

A Commission Report to the 106th General Assembly

Building Tennessee's Tomorrow:

Anticipating the State's Infrastructure Needs

July 2007 through June 2012

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September 2009

The Honorable Ron Ramsey
Lt. Governor and Speaker of the Senate

The Honorable Kent Williams
Speaker of the House of Representatives

Members of the General Assembly

State Capitol
Nashville, TN 37243

Ladies and Gentlemen:

Transmitted herewith is the seventh in a series of reports on Tennessee's infrastructure needs by the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) pursuant to Public Chapter 817, Acts of 1996. That act requires the TACIR to compile and maintain an inventory of infrastructure needed in Tennessee and present these needs and associated costs to the General Assembly during its regular legislative session. The inventory, by law, is designed to support the development by state and local officials of goals, strategies and programs to

- improve the quality of life of all Tennesseans,
- support livable communities,
- and enhance and encourage the overall economic development of the state through the provision of adequate and essential public infrastructure.

This report represents the TACIR's continuing efforts to improve the inventory.

Information from the annual inventory has been used by the Comptroller's Office of Education Accountability to study high priority public schools identified by the Department of Education. Information on water and wastewater needs has been shared with staff of the Department of Environment and Conservation's grant programs. Future plans for reports include analysis of funding availability and location in relation to boundaries established under the Growth Policy Act (Public Chapter 1101, Acts of 1998) as required by Public Chapter 672, Acts of 2000.

Sincerely,

Senator Mark Norris
Chairman

Harry A. Green, Ph.D.
Executive Director

Building Tennessee's Tomorrow: Anticipating the State's Infrastructure Needs

July 2007 through June 2012

Executive Summary

This report is the seventh in a series on infrastructure that began in the late 1990s. These reports to the General Assembly present Tennessee's public infrastructure needs as reported by local officials, those submitted by state departments and agencies as part of their budget requests to the Governor, and those compiled by the Tennessee Department of Transportation. It covers the five-year period of July 2007 through June 2012 and provides two types of information: (1) needed infrastructure improvements and (2) the condition of existing elementary and secondary (K-12) public schools. Needs fall into the six broad categories shown in the block below. A number of conclusions may be drawn from the information compiled in the inventory:

- The total need for public infrastructure improvements is estimated at \$34.2 billion for 2007 through 2012—an increase of \$5.9 billion from the previous inventory—including the cost of upgrading existing public schools to good condition. The \$20.5 billion increase since the 1999 report represents both increased need for infrastructure and increased coverage by the inventory.
- Transportation and Utilities needs increased \$3.2 billion since the last inventory and \$12.5 billion since the first, which is more than half of the total increase since that report. The Transportation and Utilities category now makes up 52% of the total infrastructure need in the current inventory.

The Tennessee General Assembly charged the Tennessee Advisory Commission on Intergovernmental Relations (TACIR) with developing and maintaining an inventory of infrastructure needs "in order for the state, municipal and county governments of Tennessee to develop goals, strategies and programs which would

- ♦ improve the quality of life of its citizens,
- ♦ support livable communities, and
- ♦ enhance and encourage the overall economic development of the state."

[Public Chapter 817, Acts of 1996.]

Reported Infrastructure Needs

Transportation & Utilities \$17.7 billion	Education \$6.8 billion
Health, Safety & Welfare \$6.8 billion	Recreation & Culture \$1.8 billion
Economic Development \$617 million	General Government \$563 million

Grand Total \$34.2 billion

- Three other categories increased since the last report: Education (20.0%), Health, Safety and Welfare (29.9%), and General Government (32.2%). The increase in the Education category is the result of increased needs reported by the state's higher education institutions. Growing law enforcement and water and wastewater needs are the main reason for the increase in the Health, Safety and Welfare category. Most of the increase in General Government needs is for new or improved public buildings.
- Two categories decreased: Economic Development (-7.7%) and Recreation and Culture (-3.4%). The decrease for these two categories is nearly the same in dollar terms. A cancelled recreation project accounts for the decrease in the Recreation and Culture category. The Economic Development category decreased for the second year because more projects were completed or cancelled than were added since the previous inventory.
- The overall condition of Tennessee's public school buildings has stabilized. According to local officials, 91% of schools were in good or excellent condition, the same as the last report. This is a considerable improvement over the 59% reported in 1999.
- Infrastructure improvements at Tennessee's public schools, including new schools as well as improvements and additions to existing schools, are estimated to cost more than \$3.7 billion. The cost of school facility needs reported by local officials statewide is now increasing. This total is \$225 million more than the estimate in last year's report and approximately \$1 million more than the estimate reported in 1999.

Building Tennessee's Tomorrow:

Anticipating the State's Infrastructure Needs

July 2007 through June 2012

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Overview

Government's role in providing infrastructure has been well established since ancient times. The Roman Empire is remembered in part for the massive road system it built to tie its vast landholdings together. Remnants of these roads still remain, and many are still in use. In fact, public infrastructure is such an essential part of our lives that we rarely consider why government provides it. Would we have today's extensive road systems if they were not publicly funded? Would we have access to clean water and reliable power without public agencies to ensure their availability? Why do we rely on the public sector for these things instead of the private sector? The private sector does a fine job of providing goods and services when it is possible to monitor and control usage and to exclude users who cannot or will not pay an amount sufficient to generate profit. In the interest of general health and safety, excluding users is not always desirable, and profit may not be possible. Public infrastructure is the answer when the service supported is essential to the common good and the private sector cannot profitably provide it at a price that makes it accessible to all.

This report is the seventh in a series that presents Tennessee's public infrastructure needs. It covers the five-year period of July 2007 through June 2012 and provides two basic types of information as reported by local and state officials: (1) needed infrastructure improvements and (2) the condition of existing elementary and secondary (K-12) public schools. The needs fall into six broad categories:

**Table 1. Summary of Reported Needed Infrastructure Improvements
Five-year Period July 2007 through June 2012***

Category**	Number of Projects or Schools Reported		Five-year Reported Estimated Cost	
Transportation and Utilities	3,044	35.1%	\$ 17,722,418,638	51.8%
Education***	1,896	21.9%	\$ 6,777,206,905	19.8%
Health, Safety and Welfare	2,274	26.2%	\$ 6,751,104,157	19.7%
Recreation and Culture	1,008	11.6%	\$ 1,771,858,638	5.2%
Economic Development	172	2.0%	\$ 617,120,154	1.8%
General Government	276	3.2%	\$ 562,998,278	1.6%
Grand Total	8,670	100.0%	\$ 34,202,706,770	100.0%

*For a complete listing of all reported needs by county and by public school system, see Appendices D and E.

**A list of the types of projects included in the six general categories is shown in Table 3. Descriptions of the projects types are included in the Glossary of Terms at the end of this report.

***Includes improvement needs at existing schools. Number of projects includes the 1,716 schools for which needs were reported.

These needs are based on the full cost of projects that should be in any stage of development during the five-year period of July 2007 through June 2012. Projects included are those that need to be either started or completed at anytime during that period. Estimated costs for the projects may include

Characteristics of Infrastructure

- It serves an essential public purpose.
- It has a long useful life.
- It is infrequent and expensive.
- It is fixed in place or stationary.
- It is related to other government functions and expenditures.
- It is usually the responsibility of local government.

Joint Task Force of the National Association of Home Builders and the National Association of Counties

amounts spent before July 2007 to start a project that needs to be completed during the five-year period or amounts to be spent after June 2012 to complete a project that needs to be started during the five-year period. Officials reporting these needs are not asked to break out the costs by year. These needs represent the best estimates that state and local officials could provide and do not represent only what they anticipate being able to afford.

Why inventory public infrastructure needs?

The General Assembly proclaimed the value of public infrastructure in legislation enacted in 1996 when it deemed an inventory of those needs necessary "in order for the state, municipal and county governments of Tennessee to develop goals, strategies, and programs which would

- improve the quality of life of its citizens,
- support livable communities, and
- enhance and encourage the overall economic development of the state

through the provision of adequate and essential public infrastructure."¹ The public infrastructure needs inventory on which this report is based was derived from surveys of local officials by staff of the state's nine development districts,² the capital budget requests submitted to the Governor by state officials as part of the annual budget process, and bridge and road needs from project listings provided by state transportation officials. The Commission relies entirely on state and local officials to evaluate the infrastructure needs of Tennessee's citizens as envisioned by the enabling legislation.

What infrastructure is included in the inventory?

For purposes of this report, based both on the direction provided in the public act and common usage, public infrastructure is defined as

capital facilities and land assets under public ownership or operated or maintained for public benefit.

¹ Chapter 817, Public Acts of 1996. For more information about the enabling legislation, see Appendix A.

² For more information on the importance of the inventory to the development districts and local officials, see Appendix B.

Further, to be included in the inventory, infrastructure projects must not be considered normal or routine maintenance and must involve a capital cost of at least \$50,000. This approach, dictated by the public act, is consistent with the characterization of capital projects adopted by the General Assembly for its annual budget.

Local officials were asked to describe the needs they anticipated during the period of July 1, 2007, through June 30, 2027, classifying those needs by type of project. State level needs were derived from capital budget requests. Both state and local officials were also asked to identify the stage of development as of July 1, 2007. The period covered by each inventory was expanded to twenty years in 2000 because of legislation requiring its use by TACIR to monitor implementation of Tennessee's Growth Policy Act.³ Plans developed pursuant to that act establish growth boundaries for the anticipated twenty-year population increase and business expansion. This report focuses on the first five years of the period covered by the inventory.

Within these parameters, local officials are encouraged to report their needs as they relate to developing goals, strategies and programs to improve their communities. They are limited only by the very broad purposes for public infrastructure listed in the law. No independent assessment of need constrains their reporting. In addition, the inventory includes capital needs identified by state officials and submitted to the Governor as part of the annual budget process, and for the fourth time, bridge and road needs from project listings provided by state transportation.

What have we learned about public infrastructure needs?

State and local officials report a total need for public infrastructure improvements estimated at \$34.2 billion for 2007 through 2012—an increase of \$5.9 billion from the previous inventory—including the cost of upgrading existing public schools to good condition. The \$20.5 billion increase since the first infrastructure needs report represents both increased need for infrastructure and increased coverage by the inventory. Some of the larger increases between inventories resulted from improvements such as the inclusion of state agency projects

³ Chapter 672, Public Acts of 2000.

(added for the 2002 report) and projects from state highway officials (added for the 2004 report). (See Table 2.)

Table 2. Comparison of Needed Infrastructure Improvements Reported for All Inventories

Report year	Five-year Reported Estimated Cost [in billions]	Changes from Previous Report [in billions]
1999	\$13.7	NA
2001	\$18.2	\$4.5
2002	\$20.5	\$2.3
2004	\$21.6	\$1.1
2005	\$24.4	\$2.9
2007	\$28.3	\$3.8
2008	\$34.2	\$5.9

Transportation and Utilities needs represent more than half of the total increase since the first report. Transportation and Utilities needs increased \$3.2 billion since the last inventory and \$12.5 billion since the first. The two-year increase occurred because the Tennessee Department of Transportation provided TACIR with additional data about bridge needs. The Transportation and Utilities category makes up 52% of the total infrastructure need in the current inventory.

Three other categories increased: Education (20.0%), Health, Safety and Welfare (29.9%), and General Government (32.2%). The increase in the Education category is the result of increase in the cost of new school construction and more needs reported by the state's higher education institutions. The increase in General Government occurred because other facilities and public building needs increased, offsetting a decrease in property acquisition.

Two categories decreased: Economic Development (-7.7%) and Recreation and Culture (-3.4%). More than half of the decrease in Economic Development needs is attributable to a reduction in the estimated cost of a business development project in Nashville. Recreation and Culture decreased because recreation decreased by \$68 million.

The overall condition of Tennessee's public school buildings remains the same, and the cost of school facility needs reported by local officials statewide is increasing. According to local officials, 91% of schools were in good or excellent condition—the same percentage as the previous

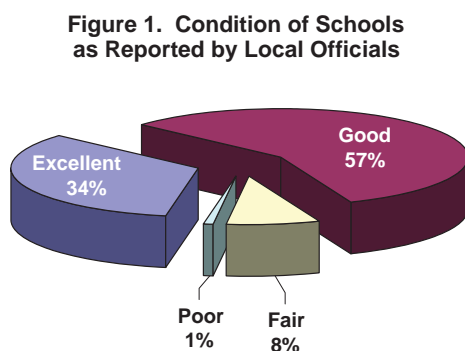
Thirty-two percent of Tennessee's major urban roads are congested.

Twenty-one percent of Tennessee's bridges are structurally deficient or functionally obsolete.

American Society of Civil Engineers 2005 Report Card for America's Infrastructure

inventory (see Figure 1). This is a considerable improvement over the 59% reported in 1999. Infrastructure improvements, including new schools as well as improvements and additions to existing schools, are estimated to cost slightly more than \$3.7 billion. This total is \$225 million more than

the estimate in last year's report—a 6% increase—and approximately \$1 million more than the estimate reported in 1999.



What else needs to be done?

The data collection process continues to improve, and the current inventory is more complete and accurate than ever, particularly with respect to transportation needs. TACIR has tried to strike a balance between requiring sufficient information to satisfy the intent of the law and creating an impediment to local officials reporting their needs. By law, the inventory is required of TACIR, but it is not required of state or local officials; they may decline to participate without penalty. Similarly, they may provide only partial information, making comparisons across jurisdictions and across time difficult. But with each annual inventory, participants have become more familiar with the process and more supportive of the program.

Chapter 672, Public Acts of 2000, formally linked Tennessee's public infrastructure inventory and its Growth Policy Act (Chapter 1101, Public Acts of 1998), requiring that the inventory be used to help monitor implementation of the growth policy act. One such project is currently underway. Also currently underway is a project to improve the technological infrastructure of the inventory itself. This project is setting the stage for future efforts to make the inventory more accessible and useful to state and local policy makers and to other researchers. Plans include making it possible for anyone with an interest to easily access information about and compare the infrastructure needs of cities, counties, and regions. TACIR researchers plan to prepare reports targeting specific categories of needs in the future.

Building Tennessee's Tomorrow:

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Introduction:

Basics of the Public Infrastructure Needs Inventory

The public infrastructure needs inventory is developed using two separate, but related, inventory forms.⁴ Both forms are used to gather information from local officials about needed infrastructure improvements. The second form is also used to gather information about the condition of existing public school buildings, as well as the cost to meet all facilities mandates at the schools, put them in good condition, and provide adequate technology infrastructure. Information about the need for new public school buildings and for school-system-wide infrastructure improvements is gathered in the first form. TACIR staff provide local officials with supplemental information from the state highway department about transportation needs, many of which originate with local officials. This information helps ensure that all known needs are captured in the inventory.

In addition to gathering information from local officials, TACIR staff incorporate capital improvement requests submitted by state officials to the Governor's Office into the inventory. While TACIR staff spend considerable time reviewing all the information in the inventory to ensure accuracy and consistency, the information reported in the inventory is based on the judgment of state and local officials. In many cases, information is limited to that included in the capital improvements programs of local governments, which means that it may not fully capture local needs.

Projects included in the inventory are required to be in the conceptual, planning and design, or construction phase at some time during the five-year period of July 2007 through June 2012, and have an estimated cost of at least \$50,000. Projects included are those that need to be either started or completed during that period. Estimated costs for the projects may include amounts spent before July 2007 to start a project that needs to be completed during the five-year period or amounts to be spent after June 2012 to complete a project that needs to be started during the five-year period. Because the source

⁴ Both forms are included in Appendix C.

of information from state agencies is their capital budget requests, all of those projects are initially recorded as conceptual.

In the context of the public infrastructure needs inventory, the term “mandate” is defined as any rule, regulation, or law originating from the federal or state government that affects the cost of a project.⁵ The mandates most commonly reported are the Americans with Disabilities Act (ADA), asbestos, lead, underground storage tanks, and the Education Improvement Act (EIA). The EIA mandate was to reduce the number of students in each public school classroom by an overall average of about 4½ by fall 2001. Tennessee public schools began working toward that goal with passage of the EIA in 1992 and met it by hiring a sufficient number of teachers; however, some schools still do not have sufficient classroom space to accommodate the additional classes and teachers required.

Except in the case of existing public schools, the inventory does not include estimates of the cost to comply with mandates, only whether the need was the result of a mandate; therefore, mandates themselves are not analyzed here other than to report the number of projects affected by mandates. Even in the case of public schools, aside from the EIA, the cost reported to TACIR as part of the public infrastructure needs inventory is relatively small—less than 1% of the total.

The Public Infrastructure Needs Inventory—It Matters

The Public Infrastructure Needs Inventory is both a product and a continuous process, one that has been useful in

- short-term and long-range planning,
- providing a framework for funding decisions,
- increasing public awareness of infrastructure needs, and
- fostering better communication and collaboration among agencies and decision makers.

⁵ See the Glossary of Terms at the end of the report.

Short-Term and Long-Range Planning: Often the One Opportunity for Proactive Thinking

The Public Infrastructure Needs Inventory has become a tool for setting priorities and making informed decisions by all stakeholders. Many decision makers have noted that in a time of tight budgets and crisis-based, reactive decisions, the annual inventory process is the one opportunity they have to set funding issues aside for a moment and think proactively and broadly about their very real infrastructure needs. For most officials in rural areas and in smaller cities, the inventory is the closest thing they have to a capital improvements program (CIP). Without the inventory, they would have little opportunity or incentive to consider their infrastructure needs. Because the inventory is not limited to needs that can be funded in the short term, it may be the only reason they have to consider the long-range benefits of infrastructure. Among other things, the inventory has documented the limited scope of capital improvements programming and is being used to encourage local officials who have not been using CIPs to adopt them.

Decision Making: Matching Critical Needs to Limited Funding Opportunities

The Public Infrastructure Needs Inventory provides the basic information that helps state and local officials match needs with funding, especially in the absence of a formal capital improvements program. At the same time, the inventory provides information needed by the development districts to update their respective Comprehensive Economic Development Strategy Reports required annually by the Federal Economic Development Administration. Unless a project is listed in that document, it will not be considered for funding by that agency. Information from the inventory has been used to develop lists of projects suitable for other types of state and federal grants as well. For example, many projects that have received Community Development Block Grants were originally discovered in discussions of infrastructure needs with local government officials. And it has helped state decision makers identify gaps between critical needs and available state, local, and federal funding, including an assessment of whether various communities can afford to meet their infrastructure needs or whether some additional planning needs to be done at the state level about how to help them. Most recently, this

data was used to help identify projects that may eligible to receive funding through the American Recovery and Reinvestment Act.

A Special Case: Annual Review of Conditions and Needs of Public School Facilities

The schools' portion of the inventory is structured so that the condition of all schools is known, not just the ones in need of repair or replacement. Data can be retrieved from the database and analyzed to identify particular needs, such as technology. This information is useful in pinpointing pressing needs for particular schools and districts, as well as providing an overview of statewide needs. This unique statewide database of information about Tennessee's public school facilities, conditions and needs continues to be used by the Comptroller's Office of Education Accountability in its review of schools placed on notice by the Department of Education.

Increased Public Awareness, Better Communication and Collaboration

The state's infrastructure needs have been reported to a larger public audience, and the process has fostered better communication between the development districts, local and state officials, and decision makers. The resulting report has become a working document used at the local, regional and state levels. It gives voice to the often-underserved small towns and rural communities. Each update of the report provides an opportunity for re-evaluation and re-examination of projects and for improvements in the quality of the inventory and the report itself. This report is unique in terms of its broad scope and comprehensive nature. Through the inventory process, development districts have expanded their contact, communication, and collaboration with agencies not traditionally sought after (e. g., local boards of education, utility districts, the Tennessee Department of Transportation) and strengthened personal relationships and trust with their more traditional local and state contacts. Infrastructure needs are being identified, assessed, and addressed locally and documented for the Tennessee General Assembly, various state agencies, and decision makers for further assessment and consideration.

Building Tennessee's Tomorrow:

Anticipating the State's Infrastructure Needs

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Infrastructure Needs Statewide

Total Needs Reported Increased 21% Since Last Report, Partly Because of a Two-year Update and More Complete Reporting on Bridge Improvement Needs.

State and local officials estimate the cost of public infrastructure improvements that should be started or completed sometime between July 1, 2007, and June 30, 2012, at \$34 billion. (See Table 3.) This is an increase of \$5.9 billion or 21%, since the last report, which was based on an inventory two years older than the one on which this report is based and it includes additional bridge improvement needs not captured by the last inventory. In the wake of the bridge collapse in Minneapolis in 2007, TACIR staff took a closer look at the information maintained by Tennessee's Department of Transportation about bridge needs in the state and discovered that we had not been gathering all of it into the public infrastructure needs inventory. Consequently, this latest inventory includes nearly \$660 million of bridge improvements that were not captured in earlier inventories.

Transportation and Utilities continues to be the single largest category comprising 52% of all infrastructure needs. This category does not include water utilities, which are reported in the Health, Safety, and Welfare category. Transportation and Utilities continues to be the single largest category comprising 52% of all infrastructure needs. This category does not include water utilities, which are reported in the Health, Safety, and Welfare category. The Health, Safety, and Welfare and Education categories each account for nearly 20% of all infrastructure needs. In TACIR's first inventory, taken in 1997, needs reported in the Health, Safety, and Welfare category totaled \$1 billion more than Education needs. Education needs have since caught up and now slightly exceed the Health, Safety, and Welfare needs. Both categories have grown—partly because of improved reporting—but Education infrastructure needs grew faster in the early years as new schools were built and existing schools were expanded to provide the new classrooms needed for the additional teachers required by the Education Improvement Act of 1992.⁶

⁶ The Education Improvement Act of 1992 reduced class sizes by an average of 4½ students. The mandated reduction was phased in and was fully implemented in the fall of 2001.

"The I-35 Bridge was 40 years old when it fell into the Mississippi. We know we need to fix thousands of other deteriorating bridges around the country. But figuring out how to pay the bill and, more fundamentally, how to restrain our taste for new steel and concrete, will require setting new political rules before more bridges come falling down."

—Donald F. Kettl
Governing, October 2007

**Table 3. Total Number and Estimated Cost of Needed Infrastructure Improvements
Five-year Period July 2007 through June 2012***

Category and Project Type**	Number of Projects or Schools Reported		Five-year Reported Estimated Cost	
Transportation and Utilities	3,044	35.1%	\$ 17,722,418,638	51.8%
Transportation	2,971	34.3%	17,106,712,172	50.0%
Other Utilities	66	0.8%	598,697,566	1.8%
Telecommunications	7	0.1%	17,008,900	0.0%
Education	1,896	21.9%	\$ 6,777,206,905	19.8%
Non K-12 Education	549	6.3%	3,015,869,156	8.8%
Existing School Improvements	1,192	13.7%	1,899,734,970	5.6%
K-12 New School Construction	112	1.3%	1,798,581,339	5.3%
School System-wide Need***	43	0.5%	63,021,440	0.2%
Health, Safety and Welfare	2,274	26.2%	\$ 6,751,104,157	19.7%
Water & Wastewater	1,572	18.1%	3,855,354,975	11.3%
Law Enforcement	288	3.3%	1,826,201,324	5.3%
Stormwater	100	1.2%	371,226,805	1.1%
Public Health Facilities	88	1.0%	323,093,268	0.9%
Fire Protection	151	1.7%	220,725,045	0.6%
Housing	22	0.3%	100,188,740	0.3%
Solid Waste	53	0.6%	54,314,000	0.2%
Recreation and Culture	1,008	11.6%	\$ 1,771,858,638	5.2%
Recreation	784	9.0%	1,118,526,947	3.3%
Community Development	115	1.3%	367,547,066	1.1%
Libraries, Museums, & Historic Sites	109	1.3%	285,784,625	0.8%
Economic Development	172	2.0%	\$ 617,120,154	1.8%
Business District Development	40	0.5%	375,758,154	1.1%
Industrial Sites & Parks	132	1.5%	241,362,000	0.7%
General Government	276	3.2%	\$ 562,998,278	1.6%
Public Buildings	248	2.9%	526,287,575	1.5%
Other Facilities	20	0.2%	32,754,867	0.1%
Property Acquisition	8	0.1%	3,955,836	0.0%
Grand Total	8,670	100.0%	\$ 34,202,706,770	100.0%

*For a complete listing of all reported needs reported in the July 2007 inventory by county and by public school system, see Appendices D and E.

**Descriptions of project types are included in the Glossary of Terms at the end of this report.

***These figures include the needs of that state's special schools and the total differs from the total in Table 8.

The Transportation and Utilities category represents nearly half of the total increase since TACIR's first report on infrastructure needs. Transportation needs alone increased \$3.4 billion since the last report and \$12.5 billion since the first. The 25% increase in transportation needs since the last report can be explained by a combination of factors. First, the estimated cost of 24% of the projects remaining from the 2007 report increased. Second, nearly one-quarter of the 388 projects added are expected to cost more than \$10 million each. And third, \$660 million of bridge needs that were not captured in earlier inventories were added. The two-year changes for each category of need and type of project are shown in Table 4.

**Table 4. Comparison of Estimated Cost of Needed Infrastructure Improvements
July 2007 Inventory vs. July 2004 Inventory***

Category and Project Type**	July 2004 Inventory	July 2007 Inventory	Difference	Percent Change
Transportation and Utilities	\$ 14,570,916,337	\$ 17,722,418,638	\$ 3,151,502,301	21.6%
Transportation	13,664,722,385	17,106,712,172	3,441,989,787	25.2%
Other Utilities	558,019,952	598,697,566	40,677,614	7.3%
Telecommunications	29,774,000	17,008,900	(12,765,100)	-42.9%
Education	\$ 5,647,216,951	\$ 6,777,206,905	\$ 1,129,989,954	20.0%
Non K-12 Education	2,052,714,184	3,015,869,156	963,154,972	46.9%
Existing School Improvements	2,069,189,959	1,899,734,970	(169,454,989)	-8.2%
K-12 New School Construction	1,497,197,808	1,798,581,339	301,383,531	20.1%
School System-wide Need***	28,115,000	63,021,440	34,906,440	124.2%
Health, Safety and Welfare	\$ 5,198,055,196	\$ 6,751,104,157	\$ 1,553,048,961	29.9%
Water & Wastewater	3,199,008,445	3,855,354,975	656,346,530	20.5%
Law Enforcement	1,039,877,979	1,826,201,324	786,323,345	75.6%
Stormwater	258,485,011	371,226,805	112,741,794	43.6%
Public Health Facilities	355,133,468	323,093,268	(32,040,200)	-9.0%
Fire Protection	175,968,148	220,725,045	44,756,897	25.4%
Housing	100,460,938	100,188,740	(272,198)	-0.3%
Solid Waste	69,121,207	54,314,000	(14,807,207)	-21.4%
Recreation and Culture	\$ 1,834,871,543	\$ 1,771,858,638	\$ (63,012,905)	-3.4%
Recreation	1,191,604,759	1,118,526,947	(73,077,812)	-6.1%
Community Development	386,366,258	367,547,066	(18,819,192)	-4.9%
Libraries, Museums, & Historic Sites	256,900,526	285,784,625	28,884,099	11.2%
Economic Development	\$ 668,555,407	\$ 617,120,154	\$ (51,435,253)	-7.7%
Business District Development	397,793,479	375,758,154	(22,035,325)	-5.5%
Industrial Sites & Parks	270,761,928	241,362,000	(29,399,928)	-10.9%
General Government	\$ 425,990,395	\$ 562,998,278	\$ 137,007,883	32.2%
Public Buildings	409,194,698	526,287,575	117,092,877	28.6%
Other Facilities	11,375,697	32,754,867	21,379,170	187.9%
Property Acquisition	5,420,000	3,955,836	(1,464,164)	-27.0%
Grand Total	\$ 28,345,605,829	\$ 34,202,706,770	\$ 5,857,100,941	20.7%

*For a complete listing of all reported needs reported in the July 2007 inventory by county and by public school system, see Appendices D and E.

**Descriptions of project types are included in the Glossary of Terms at the end of this report.

***These figures include the needs of that state's special schools and the total differs from the total in Table 8.

Not every type of infrastructure need included in the Transportation and Utilities category grew since the last inventory. The estimated cost of telecommunication needs, which are included in the Transportation and Utilities category, declined a small amount in overall dollar terms, but decreased the most of any type of need in percentage terms (-42.9%). The largest project in 2004, a citywide project in Morristown costing \$18 million, which has now been completed, accounted for more than half of the total for telecommunications in the last report and for all of the decrease since then.

Three other categories increased since the last report: Education; Health, Safety, and Welfare; and General Government. The state's colleges and universities ("non K-12 education" in the tables) account for most of the 20% growth in education facilities needs. Facility improvements needed at existing public schools actually declined, largely because a \$400 million technology project in Memphis was completed, but the need for new school construction increased by more than enough to offset that decline, causing overall public school needs to increase by \$225 million. The state's special schools (the York Institute in Fentress County, the schools for the deaf in Jackson and Knoxville, and the school for the blind in Nashville) account for most of increase in school system wide needs.

Infrastructure needs related to Health, Safety, and Welfare increased 30% over the last reported inventory, mainly to meet law enforcement and water and wastewater needs. Law enforcement needs increased 76% from the previous report. Two large prison projects account for a third of the cost of law enforcement needs added since the last report, and the average estimated cost increased from \$3.9 million to \$6.3 million of law enforcement projects. Water and wastewater needs increased 21%. Even though the number of projects increased by a net of only 12, 16 of the new ones are estimated to cost \$20 million or more each. Solid waste needs decreased by 21.4%, largely because two projects—one in Memphis and one in Nashville—totaling \$13.7 million were completed between the last inventory and the current one, and a \$5 million project for a materials facility in Nashville was canceled.

The General Government category, which increased a modest 4% in the previous inventory, increased 32% in this latest inventory. General Government has always been either the smallest or the second smallest of the six categories into which needs are grouped for reporting purposes, and increases and decreases that might go unnoticed in the three biggest categories can easily cause large percentage changes in this relatively small category. Most of the increase in General Government needs in the current inventory was for new or improved public buildings. The \$117 million increase in public building needs is a combination of higher cost projects being added and lower cost projects being completed since the last inventory. Only four public building projects have been completed since the 2004 inventory, with a cost of more than \$10 million each, while ten projects with a total estimated cost of nearly \$190 million have been added. Nearly all of

the increase in other facilities needs is attributable to the addition of two new \$10 million projects at the state’s veterans’ cemeteries.

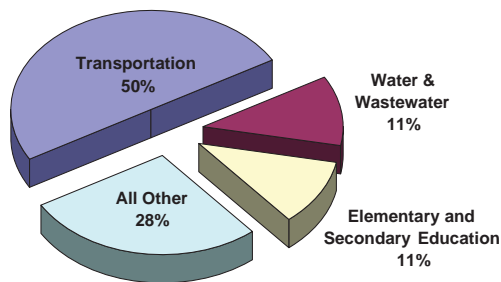
The two categories that decreased are Economic Development and Recreation and Culture. The Economic Development category, which decreased 40% in the last reported inventory, decreased another 8% in this latest inventory. Both types of needs making up the category decreased. Despite the addition of a number of new projects—twice as many as were completed or canceled—business district development needs decreased by \$22 million because of a reduction in the cost estimate of one project in Nashville. Without this reduction, the total need in this category would have increased \$35 million or 8%.

The Recreation and Culture category decreased about the same in dollar terms as the Economic Development category, despite a sizeable increase in the need for new or improved libraries, museums, and historic sites. Still, the percentage changes were relatively modest considering that this inventory is a multi-year update. The decrease in recreation is attributable to the cancellation of a \$150 million stadium project in downtown Nashville. If this project was still active, recreation would have increased.

Transportation, Education, and Water and Wastewater Continue to Dominate Statewide Needs.

As shown in Figure 2, three types of projects dominate reported needs. Transportation needs alone had always been 35% to 40% of total needs,

Figure 2. Percent of Total Reported Cost of Infrastructure Needs by Type of Project Five-year Period July 2007 through June 2012



but now comprise half of the total. Water and wastewater infrastructure improvements and public school facilities improvements each comprise 11% of the total. These three types of need combined represent 72% of the total estimated cost of public infrastructure needs reported in the latest inventory.

Transportation and water and wastewater needs both grew by more than 20% while education needs for public schools had a much smaller increase (6.4%).

State infrastructure Needs Continue to Dominate Overall, but County Needs Now Exceed City Needs.

Although most of the projects in the public infrastructure needs inventory are reported by local officials, they may ultimately be owned or controlled by a variety of entities, including state or federal agencies or public utilities. This is especially true for transportation needs, nearly three-fourths of which are the responsibility of the state. In previous reports, cities dominated four of the six major categories of infrastructure needs, but the categories are now divided between city, county, and state governments.

With significantly increased needs identified for the state's colleges and universities, state-level needs now account for nearly half of the Education category (See Table 5). County governments, which bear primary responsibility for local education needs, continue to report the greatest need for improvement in public school facilities, but the state contributes a significant amount to funding school facilities through its Basic Education Program formula.

Although cities still bear the lion's share of responsibility for needs in the Health, Safety, and Welfare category and in the Recreation and Culture category, counties are now responsible for two-thirds of needs reported in the Economic Development category, including both types of projects included there. This shift occurred partly because all three counties with metropolitan governments are now reported as county governments, which is consistent with their classification by federal agencies. Consequently, Metropolitan Nashville and Davidson County dominates this group and greatly increases the needs reported for it.

Stage of Development Varies With Type of Project; State Needs Are Far More Likely to be in the Conceptual Stage.

Infrastructure needs in the planning and design stage represent a smaller portion of needs than in the prior inventory when they were nearly equal to needs in the conceptual stage. Similarly, needs in the construction stage make up a smaller percentage of needs than in the previous inventory. In contrast, projects in the conceptual stage

Table 5. Total Estimated Cost [in millions] of Needed Infrastructure Improvements by Project Type and Level of Government Five-year Period July 2007 through June 2012

Category and Project Type	City	County	State	Federal	Joint	Other	Total
Transportation and Utilities	\$2,312.1	13.0%	\$2,174.7	12.3%	\$12,630.3	71.3%	\$17,722.4
Transportation	2,147.4	12.6%	1,735.3	10.1%	12,630.3	73.8%	17,106.7
Other Utilities	161.4	27.0%	425.7	71.1%	0.0	0.0%	598.7
Telecommunications	3.3	19.4%	13.7	80.6%	0.0	0.0%	17.0
Education	\$613.1	9.0%	\$3,104.7	45.8%	\$3,016.9	44.5%	\$6,777.2
Non K-12 Education	2.4	0.1%	28.1	0.9%	2,983.3	98.9%	3,015.9
Existing School Improvements	410.2	21.6%	1,476.1	77.7%	0.0	0.0%	1,899.7
K-12 New School Construction	200.3	11.1%	1,575.3	87.6%	0.0	0.0%	1,798.6
School System-wide Need*	0.3	0.4%	25.2	40.0%	33.6	53.3%	63.0
Health, Safety and Welfare	\$2,727.8	40.4%	\$1,491.1	22.1%	\$1,360.2	20.1%	\$6,751.1
Water & Wastewater	2,024.4	52.5%	659.5	17.1%	1.4	0.0%	3,855.4
Law Enforcement	129.0	7.1%	600.3	32.9%	1,096.9	60.1%	1,826.2
Stormwater	335.2	90.3%	34.5	9.3%	0.7	0.2%	371.2
Public Health Facilities	2.2	0.7%	59.7	18.5%	261.2	80.8%	323.1
Fire Protection	150.4	68.1%	70.0	31.7%	0.0	0.0%	220.7
Housing	66.6	66.5%	33.5	33.5%	0.0	0.0%	100.2
Solid Waste	19.9	36.7%	33.6	61.8%	0.0	0.0%	54.3
Recreation and Culture	\$849.5	47.9%	\$446.3	25.2%	\$381.7	21.5%	\$1,771.9
Recreation	568.0	50.8%	272.9	24.4%	239.5	21.4%	1,118.5
Community Development	241.0	65.6%	81.3	22.1%	3.0	0.8%	367.5
Libraries, Museums, & Historic Sites	40.6	14.2%	92.1	32.2%	139.2	48.7%	285.8
Economic Development	\$186.2	30.2%	\$392.8	63.6%	\$0.2	0.0%	\$617.1
Business District Development	127.0	33.8%	236.2	62.9%	0.0	0.0%	375.8
Industrial Sites & Parks	59.2	24.5%	156.6	64.9%	0.2	0.1%	241.4
General Government	\$215.5	38.3%	\$246.4	43.8%	\$73.3	13.0%	\$563.0
Public Buildings	211.1	40.1%	239.7	45.5%	48.0	9.1%	526.3
Other Facilities	1.7	5.2%	6.6	20.2%	24.4	74.6%	32.8
Property Acquisition	2.7	68.9%	0.1	2.5%	0.9	22.2%	4.0
Grand Total	\$6,904.1	20.2%	\$7,856.0	23.0%	\$17,462.6	51.1%	\$34,202.7

*These figures include the needs of that state's special schools and the total differs from the total in Table 8.

Table 6. Needed Infrastructure Improvements by Project Type and Stage of Development
Five-year Period July 2007 through June 2012*

Category and Project Type**	Conceptual		Planning & Design		Construction	
	Number	Cost [in millions]	Number	Cost [in millions]	Number	Cost [in millions]
Transportation and Utilities	1,644	\$ 8,479.3	859	\$ 5,673.7	541	\$ 3,569.4
Transportation	1,610	8,414.2	844	5,635.5	517	3,057.0
Other Utilities	33	58.6	12	34.3	21	505.8
Telecommunications	1	6.5	3	3.9	3	6.6
Education	391	\$ 2,786.5	225	\$ 1,438.6	88	\$ 652.4
Non K-12 Education	304	1,712.3	187	1,086.5	58	217.0
K-12 New School Construction	66	1,040.0	21	329.0	25	429.6
School System-wide Need***	21	34.2	17	23.0	5	5.8
Health, Safety and Welfare	1,294	\$ 3,376.0	586	\$ 1,673.6	394	\$ 1,701.5
Water & Wastewater	882	1,805.4	378	833.2	312	1,216.8
Law Enforcement	180	1,190.8	83	441.8	25	193.7
Stormwater	42	65.8	33	141.1	25	164.4
Public Health Facilities	53	144.8	25	116.8	10	61.5
Fire Protection	95	125.7	43	72.4	13	22.6
Housing	7	18.5	11	48.0	4	33.7
Solid Waste	35	25.1	13	20.4	5	8.9
Recreation and Culture	549	\$ 874.6	281	\$ 654.3	178	\$ 243.0
Recreation	431	539.3	211	392.6	142	186.6
Community Development	61	158.4	36	189.2	18	20.0
Libraries, Museums, & Historic Sites	57	176.9	34	72.5	18	36.4
Economic Development	102	\$ 227.1	55	\$ 196.1	15	\$ 194.0
Business District Development	18	88.0	16	107.1	6	180.7
Industrial Sites & Parks	84	139.1	39	89.0	9	13.3
General Government	146	\$ 222.1	79	\$ 211.1	51	\$ 129.8
Public Buildings	128	204.9	75	193.5	45	127.9
Other Facilities	14	16.0	2	15.4	4	1.3
Property Acquisition	4	1.2	2	2.2	2	0.6
Grand Total	4,126	\$ 15,965.6	2,085	\$ 9,847.3	1,267	\$ 6,490.1

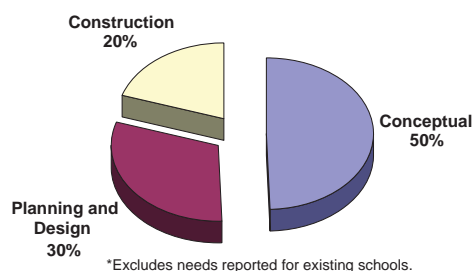
*For complete listings of costs by project type, stage of development, and county, see Appendix D.

**Descriptions of project types are included in the Glossary of Terms at the end of this report. This table does not include existing public schools.

***These figures include the needs of that state's special schools and the total differs from the total in Table 8.

now comprise half (50%) of the total cost of projects in the inventory. These needs were only 40% in the prior inventory. (See figure 3.) Transportation needs had a significant impact on this increase, since they represent half of all needs reported. In the previous inventory less than 33% of transportation needs were conceptual and now nearly 50% are conceptual.

Figure 3. Percent of Total Reported Cost of Infrastructure Needs* by Stage of Development
Five-year Period July 2007 through June 2012



As Table 6 illustrates, the distribution by stage of development varies for different types of projects. The majority of the cost is in the conceptual stage of development for 14 out of the 22 need types. Law enforcement had the largest percentage (62.5%) of needs in the stage conceptual, but more than half of infrastructure improvements needed for public education institutions are also in the conceptual stage. Information about improvement needs at existing schools is not included in this analysis because there are numerous small projects in varying stages of development reported for existing schools, making it impossible to identify a single stage for each school.

State and Federal Mandates Affect 5% of All Projects.

TACIR does not ask local or state officials to split out the marginal cost of state and federal mandates—except for needs at existing schools—because officials reporting their needs often do not have the detailed information necessary to split out the marginal costs associated with facilities mandates (e.g., the cost of ramps and lowered water fountains). TACIR does ask how many projects are affected by mandates. So while it is impossible to determine how much of the estimated total costs are attributable to state and federal mandates, we can say that the overall number of projects affected by mandates such as the federal Americans with Disabilities Act and the state Education Improvement Act (EIA) is a relatively small portion (5.4%) of the total number of projects in the inventory.

Moreover, the number of projects affected by mandates continues to decline. About 15% of projects in the 2001 report were mandate

Table 7. Percent of Projects Reported to Involve Facilities Mandates by Type of Project
Five-year Period July 2007 through June 2012

Type of Project	Number of Projects or Schools Reported	Projects or Schools Affected by Mandates	
		Number	Percent
Existing School Improvements	1,192	287	24.1%
School System-wide Need	43	7	16.3%
Public Health Facilities	88	9	10.2%
Non K-12 Education	549	47	8.6%
Law Enforcement	288	17	5.9%
Housing	22	1	4.5%
K-12 New School Construction	112	5	4.5%
Public Buildings	248	11	4.4%
Solid Waste	53	2	3.8%
Recreation	784	27	3.4%
Stormwater	100	3	3.0%
Water & Wastewater	1,572	30	1.9%
Libraries, Museums, & Historic Sites	109	1	0.9%
Fire Protection	151	1	0.7%
Transportation	2,971	16	0.5%
Industrial Sites & Parks	132	0	0.0%
Community Development	115	0	0.0%
Other Utilities	66	0	0.0%
Business District Development	40	0	0.0%
Other Facilities	20	0	0.0%
Property Acquisition	8	0	0.0%
Telecommunications	7	0	0.0%
Grand Total	8,670	464	5.4%

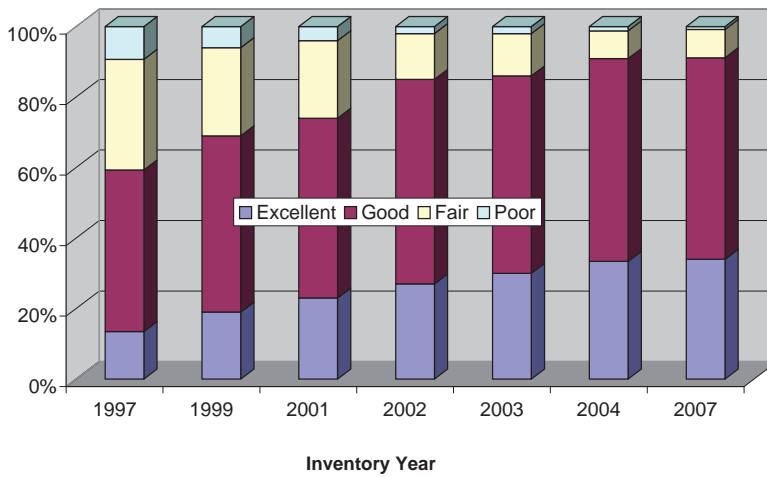
related. The percentage fell to 9% the following year, and the percentage affected by mandates now stands at just over 5%. This is largely because of the declining effect of the EIA, which was completely phased in by fall 2001. Even so, new and existing elementary and secondary schools account for 63% of the total number of projects affected by facilities mandates. Existing schools were far more likely to be associated with mandates than any other type of project.⁷

Most of Tennessee's Public Schools Are in Good or Excellent Condition.

According to local officials, around 91% of their schools are in good or better condition—the same percentage as the previous inventory, but considerably better than the 59% reported in 1999 (see Figure 4).

⁷ Projects reported for existing schools were aggregated so that each school is counted only once in this percentage figure.

**Figure 4. Overall Condition of Public School Buildings
1997 through 2007**



Defining what constitutes a high-quality learning environment is both subjective and difficult. The rating scale used in this inventory is carefully defined, but rating individual schools and school components is left to the judgment of local officials. While the ideal standard is a qualitative rating of “excellent,” as a practical matter, the inventory captures the cost of getting schools into “good” condition—both overall and for each facility component. Schools in good or even excellent condition overall can have individual classrooms, libraries or other components that are in need of upgrading or replacement. Upgrade needs reported in the inventory include estimated costs to put individual components as well as entire schools in good condition.

Overall Public School Building Needs Have Returned to Earlier Levels.

The statewide cost of school facility needs reported by local officials has begun to increase after declining in TACIR’s last report on infrastructure needs. School facilities improvements—including new schools and improvements or additions to existing schools—that need to be started or completed sometime during the 5-year period of July 2007 through June 2012 are estimated to cost more than \$3.7 billion (see Table 8). This total is some \$225 million more than the estimate in the last report—a 6% increase—and \$1 million more than the estimate reported in 1999.

Improvement needs at existing schools declined for the first time since the inventory began, but an increase in the estimated cost of the

“Across the country, aging infrastructure and a growing population have led to a massive need for modernizing old schools and constructing new ones.”

Safety, Growth, and Equity: School Facilities, Richard Raya and Victor Rubin

Table 8. Reported Cost of Public School Infrastructure Needs by Type of Need*

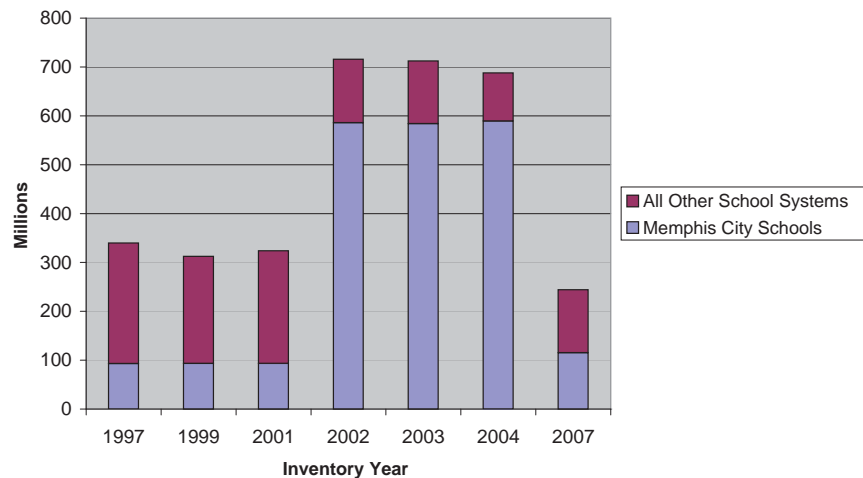
Type of Need	Estimated Cost [in millions]	Percent of Total
New School Construction	\$ 1,798.6	48.2%
Enrollment Growth & Other New School Needs	1,746.7	46.9%
EIA-related Needs	51.9	1.4%
Existing Schools	\$ 1,899.7	51.0%
Facility Component Upgrades	1,497.5	40.2%
Technology	244.3	6.6%
EIA Mandate	74.2	2.0%
Federal Mandates	51.3	1.4%
Other State Mandates	32.4	0.9%
System-wide Needs	\$ 29.4	0.8%
Statewide Total	\$ 3,727.7	100.0%

*This table covers only local public school systems. It does not include the state's special schools, and therefore, totals presented here will not match totals elsewhere in the report.

new schools needed more than made up the difference. The number of new schools needed decreased by 3, but the overall estimated cost climbed \$301 million. It is mainly the increased cost per new school—from \$13 million to \$16 million—that accounts for the overall increase.

The overall decline in facilities upgrade needs at existing schools is accounted for by the completion of a major technology upgrade at the Memphis City Schools, but Memphis City's technology needs still account for nearly half of all technology needs reported (47%). Technology needs are now at their lowest reported level since the start of the public infrastructure needs inventory began. (See Figure 5.)

Figure 5. Estimated Cost of Technology Infrastructure Needs at Existing Public Schools 1997 through 2007



Building Tennessee's Tomorrow:

Anticipating the State's Infrastructure Needs

July 2007 through June 2012

Appendices

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