

2009 ASCE Georgia Infrastructure Report Card



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Executive Summary

Maintenance and improvement of Georgia's infrastructure is vital to our economy, safety, environment and quality of life. Our goal is that broadened awareness and discussion of the issues raised in this report will increase understanding of the current and future infrastructure needs of Georgia, prompting decision makers in our communities and the state Legislature to formulate policies and provide the necessary funding to address Georgia's infrastructure needs.

With new grades for the first time since 2003, Georgia's infrastructure has shown very little improvement and once again received a cumulative grade of C. The Georgia Section of the American Society of Civil Engineers (ASCE) assessed the same 11 infrastructure categories as 2003: wastewater, stormwater, drinking water, energy, dams, school facilities, transit, bridges, airports and solid waste. One new category was added this year, Parks. Some areas have seen important improvements, including wastewater, school facilities, airports and solid waste. In wastewater, the city of Atlanta alone has invested more than one billion dollars since 2003 in improving its sewers. Progress has also been made in the regional and state-wide planning of water, wastewater and stormwater with the development of the Georgia Comprehensive State-wide Water Management Plan. However, continued state funding will be critical for the successful implementation of the plan which includes the development of regional water conservation and development plans.

Funding for transit, roads and bridges is still woefully inadequate while our population and vehicle congestion continues to grow at record pace. Georgia has also significantly underfunded the Safe Dams Program. The large number of deficient high-hazard dams and lack of staff to perform dam failure analyses puts life and property at risk.

Considerable efforts have been made since 2003, but Georgia's infrastructure still has a long way to go. A strong, sustainable infrastructure is key to an economically prosperous Georgia. Some infrastructure, such as bridges and buildings, is observable, while much of our infrastructure, such as water and wastewater pipe systems, is underground and not easily assessed or maintained. Infrastructure failure would significantly affect quality of life. Georgia residents and policy makers must unite to address the problems and issues posed by the current and future state of our infrastructure and respond with dedication and measurable results. If we choose to ignore our infrastructure, we face significant degradation of basic public services, our quality of life and Georgia's ability to remain competitive in attracting new businesses.

The 2009 Georgia Infrastructure Report Card is not intended to be a commentary on, nor an evaluation of, the performance of any particular government department, agency or individuals of these groups. In fact, our research found that most agencies have made remarkable progress in fulfilling their ever-expanding responsibilities despite being understaffed and underfunded.

A challenge in producing the Georgia Infrastructure Report Card was to maintain focus on statewide issues and avoid being overly influenced by local needs, especially in the metro Atlanta area. Although in many categories more data were available for the metro Atlanta area, significant efforts were made to make a statewide analysis.

The Georgia Section of ASCE represents more than 3,000 civil engineering professionals who live and work in Georgia. On behalf of engineers dedicated to problem solving and creating a healthy environment and better quality of life for their community, the Georgia Section presents this document to the residents and policymakers of Georgia. At the end of the day, we must ask ourselves if the grade is acceptable. We believe Georgia should aspire to be "Hope Scholars" with a B average.

If we delay action and fail to address the state's infrastructure problem, we are going to experience a significant degradation of our quality of life.

Grading Process Overview

The 2009 Georgia Infrastructure Report Card was modeled after the national ASCE Report Card for America's Infrastructure. A committee of more than 25 volunteer practicing civil engineers was assembled to collect, review and evaluate data, and develop grades and recommendations. Twelve major areas of infrastructure were chosen for evaluation. Eleven of these areas were evaluated in the 2003 Report Card on Georgia's Infrastructure. In most cases, existing data from federal, state and local agencies and organizations was compiled by the fact sheet authors. In some cases, new data was collected from phone conversations with experts in the field.

The 2009 grading criteria differs slightly from that used in 2003. In 2003, the infrastructure was rated on the basis of condition and performance, capacity versus need and funding versus need. Since that time, the grading methodology used by ASCE National has been refined. The fundamental components evaluated this year were condition, capacity, operation and maintenance, funding, future need, public safety and, where possible, resilience. Resilience is the ability to prevent or protect against significant multi-hazard threats and incidents and the ability to quickly recover critical services.

For each infrastructure category, each of the grading criteria were assigned a weighting factor. In most categories, more weight was placed on condition, capacity, funding and future needs because these are core criteria and better data were usually available for evaluation in these areas. The data were evaluated against objective grading criteria and a grade was assigned. Grades were assigned as follows:

A = 90-100%

B = 80-89%

C = 70-79%

D = 51-69%

F = 50% or lower

The fact sheet for each infrastructure category was peer reviewed by a group of technical experts not involved with their initial preparation. They were also reviewed externally by other organizations with experts in the field, other ASCE Sections and ASCE National.



2009 ASCE Georgia Infrastructure Report Card

Wastewater	C
Stormwater	D+
Drinking Water	C+
Energy	B-
Dams	D
School Facilities	C+
Transit	D+
Bridges	C-
Airports	B+
Roads	D+
Solid Waste	C
Parks	D

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Wastewater

 | Report Grade: C

Definition of the Issue

Without adequate and properly maintained wastewater systems, cities cannot serve an increasing population. Inadequately maintained wastewater collection systems, or sewers, can lead to sewage spilling onto the ground or backing up into homes, polluting streams and creating a public health issue. Wastewater treatment plants must be able to handle the quantity of wastewater they receive, as well as properly treat the wastewater, in order to not degrade the water quality of receiving streams.

Wastewater flows in Georgia are expected to increase in proportion to the population. The recent drought has brought additional attention to water resources, leading to a concern that metropolitan areas will need to transfer water from other parts of the state or the Southeast U.S. As a result of ongoing drought conditions, discussions continue among Alabama, Georgia, Florida, South Carolina and Tennessee concerning water quantity and quality issues.

In 2001 the Georgia General Assembly established the Metropolitan North Georgia Water Planning District. Subsequently, the Georgia Water Council and the Georgia General Assembly developed and adopted the Comprehensive State-wide Water Management Plan. The purpose of the plan is to guide Georgia in managing water resources in a sustainable manner to support the state's growing population and economy, to protect public health and natural systems, and to enhance the quality of life for all citizens.

Grade

The Georgia Section of ASCE has assigned wastewater a grade of "C" due to the aging infrastructure, the number of individuals not served by public sewers (26 percent of households in the metro Atlanta area), the significant financial resources required to upgrade wastewater systems, the lack of current funding sources, and the additional capacity required for growth. The final grade was obtained by applying an equal weight to condition, capacity, operation and maintenance, and public safety, with a slightly higher weight applied to funding and future needs. Funding and future need were given a higher weighting because they directly impact the other criteria.

There is currently much uncertainty as to the possibility of federal funding for wastewater in 2009. In addition, many utilities are struggling with reduced revenues due to water conservation as a result of the recent drought. Meanwhile, the future need for properly maintained systems is still large. In recent years Georgia has taken a proactive stance in moving toward planning, advanced treatment and reuse applications.

Since 2003, significant progress in the metro Atlanta area has included construction of new wastewater treatment facilities and decommissioning of less efficient facilities, completion of operational changes at two Georgia Power plants to reduce heat load to the Chattahoochee River, construction of Gwinnett County's F. Wayne Hill water reclamation facility, which will discharge high quality effluent to Lake Lanier, and completion of three combined sewer separation projects in the city of



Manhole repair in the City of Atlanta

Atlanta. The city of Atlanta has also completed Sanitary Sewer Evaluation Survey (SSES) on more than two-thirds of its sewer system since 2001, and is expected to complete surveying the entire 1,500-mile system by 2011. Rehabilitation of Atlanta's sewer has begun and is expected to continue until 2014.

While these improvements are significant, most facilities and maintenance programs only meet the minimum requirements of the Environmental Protection Agency (EPA) and Environmental Protection Division (EPD) of the Georgia Department of Natural Resources. Overall, the state is not exceeding minimum requirements, further contributing to the grade of "C".



Utoy Creek Water Reclamation Facility in the City of Atlanta

Existing sewer facilities are comprised of two main components: the collection system and treatment facilities (wastewater treatment plants). In general, collection systems appear to be in worse condition than wastewater treatment plants (WWTPs), which receive greater scrutiny during the permitting process due to the regulatory focus on meeting water quality standards. In Georgia, wastewater treatment permits are issued by EPD.

Condition/Operation and Maintenance

Wastewater infrastructure throughout the state is aging. While operation and maintenance programs vary by municipality, overall they are consistently inadequate and underfunded. Over the past 10 years several municipalities were issued consent decrees to clean up combined sewer overflow (CSO) and sanitary sewer overflow (SSO) problems. CSOs occur in areas where wastewater and stormwater are collected in the same pipe system. If a pipe becomes crushed, blocked by debris or does not have enough capacity for the flows entering it, a backup out of the pipe system onto the ground can occur. Similarly, sanitary sewer overflows occur on pipe systems that only have sanitary sewer flowing through them.

Most of the funding for infrastructure comes from water and sewer rates. These rates are usually set by a local government that is under political pressure to keep rates low. The consent decrees have forced some municipalities to raise their rates in order to improve the infrastructure. In order to avoid enforcement actions, many municipalities have implemented Capacity, Management, Operations, and Maintenance (CMOM) programs. CMOM programs provide a more efficient approach to controlling SSOs through an increased focus on system planning and should improve maintenance activities in the future.

Capacity

The number of operational wastewater treatment facilities and wastewater collection systems reported in the 1996 Clean Watershed Needs Survey (CWNS) in Georgia were 379 and 486, respectively. According to the 2004 CWNS there were 350 treatment facilities and 404 collection systems operational in Georgia in 2004. The decreased number of facilities in 2004 may be due to a consolidation of facilities or a lack of reporting. Of the treatment facilities, 203 provided secondary treatment, 96 provide greater than secondary treatment and 41 do not discharge to waterways.

Biochemical Oxygen Demand (BOD) measures how fast biological organisms use up oxygen in a body of water and, therefore, is a measure of the effectiveness of a wastewater treatment facility. Secondary treatment uses physical, chemical and biological processes to treat wastewater before it is discharged into a water body. Tertiary or advanced treatment adds another treatment stage to increase water quality even more. Of the permitted capacity in the Metropolitan North Georgia Water Planning District, 91 percent is advanced treatment to less than 20 mg/L BOD. Over 2.8 million people are served by greater than secondary treatment.

In the metro Atlanta area, there are 313 wastewater treatment facilities with a permitted discharge of 667 million gallons per day (MGD). This represents an 18 percent increase in permitted discharge from 2003 when there were 233 facilities with a permitted discharge of 565 MGD. Of these facilities, 99 are publicly owned, with a total capacity of 660 MGD, treating 99 percent of the wastewater. This is based on facilities in operation at the end of 2006. In the metro Atlanta area, approximately 345 MGD of additional treatment capacity will be needed by 2035, bringing total treatment capacity to 1,012 MGD, due to an estimated population increase from 4.0 million in 2007 to 7.74 million in 2035.

Economic benefits and higher levels of treatment can be achieved through the consolidation of WWTPs by expanding current plants and closing smaller ones. Larger facilities can streamline operations to provide higher levels of treatment at lower cost.

Septic systems have been proven to be an environmentally sound method for onsite wastewater treatment when properly designed, sited, constructed, and maintained. When they are not, they can become a source of groundwater and surface water contamination, as well as a public health hazard. The number of septic systems in Georgia has not been accurately estimated by local municipalities. In 2005 the Metro Planning District issued a Septic System Status and Issues Working Paper which estimated that there are more than 525,000 septic systems within the 16-county metro area with over 12,000 systems being added per year. However, most Counties did not have complete records prior to 1998 and most counties do not track when septic systems are taken out of service so this number may not be accurate. It is estimated that highly developed counties, such as DeKalb and Cobb, have less than 10 percent of housing units using septic systems. Developing counties have between 25 percent and 75 percent of housing units using septic systems. Septic systems are expected to be a permanent element of wastewater management within the state and therefore, it is important to insure they are installed, operated, and managed properly. Public education is critical in achieving these goals. Plans are now being developed in metropolitan Atlanta to require periodic inspection and maintenance of septic systems.

Funding/Future Need

The 2004 CWNS prepared by the EPA outlined Georgia's reported needs in various categories for the next 20 years (beginning in 2004). The needs represent the capital investment necessary to build wastewater treatment facilities, repair old sewers and build new sewers in order to address a water quality or public health issue. This includes planning, design and construction costs. The EPA has strict documentation criteria required of local governments in order for a need to be included in the survey. Needs that were submitted by local governments, but did not fully meet the documentation criteria were listed as additional needs.

Only \$8 million of these needs were reported for small communities with a population of less than 10,000. According to the CWNS, Georgia's documented needs decreased 10 percent from 2000 to 2004, from \$2.60 billion to \$2.35 billion in 2004 dollars. Additional needs decreased from \$642 million to \$285 million during the same period. In 2004 dollars, the 1996 needs were \$2.46 billion. Therefore, needs were reduced four percent from 1996 to 2004. Since the 2004 CWNS, the city of Atlanta has spent over \$1 billion to reduce CSOs as a result of Atlanta's consent decree. If the CSO needs are removed, the CWNS only shows Georgia needing \$1.33 billion. Clearly the CWNS underestimates the true need. This is likely due to stringent

Infrastructure Type	2004		
	Georgia Needs (\$ Million)	Additional Needs (\$ Million)	Total (\$ Million)
Secondary Wastewater Treatment	68	17	85
Advanced Wastewater Treatment	110	239	349
I/I Correction	1,107	2	1,109
Replacement/Rehabilitation of Sewers	23	0	23
New Collector Sewers	3	1	4
New Interceptor Sewers	18	26	44
Combined Sewer Overflow Correction	1,022	0	1,022
Total	2,351	285	2,636

documentation requirements and a lack of reporting by local governments. A survey conducted by the Georgia Municipal Association (GMA) in June 2008 found that cities in Georgia are projected to need over \$3 billion for capital improvements for water, wastewater, stormwater and drainage over just the next 5 years. This does not include capital improvements in the city of Atlanta, but does include other cities in the metro Atlanta area which make up nearly \$1 billion of the total.

Replacement of aging wastewater infrastructure represents the largest infrastructure expense facing the state's municipalities. The Metro Planning District Long-Term Wastewater Management Plan 2030 states that investment in wastewater collection and treatment systems in the metro Atlanta area alone is expected to reach \$22 billion, with an additional \$18 billion needed for operation and maintenance.

The city of Atlanta is expected to spend \$3.8 billion on its sewer improvement program between 2000 and 2014. Approximately half has been spent as of 2008. However, significant funding shortfalls may force the city to delay its sewer rehabilitation program. Due to increased conservation during the drought, as of August 2008 many utilities in the metropolitan Atlanta area reported a 20 percent decrease in revenues from the previous year. This has caused many utilities to extend their capital improvement program into the future, doing less in the short term, to compensate for the revenue reduction. This postponement can lead to increased infrastructure needs and costs in the future. Some utilities have also increased their rates due to the reduction in water use.

Public Safety

Regulatory agencies have determined that CSOs and SSOs are a direct threat to public health and safety since they discharge raw sewage onto the ground or into homes. Reducing and eliminating these overflows accounted for a significant portion of the needs indicated in the 2004 CWNS.

The city of Atlanta has spent approximately \$1 billion to separate combined sewer areas to satisfy a consent decree that mandated completion by November 2007. An additional \$1 billion will be necessary by 2014 to eliminate SSOs in the separated areas of the sewer system.

There are 191 wastewater plants with a capacity of more than 1 MGD in Georgia—36 are owned by industrial facilities and 155 are owned by municipalities. In the 12-month period ending in June 2008, 30 of the 191 plants failed to comply with their permit conditions in at least in one quarter of the year, for a 84.3 percent annual compliance rate.

Recommendations

- » **Management of Wastewater Infrastructure:** It is recommended that municipalities consider future WWTP consolidation, return reclaimed water to source basins, upgrade WWTPs to protect water quality and incorporate reuse features, offset direct withdrawals for potable water with alternatives such as non-potable irrigation, and enhance reliability of plants and pump stations.
- » **Wastewater Collection System Inspection and Maintenance Programs:** Municipalities should ensure availability of adequate collection and conveyance capacity, proper operation of all sewer system components, and reduction or elimination of wastewater overflows, spills and bypasses.
- » **Septic System Inspection and Maintenance Programs:** It is important to improve site selection, design and construction requirements; improve and enforce maintenance requirements; establish a decentralized management system; and manage private treatment systems, especially septic systems.
- » **Local Planning:** Planning should address short- and long-term issues, consumptive uses and interbasin transfer. Local management plans need to be coordinated with statewide plans.
- » **Regulatory:** Georgia EPD is expected to modify existing permits and future permits with more stringent requirements. EPD will also need to increase the number of maintenance staff and inspectors and the training they receive.
- » **Funding:** To improve system performance, municipalities need to improve their planning efforts for obtaining timely funding from traditional sources of financed loans and user revenue. Increased federal funding could also be obtained through a unified appeal, illustrating the capacity for collaboration among local, regional and state interests. Asset management programs should be implemented at every level.

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Photos courtesy of Clean Water Atlanta.

Stormwater

 | Report Grade: D+

Definition of the Issue

The impact of stormwater was evaluated due to its importance in providing water supply, recreation and habitats for fish and wildlife, and its impact on economic prosperity and quality of life. A comprehensive overview of stormwater must include both water quality and water quantity due to their impacts on natural systems. The biggest factor affecting both water quality and flow regime remains the rate and degree of urbanization.

Georgia is one of the fastest growing states in the country and relies more heavily on its water resources to support its economic prosperity than many other states.



Failing Pipe in Troup County

Grade

The Georgia Section of ASCE assigned stormwater a grade of “D+” in 2003 to stormwater infrastructure mostly because it lacked asset management and maintenance programs.

The 2009 grade is the result of off-setting factors. There are positive factors such as the new statewide approach to water resources through watershed management, which encourages more efficient and effective application of solutions and intergovernmental cooperation. Also, more than 65 percent of Georgia communities have adopted floodplain management regulations. Unfortunately, funding for stormwater programs remains inadequate. While many communities are beginning to inventory and assess stormwater infrastructure, most of Georgia’s communities are still taking a reactive approach to maintaining and upgrading stormwater infrastructure and meeting applicable water quality requirements.

Water Quality

Water quality in Georgia is at continued risk as the state’s population continues to increase. Sources of pollution for streams and rivers include point sources, such as a pipe from a plant, and nonpoint sources, where it is difficult to pinpoint where the pollution came from, such as roads, driveways and yards. Development and everyday activities in residential, commercial and rural areas have increased the potential for nonpoint source pollution. Now that point source treatment technologies are available that produce discharges from wastewater treatment plants at a level of quality higher than some streams, attention has turned to nonpoint source pollution.

Currently, 41 percent of the 12,930 river miles, 62 percent of the 341,777 acres of lakes and 60 percent of 854 square miles of estuaries assessed fully meet water quality standards. Stream segments in Georgia equaling approximately 7,585 miles (including 1,100 miles of streams in the metro Atlanta area) are listed as impaired and do not meet their designated uses. Stormwater runoff from urban areas and nonpoint sources account for 99 percent of the violations.

Flood Protection

Flooding is the most common natural disaster in Georgia and in the country. Urban development causes changes in hydrology, stream morphology and encroachment on the floodplain. In 1994, approximately 350 counties and municipalities participated in the National Flood Insurance Program (NFIP). Today, more than 470 communities have joined the NFIP, a 65 percent participation level which makes 97 percent of Georgia residents eligible to purchase flood insurance. The Federal Emergency Management Agency (FEMA) flood maps are one of the essential tools for flood mitigation and the Georgia Department of Natural Resources (DNR) is currently developing digital flood maps for all of the state's 159 counties, including municipalities throughout the state. This will improve management and support of all regulatory, engineering and mapping activities in the state and provide more accurate and complete flood hazard information.

Infrastructure

Stormwater infrastructure consists of conveyance components such as pipes and streams, storage components such as lakes, ponds and wetlands, and features such as catch basins, junctions and weirs. "Green" infrastructure such as buffers, riparian corridors and filter strips are becoming more accepted as part of the stormwater system. Stormwater infrastructure conveys not only stormwater runoff but pollutants (such as sediment) that can reduce the capacity of conveyance systems and storage facilities. Sediment is the largest pollutant in Georgia's streams and fecal coliform, a commonly found pathogen in streams, is the most problematic.



New Stormwater Handling Facility in Troup County

Aging systems will continue to be a problem leading to increased repair costs and disruption to residents and businesses as system components fail. The capacity of some systems no longer meets the demand in growing urban areas. Local governments need to assess which systems need increased capacity versus systems that need maintenance. Due to the National Pollutant Discharge Elimination System (NPDES) and Municipal Separate Storm Sewer System (MS4) permitting program, many local governments are creating an inventory of their stormwater infrastructure and some are even assessing its condition as part of a proactive maintenance program.

A fully functioning infrastructure system is essential to safe operation for the public. Maintenance of infrastructure should include regular inspections and, if necessary, removal of accumulated pollutants, especially sediment. Enforcement is limited due to a lack of funds and personnel and is complicated by factors such as transfers of property ownership and ongoing maintenance contracts.

Effective Regional, State and Federal Regulations

The Environmental Protection Division (EPD) of the Georgia DNR recently produced the Comprehensive State-wide Water Management Plan as a result of legislation passed by the Georgia General Assembly in 2004. The plan focus is on total water management and more specifically on water quality and supply. Through this effort, EPD will determine optimum

water management strategies including assimilative capacity of streams, support of historic flow regimes and improved water quality monitoring and reporting formats. There is increasing recognition that water quality cannot be fully addressed without consideration of flow regime.

Approximately 1,400 Total Maximum Daily Loads (TMDLs)—the amount of pollutants a water body can assimilate before becoming impaired or unable to support aquatic life—have been established by Georgia EPD for many of the major streams.

EPA has recognized the impact of stormwater and applied NPDES and MS4 regulations to stormwater. These regulations require municipalities to develop a stormwater quality management plan that is based on a set of best management practices (BMP). NPDES is mandated through the Clean Water Act and focuses on water quality. EPD requires the adoption of stormwater design standards similar to the Georgia Stormwater Management Manual (GSMM). EPD's audit process on the NPDES and MS4 programs ensures compliance and progress. Without strong urging through compliance, progress toward water quality improvement will not happen.

The Erosion and Sedimentation Control Act of 1975 was amended in 2003 and mandates education and training for those involved in land disturbance activities. Local governments, construction contractors and even the Georgia Department of Transportation must comply with these regulations.

Best Management Practices

Since nonpoint source pollution is tied to land use, EPD is encouraging the use of land development practices such as “green” infrastructure and low impact development, as well as pollution prevention and BMPs. Structural BMPs now go beyond the typical dry detention pond. They include innovative and multi-use systems that can be applied to regional areas. Non-structural BMPs include special zoning requirements, ordinances (such as erosion and sediment control ordinances), maintenance activities (such as storm drain cleaning and street sweeping) and education and outreach programs

Ordinances such as the model ordinances established by the Metropolitan North Georgia Water Planning District have been an excellent start in laying a foundation to change the behavior and management of water resources. Many cities and counties in Georgia have also adopted stormwater infrastructure design standards.

Local governments should coordinate infrastructure system planning and even consider regional or shared solutions. The implementation of NPDES stormwater permitting, TMDL plans, source water protection and watershed improvement strategies relies on coordinated efforts between neighboring jurisdictions.

Funding Sources

Currently, the main funding source in Georgia for stormwater management is property taxes. The GSMM identifies a number of alternative funding methods for stormwater management programs, including general obligation bonds, development impact fees, formation of special assessments or tax districts, and the creation of user fees through stormwater utilities.

A stormwater utility, like a sewer or water supply utility, is user oriented with costs allocated based on services received. Currently, Georgia has approximately 35 stormwater utilities and more than 10 others in the process of being established. As a comparison, there are more than 100 stormwater utilities in Florida and more than 500 throughout the U.S. Stormwater utility fees can be used for activities related to water quality and quantity and their impacts on natural resources.

Georgia EPD is encouraging local governments to establish stormwater utilities to fund the federal mandated regulations. Funding assistance is available from the Georgia Environmental Facilities Authority (GEFA) and Georgia EPD for stormwater

quality structural and non-structural BMPs. GEFA provides grants and low interest and state revolving loans. Georgia EPD provides Section 319(h) grant funds of approximately \$4.5 million annually to local governments for projects that address water quality.

Funding Needs

Twenty-eight states and the District of Columbia collectively reported \$9.0 billion in stormwater management program needs for developing and implementing NPDES and MS4 requirements. The Georgia Municipal Association reports that water, sewer and stormwater funding needs for the next five years will reach over \$3 billion.

There is a shortage of available funding for municipalities to develop watershed protection and stormwater management programs. Municipalities need to be creative in obtaining funds through financed loans and user revenue fees such as stormwater utility fees. The Erosion and Sedimentation Control Act of 1975 also provides a potential funding mechanism through usage fees.

Recommendations

Given Georgia's robust population growth, changes in land use and natural hydrology from increased development are adversely impacting stormwater runoff. Solutions should focus on addressing future requirements.

- » **Local Planning and Policies:** Planning should focus on resource protection and reduction of impervious surface as local agencies coordinate with statewide plans and organizations.
- » **Stormwater Inventory:** Municipalities should inventory their stormwater system to gather specific location and structural dimensions and condition information on all stormwater conveyance elements. This will allow for the creation of stormwater management plans, comprehensive master plans, system maps and watershed models.
- » **Inspection and Maintenance:** Maintenance of BMPs should include regular inspections and, if necessary, removal of accumulated pollutants. The goal is optimization of the system to function at or near its original specifications. Communities need to regularly inspect and maintain their stormwater infrastructure. Stable funding sources are needed to provide for effective maintenance programs.
- » **Education:** State and local governments should increase efforts to inform people of the impacts of individual behavior on water quality and flow regime as well as increase awareness of stormwater infrastructure and its direct connection to stream, river and lakes. The Clean Water Campaign, managed by the Atlanta Regional Commission, serves as a model of a collaborative education effort.
- » **Watershed Restoration:** Watershed protection can be obtained through BMPs and improved land use strategies. Restoration on a watershed basis is critical since water quality and flow regime are intertwined. Land use management that includes greenspace preservation, alternative development patterns and other innovative land use practices that improve stormwater management should be encouraged.
- » **Technology and Information Sharing:** Technology use has facilitated progress in stormwater management. Global Positioning Satellite (GPS) technology has made mapping infrastructure easier and more accurate. Geographical Information Systems (GIS) are increasingly used as analytical tools for integrating data, impacts and solutions to water quality, quantity and natural systems challenges. BMPs should be measured for performance of water quality objectives. Monitoring will document background conditions and trends from development and BMPs.

- » **Regulatory:** Georgia EPD will likely establish more stringent requirements to address specific pollution problems through TMDL strategies aimed at watershed protection. Enabling statewide legislation for stormwater authorities could lead to stormwater utilities addressing inter-jurisdictional issues because of watersheds that cross county and city boundaries.

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Drinking Water | Report Grade: C+

Definition of the Issue

The average person uses 150 gallons of water per day for uses such as drinking, cooking and bathing. According to the U.S. Census Bureau, the population of Georgia was 6.5 million in 1990. By 2000, the population increased to 8.2 million, and by 2007 it was estimated to be 9.5 million. Georgia's population is forecasted to reach 12 million by 2030. As the Georgia population grows, so does the demand for safe drinking water. This increasing demand for drinking water has been exacerbated by recent droughts. For many parts of the state, the 2007 - 2008 drought is the most severe on record and follows closely on the heels of the 1998 - 2002 drought. In response to this scarcity of water, concerns have heightened among Georgia and its neighboring states and among regions of the state, that local water supplies will be inadequate due water use by others.

The need for an adequate supply of drinking water is one of the major considerations that influenced the actions of the Georgia General Assembly to establish the Metropolitan North Georgia Water Planning District in 2001. This District is now one of 11 districts in Georgia. Recently, the Georgia Environmental Protection Division (EPD), Georgia Water Council and the Georgia General Assembly developed and adopted the Comprehensive State-wide Water Management Plan.

Grade

The 2009 grade assigned to drinking water is a "C+". In 2003, Georgia drinking water infrastructure received a grade of "B-" based on the large percentage of the population receiving potable drinking water, the planning for additional capacity required by population growth and the expectation that future needs would be addressed by the state water management plan. Since then, there have been both positive and negative changes. There has been an improvement in the quality of the water as more treatment plants implement the latest treatment technologies. In addition, Georgia adopted the Comprehensive State-wide Water Management Plan. On the other hand, water shortages were severe enough during 2007-2008 that state mandated restrictions were necessary. Georgia residents responded to the drought and conserved water. This led many municipalities to see over 20 percent reductions in water revenues. However, this reduction in water use and revenues did not reduce the capital needs for municipalities to maintain and upgrade their water distribution systems.

Addressing infrastructure issues requires significant financial resources to both upgrade aging infrastructure and meet future needs. The cost of these improvements is estimated to be in the billions of dollars. However, the economies of the nation, and Georgia, have declined to the extent that the Governor recently eliminated funding for new reservoirs as part of across-the-board cutbacks to offset the shortfall between the state budget and incoming revenues. The economy is not expected to significantly improve in the short term, thus leaving future increases in funding of water projects in doubt. According to the U.S. Census Bureau, the population of Georgia is expected to increase 28 percent by 2030. Capacity must stay abreast of population growth if the well-being of the state and its citizens is to be protected.

By applying an equal weight to the condition of the existing drinking water infrastructure, the need for capacity increases and the associated funding requirements, the final grade of "C+" was assigned.

Existing Conditions



Water Tanks in Rossville, Georgia

average, is high compared to some other states, the watersheds of north Georgia rivers are relatively small because the origins of these rivers are along the eastern continental divide, which bisects the state and the metro Atlanta area. Thus, in the northern half of the state a critical infrastructure component is the water supply reservoirs that serve to augment stream flow during periods of scarce rainfall.

Private wells provide water to approximately 15 percent of Georgia's citizens. In south Georgia, groundwater is the principal source of drinking water. The underlying geologic formations serve as large storage reservoirs. Although some areas of south Georgia have experienced falling water tables during recent years, the drinking water supply has not been as restricted as that in north Georgia. Nevertheless, groundwater usage has been restricted in some areas of southern Georgia. These restrictions have included limitations on both the withdrawal from existing groundwater wells and the construction of new wells.

Drinking Water Treatment Plants: In 2003 Georgia had 1,678 public community water systems serving a population of 7,119,376 according to the U.S. Environmental Protection Agency (EPA). In 2007, the number of systems had increased to 1,731 serving a population of 7,879,320, an increase of more than 10 percent in the population served. However, the number of systems reporting health-based violations decreased from 85 (five percent of the total number of systems) in 2003 to 75 systems (4.3 percent) in 2007. Thus, there was an apparent improvement in the quality of the water served between 2003 and 2007.

Drinking Water Distribution Systems: In 2005 the EPA reported to Congress that the total national need for drinking water investment was \$276.8 billion over the next 20 years. The largest category of need, accounting for nearly two-thirds of the total, was transmission and distribution systems.

The transmission and distribution category includes the installation and rehabilitation of raw and finished water transmission and distribution mains, and replacement of lead service lines, flushing hydrants, valves, meters and backflow prevention devices. It is reasonable to expect that needs in Georgia for new distribution systems and maintenance of existing systems

Drinking Water Supplies: The water shortage in Georgia has been severe enough during 2007-2008 that state-mandated water use restrictions have been put in place and increased conservation of water required. There are several infrastructure components needed to supply drinking water including reservoirs, water treatment plants, pumping systems, and pipelines. However, all drinking water starts at a source, which could be surface water, such as a lake or river, or groundwater, usually from a well.

In the northern half of the state, surface water is the principal source of drinking water due to the relatively small quantities of groundwater that can be obtained from the underlying crystalline rock geology. Although rainfall in Georgia, at over 50 inches per year on



The water supply in Lake Lanier has been significantly impacted by the recent drought

are not generally different from the country as a whole. This expectation is strengthened by the projections of the Metropolitan North Georgia Water Planning District. The District's projected costs for water infrastructure needs through 2030 is \$27 billion, \$20 billion of which resulted from the need for new distribution systems and operation and maintenance of existing distribution systems.

Plans to provide water system interconnections for increased reliability and security, as well as to support projected growth in water demand, are included in the District's projections. The majority of water systems in the District will need additional connections with adjacent systems to achieve the needed reliability.

Capacity

While the largest funding need is for the distributions systems, water supply is a critical issue that could affect population growth. A number of north Georgia water systems have experienced water yield constraints and water supply challenges during the 2007-2008 drought. Although these systems have been stressed to provide adequate water during the drought, conservation and water sharing efforts in the state and among communities and systems resulted in adequate water to meet essential demands. However, this experience has strongly reinforced the need to improve and expand the current infrastructure.

In addition to supply needs resulting from the drought, additional capacity is required to meet future population growth. The District estimated that the existing water supply from lakes and rivers in the metro Atlanta area is 993 million gallons per day (MGD). The water needs will exceed this supply by 2013 based on current trends. With the construction and operation of additional planned reservoirs, the water supply can be extended until 2018, and with reallocation of the water held in the U.S. Army Corp of Engineers reservoirs (Lanier and Allatoona) the water supply can be extended until 2025. Additionally, the supply can be extended even further if recommended conservation practices are adopted.

Funding

Most of the funding for drinking water infrastructure comes from water and sewer rates. These rates are usually set by a local government that is under political pressure to keep rates low. Drinking water infrastructure needs include the costs of permitting, mitigation, land acquisition, construction, maintenance and operating costs. According to the Georgia Environmental Facilities Authority (GEFA), contemporary experience in Georgia indicates a cost ranging from approximately \$4 to \$10 million per MGD of water supply provided by the construction of new reservoirs and reservoir expansion.

Historically, Georgia communities have used a variety of financing mechanisms to secure funding necessary for water supply projects. These mechanisms include revenue bonds, general obligation bonds, special purpose local option sales taxes, the revolving loan fund operated by the Georgia Environmental Facilities Authority and, to a lesser degree, receipt of federal grants. In Georgia, water system improvements have predominantly been funded by local initiatives. Loans and bonds are usually paid back with revenues from the local utility fees.

The Georgia Municipal Association (GMA) estimates that approximately half of the state's funding requirements for drinking water infrastructure improvements are for the city of Atlanta and the remaining half represents the needs of the rest of the state.

Future Needs

The projected increase in the population of north Georgia between 2007 and 2030 is approximately 3.8 million. Based on a cost of \$4 to \$10 million per additional MGD, the estimated population increase and a typical water use rate of 150 gallons per capita per day (gpcd), the estimated cost to increase the drinking water supply could range from \$2.3 to \$5.7 billion.

Another estimate of funding needs for water projects is available from the GMA. The GMA polled member cities regarding capital needs for infrastructure. Based on information supplied by 225 towns and cities in Georgia, the GMA projected the funding necessary for water, sewer, stormwater and drainage will be approximately \$4.9 billion over the next five years for all 535 Georgia cities. Although this total includes other water-related needs in addition to the need for drinking water, it is clear that billions of dollars will be needed over the next several years to meet the needs for drinking water in Georgia.

Public Safety and Resilience

A safe drinking water supply is critical for public safety. Systems are required to report health based violations. In 2007, 4.3 percent of water systems reported a health based violation. Under the Bioterrorism Act, each water system that serves a population of over 3,300 must perform an assessment of the vulnerability of its system to a terrorist attack or other intentional acts that are intended to substantially disrupt the ability of the system to provide a safe and reliable drinking water supply. Virtually all water systems in Georgia have complied with the requirement.

Recommendations

- » **Construction of Water Supply Reservoirs:** Reservoir capacity in north Georgia needs to be expanded to ensure future needs are met. This can be accomplished by the construction of new reservoirs and the expansion of existing reservoirs. In most cases, this can be accomplished by local governments with the assistance of GEFA and other state agencies that can provide technical assistance in reservoir planning, permitting and design. The necessary increase in reservoir capacity can be assisted by the development of a comprehensive wetland mitigation strategy for the state.
- » **Management of Drinking Water Infrastructure:** In the future, Georgia municipalities need to consider higher levels of treatment, enhanced system interconnections, implementation of water conservation and reuse plans, and drought and emergency planning. Through asset management programs, water utilities collect accurate data about their assets in order to provide a better understanding of their maintenance, rehabilitation, and replacement needs. Asset management programs need to be implemented for all drinking water systems.
- » **Water Supply Source Protection:** It is necessary to better evaluate water supply sources, provide protection plans and assess needs for higher levels of treatment.
- » **Water Conservation Programs:** Municipalities must establish water conservation programs. The current conservation measures have shown that significant reductions in water demand can be achieved by such measures.
- » **Water System Interconnection:** Construction of interconnections between water systems can increase reliability in times of system failure or drought.
- » **Statewide Planning:** Based on projections for increasing demands on water resources, coordinated water planning is an ongoing need. The Comprehensive State-wide Water Management Plan provides the framework to measure water resources, forecast how much water supply will be needed to support future growth and identify regional solutions to water needs. The state Legislature needs to continue to fund the implementation of the plan.

- » **Regulatory:** The Georgia Environmental Protection Division (EPD) needs to impose more stringent requirements in order to meet water allocation plans at both the regional and state level.
- » **Funding:** In order to make future facility improvements, municipalities need to improve their planning efforts to obtain adequate funding from traditional sources, including ensuring rate structures meet the funding needs. Federal aid could help many municipalities jumpstart their capital improvement programs. However, local water utility rate structures need to be adjusted to encourage water conservation and still provide enough funding for operation, maintenance and capital improvement needs.

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- Photos courtesy of www.creativecommons.org/licenses/by-nc-nd/2.0.

Energy | Report Grade: B-

Definition of the Issue

This fact sheet focuses on the electric utility industry in Georgia and does not include the gasoline or natural gas industries. According to the Energy Information Administration, from September 2007 to September 2008 the average residential user in Georgia paid 10.13 cents per kilowatt-hour (kWh) while the national average was 11.29 cents per kWh. Last year Georgia residential users spent over \$4.3 billion on electricity. About two-thirds of the electricity in Georgia is produced by coal power plants. Although the price per kWh remains below the national average, the region's rates have increased 30 percent during the last few years. Demand reduction could occur due to the higher cost of power to the customer. Rising commodity and labor costs continue to increase new generation costs.



500 KV training exercise in Georgia

The reserve margin is the amount that the electric power generation capacity exceeds the maximum demand. Power generators must provide reserve margin to ensure power supplies are reliable and not interrupted by abnormal weather, plant outages and other adverse events. Currently, a standard of 15 percent has been set for the reserve margin to ensure reliability.

Grade

The cost of electric power for Georgia residents is below the national average. Current power reserves are adequate and Georgia's reserve margin exceeds many areas of the country.

The recent economic downturn could have an impact on electricity demand. The volatility of demand makes long-term planning difficult. Therefore, more dependence could be placed on natural gas plants since these can be built in less than a year. More natural gas plants will put upward pressure on the price of energy.

The reserve margin is a significant factor evaluated as part of the energy grade. The reserve margin standard for many years was 20 percent, which the Georgia Section of ASCE equates to an A, the current standard of 15 percent is a B, 12 percent is a C, and 10 percent is a D.

The ASCE Georgia Section assigned a 2009 grade of B- due primarily to the projections of less than 15 percent reserve margin after mid-2010, the aging energy infrastructure and the impacts of an uncertain economy on demand.



Georgia Power convoy prepares to assist after a hurricane

Condition / Operation and Maintenance

The existing power plants in Georgia are not new and electric utilities are not currently building new plants in the state. Therefore, maintenance of existing plants is critical.

Any minor interruptions to service are generally repaired quickly and even with major events like tornados, hurricanes and ice storms, Georgia's electric utilities work around the clock to restore service to their customers as quickly as possible.

In a December 2004 technical presentation to the ASCE Georgia Section by Georgia Power, they indicated that the company works hard to keep the lights on in Georgia and is able to provide crews and support to neighboring states during disasters to assist with restoration efforts.

Capacity

The Southeastern Region of the North American Energy Reliability Corporation (NERC), which includes the state of Georgia, has projected a reserve margin of 15 percent for electric power through mid-2010, which will tighten to 13.9 percent in 2011 and 11.7 percent in 2012. Only electric power generation existing or under construction is included in the above projections. To be conservative, proposed capacity is excluded. For example, two coal merchant plants are proposed, but construction is uncertain due to environmental opposition and regulatory difficulties. In addition, Southern Company has two new 1100 megawatt (MW) nuclear units at Plant Vogtle near Augusta under early site permit review with approval expected in early 2009. These plants are not currently under construction and the earliest completion is projected for 2016. It is possible that the required reserve margin could be reduced to 12 percent in the future due to increasing transmission interconnections and increased distributed generation.

The electric energy in Georgia is provided by:

- » Georgia Power,
- » Oglethorpe Power, which supplies 39 electric membership cooperatives,
- » Tennessee Valley Authority, which supplies three cooperatives, and

- » the Municipal Electric Authority of Georgia, which supplies 49 communities.

At the beginning of 2008, there was approximately 30,000 MW of electric capacity in Georgia and last year over 100 million megawatt-hours of electricity was produced in the state. The capacity mix for this generation was 61 percent coal, 22 percent nuclear, 1.6 percent hydro and 15.4 percent oil and gas.

Funding and Future Needs

Rising material and labor costs caused new generation capital costs to increase through the summer of 2008. The median estimated cost for a modern gas-fired power plant starting service in 2012 is nearly \$900 per kilowatt. This compares with \$545 per kilowatt for a similar plant starting service in 2008.

Georgians used 16 percent more energy per person in 2004 than they did in 1984. During this 20-year period, Georgia's energy demand has increased by 76 percent compared to a population growth of only 51 percent.

One of the best ways to approach this increasing demand is to promote a statewide plan involving energy conservation. Customers may begin to reduce per capita demand spontaneously as a response to the regional rate increases of 30 percent over the last several years and the current economic downfall in Georgia. As demonstrated by gasoline conservation due to high prices during the summer of 2008, energy conservation may be more feasible than expected. Thus, any conservation plan may only need to reinforce changes in behavior driven by the current economic conditions.

Public Safety and Resilience

As the reserve margin falls below 15 percent, the possibility of unscheduled outages increases. With reserve margins less than 10 percent, blackouts become even more likely. Currently, the Georgia and southeastern grid are more reliable than most states, as evidenced by brownouts and blackouts in California and New York. A major blackout could affect economic development. Some of the important safety devices put in jeopardy when a blackout occurs include medical equipment and traffic signals. Georgia Power and other energy providers in the state should have programs in place to reduce customer endangerment due to dependency on electrical power for monitoring, breathing and other life maintenance equipment.

The retirement of the baby-boomer generation could create gaps of expertise in the power workforce, thus potentially delaying repairs. The industry has taken steps to alleviate this potential problem through recruitment and training.

Recommendations

- » **Reserve Margin:** Maintaining a reserve of 15 percent or better requires constructing plants, contracting for merchant power and constructing transmission facilities ahead of the demand. This can happen when a healthy balance of regulation and adequate rates are maintained. The state's reserve margin could also be expanded by increasing the percentage of the state's load that is subject to direct load control and management.
- » **Conservation:** Conservation by users should continue to be emphasized and encouraged. For example, proper insulation, more efficient appliances and lighting, and insulated windows can significantly reduce energy usage. An aggressive and intelligent metering program by Georgia Power, scheduled for completion in 2012, should reward and enhance conservation with new options like off-peak rate reductions for scheduling of some uses.

- » **Lower cost plants:** Incentives and research should be provided to focus on the long-term, low-cost clean energy of clean coal technology or nuclear options that are available instead of natural gas plants, which are quick to construct, but not designed for daily operations and expensive to operate. This will moderate the upward pressure on energy costs from the natural gas plants.

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Photos courtesy of Melissa Wheeler, Georgia Power Company.

Dams | Report Grade: D

Definition of the Issue

Georgia has few, if any, natural ponds or lakes. Lakes and ponds have been created all over the state by placing dams on streams and rivers to hold back the water. Dams create reservoirs, ponds and lakes that are used for water storage, recreation and flood management. In December 2008 there were 4,883 dams in Georgia, 475 of which were considered by state definition to be high-hazard dams. High-hazard dams include dams of any size that are likely to pose a significant threat to human life. A total of 155 high-hazard dams in Georgia are considered deficient by the Georgia Department of Natural Resources (DNR). Four dams failed in the past two years with no significant property damage. The number of high-hazard dams in Georgia has increased from 385 in 2001 to 475 in 2008, an increase of 23 percent.

Grade

The Georgia Section of ASCE assigned dams a 2009 grade of “D” because the Georgia DNR classifies 155, or 33 percent, of its 475 high-hazard dams as deficient. Additionally, the Section considered the increasing dam failure analysis backlog and the shortage of programs to assist dam owners in addressing deficiencies. As the population of the Georgia continues to increase, residents will continue to rely even more heavily on dam structures for water storage, recreation and flood management.

Condition/Operation and Maintenance

The Georgia Safe Dams Act was enacted in 1978 after the failure of the Kelly-Barnes Dam in Toccoa, Georgia which killed 39 people at Toccoa Falls College in 1977. The Safe Dams Program is the regulatory organization in the DNR, which was established to enforce the Georgia Rules for Dam Safety. The program regulates dams which, based on definition, are not otherwise regulated by the federal government. The federal government has several agencies that regulate dams including the Federal Energy Regulatory Commission (FERC), the U.S. Army Corps of Engineers and the Natural Resources Conservation Service (NRCS).



Earth dam improvement under construction

The U.S. Census Bureau estimates that Georgia's population increased from 8.2 million in 2000 to 9.5 million in 2007, or about 16 percent. By the year 2030, the state's population is estimated to increase to 12 million. As the population density increases throughout Georgia, many rural dams which once were not considered to be high-hazard will need to be reclassified. Many of these dams are remnants of Georgia's agricultural past and were constructed more than 50 years ago.

using materials and methods not considered reliable by modern design standards. These structures create lakes and ponds that attract residential development and often become focal points of communities.

A dam must be inspected and maintained to prolong the structure's life and prevent catastrophic failure. The Georgia Safe Dams Program currently inspects all 475 high-hazard (Category I) structures in Georgia annually and requires dam owners to conduct quarterly inspections. Low-hazard (Category II) dams and unregulated dams—dams which do not meet the criteria specified in the Georgia Rules for Dam Safety to be regulated by the state—are not inspected annually. Category II and unregulated dams account for over 90 percent of the 4,883 dams in Georgia.

Capacity, Funding and Future Need

Based on 2005 data from the National Inventory of Dams, the total number of dams nationwide increased 10.6 percent while the total number of dams in Georgia subject to state regulation increased 13.7 percent. Nationwide, the number of high hazard dams increased 0.7 percent while Georgia's number of high-hazard dams increased 19 percent. The number of deficient dams in Georgia increased 47.6 percent versus 39.6 percent nationally. The majority of the deficiencies are due to inadequate hydraulic capacity, such as insufficient spillway capacity.

Despite the 47.6 percent increase in deficient dams, the Georgia dam safety budget increased only 6.6 percent during the same time period. Nationwide, dam safety budgets increased 67.9 percent. In Georgia, the dam safety budget is used to fund the Georgia DNR dam safety staff. Three positions are currently vacant and new staff cannot be hired because of the state government mandated hiring freeze. Two positions are fully funded by the Federal Emergency Management Agency (FEMA) Dam Safety Program and do not represent a cost to the state.

The state of Georgia recently reported a dam failure analysis backlog of more than 500 dams. The number of state regulated dams in Georgia per staff member increased 42.2 percent, versus a decrease nationally of 21.8 percent. There are 485 state regulated dams per Dam Safety Program staff member.

The state of Georgia is currently in the middle of a historic drought. New raw water reservoir projects are being proposed to increase water supply capacity. The Georgia Safe Dams Program reviews and approves the design of all category I dam designs and has the option to review any design for a water supply reservoir project. The backlog of plans to be reviewed and approved by the Georgia Safe Dams Program continues to increase. The anticipated timeframe to have a dam design reviewed and approved is more than six months.

Public Safety

Currently, Georgia DNR policy is to address a dam deficiency with a letter asking the dam owner to hire an engineer within four to eight weeks, followed by submitting an engineering report within three to four months. Serious deficiencies may result in the owner being required to comply within reduced timeframes. Failure to comply may lead to enforcement action being taken against the dam owner.



Failure of a dam at an outlet structure

The increasing rate of dam deficiencies has also received media attention. In November 2007, an investigative news story by Fox 5 Atlanta reported that 90 percent of deficient dams are owned by homeowners associations or individuals who lack resources to address deficiencies. Many of these dams were constructed in areas of high growth where future downstream development was not considered.

Statistics* on Dams and State Safety Regulation

Source: Association of State Dam Safety Officials and the Environmental Protection Division of Georgia DNR

	Total Dams per National Inventory ¹	Total Dams Under State Regulation ²	High Hazard Dams ³	High-Hazard Deficient Dams ⁴	State Dam Safety Budget (\$ thousand)	No. State Staff on Dam Safety	No. State Regulated Dams Per FTE Staff
% Georgia Change ⁵	-1.9 %	+13.7 %	+19 %	+47.6 %	+6.6 %	-20 %	+42.2 %
Georgia Change ⁵	-94	+469	+76	+50	+\$45	-2	+144
Georgia (2008)*	4,883	3,881	475	155	+\$727(2005)	8	485
Georgia (2003)*	4,977	3,412	399	105	\$682	10	341
% National Change	+10.6 %	-8.7 %	+0.7 %	+39.6 %	+67.9 %	+16.8 %	-21.8 %
National Change	+847	-8,284	+70	+965	+\$22,612	+64	-55
National (2005-2006)*	80,383 (2005)	87,310	10,130	3,402	\$55,923	444	197
National (2003)*	79,536	95,594	10,060	2,437	\$33,311	380	252

*Indicates figure taken from National Inventory of Dams (NID) and based on NID definitions.

1 - Includes dams of any size that are likely to pose a significant threat to human life or property in case of failure and all other federal and non-federal dams over 25 feet high that impound more than 15 acre-feet; and dams over 6 feet high that impound more than 50 acre-feet.

2 - Estimated number of all dams under state regulatory control.

3 - High-hazard by state definition derived from state inventory in column 2. Individual states' definitions may differ from the federal (National Inventory of Dams) definition.

4 - High-hazard dams with identified deficiencies by state definition derived from state inventory in column 3.

5 - The number of dams in Georgia decreased from 2003 to 2008 due to cleaning up the state database to reduce duplicates.

Recommendations

- » **Dam Safety Program Staffing:** The state needs to fill the engineering positions currently vacant in the Georgia Safe Dams Program. In addition to filling vacant positions, additional dam safety staff and funding for the Dam Safety Program are needed to address the increasing number of deficient dams. The additional staff and funding will need to focus on accelerating the repairs of existing deficiencies.
- » **Backlog Reduction:** Reduce the current backlog of dam inspections by hiring additional qualified inspectors or requiring Category I dam owners to perform inspections utilizing dam inspectors that have been classified by the Georgia Safe Dams Program as "Engineers of Record". Reduce the current backlog of over 500 dam failure analyses by hiring additional staff for the Dam Safety Program or procuring dam breach hydraulic modeling services from Georgia Safe Dams Program classified "Engineers of Record".

- » **Regulation and Permitting:** Georgia should consider regulations that require developers who build subdivision lakes to consider and plan for future development that may occur downstream. This will reduce unexpected dam retrofits or forced breaching. In addition, the state needs to modify the Category I dam permitting process to reduce the design plan review and approval timeframe by the Safe Dams Program without compromising safety.

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Photos courtesy of United Consulting.

School Facilities | Report Grade: C+

Definition of the Issue

This fact sheet examines the facilities and buildings in the public school systems in Georgia. It is difficult to separate the physical building in which kindergarten through high school students are educated from the more human aspects of administrators, teachers, students and parental influence. Nevertheless, this fact sheet is intended to promote a general awareness of public school facilities in the state of Georgia.

The Georgia Department of Education (DOE) provides oversight of the educational needs of 189 county and city school districts with a total of approximately 2,000 school facilities. In the DOE, the Facilities Section tracks construction spending funded by the Georgia Legislature. Each school district submits a five-year funding plan, which breaks out the spending needs for new and existing facilities. These plans also track funds provided by the special purpose local option sales tax (SPLOST) spent on construction and renovations. Because each SPLOST is a local program, the DOE has little control of how these sales taxes are spent on local projects. Lastly, the Facilities Section reviews district construction documents to ensure that schools meet the requirements established by state and federal laws and regulations.

Grade

The Georgia Section of ASCE assigned Georgia public school facilities a grade of “C+” based on the reported condition of school facilities in terms of capacity, operation and maintenance, the projected funding versus need and future challenges. Although the state Legislature has consistently underfunded schools statewide, local SPLOST programs have helped many local school systems bridge the funding gap.

Capacity

Based on the state, local and SPLOST funding available for construction, Georgia may be catching up with the demands for new and upgraded facilities. Since 2003, school districts have added the following space to their inventory:

Table 1 –Space Added to Georgia Schools Since 2003		
School Type	New Facilities	Additions
Elementary	10,234,518 square feet	4,446,911 square feet
Middle	8,353,476 square feet	1,811,778 square feet
High	5,806,601 square feet	4,341,702 square feet

SPLOST programs approved by local voters add a penny sales tax which is dedicated to funding for local schools. Although substantially more money is available due to SPLOST, state reimbursements have not kept up with the rising costs of construction and renovations. This lagging reimbursement is partially due to state funding calculations, which are based on unit prices that are out of date. As a result, some school districts have directed all or part of their state entitlement for renovations to

new construction to help offset the lagging state reimbursements. Thus, new construction has barely kept up with capacity requirements while renovations have suffered.

Condition/Operation and Maintenance

On average, public school buildings in the U.S. are more than 40 years old. However, the maintenance and renovation history of school facilities tends to be more important than the age of the building itself according to the National Center for Education Statistics (NCES). Deferred maintenance not only compromises the current condition of school facilities, but also can compromise the useful life of the facility. A 1999 NCES survey showed that three-quarters of schools reported needing repairs, renovations and modernizations in order to bring the buildings to “good” condition. Of the schools needing repairs, renovations and modernizations, the average need was \$2.2 million per facility.

Many older schools in Georgia are in need of significant renovations. For example, Rockdale County built several schools in the 1970s that are in need of significant upgrades to heating and air conditioning systems, roofing, lighting and other items, but little has been done. Hopefully the next Rockdale County SPLOST will address some of these needs. Gwinnett County recently allocated \$1 billion from the current SPLOST for roofing, paving and heating and air conditioning upgrades to existing facilities.



New Elementary School in Troup County



New Middle School in Troup County

Funding

Each school district submits its five-year facilities plan based on several factors, including population, future growth and the age of buildings. The DOE performs a series of calculations to determine how much the state should reimburse the

district for new construction, modifications and renovations. The DOE presents this estimate to the state Legislature, which then determines the funding amounts. The approved amount is often lower than the amount requested. The current maximum annual state entitlement is \$300 million per year. Since 2003, the Georgia Legislature has provided funding as shown in Table 2.

Fully funding construction from 2003 to 2009 would have resulted in payments to school districts in the amount of \$2.1 billion. Thus, the state has underfunded construction, modifications and renovations by over \$400 million over the seven-year period.

For 2008 to 2013, the DOE projects that state funding for new construction, modifications and renovations will be

Table 2 – School Funding from Georgia Legislature

Year	Funding from Georgia Legislature
2003	\$117,962,326
2004	\$159,875,000
2005	\$159,551,122
2006	\$132,620,141
2007	\$367,817,592
2008	\$454,165,000
2009	\$295,621,944
Total	\$1,687,613,125

approximately \$995 million, an expenditure rate of approximately \$199 million per year. If the Legislature fully funds the state portion of school construction, modifications and renovations for the school districts, an additional \$505 million would be budgeted.

Local school districts are responsible for their portion of operations, maintenance and capital funding. Prior to 1996, the local school boards had two funding options:

1. By local referendum voters could approve the passage of general obligation bonds, which are paid back through imposition of bond millage rates on the property owners.
2. Ad valorem taxes (millage rates) paid by the property owners could be increased.

Due to imbalances in the economic development of Georgia counties, revenues from property tax millage rates vary widely. As a result, the Legislature imposed a state millage on certain highly developed, high-growth counties and these funds were then directed to less-developed school districts. However, property taxes are not meeting the school districts' construction needs, especially in high-growth counties. This problem was exacerbated by the state's continual refusal and/or inability to fully fund its portion of the school construction budget. Property owners are increasingly refusing to take on additional debt, either through referendums or ad valorem taxes. In 1996, legislation was passed allowing school districts to put the SPLOST on the ballot in order to create a penny sales tax dedicated to local schools. This penny sales tax, which sunsets after five years but can be renewed by referendum, allows school districts to raise money for debt reduction and capital improvements without putting the burden on the property owners.

Even with the SPLOST, funding is insufficient in some instances. SPLOST revenues in some of the less developed and populated counties have generated less than \$1 million. As a result, these counties continue needing state funding to build new and upgrade existing facilities. Conversely, SPLOST funding in those counties where an excellent sales tax base exists, such as Gwinnett County where \$1 billion was generated during its five-year referendum period, have actually generated funding that exceeds the need for new facilities.

The state's method of estimating costs for new construction on a square foot basis results in substantially lower cost estimates than the actual construction costs paid by school districts. Districts usually use SPLOST funds to make up for the state shortfall. The SPLOST provides substantially more capital improvement funds without additional direct burdens upon the property owners.

From 1997 to 2006, SPLOST referendums provided \$16.5 billion for new schools, additions and improvements for existing schools, as well as \$2.6 billion for district debt reduction. The local portion of projected costs between 2009 and 2013 above the state eligible amount is approximately \$5.227 billion or \$1.045 billion per year.

According to NCES, the student enrollment growth rate over the last decade is projected to slow and level out between 2006 and 2012. If this projection is realized and funding levels are maintained, this should allow Georgia to make headway in bringing school facilities up to acceptable standards.

Recommendations

- » **Funding:** The state should continue to support SPLOST funding for all districts but also move toward developing permanent and reliable funding sources.
- » **Cost Estimating:** The DOE should update the unit costs of construction each year with current construction cost data in order to better determine construction funding needs.

- » **Operating Cost Reduction:** Schools should identify technology upgrades that lower short-term (two to three years) operating costs. For example, upgrading to electronically controlled fluorescent lights reduce not only power and maintenance costs, but prevent flicker and humming to improve the learning environment. The state should also consider establishing a revolving loan fund for school systems for improvements with a short-term, dollar-for-dollar payback.

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Photos courtesy of Troup County Board of Commissioners.

Transit

 | Report Grade: D+

Definition of the Issue

This fact sheet is based on the current condition of the transit system in Georgia. The transit system is evaluated based on usage, funding and age. According to the Georgia Department of Transportation (GDOT) Fact Book 2006, public transit in Georgia consists of 99 rural programs and 14 urban transit systems.

The transit system in the metro Atlanta area is primarily made up of five major transit systems: Metropolitan Atlanta Rapid Transit Authority (MARTA), Cobb County Transit (CCT), Gwinnett County Transit (GCT), C-Tran (in Clayton County) and Xpress. In the Atlanta region, there are a number of smaller operators that move people within activity centers such as Buckhead, Emory University and the Georgia Institute of Technology. Seasonal transit services are offered as well, including the Braves Shuttle from MARTA during games, the Canton Trolley and the holiday-season Zipper at Town Center Mall.

Grade

Due to the large fluctuations in gas prices since 2001, ridership on all modes of public transit has increased significantly. From a usage standpoint, Georgia's transit system meets the needs of its citizens who work and live near transit access points with clean, reliable transportation alternatives. However, due to urban sprawl in the Atlanta region, public transportation may not be a viable option in certain areas. Although improvements and expansion of the existing system are anticipated, there are hurdles that many commuters need to navigate. Seventy-five percent of the residents in metro Atlanta do not live within walking distance to transit. Until passengers can conveniently access transit and get to where they need to go, transit will not be a viable option. The accessibility to transit in Atlanta does not come close to other major cities in the nation, such as New York and Washington, D.C. Transit in Georgia is segmented and more collaboration between jurisdictions is needed, especially in the metro Atlanta area. Therefore, the transit system in Georgia is assigned a D+.

Usage

According to the Transit Planning Board, based on the amount of transit provided, Atlanta residents use transit more than any other Sunbelt city, including Miami, Dallas, and Phoenix. Each day in metro Atlanta, approximately half a million trips are taken on transit.

In the 1990s, transit in the metro-Atlanta region was limited to MARTA in Fulton and Dekalb Counties, and CCT in Cobb County. Since then, other systems have emerged, including the C-Tran, GCT and the successful launch and expansion of the regional express bus program, Xpress. With the addition of these bus systems to the MARTA system, the transit service offered today is more reflective of the region as a whole.



Gwinnett County Transit Bus

Currently, transit service is offered in the 12 metro counties and demand is increasing for express buses in growing areas such as Buford, Canton, Conyers, Cumming, Douglasville, Hampton, Kennesaw and Newnan. The impressive growth of the express bus ridership has demonstrated that a growing number of suburban commuters will use public transit if made convenient.

Currently along the Interstate 75 corridor, more than 1,600 trips are taken each day by express bus. Many of the buses are standing room only. By 2030, projections for ridership show a potential increase of 50 percent to 2,300 trips per day.

The 2007 State Transportation Statistics Manual from the U.S. Department of Transportation ranked Atlanta 11th for transit ridership in the 50 largest urbanized areas. For heavy rail systems, subways and elevated trains, the largest increases in ridership in the U.S. for the second quarter of 2008 included Atlanta at 15.6 percent.

MARTA, established in 1965, ranks in the top 25 large transit organizations in the country. In fiscal year 2006, MARTA ranked ninth in unlinked passenger trips with 138,403 trips, 12th in passenger miles with 749,676 passenger miles, 16th in bus and trolleybus unlinked passenger trips, eighth in heavy rail passenger trips, and sixth in heavy rail passenger miles. Georgia is one of 15 states in the country with direct rail public transportation access to an airport.

According to the 2008 Transportation Metropolitan Atlanta Performance (MAP) Report, MARTA's hours of revenue service continued their downward trend in 2006. Conversely, the annual revenue service hours by other transit providers – CCT, Douglas County Rideshare (DCR), GRTA and GCT – continued to increase. In 2006, transit passenger miles traveled increased, while the number of transit passenger boardings decreased. This shows that transit riders in the region made less transit trips, but longer ones. In 2001, passengers using public transit traveled 874 million miles. That figure fell to a low of 780 million miles in 2003 and climbed again to 871 million miles in 2006 in the 13-county Atlanta area.

“Within walking distance to transit” is defined as homes and jobs that are within four-tenths of a mile from a transit stop. This is considered the distance an average person is willing to walk in order to use transit. In 2001, 1,057,000 people lived and 1,085,000 people worked within walking distance to a transit station or stop. In 2006, the number of homes and jobs that were within walking distance to transit increased to 1,129,000 and 1,186,000, respectively. However, with over 4.5 million residents in the metro Atlanta area, this means that only one in four residents live within walking distance to transit.

Funding

Approximately 30 percent of the urban bus system's operating costs were paid for by revenue from the farebox. The national average of transit revenues provided by the farebox is 25.3 percent according to the National Center for Transit Research. Therefore, the Georgia's transit system farebox revenues are a little higher than the national average.

A study performed by the University of Georgia revealed that between 2001 and 2005, the MARTA system had an economic impact of between \$1.3 and \$1.5 billion annually on the Atlanta economy. According to the National Transit Database compiled annually by the Federal Transit Administration (FTA), from 2001 to 2005, Atlanta invested between \$515 and \$660 million annually in the regional transit system. This means the impact of the transit system on the regional economy is at least three to four times what the region invests in its transit system. Yet in 2008, there was no new dedicated local, regional or state transit funding for MARTA.

A large portion of the funding for MARTA comes from a penny sales tax in Fulton and Dekalb Counties. In late 2008, due to decreased sales tax revenues, MARTA announced a \$60 million shortfall and requested state assistance. Atlanta is known for traffic congestion and only so many more lane miles of roadway can be built. Transit systems can provide relief to this traffic congestion, but cannot be built overnight. Georgia cannot wait until it runs out of pavement to start improving transit.

Condition/Operation and Maintenance

In 2002, the average age of Georgia's urban buses was 7.06 years while in 2001, the national average age of full-size transit buses was 7.8 years, according to GDOT and the Bureau of Transportation Statistics. Most transit assets in Georgia are in average condition, but without additional funding, their condition could decline drastically.

Recommendations

- » **Commuter Rail:** Clean, fast commuter trains attract passengers, provide a reliable and anxiety-free ride, ease highway congestion, protect mobility and improve the quality of life. The rediscovery of the commuter train running on existing freight lines into and through the heart of the region is a viable option. The GDOT Commuter Rail Plan determined that a practical and economical plan can be developed using existing rail corridors to implement new passenger services to a select number of travel corridors within the region.
- » **Collaboration:** If the express bus and commuter rail systems collaborate, Atlanta could build ridership and influence land use and economic development in ways that assist in building a stronger, more competitive Atlanta region. The included map, compiled by the Transit Planning Board, shows that additional rail, bus or express service could create a more transit-friendly metro region. As the map depicts, transit within the metro area is not inclusive. A collaborative effort by the transit providers to get passengers to their intended destinations needs to be initiated.
- » **Planning and Development:** Community planning that encourages mixed-use development, transit-oriented development, and an improved job-housing mix should be implemented.

Sources

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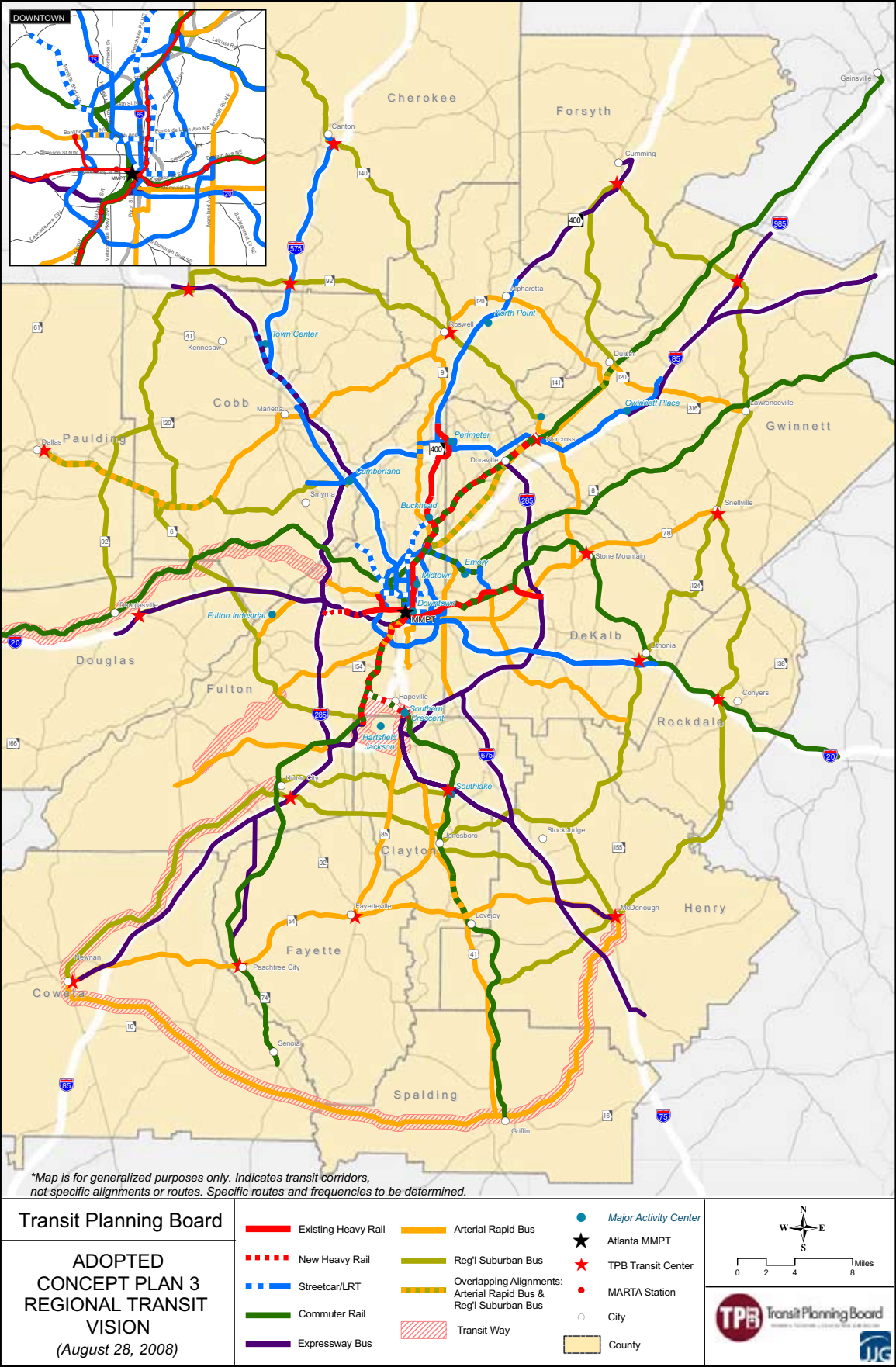
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Photo courtesy of Gwinnett County Department of Transportation.



Bridges | Report Grade: C-

Definition of the Issue

Currently, there are 14,464 bridge structures in Georgia according to the bridge inventory listing maintained by the Georgia Department of Transportation (GDOT) Office of Bridge Maintenance. This fact sheet is based on the current condition and capacity of the bridges in Georgia, as defined by their sufficiency rating. This analysis was based on the ASCE Georgia Section's review of the extensive data available from the GDOT Office of Bridge Maintenance.

The sufficiency rating is determined by evaluating factors which indicate a bridge's sufficiency to remain in service. The rating is a percentage in which 100 represents an entirely sufficient bridge and zero represents an entirely insufficient (or deficient) bridge. The calculation is complicated, but it essentially takes into account the structural adequacy (55 percent), serviceability and functional adequacy (35 percent), and how essential the bridge is for public use (15 percent). Over half the rating is based on structural condition (or adequacy) because failure of a bridge structure could be catastrophic. Serviceability and functional adequacy takes into account the factors that affect the capacity and use of the bridge such as roadway width, amount of traffic, condition of the bridge surface, and likelihood of flooding. If the bridge is on the National Highway System, has a lot of traffic or is difficult to detour around, that is taken into account in the essentiality part of the rating. In Georgia, the sufficiency rating is used as the basis for establishing the priority for repair or replacement of bridges, with the lower the rating, the higher the priority.

Grade

As with the 2003 Report Card on Georgia's Infrastructure, the 2009 grade for bridges is based primarily on condition and capacity. However, this year the basis for the grade was changed to focus more on bridges than culverts. A bridge is a structure built to span a river, road, railroad track or any other physical obstacle for the purpose of providing passage over the obstacle. Generally, culverts are concrete boxes designed to convey water under a road where it crosses a creek or low area. Culverts generally require less maintenance and are in very good condition overall in the state. This fact sheet focuses on bridges and not culverts for several reasons. The general public typically views bridges as span structures, not culverts. Span structures have a greater impact on safety, with more potential for property damage and loss of life if they fail. In addition, the installation and maintenance costs for bridges are substantially higher than those for culverts. Therefore, the 2009 grade of "C-" is based on bridge structures alone.

Condition/Capacity

Each bridge structure in Georgia is inspected every other year by GDOT and evaluated to determine a composite value referred to as the sufficiency rating. A sufficiency rating below 50 is considered by GDOT to be in need of replacement. The Federal Highway Administration (FHWA) defines a bridge as any structure with a length greater than 20 feet that passes over an obstruction, such as a river or railroad. Of the 14,464 structures inspected by the GDOT Office of Bridge Maintenance, 5,494 are culvert-type structures and the remaining 8,970 are bridges.



Atlanta bridge in need of repair



Candler Road in Gwinnett County

of bridges have a rating of 20 to 40, 15 percent of bridges have a rating of 40 to 60, 31 percent of bridges have a rating of 60 to 80 and 44 percent of bridges have a rating of 80 to 100. The average rating for bridges is 72.7, yielding a grade of “C-” for bridges.

Additional data analysis was completed to compare the sufficiency rating of bridges that are along school bus routes. Figure 2 (on next page) shows that 23 percent of bridges along school bus routes have a sufficiency rating of 60 or lower. As a comparison, Figure 3 (on next page) shows that 29 percent of bridges not along a bus route have a sufficiency rating of 60 or lower.

The data was also used to determine the frequency of use for bridges with low sufficiency ratings. Figure 4 (on next page) shows that 44 percent of bridges with less than 400 average daily vehicle trips have a sufficiency rating of 60 or lower, while Figure 5 (on next page) shows 21 percent of bridges with more than 400 average daily trips have a sufficiency rating of 60 or lower. This is likely due to lack of funding for bridges in more rural areas.

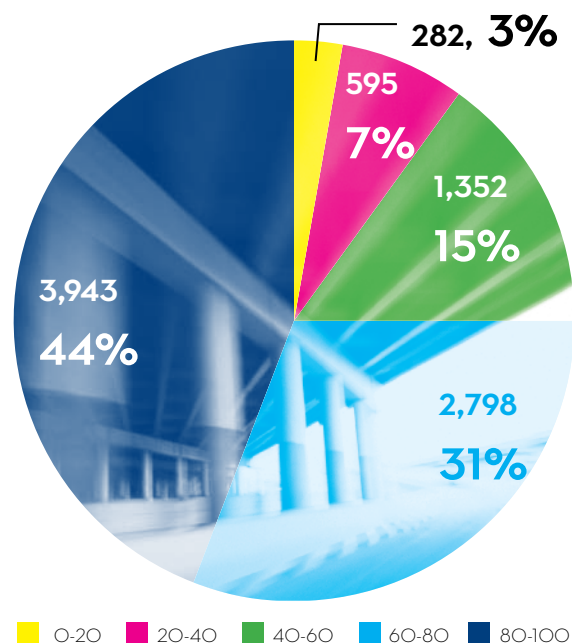
Recommendations

- » **Capacity:** The high number of bridges with sufficiency ratings lower than 60 shows that additional funding is needed for bridge maintenance and capacity upgrades. Lack of capacity on a bridge can limit the ability to expand roadways due to the high cost of expanding or building new bridge structures. Widening for additional lanes and adding new parallel structures can provide additional capacity.
- » **Funding Sources:** Twenty-five percent of the gas taxes paid in Georgia are paid by out-of-state motorists. Many bridge repairs and upgrades are funded, at least in part, by GDOT using gas tax funds, and while the state has increased the gas tax in the past several years, another increase could provide much needed funding. Other funding mechanisms for bridges should also be explored.

Seventy-five percent of culvert-type structures have a sufficiency rating of 90 or higher, while 20 percent of culverts have a sufficiency rating between 80 and 90. The remaining five percent have a rating lower than 80. The average rating for culverts is 92.4. Considering the public’s perception that a bridge is a span structure and the significant cost difference in building a bridge versus a culvert, the 2009 grade is based on bridges, not culverts.

The bridge structures shown in Figure 1 are grouped in quintiles based on their sufficiency ratings. Approximately three percent of bridges have a sufficiency rating of zero to 20, seven percent

Figure 1 – Sufficiency Rating of all Bridges in Georgia



■ 0-20 ■ 20-40 ■ 40-60 ■ 60-80 ■ 80-100

Figure 2 – Sufficiency Rating of Bridges Along School Bus Routes

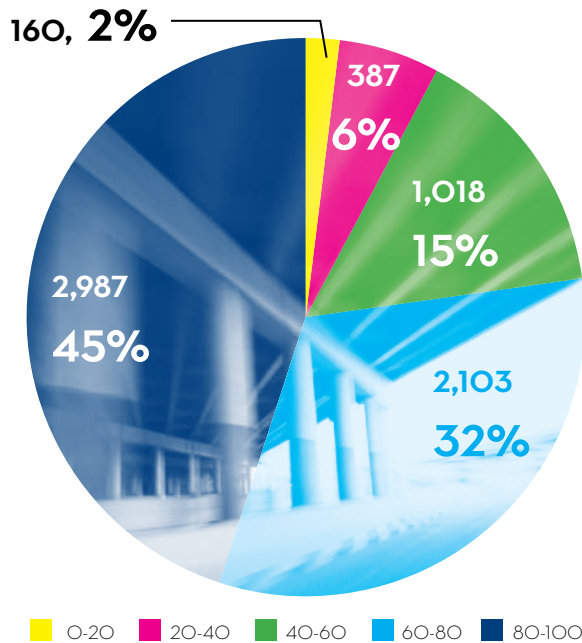


Figure 3 – Sufficiency Rating of Bridges Not Along School Bus Routes

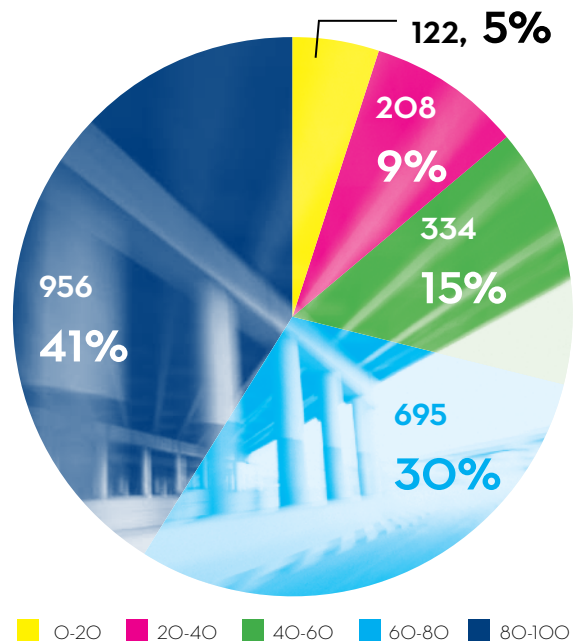


Figure 4 – Sufficiency Rating of Bridges with Average Daily Trips < 400 Vehicles Per Day

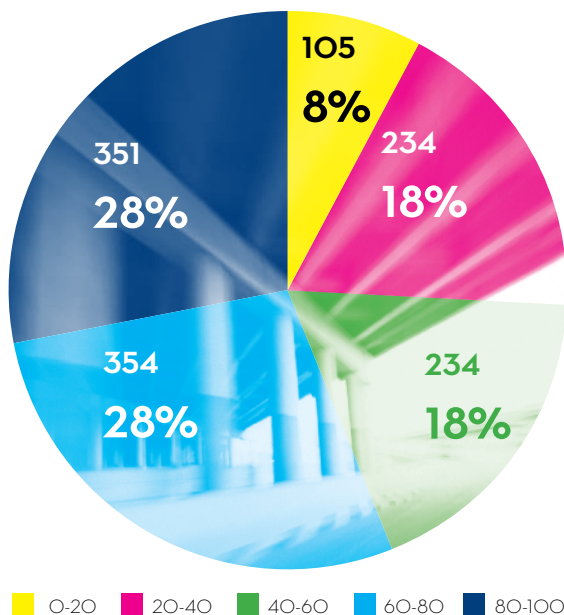
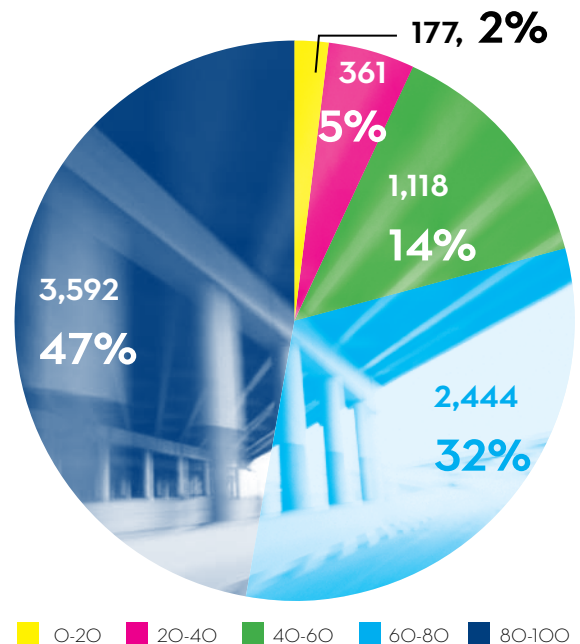


Figure 5 – Sufficiency Rating of Bridges with Average Daily Trips > 400 Vehicles Per Day



Sources

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GDOT Office of Bridge Maintenance, Bridge Inventory Listing Data provided in Excel file format by GDOT staff.

National Bridge Inventory Background Information,

www.co.clayton.ga.us/tnd/CTP/2007NovReport/Appendix%20A%20NBI%20Info.pdf.

Photos courtesy of Martin Bretherton, PE, Gwinnett County Department of Transportation and David W. Haxton, PE, Parsons Brinckerhoff.

Airports | Report Grade: B+

Definition of the Issue

This fact sheet reviews the conditions of airports in the state and their ability to serve the public. The analysis was divided into five performance measures:

1. Capacity – The percent usage of available airport capacity.
2. Standards – The ability to meet standards for safety and use of airports.
3. Flexibility – The ability to meet current and future demands.
4. Accessibility – The accessibility of airports to the public.
5. Facilities and Services – The ability to provide the minimum facilities and services for the particular level of airport.



Since the 2003 Report Card on Georgia's Infrastructure, aviation facilities in Georgia have improved in all measures except capacity. Based on traffic projections, however, capacity for the system continues to exceed current usage rates which means that there is still room to grow. Hartsfield-Jackson Atlanta International Airport, due to its unique nature as a major hub in the southeast, is included only in performance measures such as capacity and accessibility. There is currently no data available to compare Georgia's aviation infrastructure to other states.

Grade

The numerical score for each of the five performance measures is the fraction of goal achieved, expressed as a percentage. A weight was established for each measure based on significance to the performance of the system with three being "very significant" and one being "least significant." A final numerical score was calculated as the sum of all the weighed percentages divided by the sum of the weights used and that number was converted to a letter grade. Each of the performance measures summarized below are discussed in greater detail later in this fact sheet.

1. Capacity (percent usage of available airport facilities): The Georgia aviation system still has excess capacity, so a capacity grade of 100 was assigned. Capacity is very significant to the performance of the overall system so a relative weight of three was assigned.
2. Standards (meeting criteria for safety and use): The aviation system average of the three Standards measures is an 88. Standards address safety and, as such, are very significant to the performance of the overall system. Therefore, a relative weight of three was assigned.
3. Flexibility (for current and future demands): The flexibility goal is for 100 percent compliance at Level II and III airports. There are 73 Level II and III airports, or 70 percent of Georgia airports. The system average of both Flexibility measures is 56 percent. This was divided by the goal of 70 percent, which calculated a score of 80 percent. Flexibility is less significant to the performance of the overall system so a relative weight of one was assigned.



- 4. Public Accessibility: The aviation system average of all three accessibility measures is a 98 based on the targets. Access is not as critical to the performance of the overall system so a relative weight of one was assigned.
- 5. Facilities and Services (provision of minimum facilities and services for a particular level of airport): The aviation system average was 70. Facilities and Services are significant to the performance of the overall system so a relative weight of two was assigned.

The overall average is $\frac{(3 \times 100) + (3 \times 88) + (1 \times 80) + (1 \times 98) + (2 \times 70)}{8} = 88$ for a grade of B+.

Types of Airports

There are three levels of airports as evaluated by the Federal Aviation Administration (FAA).

Level I - Minimum standard general airport: Level I airports should accommodate all single-engine and some small twin-engine general aviation aircraft. The FAA recommends a minimum runway length of 4,000 feet. It is also recommended that Level I airports be aided by a non-precision instrument approach. Dahunega, Jekyl Island and Madison airports are all Level I airports.

Level II - Business airport of local impact: Level II airports should be capable of accommodating all business and personal use single and twin-engine general aviation, as well as a broad range of the corporate and business jet fleet. The FAA recommends a minimum runway length of 5,000 feet. It is also recommended that Level II airports be aided by a non-precision instrument approach. Cartersville, St. Simons and Moultrie airports are all Level II airports.

Level III: Business airport of regional impact: Level III airports should be capable of accommodating commercial aircraft or a variety of business and corporate jet aircraft. The FAA recommends a minimum runway length of 5,500 feet. It is also recommended that Level III airports be aided by a precision instrument approach. Hartsfield-Jackson Atlanta International, Peachtree-Dekalb, Macon, Newnan and Savannah airports are all Level III airports.

Table 1 compares performance characteristics on the Georgia aviation system for the years 2003 and 2008.

Table 1 – Georgia Aviation System General Information

Criteria	2008	2003	Difference
Total Number of Airports (95 General Aviation and 9 Commercial Service)	104	103	1
General Aviation Arrivals and Departures (Operations) Served	1,970,000	2,030,000	-60,000
Number of Commercial Operations (not including Atlanta International)	363,703	73,266	290,437
Aircraft Based at Georgia Airports	6,098	5,209	889
Square Yards of Pavement at Georgia Airports	15,490,000	14,000,000	1,490,000
Average Number of Daily Arrivals and Departures at ATL	2,716	2,400	316
Airports with Runway Length of 4,000 feet or greater	83%	75%	8%
Airports with Runway Length of 5,000 feet or greater	64%	51%	13%
Airports with Runway Length of 5,500 feet or greater	40%	26%	14%
Airports in the National Plan of Integrated Airport Systems (NPIAS)	94%	N/A	N/A
Airports that Meet or Exceed a PCI Rating of 70 for Their Primary Runway	85%	77%	8%

N/A indicates criteria not evaluated in the 2003 Report Card on Georgia's Infrastructure.
ATL is the Hartsfield-Jackson Atlanta International Airport.

Capacity

The capacity goal is to provide a statewide aviation system with airside and landside facilities to meet current and future demand. The FAA has determined that as an airport's annual demand reaches 60 percent or more of the airport's calculated airfield operating capacity, delays to aircraft on the ground and in the air begin to increase. As annual demand reaches or exceeds 80 percent of an airport's operation capacity, delays can increase dramatically. Updated projections for 2021 show that the state will have usage rates well below 60 percent.

Table 2 – Statewide Annual Demand and Capacity Ratios (Percentage of available capacity in use)

Year	Level I	Level II	Level III	Total System
2001	9%	10%	20%	15%
2021	10%	12%	25%	19%

Standards

Statewide aviation must comply with applicable state and federal design and development standards. Many of Georgia's airports were constructed many years ago when standards were different than today. Because new standards are more stringent, some airports would require significant modification at a high cost to meet current standards. In many cases this is not cost effective, so these airports received waivers from the FAA to continue operating in their current configuration.

Although the goal is for 100 percent compliance, this is unlikely due to the older airports.

- » The Runway and Taxiway Separation Standard measures the ability to meet the separation standard between the primary runway centerline and any full or partial parallel taxiway centerline. Each airport's standard is determined by its current FAA Airport Reference Code (ARC). Currently, 89 percent of Georgia airports meet the standard, an increase from 75 percent in 2003.
- » The Runway Safety Area (RSA) Standard for Primary Runways measures the ability to meet the dimensions of runway safety areas on each end of the primary runway. Each airport's standard is determined by its current FAA ARC. Currently, 90 percent of Georgia airports meet the standard, a slight increase from 89 percent in 2003.
- » The Pavement Condition Index (PCI) Standard measures the ability of airports to meet a PCI rating of 70 or greater for the primary runway. The PCI provides a measure of the present condition of the pavement based on the distress observed on the surface of the pavement. This also indicates the structural integrity and surface operational condition. This number can range from 0 which represents failed pavements to 100 which represents pavements in excellent condition. Currently, 85 percent of Georgia airports meet the standard, an increase from 77 percent in 2003.

Flexibility

Airports must remain flexible and capable of responding to future change while maintaining compatibility with the land use in surrounding communities.

- » Of Level I, II and III airports that have current master plans or airport layout plans (ALPs), 64 percent have completed the plan during the past five years, an increase from 45 percent in 2003.
- » Of Level I, II and III airports with surrounding municipalities that have adopted controls and zoning to assure land use in the airport environs is compatible with airport operations and development, 48 percent have adopted land use or zoning controls. This is an increase from 42 percent in 2003.

Public Accessibility

When evaluating accessibility, the goal is to provide an airport system that is easily accessible from both the ground and the air. This criterion is evaluated based on the airport level.

- » The criterion for Level I airport access is the percentage of the public that are within a 30-minute drive of a Level I airport. The GDOT's goal for this criterion is 96.1 percent. The current level for this criterion is 93.0 percent, an increase from 90.1 percent in 2003.
- » The criterion for Level II airport access is the percentage of the public that are within a 30-minute drive of a Level II airport. The GDOT's goal for this criterion is 89.5 percent. The current level for this criterion is 86.0 percent, an increase from 79.4 percent in 2003.
- » The criterion for Level III airport access is the percentage of the public that are within a 45-minute drive of a Level III airport and a 60-minute drive from a commercial service airport. The GDOT's goal for this criterion is 98.1 percent. The current level for this criterion is 98.1 percent, an increase from 91.3 percent in 2003.

Facilities and Services

The goal is to provide facilities and services, such as parking, terminal space, gates and navigation aids that should be in place at Level I, II and III airports as identified by GDOT's Georgia Aviation System Plan. The Plan should guide future development at Georgia Airports.

- » Forty-nine percent of Level I airports meet the GDOT standard, up from 47 percent in 2003.
- » Seventy percent of Level II airports meet the GDOT standard, up from 61 percent in 2003.
- » Eighty-nine percent of Level III airports meet the GDOT standard, up from 76 percent in 2003.

Recommendations

- » **Facility and Service Objectives:** Improvements are necessary to bring all system airports into compliance with established facility and service objectives. These objectives include runway length, taxiway design, taxiway lights, terminals and administration, auto parking, rental car availability, full-service fixed-based operations (FBO) and apron parking. FBOs offer aircraft fuel, oil and parking, along with access to washrooms and telephones. Some FBOs offer additional aircraft services such as hangar storage, maintenance, aircraft charter or rental, flight training, deicing and ground services such as towing and baggage handling. Improvements should be planned to encourage area development.
- » **Capacity:** In order to take advantage of available capacity, airport master plans should include plans for airport expansion to accommodate future growth. Access to airport facilities can encourage regional growth.

Sources

Carol Comer, Program Manager, GDOT Aviation Programs.

Georgia Department of Transportation, Aviation Programs Website, www.tomcat2.dot.state.ga.us/Aviation/Home/index.cfm.

Tom Carr, Aviation Planner, GDOT Aviation Programs.

Roads | Report Grade: D+

Definition of the Issue

This fact sheet is based on the current condition of state roads in Georgia. The roads were evaluated based on four criteria: surface condition and smoothness (drivability), capacity in major urban areas, safety and funding.

This analysis is based on the most current data available. The most current national data available for comparison used in this report is typically from 2005 or 2006.

Grade

Since 1990, Georgia has grown faster than any other state east of the Mississippi River. Georgia is ranked fifth nationally in terms of population growth, increasing 45 percent since 1990 from approximately 6.5 million to 9.5 million residents. This trend is expected to continue with population expected to reach 13.6 million by 2035. Atlanta is one of the fastest growing cities in the country and has more commuter traffic than the roadway infrastructure can handle. Commuters spend an average of 60 hours per year in traffic, rating Atlanta second worst in the country behind Los Angeles. At 29 percent, Atlanta rates third worst in the nation in terms of the percentage of drivers who get to work in 20 minutes or less. According to a Forbes magazine article in April 2008, 13 percent of commuters spend more than an hour getting to work.

Traffic delays and roadway congestion continue to cost the citizens of metro Atlanta \$2.6 billion annually. The travel time index is the ratio of peak-period travel time to free-flow travel time and is an indicator of traffic delay and congestion costs. The travel time index for Atlanta has increased nearly 10 percent during the past 10 years. Metro Atlanta currently has the 11th most congested freeway system in the U.S. in terms of the travel time index. In addition, the safety of Georgia roads is below the national average with a fatality rate that is higher than the national average.

On the positive side, Georgia continues to lead the nation with very drivable roadways. According to the Bureau of Transportation Statistics (BTS), only 1.39 percent of pavements in the road system are rated in poor condition and less than one percent of interstate pavements in Georgia are in poor condition. However, according to the 2008 Transportation Metropolitan Atlanta Performance Report (MAP), the pavement condition in the Atlanta area has declined sharply in the past three years.

Funding for roads in Georgia is significantly below the national average. Georgia has the eleventh most miles of public roadway in the nation, but ranks 22nd in terms of the funding it receives. This results in a composite ranking of 41st in the nation in terms of funding dollars per mile of roadway, according to BTS. A “Turn-Around” plan to get GDOT back on track with its budget was presented in September 2008 to the Georgia Department of Transportation (GDOT) Board. One of the recommendation options was a reduction in work force. If this reduction is approved, there will be a decrease in maintenance of roadways, which will have a significant negative impact on the quality of Georgia’s highways.

The grade assigned for Georgia roads is a “D+” due to below average funding, higher than average fatality rate and congestion issues in large metropolitan areas. Management of roadway assets has been quite good in spite of these financial issues. However, the drivability measure is falling and will continue to drop at current funding levels.

The grade for Georgia roads in the 2003 Report Card was “D+”. Compared to data gathered in 2003, there was very little change with respect to fatality rates; increased congestion and very little change in road condition.

Condition

Based on a BTS Federal Highway Report, the condition and drivability of roads in Georgia are quite good. The condition is determined by the riding surface. The roads in Georgia, as a whole, are significantly above the national average. Ninety-five percent of Georgia roads are in fair or better condition.

Table 1 – Comparison of the Percent of Roads in Each Condition Category

	Very Good	Good	Fair	Mediocre	Poor
Georgia	49%	31%	15%	3.3%	1.4%
National Avg.	14%	27%	41%	10%	7%

Capacity

Based on a study by the Texas Transportation Institute (TTI), interstates in the Atlanta metro area are very congested, with thirty-eight percent of urban interstates congested.

TTI studies looked at the 85 most populated metro areas in the U.S. and found that Atlanta roads are very congested. As shown in Table 2, with high rankings indicating worse conditions, Atlanta ranked very congested compared to the other metro areas in several categories.

Since 1990, travel on Georgia’s highways has increased at a rate 10 times greater than new lane capacity has been added, according to The Road Information Program (TRIP). The TTI report indicates that in Atlanta, traffic demand is far outpacing roadway growth by at least 45 percent.

One factor affecting capacity is the use of transit. Based on data compiled and reported by the Center for Transportation and the Environment (CTE) in 2007, 84 percent of Atlanta residents drive alone to work, six percent use a carpool, four percent use transit, four percent telecommute and two percent use other modes of transportation. The average travel time to work is 35.9 minutes in Atlanta, which means Atlanta commuters have the third longest commute in the country.

Table 2 – Atlanta’s Congestion Rankings

	2001 Rank	2005 Rank
Wasted Fuel	8	3
Congestion Costs	9	6
Hours of Delay	9	2
Travel Time Index	12	11



I-85 at SR316 at Interchange



Roundabout in Gwinnett County

According to a Forbes magazine article in April 2008, the train system does not reach far enough into the heavily populated urban areas, failing to relieve the congestion.

Since congestion issues appear to be limited to the metro Atlanta area, the capacity or level of service for Atlanta-area roads would be rated significantly below the roads in the rest of the state.

Safety

There were 1,693 roadway fatalities in Georgia in 2006, a two percent decrease from 2005. Fatalities by state are summarized in the Fatal Analysis Reporting System (FARS) report. Fatalities are the only way to compare safety across state lines. Fatal crashes are reported to the federal government in a standardized data set. Crash reports vary by state, with some states only requiring that injuries and fatalities be reported.

The Georgia fatality rate is 1.49 fatalities per 100 million vehicle miles, or 18 per 100,000 population. The U.S. fatality rate is 1.41 fatalities per 100 million vehicle miles, or 14 per 100,000 population. This makes Georgia below average nationally in safety.

Funding

Based on data in the Federal Highway Administration (FHWA) 2007 State Transportation Statistics, Georgia's motor fuel excise tax, at 7.5 cents per gallon, is among the lowest in the U.S. With the recent large fluctuations in gas prices, many people are driving less to conserve fuel, which will reduce the motor fuel tax revenues.

The federal tax on motor fuel is 18.4 cents per gallon (in addition to the state tax). However, Georgia is considered a donor state because only 90.5 percent of the taxes it sends to the federal government are returned for transportation funding.

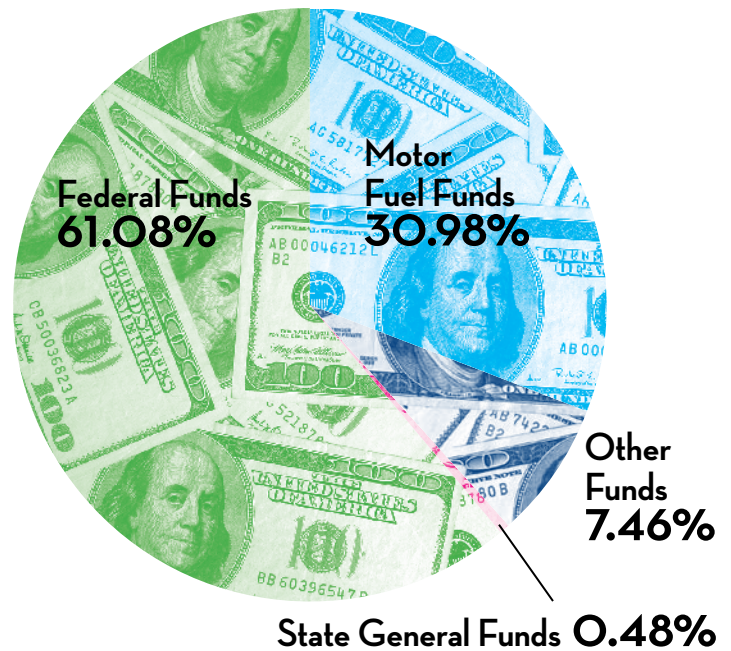
The state of Georgia received \$1.9 billion in highway revenue in 2005. According to GDOT, the revenue includes motor fuel taxes, bonds, general revenue, a share of federal revenues and other sources.

To make up for some of the lack of state and federal funding, many Georgia counties have voted to approve a Special Purpose Local Option Sales Tax (SPLOST) to fund roadway projects. This local funding option allows the county to add up to two percent to the sales tax for infrastructure improvements.

Georgia has 118,199 miles of federal, state and local roads. More than half of the mileage is rural county roads, according to GDOT. Georgia has 2.9 percent of the total road mileage in the U.S., but only receives 1.5 percent of all revenue used by states for roads, according to BTS.

Using a simple formula measuring the ratio of costs to needs, Georgia manages the roadway network with a budget of roughly 55 to 60 percent of what is projected to be required to maintain road rideability, enhance safety and limit congestion and traffic delays. Funding is clearly inadequate.

Figure 1 – Georgia Highway Revenue Sources



Recommendations

- » **Capacity:** Expand capacity by constructing additional lanes and new roads and providing additional transit which extends farther in urban communities.
- » **Efficiency:** Improve efficiency by increasing signal timing and coordination, incident management and information provided to drivers.
- » **Alternative Commutes:** Reduce travel demand by promoting telecommuting and flex time, increasing ridesharing and use of HOV lanes and implementing pricing of peak hour travel or peak travel restrictions.
- » **Planning:** Improve community planning by encouraging Mixed Use Development and improving the job-housing mix.
- » **Funding Sources:** Increase funding by increasing the gas tax, revenue bond funding and privatized funding. Georgia should seriously consider alternate delivery methods for transportation improvements such as Public Private Partnerships (PPPs), Public Private Initiatives (PPIs) and tolls.

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Photos courtesy of Martin Bretherton, PE, Gwinnett County Department of Transportation.

Solid Waste | Report Grade: C

Definition of the Issue

This fact sheet is based on the relationship between waste generation rates and disposal capacity in Georgia and on statewide efforts to manage both generation and capacity. The evaluation of Georgia's solid waste disposal facilities is based on the following criteria: per capita waste generation, current status of all facilities, capacity, mix of disposal options and funding.

Georgia's collection, processing and disposal of solid waste have evolved in an effort to keep up with the state's steadily increasing population and growing awareness of environmental impacts of waste disposal. Since the 1990s, stringent regulations at the state and federal levels have resulted in the transition to lined landfills for the disposal of residential, commercial and industrial waste, and a requirement to incorporate life-cycle costs in all operations.

Grade

Solid waste is assigned a "C" because the state has been unable to meet waste reduction goals and still has many challenges ahead. The increase in out-of-state garbage disposed in Georgia is creating an alarming trend in the growth of per capita disposal rates. In addition, the availability of disposal capacity at competitive rates provides no incentive to citizens and communities to reduce waste generation or increase recycling. Meanwhile, a large number of closed landfill sites are releasing methane and leachate, causing groundwater contamination.

The Georgia Solid Waste Trust Fund is intended to provide for the costs of a broad range of state waste management programs, including hazardous waste site cleanup. However, these funds are not actually pledged to these purposes, but are subject to the annual budget approval of the state Legislature, causing a diversion of these funds away from their intended use.

However, the overall solid waste infrastructure in Georgia is meeting the state's requirements and increasing focus on education is a step in the right direction.

Condition/Operation and Maintenance

Since 1994, the per capita waste disposal rate in municipal solid waste (MSW) landfills has risen from 5.66 lbs./person/day to 7.39 lbs./person/day in 2004. However, when the amount of waste imported from other states is excluded, the per capita disposal rate in MSW landfills was 6.38 lbs./person/day in 2004. This represents an increase of just under one lb./person/day from 1994 to 2004, while imported waste grew from 0.13 lb./person/day in 1998 to 1.01 lbs./person/day in 2004. In 2007, Georgia residents, on average, disposed of 6.6 pounds of waste per day. This is more than twice the national average of 2.46 lbs./person/day.

In the mid-1990s, the per capita disposal rate in MSW landfills nearly achieved the state's 25 percent waste disposal reduction goal. This near success was due to several factors such as the institution of constructing Subtitle D landfills, the ban of yard trimmings from household waste, and the increase in



Roswell Recycling Center

waste reduction and recycling programs. However, since that time Georgia has not reached the 25 percent waste disposal reduction goal.

Currently, landfills operate in accordance with EPA's Subtitle D regulations. While older landfills were unlined dumps, landfills constructed since the 1990's have been built so that the waste is isolated by a liner that is placed on the bottom of the landfill to collect and remove any liquid (also known as leachate) that might seep from the waste. A cover system is also installed over the waste to control rain water entering the waste. In addition, gas collection systems are installed to collect any gas generated by the decomposition of the waste and groundwater monitoring wells are installed around the landfill to monitor the performance of the liners.

While the statewide picture for waste disposal is generally good, there are several regional issues of concern:

- » The northeastern part of Georgia has less than 10 years of capacity in currently permitted landfills.
- » Soil suitability and high groundwater tables in southeastern Georgia make siting of landfills problematic.
- » The reliance on groundwater in the southern portion of the state gives added concern to the problems of contamination from leaking landfills.



New Solid Waste Convenience Center in Troup County

Georgia is home to some of the strongest recycling markets in the country, yet these industries must purchase and import recycled materials from all over North America to support their operations. Georgia residents annually dispose of 2.6 million tons of common recyclable materials with an approximate market value of more than \$250 million. From 1998 to 2003, local government reports reflect a 12 percent decline in recycling services available in their community. However, the total amount of recycled materials has increased according to annual reports from local governments.

Based on grant request proposals submitted by local governments, the Georgia Department of Community Affairs (DCA) estimates that these communities will increase recycling rates by 185 percent with a return on investment of less than three years. DCA created Regional Recycling Transfer Hubs in order to help reach that goal.

Capacity

Of the nearly 15.9 million tons of waste reported disposed in 2004, the vast majority, approximately 73 percent, went into lined MSW landfills and 23 percent of the total waste was disposed of in construction and demolition (C&D) landfills. Most of Georgia's solid waste is disposed at 16 large landfills in Georgia that are owned and operated by private companies, which is quite a different trend from the early 1990s when most MSW landfills were publicly owned. From 2000 to 2004, the volume of waste disposed in private MSW landfills increased from 66 percent to 75 percent of the total amount of waste disposed in Georgia.

Landfill tipping fees across Georgia remain competitive with other southeastern states. Posted gate rate tipping fees have steadily risen in recent years, but the increasing amount of waste sent to Georgia from other states for disposal indicates

that the actual contract prices per ton remain attractive to waste hauling companies when compared with neighboring states. In 2005, the average tipping fee for MSW in Georgia was \$35.38 per ton, up from \$34.95 per ton in 2004 and \$33.26 in 2003.

Georgia has an adequate supply of permitted disposal capacity. At the end of 2004, the state had 26.6 years of remaining permitted MSW landfill space and 19.9 years of permitted construction and demolition landfill space based on current disposal rates. Construction of new lined Subtitle D landfills increased the total landfill capacity from more than 100 million to approximately 600 million cubic yards from 1994 to 2004. Only the northeast Georgia region had less than 10 years of remaining permitted capacity as of 2004.

Funding

Disposal costs are almost entirely funded from tipping fees, so expenses for ongoing operations are expected to continue to be covered by available revenues. Full-Cost Accounting Rules established by the Georgia Comprehensive Solid Waste Management Act of 1990 require that local collection entities demonstrate how revenues cover costs and that disposal capacity is available for the next 10 years. Costs associated with long-term environmental monitoring and maintenance of facilities are incorporated in tipping fees accounting for current facilities, while some restoration of “orphan” or abandoned landfills is covered by the Solid Waste Trust Fund.

The Solid Waste Trust Fund is intended to assist local governments in planning, expanding, improving, and implementing waste reduction programs such as the Recycling and Waste Reduction Program and the scrap tire recycling program.

Public Safety

The majority of public safety concern revolves around two areas: hazardous waste and “orphan landfills.”

Currently, Georgia does not house a commercial hazardous waste landfill (HWL) and only 21 exist in the entire U.S. The closest HWL to Georgia is located in southwest Alabama, where any hazardous waste generated in Georgia is either disposed or incinerated. There are no current plans to construct an HWL in Georgia in the immediate future.

Georgia manages a database called the Hazardous Site Inventory (HSI)—an inventory of sites that are monitored throughout the year. The inventory is updated yearly to either remove sites that have been mitigated or to add sites that need to be monitored. Currently, there are a total of 575 sites in Georgia listed on the HSI.

“Orphan” landfills are abandoned landfills that have no one who is responsible for cleaning up leaks and groundwater contamination from them. Landfill design and management practice changed dramatically in 1997 when Subtitle D of the Resource Conservation and Recovery Act set criteria and specified that landfills operating after that date would be required to meet extensive post-closure responsibilities. Many of the older landfills that closed have leaked and caused groundwater contamination, of which several have no directly responsible parties to pay for the cleanup.

Future Needs

With more than 26 years of remaining permitted disposal capacity throughout the state as of 2004, landfill tipping fees remain highly competitive, increasing the challenge many local governments face in maintaining or implementing aggressive recycling programs. The state of Georgia plays an important role in assisting local governments and the recycling industry to strengthen recycling infrastructure and is supporting several initiatives to increase recycling rates throughout the state. These initiatives include the development of a statewide media campaign, investment in special event collections, invest-

ment in Regional Recycling Transfer Hubs and environmental education at the K-12 school level. Also, a total of \$3.3 million in grants has been awarded to local governments and state agencies to develop markets for recovered materials.

Challenges Facing Solid Waste Management in Georgia

The increase in out-of-state garbage disposed in Georgia is creating an alarming trend in the growth of per capita disposal rates. In a period when waste generation in the state has increased by approximately 40 percent, out-of-state imported waste to Georgia has increased tenfold. Such incursions could overwhelm capacity if not accounted for in planning.

The availability of disposal capacity at competitive rates provides no incentive to citizens and communities to reduce waste generation or increase recycling. The DCA emphasis on recycling programs has apparently helped to increase total recycling, but it is not enough to offset increased waste generation. These factors have contributed to not reaching the 25 percent recycling goal and the reduction in recycling program availability.

The Georgia Solid Waste Trust Fund is intended to provide for the costs of a broad range of state waste management programs, including hazardous waste site cleanup. These funds have been diverted by the state Legislature to other funding priorities several times since 2000 and are set to expire in 2008. The fate of the ongoing programs and activities funded by this Trust Fund will be in jeopardy if it is not reauthorized to provide a stable source of funding for these vital initiatives.

A majority of closed landfill sites are releasing methane and leachate, causing groundwater contamination. As of 2003, 128 closed landfill sites and 18 active landfill sites were identified as having contamination. As a result, an increasing number of these closed sites are under active remediation programs, raising the cost of solid waste disposal.

Recommendations

- » **Waste Reduction:** Waste generation needs to be reduced and more waste needs to be diverted from landfills through recycling programs. The state's commitment to waste reduction in the Georgia Comprehensive Solid Waste Management Act of 1990 caused substantial diversion of waste to recycling programs during the mid-1990s, but the current lack of similar emphasis has allowed goals to go unmet.
- » **Continue expansion of recycling programs:** DCA has promoted several major recycling programs in recent years that are beginning to show tangible results in consumer awareness and waste diversion. Education of consumers on the value of recycling and the proper disposal of hazardous waste needs to continue.
- » **Maintain the solvency of the Solid Waste and Hazardous Waste Trust Funds:** The state Legislature needs to ensure that fees citizens pay for solid waste management are devoted to those programs. Hazardous waste management, contaminated site cleanup and waste reduction programs are among the environmentally critical programs funded by these fees.
- » **Waste-to-Energy Programs:** The development of waste-to-energy programs needs to be supported through research and securing additional federal and state funding programs.

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Photos courtesy of James R. Emery, Jr., PE, Troup County Board of Commissioners and Stuart A. Moring, PE, City of Roswell.

Parks | Report Grade: D

Definition of the Issue

Within the borders of Georgia, the Department of Natural Resources (DNR) is the agency whose mission is “to sustain, enhance, protect and conserve Georgia’s natural, historic and cultural resources for present and future generations, while recognizing the importance of promoting the development of commerce and industry that utilize sound environmental practices.”

The DNR manages more than one million acres of land available for public recreation at state parks, historic sites, public fishing areas and wildlife management areas. In addition, Georgia has more than 500,000 acres of man-made reservoirs, 12,000 miles of warm water streams, 4,000 miles of trout streams and 2,500 acres of tidal waterways, as well as federal lands like the Chattahoochee National Forest and the Okefenokee Wildlife Refuge.

The DNR oversees 63 state parks and historic sites and 90 wildlife management areas in the state that are open to the public for hunting and other outdoor recreation. This fact sheet is based on the current condition of the state park system in Georgia. The park system is evaluated based on the following criteria: funding, comparison to other states, usage and land conservation.

Grade

Georgia ranks as the third fastest-growing state in the country but is 12th of the 16 southern states in percentage of protected land area. In terms of land conservation and preservation, Georgia owns 1.2 percent of land area in the state. From a funding standpoint, Georgia’s park system ranks significantly behind other states of comparable size.

Funding for state parks is subject to annual appropriations by the state Legislature and varies year to year. Georgia is one of only 14 states in the country without a dedicated funding source for parks. Georgia ranked third in the nation for acres of farmland and woodland being converted to subdivisions, malls and other developments.

Due to this lack of a dedicated funding source and adequate appropriations from the state Legislature for park facilities, some parks are in jeopardy of being closed and the state is unable to protect and conserve additional land. Georgia’s parks and recreation are assigned a grade of “C+”.

Usage

The most visited parks in Georgia are Georgia Veterans State Park with 912,801 visitors, Red Top Mountain State Park and Lodge with 881,847 visitors, Richard B. Russell State Park with 602,111 visitors, Amicalola Falls State Park and Lodge with 600,953 visitors, and Unicoi State Park and Lodge with 592,584 visitors per year.

In order to understand the supply, usage patterns and demands for outdoor recreation in Georgia, a comprehensive inventory was developed by the University of Georgia of existing public outdoor recreation opportunities. Extensive public input was elicited through town hall meetings, focus groups and surveys to determine the needs of Georgia residents for park and recreational facilities. The information was compiled into the Georgia Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2008-2013.

The SCORP, which is updated every five years, must be maintained in order to be eligible for federal funds from the Land and Water Conservation Fund (LWCF). The LWCF grants assist state and local governments in acquiring, redeveloping and rehabilitating outdoor recreational facilities and resources, but require a 50 percent match. In 2005, 12 counties received federal funds through the LWCF.

According to the intensive inventory conducted by the University of Georgia for the SCORP, there are 2,340 sites managed by local service providers totaling 63,103 acres. A total of 1,405 of these sites are high-infrastructure sites such as ball fields, athletic fields and playgrounds, and the remaining 935 are low-infrastructure sites, such as green space and watershed protection-areas. Of these 935 sites, the state green space programs helped protect 310 sites totaling 9,692 acres.

The total area of the state is roughly 37 million acres. Approximately 0.36 percent is owned or managed by local recreation service providers. Georgia's population of roughly 9.5 million relies on a tiny number of high-infrastructure facilities for day-to-day outdoor activities. Statistically, that places a burden on parks to satisfy an average of 6,500 people per facility.



Skidaway Island State Park by Julie Paney



Covered Bridge at Watson Mill State Park

Relative to other states, Georgia lags when it comes to land preservation. Only 1.2 percent of Georgia's total area is owned by the state, compared with 14.6 percent in Florida. The only southern state that has a lower percentage of protected land than Georgia is Alabama with 0.8 percent. Florida dedicates approximately \$300 million a year to conservation, 10 times what Georgia does in a prosperous year. Georgia's land conservation funding comes from the annual appropriations by the General Assembly, which varies from year to year.

Atlanta is one of the fastest developing regions in the country, but it ranked last among cities of its size in acres of park land per thousand residents, next to last in park space as a percentage of city area and in the bottom third in public expenditures on parks and open space.

Funding

Of the 63 state parks and historic sites in the state, only 12 parks create enough revenue to sustain themselves and generate net revenue. These are Vogel State Park (\$441,376), FD Roosevelt State Park (\$220,884), Skidaway Island State Park (\$125,388), Elijah Clark State Park (\$122,193), Tugaloo State Park (\$76,561), Cloudland Canyon State Park (\$64,820), Hard Labor Creek State Park (\$59,485), Seminole State Park (\$53,490), Mistletoe State Park (\$45,696), Moccasin Creek State Park (\$32,061), Richard B. Russell State Park (\$27,736) and Unicoi State Park and Lodge (\$7,026). The parks with the largest deficit are Amicalola Falls State Park and Lodge (\$697,705), Tallulah Gorge State Park (\$496,164), Little Ocmulgee State Park and Lodge (\$479,525), Red Top Mountain State Park and Lodge (\$437,774), Smithgall Woods Conservation Area and Lodge (\$425,582), Sweetwater Creek State Park (\$414,817), George T. Bagby State Park and Lodge (\$316,153), AH Stephens Historic Park (\$292,776), Stephen C. Foster State Park (\$279,595) and Panola Mountain State Park (\$273,383).

In 2007, state parks cost taxpayers \$8.9 million from the state's general fund. Many cities and counties are finding ways to acquire and develop facilities by using special purpose local option sales taxes (SPLOST), bonds and impact fees, although

by state law these funds can only be used for infrastructure improvements and cannot be used for maintenance and operations.

Georgians support parks. Eighty-five percent of Georgia residents support funding parks and recreation and 74 percent support increased funding for these facilities. Surveys have shown that property values increase an average of 20 percent when a park is nearby and that 57 percent of residents want to live near a park. Sixty-eight percent of respondents to the SCORP survey had visited a public outdoor recreation area during the past year and 41 percent did so a couple times a month.

Recommendations

- » **Volunteer Organizations:** The lack of funding for park upkeep is threatening the closure of numerous parks around the state. Currently, many parks are understaffed and a lack of funding has led to the closure of visitor centers and rest areas and the inability to maintain public health facilities at some parks. Potential solutions include private groups such as Friends of Georgia State Parks and Historic Sites which has volunteers that assist local community parks with funding and by leading hikes and giving classes on habitat, snakes, birds of prey and plants in their native habitat.
- » **Land Conservation Through Organizations:** Several conservation organizations are actively involved in acquiring and protecting green space and land possessing unique natural resources. The activities of the Trust for Public Land, The Conservation Fund, The Nature Conservancy, land trusts and similar organizations have gained prominence in recent years in assisting state and local communities in the preservation of natural areas and the provision of outdoor recreation opportunities. These efforts have been further extended by the significant support of Georgia's philanthropic community.
- » **Quasi-Public Recreation Providers:** The state should partner with organizations to protect and conserve land. For example, Georgia Power Company developed 57,084 acres of lakes, 1,350 miles of coastline and dozens of areas that offer fishing, boating, swimming, hiking and camping facilities. By partnering with charitable social organizations such as the YMCA/YWCA, Boys and Girls Clubs, Boy and Girl Scouts and churches, outdoor recreational facilities for public use have been developed. Facilities typically consist of athletic fields for baseball and soccer programs.
- » **Legislation:** Introducing legislation to conserve and protect green space or create a Heritage Fund for conservation, recreation and preservation efforts to protect Georgia's natural green space could assist with the lack of funding. A bill to create a Heritage Fund in 1998 failed 54 percent to 46 percent. Furthering the creation of land conservation programs in counties throughout the state will foster protection of our state's green space. Successful programs exist in several counties, including Cobb, DeKalb, Gwinnett and Paulding.

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Photo 1: Skidaway Pathway by Julie Paney, www.stateparks.com/skidaway_island_photography.html.

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External Reviewers

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ASCE New Jersey Section – Ted Green, PE, M. ASCE and Andres Roda, PE, M. ASCE
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Georgia Department of Natural Resources – Princely Dorfeuille, Bob Scott, PE, Ken Bryan, and Linda McGregor, PE
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ASCE National

Adam Gagnon
Brian T. Pallasch
Joan Buhrman
Karen Albers
Leslie Nolan
Martin Hight

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American Society of Civil Engineers
Georgia Section
233 Peachtree Street
Harris Tower, Suite 700
Atlanta, Georgia 30303
404.521.2324

For more information email 2009reportcard@ascega.org