrics: decrease in congestion costs, increase in the number of workers within 45 minutes of an employment center, and increase in the number of reliable trips. The results for each new-capacity program are shown in Exhibit 8 below. They are for the year 2030, and the improvement shown is relative to what happens if no new capacity is built (a "no build" scenario). Finally, to facilitate comparisons and to spotlight cost-effectiveness, the impact is normalized by the investment dollars required. Hence, the first column in the exhibit ("percent increase in the number of workers within 45 minutes") represents the percent increase in the number of workers that can reach an employment center within 45 minutes *per billion dollars invested in this program*. Dollars invested includes both capital and operating expense over 20 years.

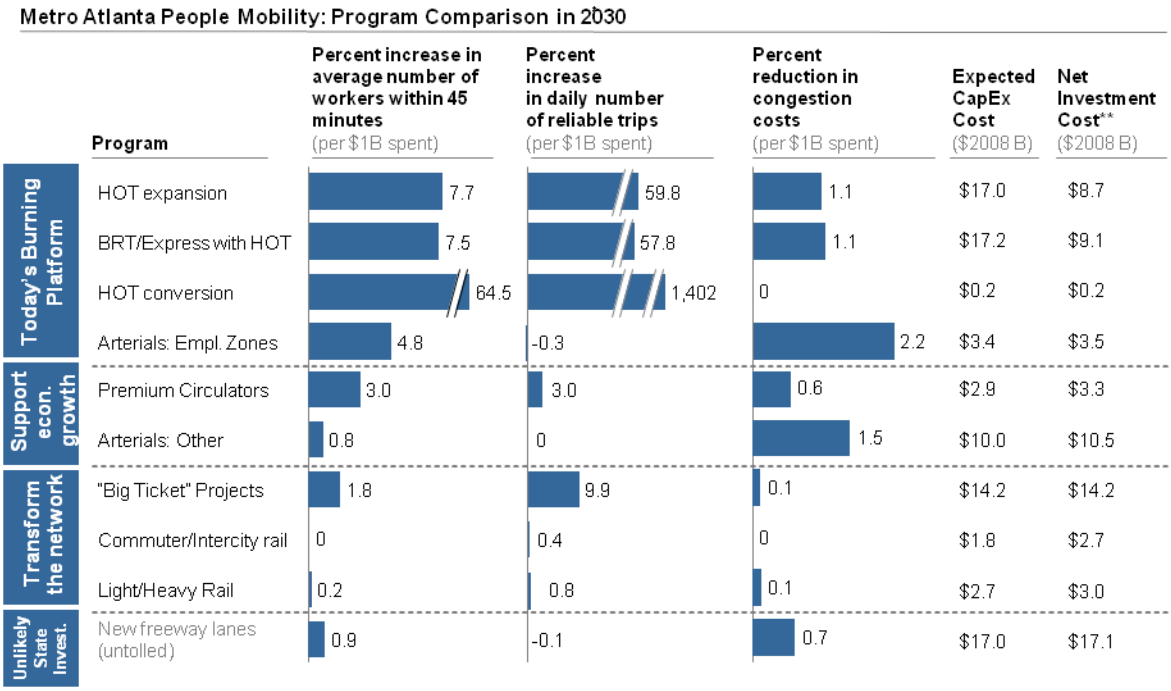
As seen in the slides below, HOT lanes, BRT/Express buses in HOT lanes, and arterial roads that connect to (or within) major employment centers emerged as high priority, "burning platform" investments because of their high benefit-to-cost ratios. Other arterial and short-haul transit (e.g., premium circulators, streetcars, in-town light rail) also have high priority and perform well on certain metrics. They are important for "supporting economic growth" and would be the next priority, as soon as capital and operating funds become available. Finally, other investments, such as commuter/intercity rail or light and heavy rail, are more long-term and transformational in nature.[18] They have benefits but are quite expensive relative to the others and have a longer payoff period, especially given the development patterns metro Atlanta has today. These investments would be implemented in a more targeted fashion and more slowly over time as funding becomes available. The near-term priority for long-haul rail is to "preserve the option" by acquiring or reserving rail right-of-way, altering the design of planned road or bridge projects (e.g., a bridge on I-20 East may be modified to ensure it can carry

[18] High-speed rail also falls into this category of "transformational" investment with a long payback period. At present the state is competing for these funds and will continue doing so as the model for operations becomes more clear nationally.

trains and cars), and to selectively compete for federal funding in priority rail corridors as the future federal rules for transit funding become clear.

Exhibit 8

COST-EFFECTIVENESS OF INVESTMENT PROGRAMS: IMPACT ON KEY METRICS



* 0% denotes statistically insignificant impact

** Includes CapEx and 20-year O&M costs, less expected revenue (e.g., tolls, fare recovery)

Source: GRTA/ARC travel demand model; Kimley-Horn

In recent years the Atlanta region has invested much time and effort in transit planning at the regional, corridor, and local levels. The most substantial of these efforts is Concept 3, the long-range transit vision developed by the Transit Planning Board. This vision was developed over a two-year period with extensive public involvement and enjoys support from a range of government and community stakeholders. In addition, more detailed transit planning has occurred at regional and local levels in areas that are predicted to have very high ridership (e.g. the Beltline, Clifton Corridor, I-20 East).

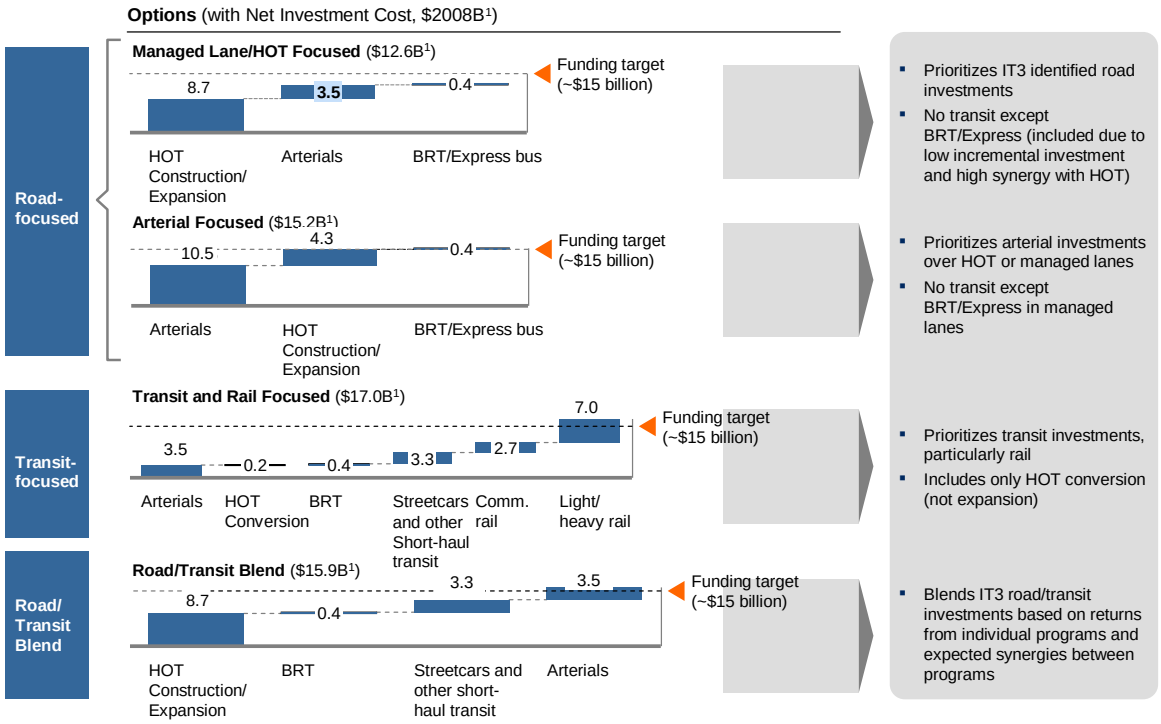
The evaluation of transit investments in IT3 is consistent with Concept 3. IT3 makes the business case for transportation improvements to all modes as appropriate and most efficient, and it establishes a discipline for investing to achieve performance outcomes based on available funding. For example, IT3 supports the development of short haul rail to and within employment centers. Short haul rail increases reliable access to major centers, and it improves the mobility within centers needed to capture the benefits of coordinating transportation investments with development patterns. As a further example, the results of IT3 indicate that

the most effective transit along the interstate is express bus or BRT in managed lanes. To the extent Concept 3 includes rail in an interstate corridor, IT3 is supportive of that vision as additional funding becomes available and ridership levels warrant the transition from bus to rail.

Impact of alternative-program combinations. In the second wave of modeling, the objective was to understand how programs work together as a portfolio to improve mobility. In particular, the modeling effort tried to inform the best way to combine programs across modes (e.g., roads and transit) to get the most effective overall performance. Also, given the high performance of both arterial roads and managed lanes in the program-level modeling, it became important to test different ways to combine these two programs. Ultimately, four portfolios were tested and with the assumption that each had a budget of $15-17 billion for new capacity. This number broadly equates to the budget metro Atlanta might actually be working with over 20 years if it aggressively pursues tolls on top of existing funds. The portfolios tested were two variations of "road focused" (one that was largely arterial-road investments and the other that was managed-lane focused), one transit-focused portfolio, and one road-transit blend. The overview of the four portfolios tested is in Exhibit 9.

Exhibit 9

COMPOSITION OF FOUR PORTFOLIOS TESTED



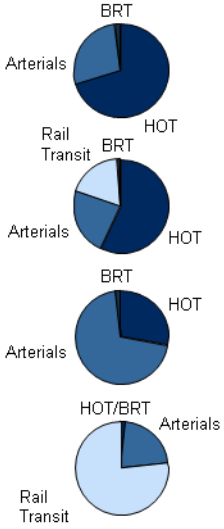
1 Assumes constrained funding of ~$15 billion; cost includes CapEx and 20-year O&M costs, less expected revenue (e.g., tolls, fare recovery)

Exhibit 10 shows the impact of each of these portfolios on percentage increase in the average number of workers that can reach an employment center in 45 minutes, percentage increase in reliable trips per day, and

percentage reduction in congestion costs. Because the budget by portfolio varied somewhat, performance was normalized by "billions of dollars invested," taking into account capital and operating expenses over 20 years. Our analysis also examined the impact of combining the multi-modal or transit-centric portfolios with denser, mixed-use development patterns, which will be necessary to achieve the transportation goals in metro areas in light of emerging demographic shifts and changes in the housing market (as described in the Introduction).

Exhibit 10

PORTFOLIO PERFORMANCE AND COST-EFFECTIVENESS ON KEY METRICS



Metro Atlanta People Mobility: Program Comparison in 2030

Portfolio	Percent increase in average number of workers within 45 minutes (per $1B spent)	Percent increase in daily number of Reliable Trips (per $1B spent)	Percent reduction in congestion costs (per $1B spent)	Expected CapEx cost ($2008 B)	Net investment cost* ($2008 B)
Road/HOT Focused	5.2	46.9	1.3	$20.6	$12.6
Road/Transit Blend	4.9-10.8**	37.8-38.6**	1.0-2.4**	$23.6	$15.9
Road/ Arterial Focused	3.0	34.5	1.4	$18.7	$15.2
Transit/ Rail Focused	2.3-6.5 **	15.1-16.2**	0.4-1.9**	$14.2	$17.0

* Includes CapEx and 20-year O&M costs, less expected revenue (e.g., tolls, fare recovery)

** Upper end of range reflects benefit of aggressive coordinated development in employment centers and enhanced demand management programs, which is more likely to occur with transit investments

Source: GRTA/ARC travel demand model; Kimley-Horn; team analysis

The highest-performing portfolio overall is the "road-transit blend." This portfolio invested about 55 percent of the funds in managed lanes (~$8.7 billion), which provided most of the expansion in reliable trips. Reliable trips in this portfolio expanded 600 percent or 38 percent for every billion dollars invested. The managed lanes are complemented by a substantial investment in the arterial-road network (~22 percent of funds or $3.5 billion) and a BRT system. The BRT network takes advantage of the managed lanes for the longest part of the transit trip, but then uses its own dedicated right of way during the "last mile" within the employment centers. The combination of the BRT network with the managed lanes allows the region to quickly extend its core transit backbone (which today is limited heavy rail in DeKalb and Fulton) to the eight largest employment centers with

minimal incremental capital investment (e.g., approximatel$400 million total capital investment, spread out over 20 years).

Finally, the managed lanes, BRT, and arterials complemented a substantial investment in short-haul rail-transit services and circulators, like streetcars and in-town light rail. The investment levels in short-haul transit were similar to what was invested in arterial roads (~$3.3 billion, or ~20 percent of funds). They provide a convenient alternative to automobile traffic on congested arterial streets and enable denser, mixed-use development over time.

If that development pattern actually occurs within a 20-year horizon, the benefit is tremendous—congestion costs from the original investments fall by 39 percent (vs. 16 percent if development patterns continue on the current trajectory) and the number of people that can reach major employment centers within 45 minutes expands by 172 percent (vs. 78 percent if development patterns continue on the current trajectory). Given the upside available from attracting more residential density in the employment centers, public-private partnerships that focus transportation improvement funds in a few areas and match them with other sources of public and private capital could become compelling public investments.

The rail-centric transit portfolio also performed well in the modeling, if the impact of the coordinated-development pattern takes effect. However, the development patterns must take full effect within 20 years for the benefits to be realized. In either case, the "road transit blend" portfolio is still stronger on a cost-benefit basis. With the extensive transit build-out assumed in the "rail-focused" portfolio, transit is projected to carry *eight percent* of trips during the morning peak in 2030, and it carries far fewer passengers in the interim years. As long as strategic road capacity projects are buildable, a "blended" portfolio that serves the other 90+ percent of travelers will have an inherent advantage.

The primary finding from this two-part modeling exercise is that "balance" is the key. Road-only programs perform well on a standalone basis, but when one looks system-wide and accounts for changes in the development pattern over time, these strategies underperform multi-modal ones. At the same time, strategies that focus too much on transit (particularly rail transit) also struggle, given metro Atlanta's low-density development pattern. Even if the aspiration is to change it through transformation, it will take decades to do so and people need convenient reliable options during the transition period. The highest-performing strategies use "dual purpose" infrastructure like managed lanes as the base and complement them with targeted arterial and rail investments in denser employment centers. If funding permits, longer-haul rail transit could be layered in over time, as long as the right-of-way is being reserved now.

To summarize, the guidelines for existing funds invested in "Atlanta people mobility" are:

- Weight towards managed toll/HOT lanes on Interstate vs. arterial roads.
- Weight arterial allocation toward employment center mobility/connectivity.

- Focus local-improvement funds and pedestrian-infrastructure investment on existing employment centers that have mixed-use zoning, transit, and clear plans to attract residential development.

Priorities for new sources of funds (if flexible) are:

- First priority: Ensure core transit system can operate at levels that maintain Atlanta's competitiveness with peer cities.
- Second priority: Expand BRT to major employment centers.
- Third priority: Augment the BRT network with new short-haul transit services (circulators) and BRT stations.
- Fourth priority: Augment the BRT network and premium circulators with other long-haul rail transit that connects suburbs to the core.

"Rest of state" people mobility

Because the most significant performance gaps for congestion and reliability were in the areas of statewide freight and people mobility in metro Atlanta, this analysis focuses on the program-level modeling in those areas. For people mobility in the rest of the state, the long-range transportation plans involve fewer types of new-capacity programs and are characterized by more locally controlled (vs. regionally controlled) funding decisions. For rural areas, the major performance gaps are around safety, which was addressed in the first subsection of this chapter. There is also a high interest in participating in economic development through freight. As noted in the freight section, that opportunity will depend on available funding.

For medium-sized cities in Georgia (e.g., metro areas like Columbus, Augusta, Savannah, Macon, Athens, etc.), congestion levels are modest and in line for cities of similar size elsewhere. Further, local governments and MPOs were confident that they could keep congestion at bay as long as they could fund the investments in their long-range plans. Therefore, for other metro areas in Georgia the focus is on identifying these funding requirements and analyzing how demand management and alternative-development patterns could improve the effectiveness of those plans.

Projects like this interchange reconstruction at I-20 and I-520 in Augusta will help Georgia's medium-sized cities keep up with their growth.

The assessment of long-range plans in medium-sized cities examines two equally critical areas: capacity investment and coordinating those transportation investments with development patterns. Augusta is an extreme example, but it illustrates the point. Twenty years from now, a trip in Augusta that takes 30 minutes during off-peak times of day will take 58 minutes during the peak if no new capacity is built. This "no build" scenario would be unacceptable and

would never take place. Building the investments in the long-range plan brings the peak trip back down to 50 minutes—better, but still too long and uncompetitive. However, combining the plan investments with demand management, and coordinating those investments with alternative development patterns (e.g., giving more people the option of living close to work and walking to work), brings rush-hour travel back down to 37 minutes. This performance would be in line with benchmarks for medium-sized cities.

Overall, medium-sized cities and rural areas are estimated to need approximately $14 billion for new-capacity and other improvement programs, if they pursue demand management and coordinate investments with development patterns. This $14 billion is over and above the freight and GRIP investments described in the freight subsection or the maintenance and safety programs described at the start of this chapter. These investments[20] are anticipated to reduce future congestion costs by $11-17 billion through 2030, and by $24-37 billion through 2040. Roughly 30-50 percent of this benefit is contingent on demand management and coordinated development, with the balance being dependent on supply.

"Coordinated development" in Georgia's medium-sized cities means something very different from what it would mean in a large urban area like metro Atlanta. Preserving the character of these medium-sized cities is important. The scenarios tested assumed a city like Augusta or Columbus would develop downtowns or other centers with modest densities that match downtown Savannah or downtown Greenville, South Carolina. Though Savannah has always had this development pattern, Greenville redeveloped its downtown just in the last 20 years. The two photographs below are of Greenville's new Falls Park, which was created only in the last ten years. The park was a particularly interesting public-private partnership that involved replacing an old highway overpass with a landscaped, pedestrian-oriented park. The park has attracted both residential and commercial development, creating a second wave of redevelopment adjacent to the already redeveloped Main Street. The lessons from here and elsewhere are that by combining design standards with public investment in transportation and significant private-sector support, local government can actually enhance the character of communities while making development more efficient and cost effective.

20 This $14 billion includes O&M for the new facilities.

Priorities across freight and people

Having modeled the benefits achieved by people mobility and freight transport programs in relation to cost, three categories of transportation investment priorities emerge: "Address today's burning platform," "Enable and support economic-growth engines," and "Transform Georgia's transportation network." The related programs and investment costs are detailed in Exhibit 11 below:

Exhibit 11

	Objective	Programs		Investment cost, 2010-30*
Address today's burning platform	▪ Improve people mobility ▪ Address immediate threats to safety and economic competitiveness	**Atlanta mobility**	HOT, BRT/express bus, arterials, core transit operations	**$39 billion***
		Rest of state mobility	Arterials, bridges, safety	
		Freight transport	Last-mile port connectivity, Interstate interchanges	
Enable and support economic growth engines	▪ Capture growth opportunity in freight and logistics ▪ Enable expected growth in/near job centers	**Freight transport**	Priority bypasses, rail improvements, intermodal connectivity, GRIP high-priority freight routes	**$18 billion*** (57B* total)
		Urban mobility	"Short-haul" light rail/ streetcars, long-haul rail right of way	
Transform Georgia's transportation network	▪ Compete for a robust set of rail transit options (e.g., high-speed rail) ▪ Selectively pursue long-haul rail transit where current and future development patterns are expected to support it	**Urban mobility**	Long-haul transit (commuter rail, high-speed rail), "big ticket" road projects (tunnels)	**$6-15 billion*** (63-69B* total)
		Rural mobility	Support for transit/ paratransit, additional GRIP corridors	

* In 2008 dollars; costs include CapEx and O&M through 2030; O&M costs through 2040 add another $1 billion each to "enable/support clear economic-growth engines" and "transform GA's transportation network" investments.

Source: Team analysis

3.3 INVESTMENTS IN AVIATION, PORTS, AND RAIL

The discussion in this chapter so far has been focused on the state's prioritization of surface transportation programs. Aviation, ports, and state-owned rail also have strategic plans that prioritize potential investments based on criteria. They are highlighted below.

Statewide aviation program. As noted in Chapter 1, the state's aviation program is committed to economic development and improving aviation facilities. Investments are generally oriented toward improving safety or adding new capacity (typically runway extensions). Projects are prioritized based upon state and federal project priority ranking systems. Currently 42 percent of the statewide aviation system (42 airports) is designed to handle nearly all (95 percent) types of corporate aircraft in operation. Another 27 percent of the aviation system

can handle at least 85 percent of the corporate aircraft in operation. The state is currently in the process of updating the statewide Airport Economic Impact Study, which will be available in 2010. It will provide economic impacts of aviation and airport-related projects. Until then, the table below summarizes current and expected funding for aviation.

TIMELINE	STATE CONTRIBUTION	FEDERAL CONTRIBUTION	LOCAL GOV'T CONTRIBUTION
Last 3 years	$46,765,484	$156,109,504	$35,350,501
Next year	$11,200,000 (GDOT, OneGeorgia)	$50,000,000	$7,000,000
Next four years (based on historical spending)	$44,800,000 (GDOT, OneGeorgia)	$200,000,000	$28,000,000
Next 10-20 years (based on historical spending)	112,000,000–$224,000,000 (GDOT, OneGeorgia)	$500,000,000–$1,000,000,000	$70,000,000–$140,000,000

The Department's Statewide Aviation Plan, last updated in 2002, provides a blueprint for planning and development of Georgia's 104 publicly-owned public-use airports. More information about the aviation program at GDOT can be found on the following webpage**:**
https://georgia-aviation.dot.ga.gov/Aviation_Planning/planning.cfm

Statewide rail plan: The State Rail Plan addresses both passenger and freight services in support of economic development. The vision is to create a system that provides a preferred choice for intra-state travelers and shippers and seamless, energy-efficient intermodal connections from origin to destination. Details can be found in the 2009 State Rail Plan which can be accessed at the link www.dot.state.ga.us/travelinggeorgia/staterail/pages/default.aspx. Highlights from it in terms of investment over the next four years are below.

TIMELINE	STATE CONTRIBUTION	FEDERAL CONTRIBUTION	LOCAL CONTRIBUTION
Last 3 years	$4,050,000	$2,832,635	$3,644,165
Next year	$11,550,000	$4,542,709	$11,531,000
Next four years	$48,765,000	$486,550,000 (contingent on approvals for TIGER and High-Speed Rail)	$3,450,000

On the freight side, some of the corridors for investment are owned by the state, though some could be public-private partnerships with the Class 1 railroads. The most cost-effective investments for freight rail will be identified as part of the Statewide Freight and Logistics Plan next year.

Georgia ports. Georgia's ports are a significant economic-growth engine for the entire state. One of the most important developments that will clearly impact the surface-transportation network (both highways and rail) is the planned $1 billion investment to deepen the Savannah River and take advantage of the larger ships that will come through the Panama Canal after it is deepened in 2014. This deepening along with other investments will position the Port of Savannah and other Georgia facilities to capture the tremendous growth opportunity that the Canal will create. The challenge from a surface-transportation strategy is making sure the highway-and-rail network can handle the incremental volume. The investment plan for Georgia's ports is developed by the Georgia Ports Authority. Details can be found in their FY 2009 Annual Report. For more information about the Georgia Ports Authority, go to http://www.gaports.com/.

3.4 COORDINATION OF TRANSPORTATION INVESTMENTS WITH DEVELOPMENT PATTERNS

One-third of the IT3 congestion benefit is delivered by coordinating transportation investments with development patterns, largely in the Atlanta region's major employment centers. Local, regional, and state governments all play a role in capturing the benefit. Among the end results to the state are greater value from the state's limited resources and greater return on taxpayers' transportation dollars. Coordinating transportation with development patterns delivers returns, particularly in major job centers, because fewer and shorter single-occupant vehicle trips result when housing is located near jobs. The key ingredients for success are existing and projected market demand for housing in employment centers, a supply of multiple housing choices (both in terms of price and type), a variety of transportation options into and within the centers, and a "quality of life" that attracts those who make the choice to live in the centers.

The local government's role, particularly in Georgia as a "Home Rule" state, is to make the land use choices on matters such as the types of uses, density, and design and planning. The state's role is to ensure the highest return on major transportation investments. The state is, therefore, interested in making sure that its major center investments are made where there is sufficient housing demand and availability in employment centers, and where local governments have committed in the centers to housing choice (including density) and quality of life. That can be accomplished through transportation project eligibility and selection criteria.

MPOs are also important to success in metropolitan areas. They are responsible for regional transportation planning, with the state as an active partner. MPOs have local government membership, an established outreach process, and a regional planning capability, all of which positions them to develop criteria and evaluate projects by balancing local and state priorities. They also have developed programs that offer incentives for local governments that coordinate transportation investments with local decisions on development patterns. An example of one successful program is ARCs Livable Centers Initiative (LCI).

4.0 Strategy with current resources and expected performance

"Do what you can, with what you have, where you are."

—Theodore Roosevelt

In Chapter 3, it was determined that the most cost-effective programs to achieve desired outcomes are in people mobility and freight transport. The plan then prioritized programs for state investment based upon each program's mobility or supply-chain benefits in relation to cost. Varying ways to combine these programs together were also tested. With those findings, different programs were grouped into investment tiers based on cost-benefit ratio and the objectives they can accomplish most effectively. These tiers are reprised below in priority order:

1. Address today's burning platform.

2. Enable and support future economic-growth engines.

3. Transform Georgia's transportation network.

In this chapter, those investment tiers are translated into target-investment levels by program across the state. However, the assumption is made that no new sources of funding are identified and fee levels/rates of taxation stay fairly consistent. Further, no new flexibility is assumed for existing funds. For example, the assumption used is that motor fuel taxes can only be used on roads and bridges, as is true today. This chapter also reviews the outcomes that can be expected on key performance—the core of a fiscally constrained plan. Though the outcomes are not inspiring, they represent the best performance the state can achieve by getting the most out of its existing network and spending every incremental dollar available for new capacity on the highest performing investments.[21] This constrained plan will be the state's strategy absent the flexibility to launch a large-scale program for tolling and managed lanes, and any other new sources of revenue for transportation.

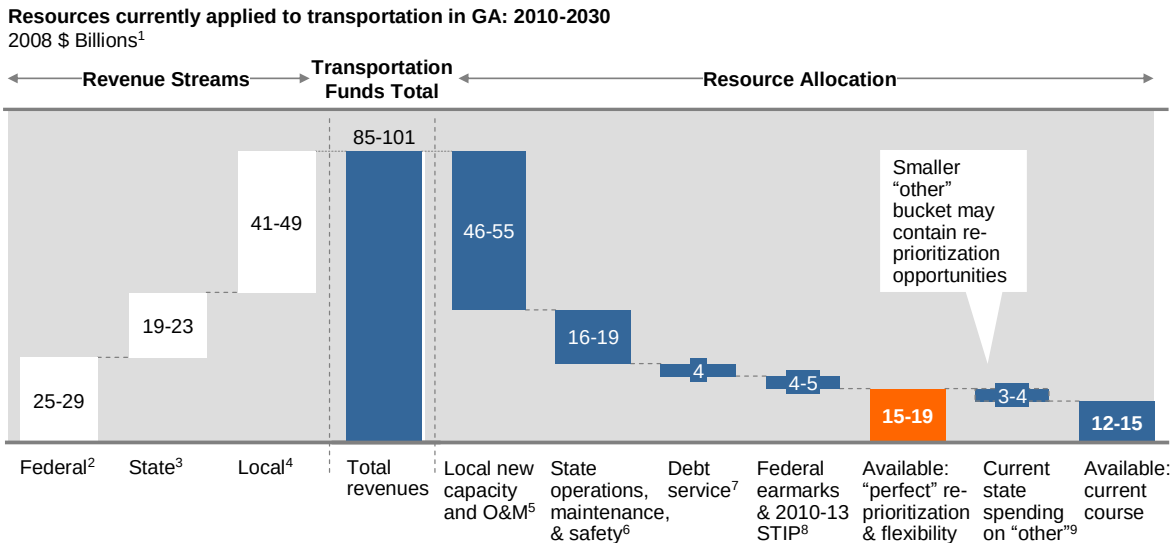
21 It is also critical that Georgia implements asset-management best practices to maximize the proportion of transportation dollars that are available for new capacity investment.

4.1 AVAILABLE RESOURCES

The first step for deriving this constrained plan is determining what level of resources will be available for transportation-improvement programs over the next 20 years absent any new funding. Across the state, ~$85-100 billion in revenue is projected from sources currently applied to transportation, as detailed below in Exhibit 12. Excluding funding that goes to local governments and state operations and maintenance, this leaves $15-19 billion for new-capacity and improvement programs administered by the state and MPOs in metro areas.[22] Even assuming perfect reprioritization and flexibility, available funding can at most cover 50 percent of "burning platform" investments. Also, because existing state funds cannot "flex" to transit operations, transit experiences a $3 billion operating shortfall statewide. Finally, something as basic as "matching federal dollars" could prove challenging at current funding levels. Depending on how the federal funding rules evolve for match in the next transportation bill, there is a risk that motor-fuel revenues are insufficient to match federal dollars as early as 2012. If that occurs, then even the picture presented here could prove optimistic.

Exhibit 12

RESOURCES AVAILABLE FOR NEW-CAPACITY INVESTMENT



22 This "available funding" bucket may be even smaller if programs falling in the "other" category in the current STIP cannot be reprioritized. This bucket includes a wide assortment of projects, ranging from fences around airports to training seminars to transportation-enhancement projects like streetscapes. There is a low likelihood that the next federal transportation bill will be much different in regards to the many buckets of funding.

1 In 2008 dollars

2 Includes FHWA and FTA

3 Includes GO bond proceeds, state motor-fuel tax (excise, prepaid, and interest), state general fund, tolls, state miscellaneous income

4 Includes MARTA (sales tax, fares, other revenues), GRTA, other urban/rural transit, local general funds (county/city/consolidated government), local (county/city) transportation SPLOST

5 New capacity includes county/city/consolidated government expenditures on highway and street construction/purchases (including local assistance from state/federal sources); O&M includes county/city/consolidated government and funded transit (MARTA, GRTA, other urban/rural transit, excluding $3B transit funding gap).

6 Includes GDOT maintenance (contract and in-house), GDOT ongoing operations (e.g., payroll, equipment, vehicles, travel, rent, utilities), Intelligent Transportation Systems, HERO, traffic-signal upgrades/timing, regional traffic operations, minor operational improvements, safety

7 Includes GARVEE and GO debt payments

8 STIP spending includes 85 percent of 2010-13 STIP spending on new capacity.

9 Reflects STIP spending on programs that are neither capacity-adding nor priority safety, maintenance, or operational projects

Source: SAFETEA-LU, FHWA, FTA, GDOT, SRTA, GSFIC, MARTA, GRTA, TPB, Department of Revenue, ACCG, Department of Community Affairs, EIA, CBO, Global Insight, US Bureau of Economic Analysis, Moody's Economy.com, Bureau of Labor Statistics, expert interviews, team analysis

4.2 STRATEGY WITH CURRENT FUNDING LEVELS

With funds that cover only 50 percent of "burning platform" investments, in which programs can and should the state invest? In this case, capturing the statewide growth opportunity in freight and logistics is not possible; neither is it possible to maximize the potential benefits from coordinated development patterns in major centers. The focus has to be solving the most urgent problems today—safety in rural areas, congestion in urban areas, and the worst freight bottlenecks across the state. Further, the investments have to focus on programs that have the highest cost-benefit tradeoffs. In freight transport, Georgia can at best only afford to make interchange improvements and to create new last-mile connectivity connections around the Port of Savannah. These are high-performing projects that relieve real bottlenecks, but they do not support the levels of growth that are possible for Georgia. New Interstate or limited-access bypass highways will not be built, nor will the state be able to jointly invest with the private sector in upgrading freight-rail capabilities. GRIP completion—even in priority freight corridors—will be minimal over the 20-year period.

For metro Atlanta people mobility, the picture is also bleak. Unless there is a robust tolling program, other direct fees (e.g., parking fees in City of Atlanta or other local jurisdictions), or additional new funding, such as a sales tax, the state's best and only strategy is to focus largely on arterial roads and interchange improvements. Public-private partnerships that assist in financing managed-toll lanes will be pursued as much as possible under the current course, but the pace is likely to be slow and incremental, given balancing and financing restrictions. An expansive network of managed lanes and Bus Rapid Transit connecting all major activity centers will not be possible, and no form of new rail transit will be built.[23] In fact, the current rail-transit system will experience a funding shortfall and require service cutbacks of ~30-50 percent.[24] The passenger experience will also deteriorate on this system as "state of good repair" becomes impossible to maintain and the

23 Some implementation of managed lanes will probably still go forward, such as the I-85 corridor, even if Georgia largely stays with current funds.

24 Estimates provided by MARTA planning staff.

infrastructure ages and breaks down more frequently. Finally, in "rest of state" people mobility, safety improvements are built out, maintenance is addressed, but only about 50 percent of the capacity-adding projects from long-range plans are built out. These assumptions are summarized in Exhibit 13 below.

Exhibit 13

LIKELY INVESTMENTS UNDER CURRENT RESOURCES

			Existing funds ($12-19B[1] avail.)
Address today's burning platform	People mobility: metro Atlanta	▪ HOT lanes [2] – Base network (~240 miles) – Full network (add'l 120 miles) ▪ BRT/Express ▪ Arterials – Suburban network (~1500 miles) – Base central network (~300 miles) – Full central network (add'l 200 miles) ▪ Core transit system – Reduced operations (50-70% of current) – Full (100%) operations	minimal ✓ ✓
	People mobility: rest of state	▪ Base network (~$7B) ▪ Full network (add'l $7B)	✓
	Freight transport	▪ Savannah port last-mile ▪ Interstate interchanges	✓ ✓
Enable and support economic growth engines	People mobility: metro Atlanta	▪ Streetcars and "short trip" transit – Beltline – Other streetcars/premium circulators	
	Freight transport	▪ NW bypass ▪ Rail improvements ▪ Intermodal/GRIP connectivity	
Transform Georgia's transportation network	People mobility: metro Atlanta	▪ MARTA extensions ▪ "Long distance" commuter and light rail ▪ Metro "big ticket" road projects	

1 In 2008 dollars through 2030; available resources allocated towards CapEx and O&M costs; O&M costs through 2040 add another $1B to Level 3 and $2B to Level 4.

2 Under existing funds, a minimal investment would probably be made in HOT lanes. For example, the I-85 HOT-lane project would still go forward.

Source: Kimley-Horn; GRTA, team analysis

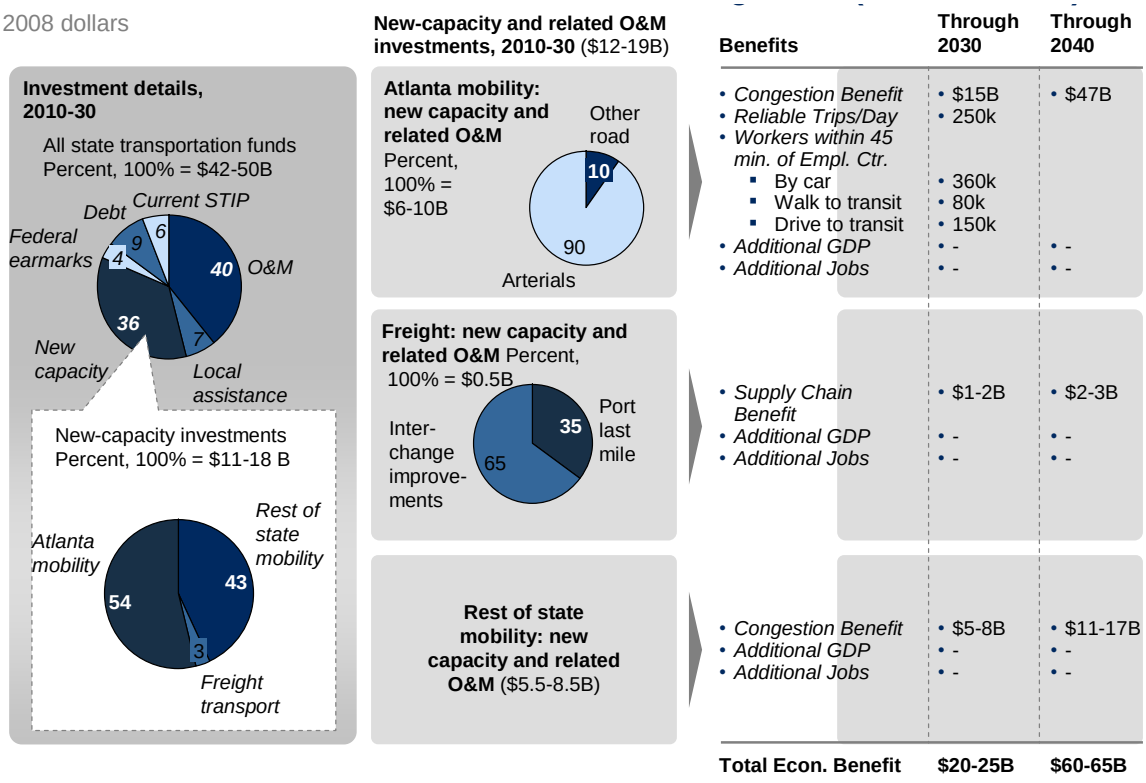
Finally, Exhibit 14 takes these assumptions and assigns investment targets to each program for different parts of the state. The exhibit also summarizes the people-mobility and supply-chain benefits.[25] Once again, investment costs include capital expenditure and operations and maintenance costs (through 2030 or 2040).[26]

25 In Exhibit 14, this is relative to a 2030 "no build" scenario

26 "State transportation funds" in Exhibit 14 excludes local county, city, and consolidated government spending on highway and street current operations and construction/purchases, except spending that uses local assistance dollars from federal/state sources. "State transportation funds" also excludes transit (e.g., MARTA, GRTA) capital and operations. The "new capacity investments" pie in the white call-out box below excludes associated O&M.

Exhibit 14

INVESTMENT ALLOCATION AND BENEFITS UNDER EXISTING FUNDS (NO DIRECT FEES)



Source: GRTA/ARC travel demand model; Kimley-Horn; team analysis

What do these outcomes mean for the transportation network's performance? In metro Atlanta, per capita congestion costs will nearly double today's levels. Employment-center talent pools (i.e., the number of people who can reach an employment center in 45 minutes) will be 33 percent smaller than today, significantly eroding the value proposition to future employers and putting future job growth at risk. Considering its operating shortfall, the core rail-transit system (MARTA) will operate at 50-70 percent of current levels. In addition, Xpress bus service will also be cut or eliminated because there will not be operating funds to support it. The public acceptance of cutting transit and increasing congestion for metro Atlanta will be particularly adverse when this story is contrasted with the aggressive investment its peers are making to mitigate congestion and create reliable trips through HOT-lane networks and new transit options.

In the rest of the state, the long-term situation is arguably even more serious. Medium-sized cities will not be able to make the investments they have made historically, so capacity will not keep pace with growth. This means many of them could experience "Atlanta-like" or at least "Charlotte/Miami" levels of congestion and deteriorating trip reliability. That is a serious problem because these smaller cities do not have the concentration of trained talent that larger cities have, so their value proposition depends on offering "high quality of life." Alternatively, congestion may never reach Atlanta or Miami levels, because population and job

growth would be choked off prematurely. Safety would still improve thanks to new investments in the network (which are a top priority), but rural job-center accessibility will remain unchanged due to minimal GRIP investment.

Finally, in the area of freight transport, the growth that was possible (e.g., GDP and jobs) due to the Savannah port expansion may never materialize. Although investments will have been made in last-mile connectivity to alleviate traffic immediately around the Port, capacity on the Interstates (which carry the vast majority of trucks) will be inadequate to handle the projected 60 percent growth in traffic volume. The congestion on I-75 that was highlighted in the previous chapter will worsen and spread, since new bypasses will not be affordable. This means delays for shippers in Georgia who are trying to reach the port or that on-time deliveries to customers or from suppliers are put at risk. Overall, it means that Georgia's claim to be the premier logistics hub in the Southeast will be challenged by states like Alabama, Florida, and Virginia, who are being very aggressive with their surface-transportation investment. It also means that a key part of the value proposition to future manufacturing employers—efficient and reliable supply chains—is eroded and opportunities to create new jobs are lost. For example, the opportunity to create a multi-modal transshipment hub for freight in South or Middle Georgia is likely to slip away because the required capacity investments would not be affordable.

It is important to note that these gaps in performance result even as the state invests existing funds into the most cost-effective programs. Clearly, one can make a case for further investment. Chapter 5 shows what investment levels are actually needed to drive improvement in performance and ensure Georgia's future competitiveness.

5.0 Strategy with additional investment and expected performance

"Price is what you pay. Value is what you get."

—Warren Buffett

In the prior chapter, it was determined that current available resources will only fund 50 percent of "burning platform" programs. With this constraint, congestion gets worse statewide, transit services are cut back or eliminated, and Georgia's value proposition as a location for talent and logistics-oriented businesses deteriorates. The impact overall is lost jobs and lower growth across the state. Since the new law created by SB 200 requires the Department to submit "a fiscally constrained plan," this story could easily end here. Further, if state lawmakers do not enact new and sufficient resources for transportation that are strategically deployed and effectively governed, the story will end there.

However, accomplishment of our goals requires that all strategies be in place. Hence, this additional chapter answers one critical question: "What will it take in terms of resources, investments, and policies to actually achieve our goals and keep Georgia economically competitive?"

5.1 DEFINING "REQUIRED RESOURCES" FOR NEW CAPACITY

To find out how much money is needed to meet our goals, there are three steps:

1. Define potential investment targets/levels for new capacity.

2. Determine what investments would be prioritized and built at each funding level.

3. Compare investment performance and outcomes at each funding level.

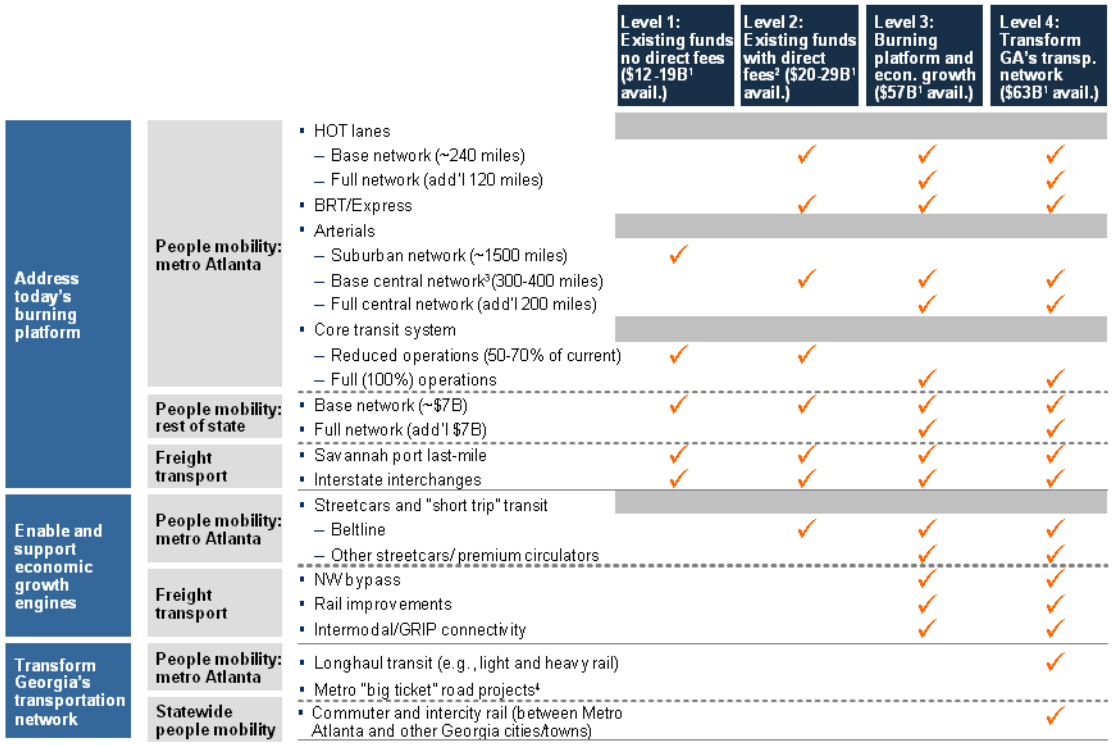
For the first step, four potential-funding levels for new capacity are defined. "Level 1" is current-course funding. Those results have already been described.

Level 2 represents funds that could be raised from a robust and proactive push on tolling. This funding strategy is currently authorized by Georgia law, but it reflects a significant shift from past state policy. Making the

change could result in an incremental $11-12 billion of toll revenues and other user fees over the next 20 years. The $11-12 billion includes ~$7-8 billion in tolls on managed or HOT lanes,[27] another $2-3 billion for parking fees in the City of Atlanta[28] (probably requiring legislation), and $1 billion in tolls on other limited-access facilities across the state (e.g., connector from Port of Savannah to I-95).[29]

Exhibit 15

INVESTMENTS INCLUDED BY FUNDING LEVEL



1 In 2008 dollars through 2030; available resources allocated towards CapEx and O&M costs; O&M costs through 2040 add another $1B to Level 3 and $2B to Level 4

2 Direct fees include tolls and parking fees.

3 "Base central network" means the arterial-road improvements are focused on employment centers. However, some suburban arterial-road investments would also be made.

4 Metro "big ticket" road projects include a tunnel connecting GA 400 and I-675, a tunnel from I-75 to I-85 under the top end of I-285, and a "cap" from the Brookwood Interchange to I-20 over the Downtown Connector.

Source: Kimley-Horn; team analysis

27 Assumes tolls raise the equivalent of 50% of the capital cost of the lanes.

28 Parking fees have been proposed in the City of Atlanta as a way to pay for operations of new transit, such as the Beltline. If other jurisdictions were to adopt a similar approach, more short-haul transit could be supported at Level 2 funding.

29 The potential impact of parking fees is estimated for the City of Atlanta, which is currently including them in its long-term transportation plan.

Exhibit 15 shows how Level 2 funding expands the program investments made statewide compared with Level 1. Because it is assumed that greater than 90 percent of the tolls and parking fees would be generated in metro Atlanta, the investments that would be possible from those revenues would be largely there. The decision to pursue tolling aggressively means a substantial managed-lane network that feeds employment centers with reliable trips becomes affordable.[30] To complement the network, arterial-road investments under Level 2 funding shift toward those that feed and support employment centers, though some investment in suburban arterials would remain. Under Level 2 funding, tolls in the managed lanes would also support operations of a Bus Rapid Transit Network. Finally, if a local government is willing (and legally enabled) to levy parking fees to fund transit operations and implement other policies to support density near transit centers, the state would be supportive of flexing some federal capital funds toward transit and using toll credits from the managed lanes as match for Federal aid. This is probably how a project like the Beltline in the City of Atlanta or a similar one could be pursued using state-authorized funds within the constraints of Level 2 funding. However, limited transit investments are pursued under Level 2 because new-transit operating funds are too scarce.

Funding Levels 3 and 4 ties back to the priority-investment tiers discussed earlier (burning platform, enable and support economic-growth engines, and transform Georgia's network). These funding levels are substantially higher than today's and cannot be reached without legislative action. Level 3 is $57 billion in new-capacity funding over the next 20 years—the minimum required to "address the burning platform" statewide and "support future economic-growth engines." As Exhibit 15 shows, Level 3 funding in metro Atlanta enables the completion of the managed-lane system and a more robust investment in arterial roads and short-haul transit (e.g., streetcars, trolleys, in-town light rail, and shuttle buses). Level 3 also enables completion of the long-range plans in all of Georgia's metro areas, funding of the Northwest Bypass to improve freight flows, targeted completion of freight-oriented GRIP corridors for rural areas, and the ability to support a new intermodal facility. Though long-haul rail investments like intercity rail would not receive much support at

Level 3 funding allows for significant investments in short-haul transit systems (like the streetcar pictured above in Portland, Oregon) and in high-capacity freight corridors (like the Heartland Freight corridor in Virginia and Ohio also pictured above).

30 Such a network could be financed through tolls and traditional public revenues or through public-private partnerships.

Level 4 funding moves the state into the third investment tier of "transform the network." It requires an additional $44-51 billion in new-capacity funding. Though it does not pay for a full statewide network of commuter and intercity rail lines, it moves Georgia down this path while keeping the overall tax burden in line with peers. This level of funding is reachable, but requires aggressive pursuit of tolling and user fees and at least one revenue source that could raise as much over 20 years as a statewide 1 percent general sales tax.

Exhibit 16

OUTCOMES BY FUNDING LEVEL

2008 dollars, 2010-40

	Resources available			
	Level 1 Existing funds, no direct fees $12-19B	**Level 2** Existing funds with direct fees $20-29 B	**Level 3** Burning platform and growth $58 B	**Level 4** Transform GA trans. network $65 B
People mobility – Atlanta				
▪ Congestion benefit, $	$47B	$46B-99B	$60B-108B	$58B-109B
▪ GDP benefit, $	---	$56B	$141B	$169B
▪ Jobs benefit	---	82k	145k	246k
People mobility – rest of state				
▪ Congestion benefit, $	$11-17B	$12-18B	$24-37B	$24-37B
▪ GDP benefit, $	---	---	$49B	$49B
▪ Jobs benefit	---	---	89k	89k
Freight and logistics				
▪ Supply-chain benefit, $	$2B-3B	$2B-3B	$32B-48B	$32B-48B
▪ GDP benefit, $	---	---	$67B	$67B
▪ Jobs benefit	---	---	90k	90k
TOTAL ECONOMIC BENEFIT	**$60-65B**	**$115-175B**	**$375-450B**	**$400-480B**
TOTAL INVESTMENT[1]	**$15B**	**$24B**	**$58B**	**$65B**
BENEFIT/COST RATIO[1]	**4.0-4.3**	**4.8-7.3**	**6.5-7.8**	**6.2-7.4**

1 Includes CapEx and 30-year O&M costs

Source: GRTA/ARC travel demand model; Kimley-Horn; team analysis

5.2 OUTCOMES BY FUNDING LEVEL

With the funding levels mapped to programs and prioritized investments, a comparison of outcomes by funding level across key metrics can be made. As before, the regional travel-demand models were used to estimate people mobility benefits. The impact of the investments on a standalone basis is tested, as well as the impact of the investments when combined with demand management and coordinating transportation investments with development patterns. For freight, the 2007 Transearch data was used to estimate supply-chain benefits in the same way as before.

To calculate GDP and job-creation benefits from the people-mobility investments, an incremental 0.25 percent GDP growth above current projections by the US Census Bureau and Moody's Economy.com in affected counties is used. This is based on benefits seen in peer cities with higher levels of mobility investment than Georgia cities.[31] For freight-transport investments, an incremental 0.6 percent GDP growth was assumed above current projections in rural counties receiving new limited-access bypasses, roughly half the incremental lift in growth that an Interstate has brought to rural Georgia counties historically.[32] Similarly, there is an incremental 0.7 percent increase in the rate of jobs growth for the rural counties receiving a bypass.[33]

Outcomes by funding level and benefit-cost ratios through 2040 are listed in Exhibit 16. The numbers in the table reflect capital and operating expense over the 30-year period. One immediate takeaway is that funding Level 2 is a clear improvement over the "current course." Though the incremental benefits are concentrated in metro Atlanta, the benefits of $115-175 billion are high, as is the benefit-to-cost ratio of 4.8 to 7.3. Equally clear is that statewide benefits are not reachable until funding Levels 3 and 4. This is also where benefit-to-cost ratios and total benefits are highest. The best results come from "transforming the network" and reaching Level 4 funding. Level 4 yields $400-480 billion in additional GDP and ~425,000 new jobs. Level 3 is also compelling, as it has clearly "enabled economic-growth engines" with $375-450 billion in economic benefit Since the aspiration is to "transform the network" and capture all of the upside opportunity, every available funding source should be utilized. The first step to freeing up resources is squeezing the maximum value out of each penny spent on maintenance and operations by implementing asset-management best practices. The next is robust tolling and user fees, as they will improve the reliability and utilization of the facilities they create (from a demand-management standpoint) and complement any future revenue decision made by state lawmakers. Once the resources are identified and Level 4 funding is reached, investment in all programs can begin. The detailed breakdown of the "Level 4" investment strategy is described below by Exhibit 17.

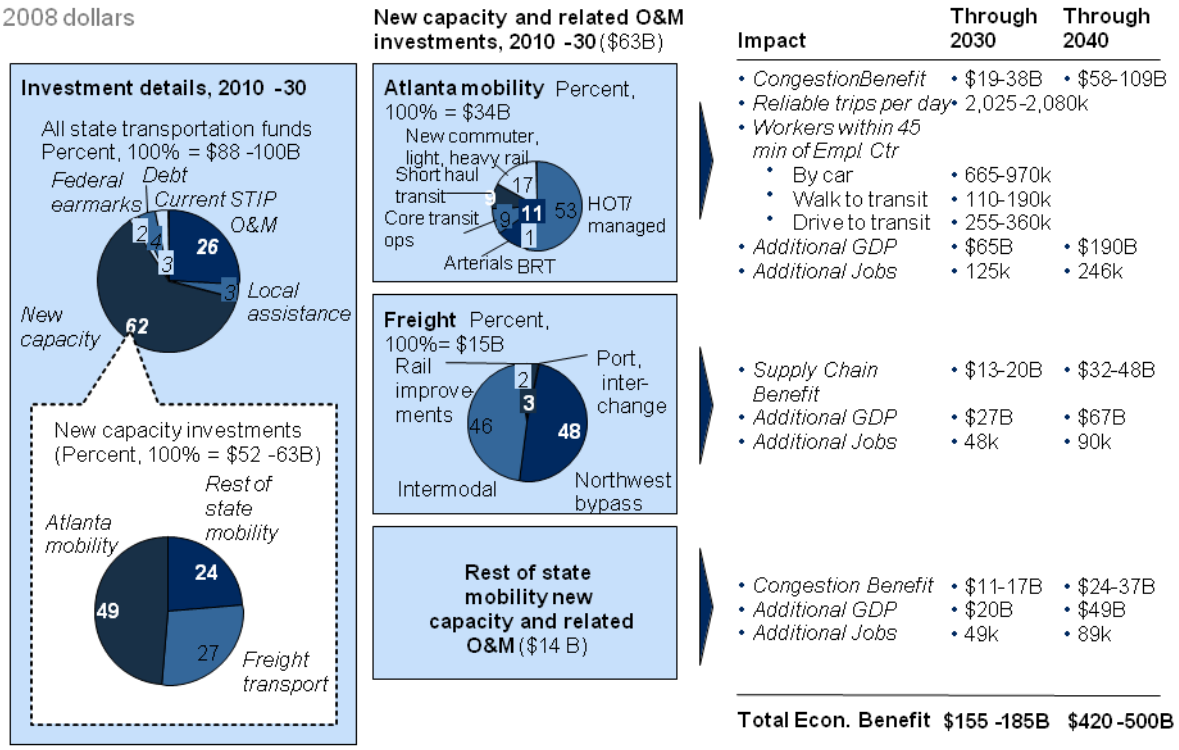
31 At Funding Level 3, the assumed incremental lift to GDP (0.25% GDP growth per year) extends only through 2030 for metro Atlanta. The GDP lift "phases out" because the region is assumed to need more significant levels of investment (like that of Level 4) between 2030-2040 to keep pace with peer cities and handle its next wave of growth.

32 Historically rural counties in Georgia with Interstates grew 1.2-1.3 percentage-points-per-year faster than rural counties in Georgia that did not have Interstates.

33 Historically, rural counties in Georgia with Interstates grew jobs 1.4 percentage-points-per-year faster than rural counties in Georgia without Interstates.

Exhibit 17

FUNDING LEVEL 4: INVESTMENT STRATEGY FOR "TRANSFORMING THE NETWORK"



* Excluding "big ticket" projects in metro areas

Source: GRTA/ARC travel demand model; Kimley-Horn; team analysis

6.0 Conclusion

"Knowing is not enough; we must apply. Willing is not enough; we must do."

—Johan Wolfgang von Goethe

Over the previous five chapters, this SSTP has made the business case for renewed investment in Georgia's transportation network. It has shown clearly that Georgia has been under-investing in transportation relative to what it has done historically and relative to its peers today. Current course will yield worsening congestion, restricted access to jobs, impeded freight flows, and reduced competitiveness. At the same time, competitors continue to move forward with innovative approaches, heightening the urgency to act. This SSTP lays out clear investment priorities and what that course of action should look like. It is more than a competitive response. If fully resourced, it has the potential to transform the state's transportation network and re-assert Georgia's leadership on freight, logistics, quality of life, and overall job growth.

With priorities clear, the remaining work of "transformation" is funding the gap between current and required resources. The Department can do its part by proactively pursuing tolls. But if multi-modal transformation is the aspiration, additional resources roughly equivalent to a one percent sales tax statewide during the next 20 years will be needed over and above a robust approach to tolls. There are a variety of ways to meet this revenue goal, but ultimately, this decision rests with state lawmakers.

The call to action

In short, Georgia has an opportunity to capture up to $480 billion in GDP benefit and 425,000 new jobs over the next 20-30 years. With effective freight pathways, the state can stay ahead of its competitors and capture economic benefit from the Port of Savannah and the historic deepening of the Panama Canal. With new networks of managed lanes and transit, metro-area businesses will have access to larger talent pools and millions of citizens will have access to rapid, reliable commutes and multiple transportation choices. Medium-sized cities in Georgia will be able to grow while maintaining the quality of life they enjoy today. Finally, rural areas will enjoy safer travel and share in opportunities for freight and logistics growth. All this is possible within a funding envelope that keeps Georgia's overall tax burden low and competitive with other states.

To be clear, using transportation infrastructure to drive growth is a formula for success that worked for Georgia for decades. The Governor and Legislature are urged to embrace the fully resourced version of the "transformation strategy" and the outcomes it will create, rather than the financially constrained "current course." The under-investment path may be familiar now, but its outcomes are not acceptable. In the end,

under-investment in transportation puts future jobs and growth at risk. Let's invest in our world-class transportation assets and position our state for a prosperous future.

Appendix 1.0
Current and Past Performance

"Nobody goes there anymore. It's too crowded"

–Yogi Berra

In Chapter 1, the expectations of Georgia citizens and businesses were used to set out transportation's goals, objectives, and key performance measures. This appendix describes Georgia's current performance against those goals and objectives. This evaluation looked at Georgia's performance relative to competitors on key performance measures. It also considered Georgia's performance over time to understand trajectory whenever data allows. The idea is to understand where Georgia should "keep up the good work" vs. where it should change strategy or increase focus and investments. Key questions to address are "Does Georgia have a performance gap relative to peers?" "If so, has the problem been eroding/ getting worse, or is the trajectory improving?" "To what degree can the state make a difference on this gap—either through policy change or by investing?" Once these questions are answered, the performance gaps that are most critical can be identified. Performance metrics that track progress against those gaps will serve as the "core performance measures" that drive the design of the investment strategy, as well as overall returns.

The rest of this Appendix has four subsections—one for each goal. Georgia's performance against each of the four goals and each objective is discussed (to the extent of data availability), starting with "Supporting economic growth and competitiveness." Note that there are some variations between the discussion in this Appendix and Exhibit 2 of Chapter 1 on performance metrics. Those variations are noted below. The Exhibit in Chapter 1 is intended to form the basis for an annual measurement system and, therefore, have the practical limitation of data availability or some other constraint.

A1.1. SUPPORTING ECONOMIC GROWTH AND COMPETITIVENESS

For half a century Georgia's economy has created prosperity for citizens and businesses throughout the state, and the decision to invest and create world class transportation infrastructure clearly was central to that success. However, beginning in the late 1980s, Georgia began under investing in its transportation network. In particular, new capacity investment did not keep pace with economic growth and travel demand, and congestion grew rapidly throughout the 1990s.

Despite these worrisome trends, the state still has great transportation assets that clearly "support economic growth and competitiveness." Over 90 percent of the global top 25 logistics providers have operations in Georgia. Logistics-oriented industries encompassed 120,000+ jobs in Georgia in 2009— one in ten jobs in the state in 2008. Further, for every 1,000 jobs created by logistics-oriented companies, another 740 jobs are created in other sectors of Georgia's economy. With this context, Georgia's performance by objective and metric is reviewed.

Objective: Improved access to jobs which encourages growth in private-sector employment and work force

Job creation and GDP growth.[34] As noted above, Georgia has been a leader in GDP growth and job growth over the last few decades. However, that growth has slowed on an absolute basis and relative to peers. From 1998-2008, Georgia real GDP grew at 7 percent –clearly above the national average and ahead of its peer states like Texas, Florida, Virginia, and North Carolina. From 1998-2008, however, Georgia grew GDP only 4.5 percent. This was much closer to the national average and clearly below its peers. The same trend could be seen on job growth. From 1988-1998, Georgia grew employment at 2.7 percent per year, only slightly below Texas (2.9 percent), the same rate as Florida, and clearly above North Carolina (2.3 percent). But from 1998-2008, employment growth slowed to 0.9 percent per year. Georgia fell behind those same peers – especially Texas which grew at almost double the rate (1.7 percent per year). The recession that began in December 2007 has been severe, and it hit Florida and North Carolina harder than Georgia (both states had higher exposure to the financial services sector). Georgia is now "middle of the pack" nationally on job performance, with unemployment hovering at the national average (10.2 percent). The question is how Georgia will fare during and after the economic recovery.

Average number of workers reaching major employment centers by car or transit in 45 minutes. Employers are traditionally attracted to cities because they offer large pools of skilled labor within a 45 minute radius. Employers actually measure the number of workers that can reach a potential job site before they locate there, and there is a growing body of economic research that links the size of the talent pool in an urban area to higher labor productivity. However, if congestion during commute hours is severe, travel speeds plummet and the number of workers that can reach any given employment site shrinks.

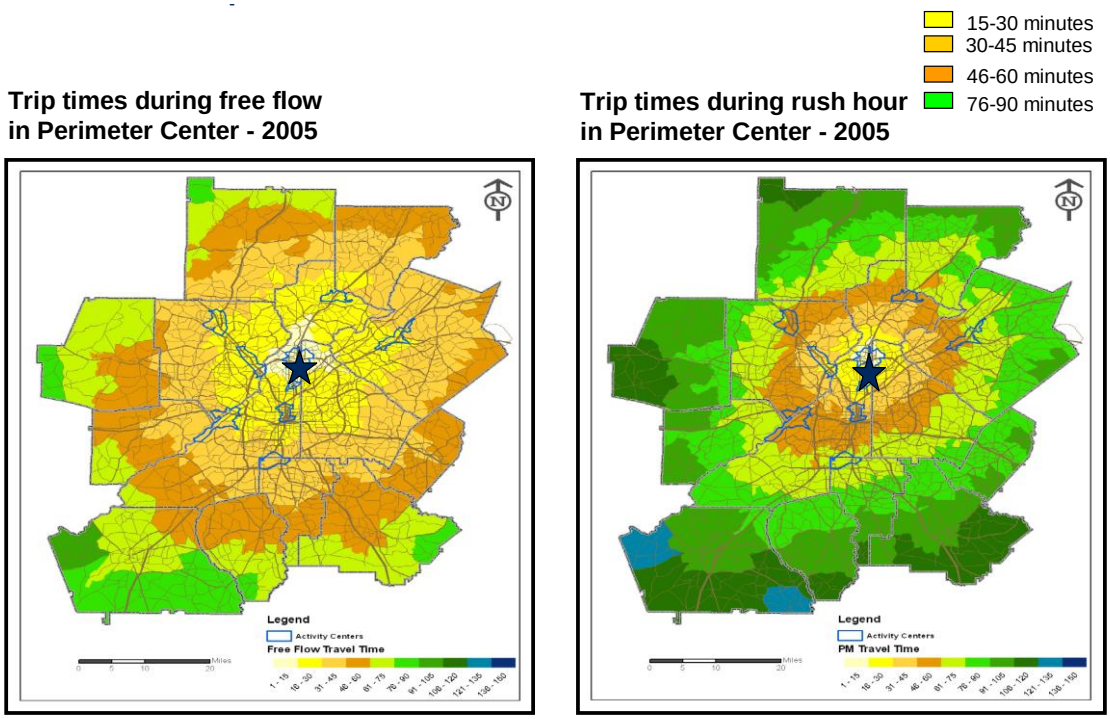
In metro Atlanta, the size of available talent pools for the eight largest employment centers in metro Atlanta was analyzed. Those 8 centers include the following: the Hartsfield-Jackson Airport, Buckhead, Cumberland/Galleria, Downtown-Midtown, Fulton Industrial, Gwinnett Place, Perimeter, Town Center, and Windward. When compared to off-peak hours when free-flow conditions prevail,

34 As previously noted, this is a variation from Exhibit 2 of Chapter 1. The Exhibit in Chapter 1 is intended to form the basis for an annual measurement system and therefore, have the practical limitations of data availability or some other constraint.

the number of workers that can reach an employment center by car during commuting hours shrinks by 60 percent. An illustration of these shrinking talent pools for the Perimeter Center area of Metro Atlanta is shown below in Exhibit A1. The light orange and yellow areas combined represent the 45 minute travel shed boundary. Any worker living in the yellow or light orange region could reach Perimeter Center in 45 minutes. However, the travel-shed shrinks dramatically during the peak period—the figure on the right. The shrinking travel-shed boundary due to congestion is what causes the talent pools to shrink during the peak.

Exhibit A1

AVAILABLE TALENT POOLS AT PERIMETER CENTER



Source: Atlanta Regional Commission - 2005

These travel-sheds can also be computed for transit (e.g., number of workers that can reach an employment center within 45 minutes.) However, these travel-sheds are not a function of congestion. Transit travel-sheds vary based on the reach of the transit system, how much of that transit is rapid (e.g., BRT, heavy, light, or commuter rail) vs. more local service, and the density of development. The size of transit travel sheds are not readily available for competitors, but Metro Atlanta's are quite small given the limited availability of rapid transit and the dispersed development patterns further limiting opportunities for employers and employees to connect.

Outside metro Atlanta, congestion levels are generally not severe enough to shrink the talent pool at peak periods. However, distance from job centers is an issue. About 88 percent of Georgians living outside Metro Atlanta can reach at least one major job center in less than 45 minutes, where "major job center" is defined as a county with at least 10,000 jobs and one technical college/ university that provides job training. [35]

Objective: Reduction in traffic congestion costs

Annual congestion cost. "Congestion cost" refers to the amount of time and fuel wasted because of traffic congestion. In any urban area, some congestion during the peak hour is expected. In Metro Atlanta, however, the congestion cost is $2,981 million annually according to the Texas Transportation Institute.[36] This means Metro Atlanta has the fourth highest cost of congestion—with only Los Angeles, New York, and Chicago, each of them a more populous metropolis, faring worse. Peers like Dallas, Charlotte, Tampa, Miami, and others all perform better. The drivers of congestion cost are "severity of congestion" (typically measured by "Travel Time Index" or TTI), duration of congestion (how long does the congested period last), extent of congestion (how much of the road network operates under congested conditions), and how far people drive under congested conditions. Interestingly, the reason Metro Atlanta underperforms its peers on congestion costs per traveler is not because its congestion is necessarily more severe, but because people drive more frequently and further under congested conditions (peak hour VMT is higher). Other cities and towns across Georgia currently have fairly low congestion costs, though they will need continued investment to preserve the quality of life they enjoy today.

Average commute time. The national average commute time is 26 minutes. The average commute time in Metro Atlanta is 31 minutes and 12 percent of commutes take in excess of 60 minutes. Once again, this performance places Metro Atlanta below direct competitors such as Denver, Charlotte, Tampa, Phoenix, Dallas, Miami and Houston. In fact, Metro Atlanta commute times are among the highest in the country, though this is largely because of distance traveled. Commute times in medium-sized cities are significantly shorter and well below the national average: 21 minutes on average. Commute times in rural areas are longer at 25 minutes, but still below the national average.

Number of people taking reliable trips per day. The unpredictability of a trip can be an issue across the state, though data availability here is not good. Few cities across the country are collecting data on percent of reliable trips, number of trips on reliable modes, or other common reliability metrics like "Planning Time Index," though the consensus is that this should become a priority. Anecdotally, much of the variability in commute trips outside Metro Atlanta is driven by incidents. In

35 Counties with at least 25,000 people, but with no technical college or university also counted as employment centers

36 This includes a small portion of "freight delay" cost—namely the cost of lost driver time. It does not include direct inventory cost (the carrying cost) or obsolescence cost (the risk that the freight's value depreciates or becomes less valuable over time)

some small towns and rural areas, a key issue is at-grade rail crossings. For Metro Atlanta, the severity of daily congestion actually makes incidents more likely. Further, congestion magnifies the impact of an incident, creating a vicious cycle. Good incident management can help tremendously, but the key is making rapid, reliable modes of travel available – managed toll lanes with reliable speeds, Bus Rapid Transit, other transit, or walking. In Metro Atlanta today, because few of these options are available to the entire metro region, the percent of trips on reliable modes is less than 3 percent. Though this figure cannot be directly benchmarked relative to other cities yet, this seems unacceptable on its face.

Objective: Efficiency and reliability of freight, cargo, and goods movement

Freight demand growth vs. capacity growth.[37] Though Georgia's ability to offer competitive travel times to key customer markets and suppliers has allowed the Port of Savannah to become one of the fastest growing ports in the United States and has attracted several new high-profile employers, competitors are investing very aggressively in an attempt to catch up. Meanwhile, Georgia has not made substantial investments in constructing new, limited access facilities to support statewide movement of people and goods since I-675 was constructed in the 1980s. Further, it is unlikely that Georgia will fund substantial widening of the existing Interstates in Metro Atlanta without the help of private investment, and widenings in other parts of the state will be limited. Statewide freight demand is growing ~3.5 times faster than projected capacity (based upon Georgia's historical lane mileage growth. Bottlenecks near the Port of Savannah, along I-75 (north of Macon), along the western wall of I-285, and in other parts of the state are already apparent.

In terms of freight rail, Georgia originates 24 million in and terminates over 75 million rail-tons of cargo. The "Class 1" rail lines are the backbone of this network and owned entirely by private operators. There are some emerging bottlenecks on this network that create delays, and absent new investment these delays will clearly get worse. A public inventory of these privately-owned assets has never been taken, though this is a top priority for the upcoming Statewide Freight Plan. Other states such as Virginia, Florida, and California have partnered successfully with freight rail providers to identify joint investment opportunities. Over the next year, we look forward to partnering with the private operators to take this inventory, improve our understanding of the severity of delays in different parts of the rail network, the cost associated with those delays (today and in the future) and potential opportunities for the state to jointly invest with the railroads to upgrade Georgia's rail capabilities.

Travel times between Georgia "gateways". A high priority for the upcoming Statewide Freight and Logistics Plan is increased clarity on average travel times and the variability of different travel times that matter to shippers across the state. "Gateways" refer to points of entry into or out of the

37 As previously noted, this is a variation from Exhibit 2 of Chapter 1. The Exhibit in Chapter 1 is intended to form the basis for an annual measurement system and therefore, have the practical limitations of data availability or some other constraint.

state, such as the Port of Savannah, Hartsfield-Jackson International Airport, or I-20 West at the Alabama Border. Congestion along I-75 and the western wall of I-285 already affect reliability and have the potential to deteriorate.

Supply chain costs by corridor. Similar to above, this is a metric that will be a priority for collection during the development of the Statewide Freight and Logistics strategy. Supply chain costs that shippers actually measure include three components: the direct cost of shipping (cost of fuel, the truck, and hiring the driver), the direct inventory cost (the capital "carrying cost" associated with having the inventory on a truck) and the obsolescence cost (the value at risk from depreciating inventory). Congestion in a corridor drives up all three components. The size of each component varies highly by commodity type, but for higher value containerized freight, delay can cost up to $50-75 per hour.

Objective: Border to Border and interregional connectivity

Interstate share of VMT. The Interstate System connects Georgia border to border and they are a preferred mode of travel for regional and inter-regional trips. They constitute only four percent of center-line miles on the Federal aid roadway system in Georgia. However, the Interstate System accounts for 33 percent of all vehicle miles traveled (VMT) on the Federal aid roadway system.

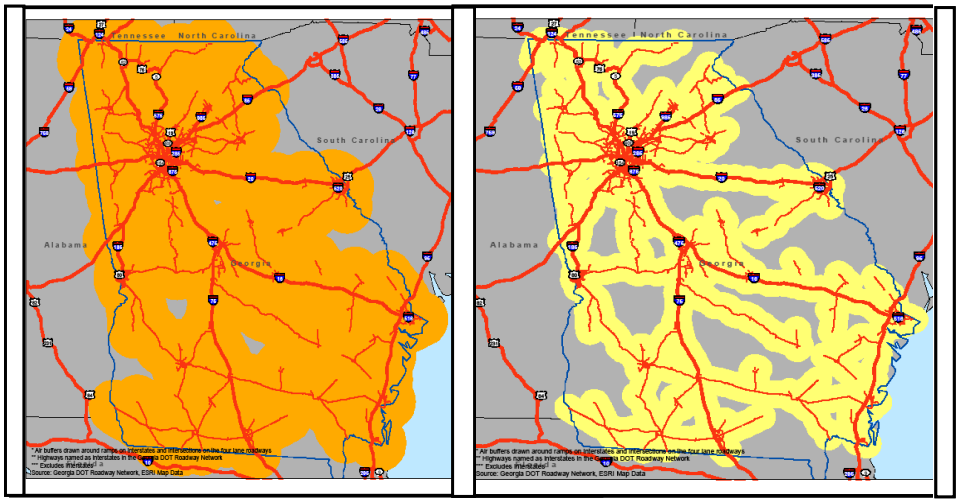
Percent of population within 20 miles of a four-lane highway. In addition to the Interstate System, Georgia's GRIP network provides inter-regional connectivity. When the interstate system and GRIP are taken together, currently 99 percent of the state's population resides within 20 miles of a four lane highway. Further, 97 percent of the population is within 10 miles of a four lane highway. That said, some of these four lane highways are only segments or fragments of GRIP corridors that have never been completed, so connectivity in some areas remains poor. Overall, however, Georgia's border to border and inter-regional connectivity are quite good, as Exhibit A2 shows.

Exhibit A2

POPULATION WITHIN 10-20 MILES OF FOUR-LANE HIGHWAY

Land within 20 miles of a four-lane highway (99% of population)

Land within 10 miles of a four-lane highway (97% of population)



Source: ESRI Business Analyst Block Group Data; GDOT

Objective: Support for local connectivity to statewide transportation network

Percent of State transportation funding spent on local roads. Ensuring local connectivity to our state system is vital for economic growth and competiveness for all communities. It should be noted that local governments own 85 percent of the public roads in Georgia, which carry about 36 percent of Georgia's vehicle-miles traveled. Under current course, without new funding, local governments are projected to receive over 40 percent of available funds for operations and new capacity spending. Most of the money for transportation investment on local roads comes from revenues collected from local governments (sales tax and property tax). State assistance has been limited in the past and will be limited in the future as well. Senate Bill 200 does provide for a minimum of 10 percent and a maximum of 20 percent of the Motor Fuel Tax collections to go to local governments under a program called the Local Maintenance and Improvement Grant Program. This will replace the previous State-Aid and LARP program.

A1.2 ENSURING SAFETY AND SECURITY

The Georgia Department of Transportation has adopted AASHTO's performance target of a fatality rate of 1.0 per 100 million miles traveled. The Department also has a target of reducing the total number of crashes by two percent annually. To achieve these ambitious targets, action will be required by all of GDOT's units.

Objective: Reduction in crashes resulting in injury and loss of life

Number of traffic fatalities. Georgia DOT is required by federal law to develop and maintain a Strategic Highway Safety Plan. The Department has teamed with the Governor's office to initiate the Governor's Strategic Highway Safety Plan to fulfill the federal requirement to maximize and leverage all of the state's safety funding resources. The overriding goal is to reduce the number of fatalities and serious injuries that occur on the state's roadways.

The strategic plan brings together the state's leadership in Engineering, Education, Enforcement and Emergency Services to establish statewide goals and emphasis areas. The current goal is to reduce the number of fatalities by forty (40) annually and to support the national goal of reducing highway fatalities by one-half by 2030. The primary GDOT role is to provide the Engineering component of the plan that covers ten identified Emphasis areas. Details of the plan can be viewed at www.gahighwaysafety.org/shsp/shsp2009final.pdf.

A1.3 MAXIMIZING THE VALUE OF GEORGIA'S TRANSPORTATION ASSETS, GETTING THE MOST OUT OF THE EXISTING NETWORK

Ensuring that Georgia protects and maximizes the value of today's transportation network requires maintenance decisions and programs that improve asset utilization and throughput. On the maintenance front, the condition of Georgia's roads and bridges is critical to safety, mobility and minimizing wear and tear on cars and trucks. To improve the way these decisions are made on the highway side, the Georgia Department of Transportation recently established the Office of Organizational Performance Management. Its activities are described further in Chapter 4.

The condition of our state's transit assets also effects safety and mobility. When track and vehicles wear out, breakdowns and delays increase. This undermines transit's core value proposition (a reliable trip) and erodes its ability to positively impact size of talent pools during peak.

Finally, this section will discuss the performance measures that drive optimized throughput. Investment programs that drive results in this category today are the current HOV lane system, the HERO program for clearing accidents and incidents, Intelligent Transportation Systems inform of delays, and employer-based "TDM" (travel demand management) programs. Future programs in this category will also include managed

freeway lanes, starting with the I-85 Corridor in Metro Atlanta between Chamblee-Tucker Road and Old Peachtree Road.

As the discussion below clarifies, Georgia's overall performance against this goal today ranges from "acceptable" to excellent, but future trends cause concern. This is particularly true with transit, where the lack of adequate and flexible funding puts the viability of core transit services at risk.

Objective: Optimized capital asset management

Percent of state bridges and highways with pavements that meet or exceed minimum standards. Georgia has "best-in-class" road conditions in comparison to the rest of the U.S., ranking 1st nationally. Georgia also ranks 10th in bridge conditions, with only seven percent of bridges rated structurally deficient. However, constrained resources will likely threaten Georgia's ability to sustain the superiority of our current roadway conditions. Furthermore, many of the bridges, particularly on the Interstates, were constructed during the 1950s and 1960s. These bridges are near the end of their functional life and will need replacing within the next several years. Additionally, under current resource regimes, local governments will be challenged in their ability to maintain and operate their valuable transit assets.

Objective: Optimized flow of people and goods across facilities and times of day

Peak-hour freeway Vehicle Miles Traveled (VMT). As noted above, Metro Atlanta has substantially higher VMT per capita than its peers. In fact, commutes are the longest in the nation. The reason is that Metro Atlanta is also the least dense (number of people living per square mile) of large metro regions, has more lane miles per capita than any Metro area except Houston, affordable parking in most areas served by transit, and no policies in place to price the cost of peak hour travel accurately. Because direct costs are the same to travel peak and off-peak, motorists opt to travel at the most convenient time for them—they do not take into account the fact that their decision to travel to work by interstate at 8 am will degrade an already congested facility further. Finally, over 60 percent of all trips during the peak period in Metro Atlanta are not work-related trips. Hence, pricing policies that encourage people to consider the time of day when they travel (e.g., tolls that are higher during peak on congested facilities, parking fees that are higher during peak) could potentially have a large impact in shifting trips to the off-peak periods.

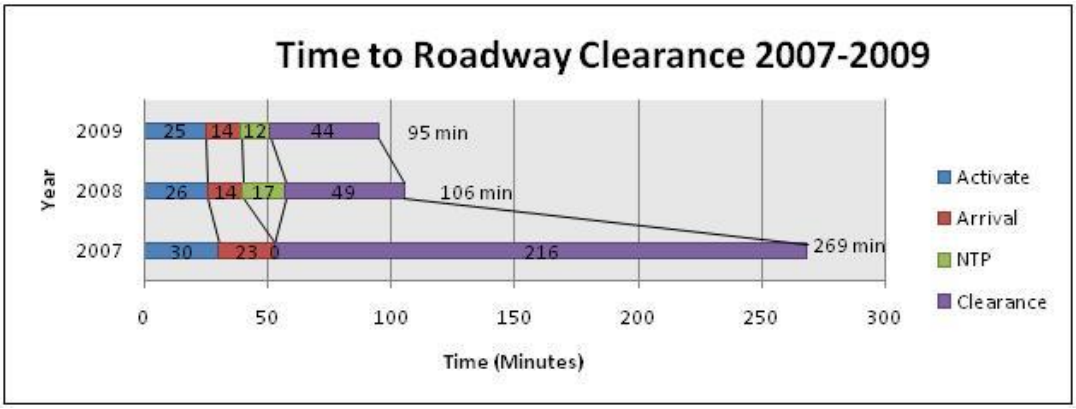
Accident clearance time. GDOT has done an outstanding job starting in the mid 1990s of managing incidents along our roadways. GDOT's HERO program is widely recognized around the country as the best program of its kind. One exciting program that Georgia began in 2007 fits perfectly with an outcome based performance measurement system is TRIP. Georgia's Towing and Recovery Incentive Program (TRIP) was implemented in metro Atlanta to facilitate improved management of large-scale commercial vehicle incidents. These large-scale incidents can significantly

affect traffic in the region, causing long motorist delays, polluting the air, and creating safety hazards. TRIP encourages the quick, safe clearance of these incidents by paying performance incentives to highly-skilled, TRIP-certified towing and recovery companies for clearing wrecks within established clearance goals.

Exhibit A3 shows how TRIP has reduced average clearing time, from 269 minutes in 2007 to 95 minutes in 2009.

Exhibit A3

TRIP IMPACT ON INCIDENT CLEARANCE TIME



Comparison of Average Time until Roadway Clearance was achieved for 2007 through 2009.

-Note all activation, arrival, notice to proceed, and clearance times were rounded to the nearest minute.

- Source: 2007 Traffic Management Center (TMC) GA Navigator Log, 2007 Highway Emergency Response Operator (HERO) Log, 2008 TMC TRIP Incident Log, and 2009 TMC TRIP Incident Log

Operating cost per unlinked passenger trip by mode, and operating cost per passenger mile by mode. These measures are cost-effectiveness performance measures that evaluate a transit system's ability to transport people in a cost-effective manner. They both support the objective of optimizing throughput of people through transit network assets in a cost-effective manner.

The basis for obtaining both measures is the transit operating costs. These are the sum of all recurring costs (e.g., labor, fuel) that can be associated with the operation and maintenance of a transit system during the period under consideration. These operating costs are then related to either unlinked passenger trips or the passenger miles traveled to obtain the respective measures.

Operating cost per unlinked passenger trip, and operating cost per passenger mile have to be analyzed together to effectively compare the different types of trips that are using the transit systems within the state such as those modes that are relieving interstate congestion and those that are helping preserve activity/employment center mobility through the first mile/last mile connectivity. For instance, the operating cost per passenger mile shows the effectiveness of long distance trips on modes such as express buses, which do not perform well on operating cost per passenger trip (they carry a few people a long way) while circulators usually perform well on operating cost per passenger trip, but not by passenger mile (they carry lots of people short distances).

For example, MARTA, which is the backbone of the Atlanta's transit system, compares favorably with the national averages by these two measures. The 2008 national operating costs per passenger trip are $3.30 for bus and $1.73 for heavy rail. MARTA's operating costs per passenger trip of $2.87 for bus is much better than the national average while the $1.91 for heavy rail is slightly above it. Using the operating costs per passenger mile paints a similar picture. MARTA has operating costs per passenger mile of $0.91 for bus and $0.27 for heavy rail, while the national averages are $0.85 and $0.36, respectively.

These measures provide one of the core evaluations of a transit system overall performance and cost-effectiveness. They are standardized and the data is available via the National Transit Database. Furthermore, they are easily understood and frequently used as part of a peer analysis.

A1.4 MINIMIZING THE IMPACT OF TRANSPORTATION ON THE ENVIRONMENT.

Finally, Georgia is committed to minimizing the impact of transportation on the environment and has made significant progress in this area over time. The review of where the State stands on its key environmental objective is below:

Objective: Reduce emissions, improve air quality statewide, and limit our future carbon footprint

Exceedances of federal 8-hour ozone standard in Georgia. Across the state, air quality has improved significantly, with a 62 percent reduction in exceedances of the ozone standard from 1998 to 2007. The Department has historically taken great care in following all applicable environmental laws when developing projects and operating the transportation system. With the passage of the next federal transportation bill, it is expected that there will be several new requirements concerning greenhouse gas emission reduction.

Prioritizing current performance gaps

This appendix assesses how well Georgia is meeting its goals and objectives overall, where it is lagging its peers, and where performance is clearly below what its "customers" (businesses and citizens of Georgia) expect. After identifying these performance gaps, the next step is to prioritize them based on:

1. Size and seriousness of the gap

2. The degree to which the state can address it through investment or policy change

In terms of performance, Georgia has been strongest recently on "Minimizing impact on the environment," "Maximize value of existing assets," and "Ensure Safety and Security." All performance measures against "minimizing impact on the environment" have been improving, which is encouraging. Similarly, on "Maximize value of existing assets," Georgia has clearly been successful in maintaining the condition of its highway and transit assets. However, maintaining this performance at current funding levels will be a challenge, particularly with transit. Also, on "Ensure Safety and Security," Georgia is clearly outperforming its peers on a statewide basis.

Performance gaps tend to be "customer" specific. While Georgia's highway safety record has improved dramatically over time, it is below the Department's aspirations. Further, fatality rates in rural areas are far higher than in urban areas, and in our interviews around the state, bridge safety in rural areas came up as a concern. Since the performance gap is significant and there are several cost-effective ways to address this problem (details in Chapter 5), safety in rural areas will be an investment priority in the SSTP.

In medium sized cities, there are no glaring performance gaps. Congestion levels are fairly modest and in line with peers. There are some critical bottlenecks, but in discussions with local officials and transportation planners, there was general confidence that current long-range plans will address these gaps–*if the funding is available to complete the priority projects in the plans*. The priority for medium sized cities, therefore, will ensure adequate funding.

In metro Atlanta, the high congestion cost per capita and trip reliability are glaring performance gaps relative to competitor cities and a clear point of concern for residents. In addition, the business community and potential employers are concerned about the way congestion is shrinking available talent pools. All three of these performance gaps (congestion costs per capita, reliable trips, and size of talent pools) are large and directly threaten the region's ability to remain economically competitive. Further, they are all areas in which the state can have an impact by combining demand management, new investment to expand reliable modes, and coordinating transportation investment with future development patterns.

Finally, for commercial users of the network, one emerging performance gap is the fact that interstate capacity has not grown to keep pace with freight volumes. Over time, this will increase supply chain costs and

potentially erode Georgia's leadership position in freight. The capacity constraints are already urgent and obvious in some parts of the network (e.g., Metro Atlanta interchanges, US 17 near Port of Savannah, at grade rail crossings). Finding cost-effective ways to maintain or lower the supply- chain costs for freight is the focus of the SSTP's freight component and the State Freight and Logistics Plan which will be initiated in 2010.

Appendix 2.0
Best Practices and Competitor Strategies

"The ability to learn faster than your competitors may be the only sustainable advantage"

–Arie de Gues

Current national trends—increasingly diverse commuting patterns, underfunded highway and transit systems, chronic supply and demand imbalances resulting in congestion, the growing importance of metropolitan areas, shifting freight patterns, and the aging of the population—require innovative approaches to meet the transportation expectations of citizens and businesses. The challenge is even greater in the Southeast where economic and population growth exceeds the rest of the US. States that Georgia competes with have begun to appreciate the urgency of the challenge and are investing in new approaches to transportation. These approaches use market forces (particularly pricing) to address congestion and improve trip reliability. They also place more emphasis on the importance of coordinating transportation investments with development patterns and policies.

A2.1 "HOT" AND OTHER MANAGED LANE SYSTEMS

Transportation experts across the world have reached a large degree of consensus that the direct pricing of highway travel is likely the only sustainable method to provide reliable and uncongested travel conditions on the road. Because of this, a variety of states and metropolitan areas are implementing concepts like High Occupancy Toll (HOT) lane systems, with great success. A HOT lane is a managed HOV (High Occupancy Vehicle) lane. Like traditional HOV facilities, carpools, vanpools, and buses pay no fee to use the lane. However, unlike a traditional HOV lane, Single Occupancy Vehicles (SOV) and lower occupant carpoolers (e.g., such as HOVs with 2 persons) can use the HOT lane if they pay a toll. The toll varies by time of day based on travel demand and is highest during the most congested "peak" periods.

These systems are in place already in 7 states: Florida, Texas, California, Washington, Utah, Minnesota, and Colorado. In some states, a pre-defined schedule sets toll rates by time of day. More sophisticated systems, however, allow the tolls to rise and fall on a "real time" basis, depending on actual congestion levels. These real-time tolling systems are essentially capacity auctions, and operators (especially if private) have a powerful

incentive to get the pricing—and the resulting balance between supply and demand—right. If the price is set too high, few drivers enter the lane. If the toll is set too low, the lane becomes too congested, and drivers exit the facility. The operator makes the most profits when the lane is full, but moves quickly. Further, the more reliably the HOT lanes perform over time, the easier it is to build "loyal" customers. Recognizing this, operators in some states (e.g., California, Virginia) actually guarantee a particular travel speed or the trip is free.

Toll rates vary considerably by metro region and by the distance covered by the HOT lane. In Orange County, California, peak rates are much higher ($10) than in Houston or San Diego ($4). Another regional difference has to do with how large a carpool has to be to qualify for free admission to the HOT lane. In areas with congested HOV facilities, a carpool may require 3 people before "free" access is granted. If, however, the HOV lanes tend to be underutilized, cities exempt any carpool of 2 or more people from paying a toll.

Once established, HOT lanes deliver significant benefits in terms of time savings and improved trip reliability. On the I-394 HOT lanes in Minneapolis, travel speeds for vehicles are over 50 mph 95% of the time. In Miami, the I-95 HOT lanes are increasing peak hour travel speeds by 2-3 times, even in the "free" general purpose lanes.[38] These benefits also extend to transit riders who often travel via bus in the HOT lanes. For example, the HOT lanes in Denver support the metro area's BRT system and enable on-time 96 percent on-time performance.

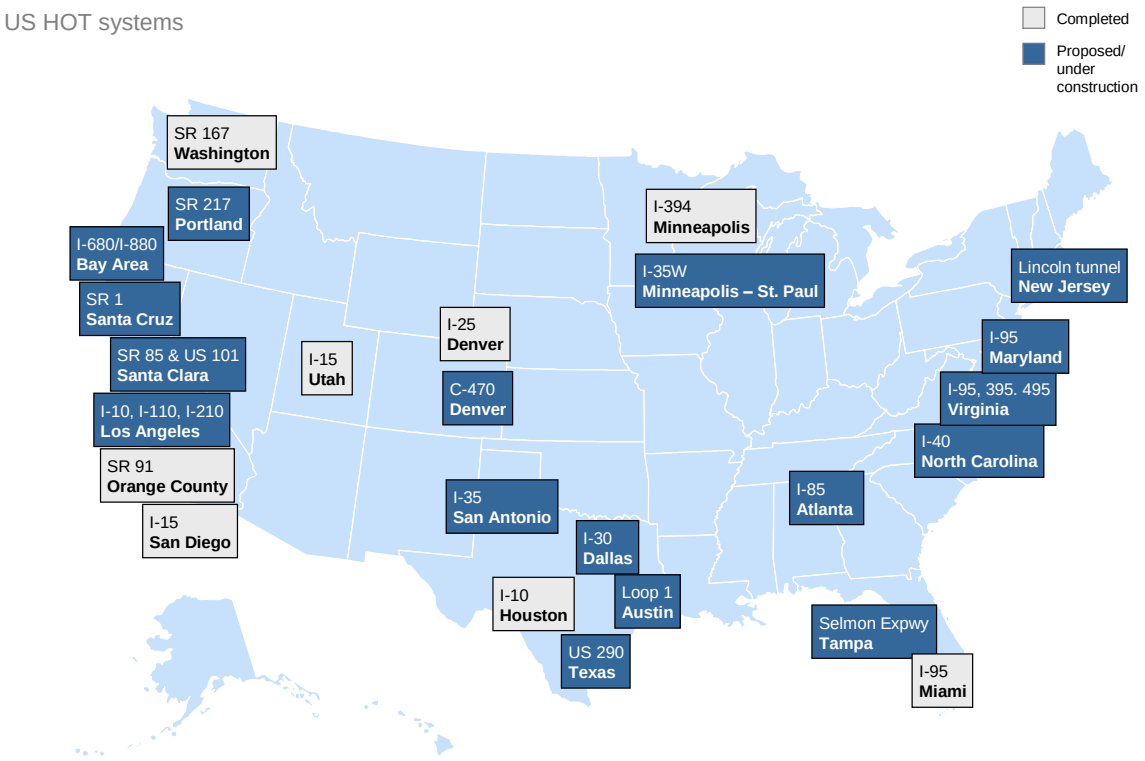
Another benefit of HOT lanes or other managed toll lanes is that they expand resources for transportation. HOT lanes enable states to create federal "toll credits" that can be used to satisfy the state matching requirements for either federal road or transit projects. New Jersey, New York and Florida (which each have extensive networks of toll lanes) utilize billions of dollars in toll credits per year in connection with Federal-aid projects. HOT lanes also expand the flexibility of states to utilize innovative contracting mechanisms like Public Private Partnerships which can transfer project development and operational risks to the private sector.

Given all of these benefits, HOT lane systems, once established, are popular with travelers and are used across the income spectrum. A four-year study by the California Polytechnic Institute that looked at user profiles in the HOT lanes on California's SR 91, found the socio-economic profiles of HOT lane users were fairly similar to the users of the "free" lanes. In San Diego, the public identified HOT lanes as the "single most effective way to reduce congestion." In Minnesota and in Florida, public approval of the HOT lanes has been high after implementation, irrespective of income levels. Exhibit A4 below shows that many more states and metro areas will implement these systems in the future. Georgia is part of the next wave of projects with its planned HOT investment in the I-85 corridor and the HOT lane network identified in the Metro Atlanta Managed Lane System Plan. Florida will soon move forward with its second project in Tampa, and Texas is launching 4 new projects in different parts of the state. Meanwhile, Virginia is launching 3 projects in metropolitan Washington DC and has already broken ground on its first project.

[38] Travel speeds have gone from 20 mph on I-95 before there were HOT lanes to 56 mph in the HOT lane and 40 mph in the "free" general purpose lanes

Exhibit A4

COMPLETED OR PROPOSED/UNDER CONSTRUCTION HOT LANE SYSTEMS



Source: ESRI Business Analyst Block Group Data; GDOT

A2.2 BUS RAPID TRANSIT

Bus Rapid Transit (BRT), is a public transit option that has been highly successful in international markets for decades. It has already performed well in its limited history in the United States. “BRT” refers to a set of bus system design features that provide high-quality and cost-effective transit service. BRT systems use dedicated right-of-way in congested areas (e.g., within employment centers), but can also travel in managed HOT lanes or other uncongested parts of the road network to ensure a fast, reliable trip. They can also use attractive “rail-like” vehicles (as experimented with recently in Las Vegas, Los Angeles, and Eugene, Cleveland) and a variety of mechanisms to ensure convenience, reliability, and a superior customer experience. These include level platform boarding at stations, live information, better station locations, fare prepayment, and easier access for disabled persons. Examples of these vehicles, station environments, and other potential enhancements to BRT from various cities around the world are in Exhibit A5.

Exhibit A5

DESIGNING THE BRT PASSENGER EXPERIENCE

Source: ESRI Business Analyst Block Group Data; GDOT

Relative to rail systems, capital costs can be much lower with BRT. The first reason for this is that buses only need dedicated right-of-way in congested areas or in areas where reliable managed lanes are not available. The second reason is that buses are inherently flexible, and one segment of BRT right-of-way can support numerous transit routes. For light, heavy, or commuter rail, safety requires that track not be shared by trains running more than 2-3 different routes. When right-of-way is used strategically, BRT capital costs are typically 10-50% lower than rail. The savings can be even more dramatic if an extensive managed lane network can be leveraged.

An equally significant advantage for BRT, however, has to do with operating costs and serving areas with dispersed development patterns. With the dispersed development patterns common in metro Atlanta and most other Southern and Western "auto-oriented" cities, commute patterns are not radial (i.e., moving from suburbs to a downtown business district in the morning and the inverse in the evening). Employment is scattered across multiple centers and commuters are traveling from "everywhere to everywhere," including suburb to suburb. In this situation, the "potential market" for any one transit line tends to be small because the number of people taking trips that are within ½ mile walking distance from any likely "destination" station is small. If a light rail train is used in this scenario, keeping it full (or targeting a minimum fare recovery ratio) requires

fairly infrequent service (e.g., 30 minute headways). That may be acceptable in some circumstances. However, in a disperse corridor BRT can support the same level of ridership with more frequent service (e.g., 10-15 minute headways) for the same operating cost as light rail.

Overall, BRT systems provide benefits in a variety of areas. The low capital costs and the routing and operating flexibility of BRT allows metro areas to tailor systems to changing demand patterns and expand rapid transit service to areas that may be decades away from justifying a rail investment. Because the quality of service is high, ridership response is also typically robust. For example, the introduction of "Silver Line" BRT service in Boston caused transit ridership to increase by 71% in that corridor.

Another important benefit of BRT systems is how they can be designed to enable and support denser development patterns, particularly around stations. There is a substantial body of research from cities around the world showing that if BRT systems deliver time savings and convenience, the impact their stations have on property values and density is similar to light rail systems.[39] In North America, the experience is more limited, but the early evidence is promising. Studies estimate that Boston's "Silver Line" BRT has already attracted $1.25 billion in new investment to a previously depressed corridor. In Pittsburgh, a study by the Allegheny Transit Authority concluded that the East Busway attracted $302 million in new investment (80% near stations), and in Ottawa, studies have estimated that building the Transitway resulted in $675 million in investment around stations.[40]

A2.3 "SHORT-HAUL" TRANSIT: THE ROLE OF STREETCARS

Streetcars are an increasingly popular transit option as cities seek to provide inner-core mobility. Streetcars have exclusive rights-of-way or operate in mixed traffic on their own dedicated track at street level. They generally serve major activity centers, circulating within one center or connecting two centers.

In addition to mobility, streetcars can foster increased density in urban cores and facilitate economic development. Research from the experience of Portland's streetcar shows areas closer to the line developed at higher densities than those further away. Specifically, prior to the streetcar, developments achieved less than half their allowable floor area ratio (FAR). After the streetcar's implementation, lots within 1 block realized 90% of FAR potential (this realized FAR drops as distance from streetcar increases (to 43% for 3+ blocks)). Portland has also demonstrated that streetcars can attract development at new properties. Properties located within one block of the streetcar went from 19% of total Central Business District (CBD) development to capturing 55% of development activity after the streetcar was introduced.

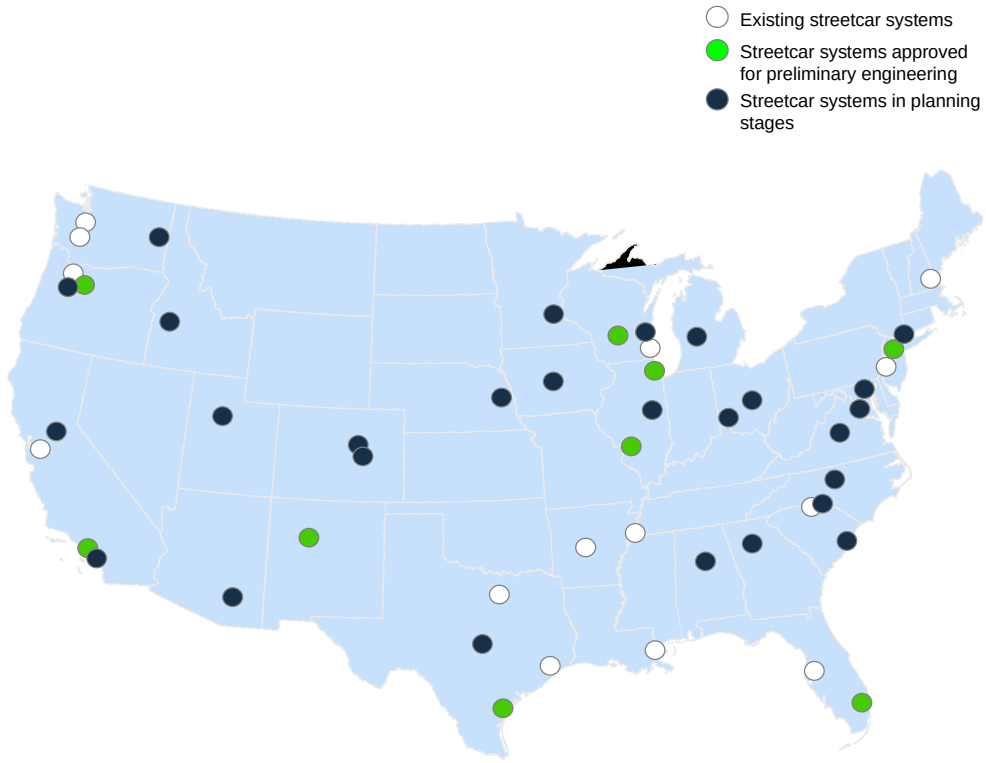
39 See Levinson (2002), Cevero (2004), Rodriquez and Targa (2004), Estupinan and Rodriquez (2008) and Cevero and Kang (2009)

40 See Transit Cooperative Research Program (TCRP) Report #90, "Volume 1: Case Studies in Bus Rapid Transit" from the Transportation Research Board

Cities have used their streetcar's demonstrated benefits to creatively fund new systems. Seattle conducted a "special benefits study" in 2006 to determine the property value increases from the proposed South Lake Union Streetcar. Property appraisers estimated the streetcar would increase property values by $69 million, or 1.2% on average for properties within 3 blocks (~1,000 ft) of the line. The city then used this information to establish a special tax district within 3 blocks of the proposed line. $25 million was provided by a special assessment on those properties, which provided 55% of the capital costs of the streetcar. A similar special assessment is now being considered in Boise, Idaho. The map below shows which cities have Streetcars in place or are pursuing them.

Exhibit A6

STATES AND METRO AREAS INVESTING IN STREETCARS



Source: GRTA

A2.4 COMPETITOR ACTIONS ON FREIGHT AND LOGISTICS

As described in Chapter 2, shifting trends in freight flows to the United States and intense port competition will continue to shape shipping demand. With the widening of the Panama Canal and continuing concerns about West Coast freight efficiency, many forecasters believe that East Coast ports stand poised to capture a larger share of overall freight traffic. Whether or not these forecasts are realized will hinge on a variety of factors,

including the extent to which East Coast ports can make necessary improvements in efficiency and capacity and the quality of inland transportation systems that connect to critical freight hubs. Georgia's competitor states have recognized this fact, and are making large scale investments in their ports, highways and railroads. If Georgia wants to maximize the value of the current Savannah port expansion, it will need to ensure that connecting infrastructure assets are adequate to handle projected demand growth into Savannah.

As the projects below demonstrate, several regions with critical freight infrastructure have sought to achieve a balance between public and private investments and enhance their own freight sector competitiveness simultaneously.

The Alameda Corridor. The Alameda Corridor is a 20-mile-long rail cargo line linking the ports of Long Beach and Los Angeles to the transcontinental rail network near downtown Los Angeles. Through a series of bridges, underpasses, overpasses and street improvements freight trains are separated from street traffic and passenger trains, facilitating a more efficient transportation network. The project's centerpiece is the Mid-Corridor Trench, which carries freight trains in an open trench that is 10 miles long, 33 feet deep and 50 feet wide between State Route 91 in Carson and 25th Street in Los Angeles. Construction began in April 1997, and operations began in April 2002.

The $2.4 billion project was funded through a unique blend of public and private sources, including $2 billion from the city councils and harbor commissions of Los Angeles and Long Beach, as well as a $400 million loan from the US DOT. Revenues from user fees paid by the railroads will be used to retire debts. Railroads initially paid $15.00 for each loaded 20-foot equivalent unit (TEU) container; $4.00 for each empty container, and US$8 for other types of loaded rail cars such as tankers and coal carriers. Over a 30-year period, fees will increase between 1.5 percent and 3 percent per year, depending on inflation.

Another project that is targeting the Alameda freight corridor is the SR 47 Expressway. This project is a partnership between Caltrans (California DOT) and the Alameda Corridor Transportation Authority (ACTA). It will provide an alternative route from Terminal Island, a major generator of port-related truck traffic, and provide direct access to local distribution centers and warehousing facilities in the South Bay area. It is expected that the new road would reduce approximately 6-7 percent of the port-related truck traffic on the I-710 freeway. Sources for funding the $40 million design and $350 million construction have not yet been determined. Completion date is approximately 2011 but is based on available funding.

Port of Los Angeles, TraPac Terminal Expansion. In August 2009, the LA Harbor Commission approved a long-term lease for the TraPac, Inc. container terminal at the Port of LA. The 30-year lease paves the way for the completion of the TraPac terminal expansion project, which will increase TraPac's space from 172 acres to approximately 226 acres, including 4,600 linear feet of wharf area. The five-year, $245 million expansion will deepen the waterside at Berths 144-147, upgrade approximately 50 additional acres of existing land to modern container handling backland standards, and construct a new on-dock rail facility. Surface road

improvements and a new main gate configuration will also improve traffic flow into and out of the terminal facilities. By 2025, the modernized facilities are expected to have capacity of up to 2.4 million TEUs.

Heartland Corridor. The Heartland Corridor project is a $151M project resulting from public-private partnership between Norfolk Southern, Virginia, West Virginia, Ohio, and the federal government ($95M paid by federal, $10.6M by states, balance paid by Norfolk Southern).To be completed in 2010, the project aims to improve rail service between the Port of Norfolk and the Midwest through more direct routes for double-stacked container trains.

Port Authority of New York/New Jersey Marine Terminals. ($22 million). The ExpressRail system is a comprehensive rail program to develop an on-dock rail link at all of the port's major container terminals, allowing direct access to the nation's rail network and a viable, sustainable alternative to trucking. The overall funding commitment in the 2007 – 2016 capital plan is $336 million.

A2.5 SUMMARY

Governments are facing a challenging environment with continued growth, constrained resources, an aging population, and travel patterns that are disperse and constantly changing. Approaches need to deliver reliability in a flexible manner, while maximizing each scarce tax dollar. Georgia's competitors are investing in transportation at a far greater rate across people mobility and freight. Continuing Georgia's minimalist transportation investment approach will place the state's future economy and quality of life at risk.

Appendix 3.0
Glossary Terms

A

1. **Activity Center** – An area that includes office, retail, service, residential or civic uses that create a central focus for a larger area.

B

1. **BRT (Bus Rapid Transit)** – Innovative transit service that mimics rail service. BRT is generally thought of as a fixed guide-way transit concept that operates in an exclusive right of way and loads passengers at stations that are similar to rail stations. The people mover between concourses at Hartsfield-Jackson Airport is an early example of the BRT concept.

C

1. **Clean Air Act Amendments of 1990 (CAAA)** – Federal legislation that establishes acceptable levels of certain criteria pollutants. Regional transportation plans and transportation improvement programs must demonstrate conformity to the air quality attainment plan that serves as a blueprint outlining how a region will demonstrate attainment of the air quality standards by a particular year.

2. **Community Improvement District (CID)** – A self-taxing district, established by the appropriate local government but usually managed by a private board, which generates revenue to implement a variety of projects and programs. Roadway improvements and shuttle services are generally the emphasis of CIDs.

3. **Concept 3** – The Atlanta region's long-range transit vision, developed in 2008 by the Transit Planning Board (TPB).

4. **Conformity** – A process in which transportation plans and spending programs (i.e. the RTP or TIP) are reviewed to ensure that they are consistent with federal clean air requirements and contribute to attainment of air quality standards.

5. **Congestion Management System** – A systematic process for managing congestion by providing information on transportation system performance and finds alternative ways to alleviate congestion and maximize the efficiency of the transportation system.

E

1. **Express Bus** – Is a bus service that is intended to operate in general purpose travel lanes with a limited number of stops and generally at a higher rate of speed than a local bus route.

F

1. **Facility** – The means by which a transportation mode is provided. For example, sidewalks are a facility serving the walking mode, a roadway is a facility serving the driving mode and a heavy rail line is a facility serving the transit mode.

2. **Fast Forward** – Introduced in April 2004 by Governor Perdue, Fast Forward was a comprehensive 6-year, $15.5 billion transportation program designed to relieve congestion and spur economic growth through the acceleration of existing projects. The program was funded

using a blend of Grant Anticipation Revenue Vehicle (GARVEE) bonds, Guaranteed Revenue Bonds (GRB), and General Obligation (GO) bonds as well as Federal funds in GDOT's regular program.

3. **FHWA (Federal Highway Administration)** – FHWA is a division of the US Department of Transportation that specializes in highway transportation. The agency oversees federal funds used for constructing and maintaining the National Highway System (primarily Interstate Highways, U.S. Routes, and most State Routes).

4. **FTA (Federal Transit Administration)** – FTA is an agency within the U.S. Department of Transportation. It provides financial assistance to develop new transit systems and improve, maintain, and operate existing systems as well as provide technical assistance to public transit systems.

5. **First and Last Mile** – This concept places additional emphasis on the beginning and end of a trip in order to highlight network deficiencies. In the case of a rail transit commuter, it may mean needing sidewalks to arrive at the transit station from their home and then needing a circulator bus to take them from the station to their job. In this example, the first and last mile connectivity provided by sidewalks from home to transit and the circulator bus from transit to employment provide the means of allowing the commuter to have a choice in the mode of transportation taken, as having a nearby rail station may provide little benefit if there is no way to arrive to or from the station.

G

1. **General Purpose Lanes** – Travel lanes which are generally available to any user. They represent the antithesis of High Occupancy Toll (HOT) and High Occupancy Vehicle (HOV) lanes.

2. **Governor's Road Improvement Program (GRIP)** – GRIP was initiated in 1989 by a resolution of the state legislature and the Governor to connect 95 percent of our state's cities (with a population of 2,500 or more) to the Interstate System. GRIP will ensure that 98 percent of all areas within the state will be within 20 miles of a four-lane road.

H

1. **Heavy Rail** – A passenger transit service which utilizes separate right-of-way rail lines either below or above ground, such as MARTA's rail system. The term 'heavy' refers to the number of passengers the trains can carry, and not the weight. Heavy rail trains typically carry more passengers than light rail but fewer than commuter rail.

2. **High Occupancy Toll Lanes (HOT)** – Lanes generally used by multi-occupant vehicles such as buses, carpools, vanpools or vehicles with three or more occupants, but made available to single-occupant vehicles for a fee.

3. **High Occupancy Vehicle Lanes (HOV)** – Lanes dedicated for exclusive use by multi-occupant vehicles such as cars with two or more occupants, buses, carpools and vanpools. In Georgia, it is legal for motorcycles and alternatively fueled vehicles (such as electric cars) to use HOV lanes.

4. **Highway Emergency Roadway Operators (HERO)** – A key component of GDOT's incident management program. Hero truck units respond quickly to incidents and clear roadways so that normal traffic flow may be restored.

I

1. **Intelligent Transportation Systems (ITS)** – A system which encompasses a broad range of communications-based information and electronics technologies. When integrated into the transportation system's infrastructure, and in vehicles themselves, these technologies relieve congestion, improve safety, and enhance productivity.

2. **Infrastructure** – The basic facilities such as roads, water and sewer lines, schools, power plants and communication systems on which the continuance and growth of a community depends.

3. **Intermodal** – Places where interconnectivity exists between various types of transportation. These locations may provide access to multiple types of transportation and allow you to transfer from one form of transportation to another. For example, an intermodal station may service air, rail, road, and waterway transportation.

4. **IT³ (Investing in Tomorrow's Transportation Today)** – The name given to Georgia's effort to bring a results-oriented, strategic orientation to transportation planning and implementation. IT³ supports the work of the Georgia Department of Transportation and Metropolitan Planning Organizations throughout Georgia.

L

1. **Light Rail** – A passenger transit service which generally operates within a city and its suburbs. The term 'light' refers to the number of passengers the trains can carry, and not the weight. Light rail trains typically carry fewer passengers than heavy rail and commuter rail. They don't share tracks with commuter rail or freight trains, but sometimes share right-of-way with automobiles. Because of their design, light rail systems typically operate at lower speeds and feature closely spaced stops.

M

1. **Managed Lanes** – Travel lanes which are regulated by vehicle eligibility (number of occupants or vehicle type), pricing and/or access control. This would include High Occupancy Vehicle and High Occupancy Toll lanes.

2. **Metropolitan Planning Organization (MPO)** – A federally required planning body responsible for transportation planning and project selection in its region. The governor designates an MPO in every urbanized area with a population of 50,000 or more people. The MPO is responsible for developing the RTP and TIP in its jurisdiction.

3. **Mixed-Use Development** – The planning practice of allowing more than one type of use in a building or set of buildings. This can mean several different combinations of residential, commercial, industrial, office, institutional, or other land uses.

N

1. **Nonattainment Area** – An urbanized area which does not meet federal air quality standards defined in the Clean Air Act.

2. **Non-Exempt Projects** – Projects which have an effect on the air quality conformity determination of an area. An example of a non-exempt project would include the addition of travel lanes to a roadway or the extension of a rail line to a newly served station.

P

1. **Performance Measures** – Indicators of how well the transportation system is performing with regard to such things as average speed, reliability of travel, and accident rates. The data that is gathered is used as feedback in the decision-making process.

R

1. **Regional Transit Committee** – In January 2010, the Regional Transit Committee (formerly the Transit Planning Board and the Transit Implementation Board) became housed at the ARC as a transportation committee where it continues to focus on regional transit system planning, funding and governance.

2. **Reliable Trip** – One that utilizes HOT lanes (via automobile or express bus/BRT) or rail transit for at least part of the trip.

S

1. **Single-Occupant Vehicle (SOV)** – A private vehicle, such as an automobile, SUV or light truck which contains only the driver.

2. **Smart Growth** – Economically viable and environmentally sustainable development that stresses balanced, inclusive community planning.

3. **Stakeholder** – Individuals and organizations involved in or affected by the transportation planning process. Can include federal/state/local officials, MPOs, transit operators, freight companies, shippers, and the general public.

4. **State Transportation Improvement Program (STIP)** - A staged, multi-year, statewide, intermodal program of transportation projects, consistent with the statewide transportation plan and planning processes as well as metropolitan plans, TIPs, and processes.

5. **Sustainable Development** – Development that maintains or enhances economic opportunity and community well-being while protecting and restoring the natural environment upon which people and economies depend. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.

T

1. **Transit Circulator** – A bus or other vehicle on a route designed to move people within an activity center. It can take on a number of forms, such as shuttle bus, monorail, trolley or other mode of transportation. It is intended to eliminate the need for the use of a car within an activity center.

2. **Transit Planning Board / Transit Implementation Board –** The Transit Planning Board (TPB) was formed through a regional partnership among multiple levels of government to assist in the development of a seamless, integrated transit plan (Concept 3) for the Atlanta Region. Upon completion of Concept 3, the TPB turned a keen eye toward implementation of the regional vision. As part of this process, the entity became the Transit Implementation Board. Please see Regional Transit Committee.

3. **Transportation Improvement Program (TIP)** – The first three to five years of a Regional Transportation Plan. Must include specific funding for the projects as well as the project schedule from preliminary engineering to construction.

4. **Transportation Management Association (TMA)** – Organizations that address the transportation needs of a particular service area. TMAs are often started as public-private partnerships in response to business concerns with mobility or accessibility. TMAs may provide vanpool or carpool formation, transit discounts, bicycle and pedestrian programs or shuttle services.

5. **Travel Demand Management (TDM)** – Low cost ways to reduce demand by automobiles on the transportation system, such as programs to promote telecommuting, flextime and ridesharing.

V

1. **Vehicle Miles Traveled (VMT)** – A measurement of the total miles traveled by all vehicles in the area for a specified time period.