

Building Tennessee's Tomorrow:

Anticipating the State's Infrastructure Needs

July 2004 through June 2009

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 sixth in a series that presents Tennessee's public infrastructure needs. It covers the five-year period of July 2004 through June 2009 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 Infrastructure Improvements Reported as Needed
Five-year Period July 2004 through June 2009¹**

| Category ² | Number of Projects or Schools Reported | | Five-year Reported Estimated Cost | |
|------------------------------|---|---------------|--------------------------------------|---------------|
| Transportation and Utilities | 2,663 | 32.3% | \$ 14,570,916,337 | 51.4% |
| Education ³ | 1,690 | 20.5% | \$ 5,647,216,951 | 19.9% |
| Health, Safety and Welfare | 2,349 | 28.5% | \$ 5,198,055,196 | 18.3% |
| Recreation and Culture | 1,087 | 13.2% | \$ 1,834,871,543 | 6.5% |
| Economic Development | 206 | 2.5% | \$ 668,501,407 | 2.4% |
| General Government | 246 | 3.0% | \$ 425,990,395 | 1.5% |
| Grand Total | 8,241 | 100.0% | \$ 28,345,551,829 | 100.0% |

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 2004 through June 2009. Projects included are those that need to be either started or completed at anytime during that period. Estimated costs for the projects may include amounts spent before July 2004 to start a project that needs to be completed during the five-year period or amounts to be spent after June 2009 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

¹ For a complete listing of all reported needs by county and by public school system, see Appendices D and E.

² A list of the types of projects included in the six general categories is shown in Table 1. Descriptions of the project types are included in the Glossary of Terms at the end of this report.

³ Includes improvement needs at existing schools and the state's special schools. Number of projects includes the 1,237 schools for which needs were reported.

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

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.”⁴ 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 districts⁵, 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.*

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, 2004, through June 30, 2024, classifying those needs by type of project. State level needs were derived from capital

⁴ Chapter 817, Public Acts of 1996. For more information about the enabling legislation, see Appendix A.

⁵ For more information on the importance of the inventory to the development districts and local officials, see Appendix B.

budget requests. Both state and local officials were also asked to identify the stage of development as of July 1, 2004. 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.⁶ 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 third time, bridge and road needs from project listings provided by state transportation officials.

What have we learned about public infrastructure needs?

State and local officials report a total need for public infrastructure improvements estimated at \$28.3 billion for 2004 through 2009—an increase of \$3.9 billion from the previous inventory—including the cost of upgrading existing public schools to good condition. The \$14.7 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 (added for the 2002 report) and projects from state highway officials (added for the 2004 report). (See Table 2.)

Transportation and Utilities needs represent more than half of the total increase since the first report. The increase in total infrastructure needs is smaller than the increase in the Transportation and Utilities category because the decrease in two other categories of need are larger than the increases in the remaining three categories. Transportation and Utilities needs increased \$4.2 billion since the last inventory and \$9.3 billion since the first. The one year

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

| Report Year | Five-year Reported Estimated Cost [in billions] | Change 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 | \$3.9 |

⁶ Chapter 672, Public Acts of 2000.

increase occurred because the Tennessee Department of Transportation provided TACIR additional data about transportation needs. The Transportation and Utilities category makes up 51% of the total infrastructure need in the current inventory.

The other two categories that increased are Education (7.4%) and General Government (3.6%). The increase in the Education category is the result of more needs reported by the state's higher education institutions. The increase in General Government infrastructure needs occurred because the estimated cost of public building improvements increased by \$28 million, offsetting a decrease of \$9.8 million in other facilities and a decrease of \$3.4 million in property acquisition.

The three categories that decreased are Economic Development (39.8%), Health, Safety, and Welfare (3.1%), and Recreation and Culture (2.6%). 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. The decline in Health, Safety, and Welfare needs occurred mostly because of large decreases in two project types (stormwater and water and wastewater). More stormwater and water and wastewater projects were completed than were newly reported. Recreation and Culture decreased because infrastructure needs to support libraries, museums, and historic sites decreased 27% almost entirely because of the completion of the new Nashville Main Public Library. This offset increases in the other two types of needs in this category, recreation (1.1%) and community development (10.1%).

Less than half of all infrastructure needs in the current inventory were fully funded at the time of the inventory. As in the previous inventory, information about the availability of funding to meet Tennessee's public infrastructure needs indicates that more than half of the funding has not yet been identified. The inventory does not include funding information for needs at existing schools or for needs drawn from the capital budget requests submitted by state agencies. Excluding those needs from the total of \$28.3 billion reported for the period covered by the inventory leaves \$23.2 billion in needs. Local officials are confident of only \$9.0 billion of that amount. Most of it, \$7.8 billion, is for needs that are fully funded; another \$1.2 billion is for needs that are partially funded. That leaves \$14.2 billion of needs for which funding has not yet been identified. It is likely that more of the needs will be met from existing funding sources as they move through planning and design and into the construction process, but it is impossible to know in advance how much of the needs will actually be funded.

32% of Tennessee's major urban roads are congested.

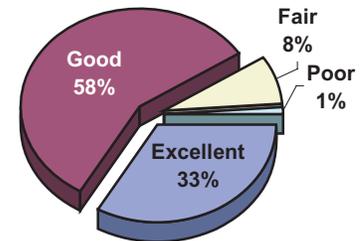
21% of Tennessee's bridges are structurally deficient or functionally obsolete.

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

Breaking the fully funded projects down into the 22 different types of infrastructure in the inventory, local officials expected to raise more than 90% of the funding needed for 8 of the 22 types and more than 60% of the funding needed for 11 of the remaining 14. The state is expected to provide about half the funding for transportation needs and 85% of the funding for the one navigation project that is fully funded. Federal funding is expected to make up less than one third of the total for all types with the exception of one: 78% of the estimated cost of ‘other facilities’ needs that are known to be fully funded will come from federal funds.

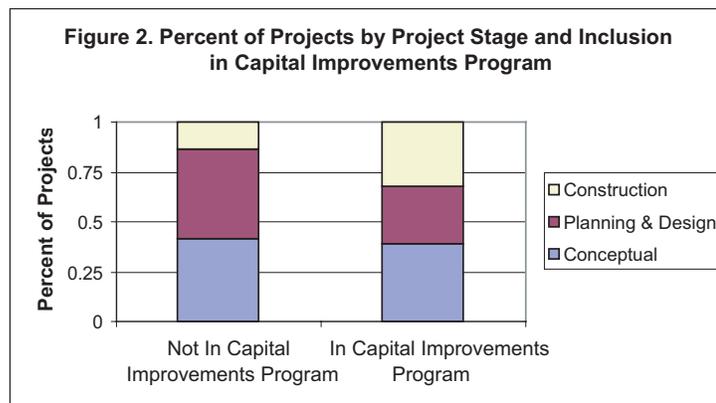
The overall condition of Tennessee’s public school buildings continues to improve, and despite increased enrollment growth, the cost of school facility needs reported by local officials statewide is declining. According to local officials, 91% of schools were in good or excellent condition, up five percentage points from 86% last year (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 less than \$3.6 billion. This total is \$149 million less than the estimate in last year’s report—a 4% decline—and approximately \$144 million more than the estimate reported in 1999. (These figures do not include the needs of the state’s special schools.) The one-year decline can be accounted for primarily by a need that was counted twice in error in the previous report.

Figure 1. Condition of Schools as Reported by Local Officials



Projects included in capital improvements programs (CIPs) are far more likely to be in the construction stage than projects not included in CIPs. One of the questions asked of local officials about their needs is whether they are in a CIP.⁷ As shown in Figure 2, the difference in the percentage of projects under construction between projects in CIPs and those that are not is dramatic. Almost 33% of projects included in a CIP were in the construction phase, whereas only 14% of projects not in a CIP were in the construction phase. Slightly more than \$4.1 billion of needs included in CIPs were in the construction stage whereas \$1.8 billion of needs not in CIPs were in the construction stage, a difference of just over \$2 billion. The relationship between inclusion in a CIP and being in the construction stage has been consistent through all six TACIR reports. It suggests that inclusion in a CIP is an indication of whether a project can and will be funded.

Figure 2. Percent of Projects by Project Stage and Inclusion in Capital Improvements Program



⁷ A copy of the form is included in Appendix C.

State or federal mandates affect about 5% of all projects in the current inventory, down from 6% last year and 8% the year before. The inventory of needs does not require separate estimates of the cost of federal and state mandates except for those affecting existing public school buildings, so it is not possible to determine how much of the total estimated costs of other needs are attributable to mandates; however, about 78% of all projects affected by mandates are new schools or improvements at existing public schools. Mandates at these schools are estimated to cost \$137 million, which is only a quarter of the mandate costs reported in the last inventory. About 25% of this amount is related to federal requirements, and 75% is related to state requirements. About 51% of mandate-related education needs is related to providing additional classrooms to meet the lower class sizes required by the Education Improvement Act (EIA). This percentage has declined dramatically—down from 88% in the last inventory. The decline is not unexpected because the EIA's class size requirements went into effect in 2001.

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.

For the fourth year in a row, local officials were provided an opportunity to report whether projects were funded, and if so, from what source. This report is the second to contain a full section on funding. Response to this question has improved, but despite continued efforts to ensure that availability of funds played no role in whether needs were reported, it again appears that some local officials are understating their true needs and reporting instead the infrastructure they plan to build or believe their tax base can support. Future work should include a closer look at variations across the state, such as how urban and rural areas differ in their ability to meet—and perhaps even assess—their infrastructure needs.

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.