

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

July 2022 through June 2027

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INTRODUCTION

Why do we rely on the public sector for roads, bridges, water lines, and schoolhouses? Certain goods and services—such as clean drinking water, education, commerce, and roads—must be provided in the interest of general health and safety. 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. Therefore, we look to those who represent us in our public institutions to set priorities and find ways to fund them.

Why inventory public infrastructure needs?

In 1996, the Tennessee General Assembly enacted legislation that affirmed the value of public infrastructure. An inventory of necessary infrastructure was laid out “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; needed capital projects from the Tennessee Board of Regents (TBR), and bridge and road needs from project listings provided by state transportation officials. The Tennessee Advisory Commission on Intergovernmental Relations (Commission) relies entirely on state and local officials to evaluate the infrastructure needs of Tennessee’s citizens as envisioned by the enabling legislation.

¹ Public Chapter 817, 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.

What infrastructure is included in the inventory?

For the purposes of this report and based 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. 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 \$50,000.³

Local officials were asked to describe anticipated needs for the period of July 1, 2022, through June 30, 2042, 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—conceptual, planning and design, or construction—as of July 1, 2022. Because of legislation requiring the inventory's use by the Commission to monitor the implementation of Tennessee's Growth Policy Act in 2000, the period covered by each inventory was expanded from 5 years to 20 years.⁴ Plans developed pursuant to that act established growth boundaries for annexation by the state's municipalities. This report focuses on the first five years of the period covered by the inventory and the following types of public infrastructure (see the glossary for definitions of project types):

- Transportation and Utilities
 - Transportation
 - Other Utilities
 - Broadband
- Education
 - Post-secondary Education
 - School Renovations
 - New Public Schools and Additions
 - Other Education
 - School System-wide
- Health, Safety, and Welfare
 - Water and Wastewater
 - Law Enforcement
 - Public Health Facilities
 - Housing
 - Fire Protection

³ School technology infrastructure is included for existing schools regardless of cost in order to provide information related to the technology component of the state's education funding formula in effect at the time of the survey.

⁴ Public Chapter 672, Acts of 2000.

- Storm Water
- Solid Waste
- Recreation and Culture
 - Recreation
 - Libraries, Museums, and Historic Sites
 - Community Development
- General Government
 - Public Buildings
 - Other Facilities
- Economic Development
 - Industrial Sites and Parks
 - Business District Development

Within these parameters, local officials are asked to report their needs as they relate to developing goals, strategies, and programs to improve their communities. They are limited by only the very broad purposes for public infrastructure as prescribed by law. No independent assessment of need constrains their reporting. In addition, the inventory includes bridge and road needs from project listings provided by the Tennessee Department of Transportation (TDOT), capital projects from TBR, and capital needs identified by state officials and submitted to the governor as part of the annual budget process.

How is the inventory accomplished?

The Public Infrastructure Needs Inventory is developed using two separate, but related, inventory forms⁵ to gather information from local officials about necessary infrastructure improvements. The Existing School Facility Needs Inventory Form is 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. The General Public Infrastructure Needs Inventory Form is used to gather information about all other types of infrastructure, including the need for new public school buildings and school system-wide infrastructure improvements not gathered on the school inventory form. Commission staff provide local officials with supplemental information from the state highway department about transportation needs, many of which originate from local officials. This information helps ensure that all known needs are captured in the inventory.

⁵ Both forms are included in appendix C.

In addition to gathering information from local officials, Commission staff incorporates capital improvement requests submitted by state officials to the governor's budget office, bridge and road needs from project listings provided by TDOT, and needed capital projects from TBR. While Commission staff spends considerable time reviewing all the information in the inventory to ensure accuracy and consistency, it is based on the judgment of state and local officials. In many cases, information about local needs is limited to those included in the capital improvements programs of local governments, which means the inventory may not fully capture all local requirements.

As discussed above, projects included in the report are only those in the conceptual, planning and design, or construction stage at some point during the five-year period of July 2022 through June 2027. For projects started before the five-year period, estimated costs for the projects may include amounts spent before July 2022; for projects that won't be completed during the five-year period, amounts must be spent after June 2027. All those projects are initially recorded as conceptual because capital budget requests generally serve as the source of information from state agencies (TDOT and TBR, excepted).

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.*⁶ 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 reduced the target number of students in each K-12 public school classroom by fall 2001. Tennessee public schools began working toward that goal after the passage of the EIA in 1992, which was met by adding classroom space and hiring a sufficient number of teachers.⁷ However, some schools continue to use portable classrooms because they still do not have sufficient traditional classroom space to accommodate both teachers and students.

Except in the case of existing public schools, the inventory does not include estimates of the cost to comply with mandates. Even in the case of public schools, with the exception of the EIA, the compliance cost reported to the Commission as part of the Public Infrastructure Needs Inventory is relatively small—accounting for less than 1% of the total reported Public School Infrastructure Needs. See appendix E-9.

How is the inventory used?

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

⁶ See the Glossary of Terms at the end of the report.

⁷ Tennessee Comptroller of the Treasury. 2004. "The Education Improvement Act: A Progress Report." https://comptroller.tn.gov/content/dam/cot/orea/advanced-search/orea-reports-2004/2004_OREA_EdImpAct.pdf.

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

The inventory promotes planning and setting priorities.

The Public Infrastructure Needs Inventory has become a tool for setting priorities and making informed decisions that is used by all stakeholders. Many decision-makers have noted that the annual inventory process offers an opportunity to set funding issues aside for a moment and think proactively and broadly about real infrastructure needs, especially in times of tight budgets and crisis-based, reactive decisions. For most officials in rural areas and 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 formal opportunity officials have to consider the long-range benefits of infrastructure.

The inventory helps match critical needs to limited funding opportunities.

In the absence of a formal CIP, the Public Infrastructure Needs Inventory provides basic information to state and local officials to match needs with funding. 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 US Economic Development Administration*.⁸ Projects are not considered for funding by that agency unless they are listed in one of these reports. 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. The inventory has also 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.

⁸ US Economic Development Administration. "Comprehensive Economic Development Strategy (CEDs)." <https://www.eda.gov/ceds/>.

The inventory provides an annual review of conditions and needs of public school facilities.

Local officials are asked to report the condition of all schools on the Existing School Facility Needs Inventory Form, not just those 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 school systems, as well as providing an overview of patterns and trends across the state. This unique statewide database provides information about the condition and needs of Tennessee's public school facilities.

The inventory increases public awareness, communication, and collaboration among decision-makers.

As a result of the inventory, the state's infrastructure needs have been reported to a broader public audience, and the process has fostered better communication between the development districts, local and state officials, and other decision-makers. The resulting report has become a working document used at the local, regional, and state levels. It gives voice to small towns and rural communities with limited planning resources. 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 regarding its broad scope and comprehensive nature. Through the inventory process, development districts have expanded their contact, communication, and collaboration across agencies (e.g., local boards of education, utility districts, and TDOT) and strengthened personal relationships and trust among 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.

What else needs to be done?

The data collection process continues to improve, and the current inventory is more complete and accurate than ever. The Commission has tried to strike a balance between requiring sufficient information to satisfy the intent of the law and creating a burden on local officials reporting their needs. By law, the inventory is required of the Commission, but it is not required of state or local officials; they may decline to participate without penalty. Similarly, they may provide only partial information. This can make 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. Improvements in the technological infrastructure of the inventory itself have set the stage for future efforts to make the inventory more accessible and useful to state and local policymakers and researchers.

As stated in the previous infrastructure report, Commission staff conducted an analysis to compare and contrast the effects of COVID-19-induced disruptions by using historical trends to determine their effects on public infrastructure development or priorities. In the second phase of the analysis,⁹ which focused on the effects of social disruptions and economic downturns from the global pandemic on public infrastructure needs, Commission staff found that the recession caused by the COVID-19 pandemic had no effect on reported public infrastructure needs. However, the shift to remote learning resulting from the pandemic increased the need for technology.

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⁹ Carpenter, Tyler, Presley Powers, Michael Mount, Matt Owen, Jennifer Barrie, and Mark McAdoo. 2023. *The Effect of the COVID-19 Recession on Public Infrastructure Needs Interim Report Phase Two: Effects of the Great Recession and COVID-19 Recession Compared*. https://www.tn.gov/content/dam/tn/tacir/2023publications/2023_PINIspecialProject2_StaffReport.pdf.

State Total

Total Estimated Cost* for Infrastructure Improvements
\$68,251,095,652

TOP 3

Transportation (in billions)

Post-secondary Education (in billions)

Water and Wastewater (in billions)

■ = Local
■ = Regional (Serves Multiple Counties)

Estimated Cost of Needed Infrastructure for State Total Five-year period July 2022 through June 2027		
Project Type	Conceptual	Planning & Design + Construction
Transportation	\$ 10,467,663,333	\$ 24,254,301,278
Post-secondary Education	3,214,920,200	3,601,255,740
Water and Wastewater	1,351,858,180	5,066,512,456
School Renovations	4,450,233,180	1,225,482,736
New Public Schools & Additions	2,065,425,174	1,997,447,370
Law Enforcement	1,471,007,000	1,117,539,121
Public Buildings	1,560,622,000	676,635,628
Recreation	725,101,645	1,195,157,861
Public Health Facilities	830,913,920	260,482,092
Other Utilities	141,920,000	411,565,000
Fire Protection	247,387,030	173,488,235
Community Development	69,989,000	315,592,873
Other Facilities	54,888,000	204,350,218
Housing	12,582,000	220,888,350
Libraries, Museums, & Historic Sites	95,201,200	110,846,988
Industrial Sites and Parks	56,659,000	130,459,896
Other Education	62,400,000	65,780,000
Storm Water	91,550,871	24,184,545
Solid Waste	59,960,000	29,547,289
School-System-wide	17,992,000	37,184,837
Business District Development	31,920,000	20,209,406
Broadband	30,000,000	1,990,000
Total	\$ 27,110,193,733	\$ 41,140,901,919

Cost of Needed New School Space vs Improvements to Existing Schools and Student Enrollment Growth

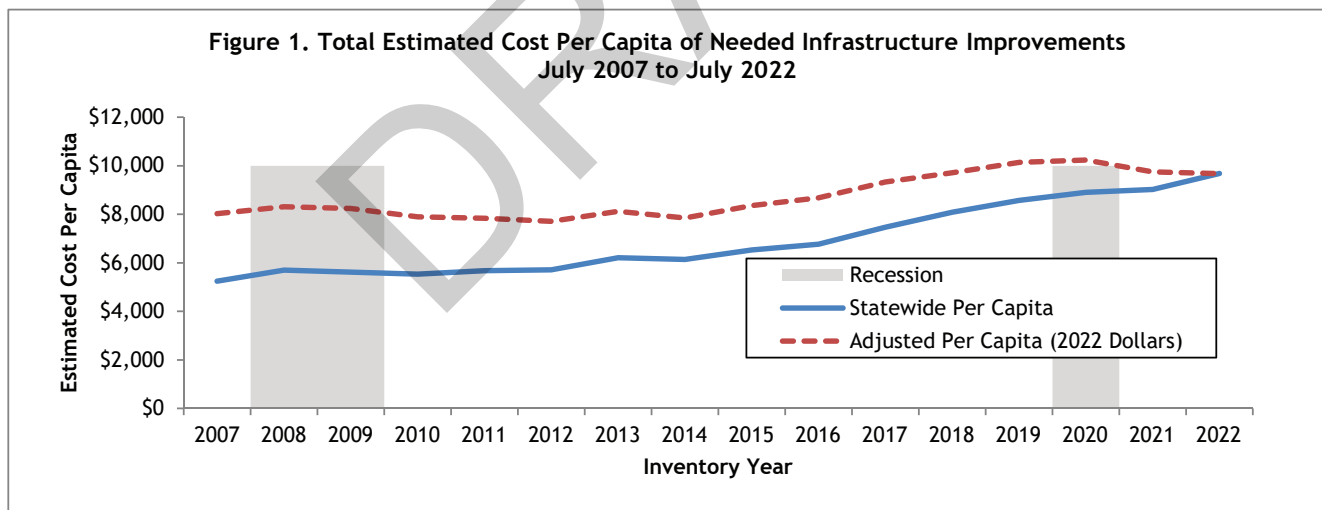
*Total Estimated Cost = Conceptual + Planning & Design + Construction

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INFRASTRUCTURE NEEDS OVERVIEW

The estimated cost per capita of all needed public infrastructure improvements in Tennessee increased for the eighth straight reporting period but decreased when adjusted for inflation¹⁰ (see figure 1). State and local officials report an increase of approximately \$5 billion (9%) in this year’s inventory (see table 1), which brings the estimated cost of public infrastructure improvements that need to be in some stage of development (see figure 2) between July 1, 2022, and June 30, 2027, to \$68 billion.¹¹ Improvements needed for the following categories continue to account for most of the total estimated cost of the inventory: Transportation and Utilities; Education; and Health, Safety, and Welfare. This year, the categories most responsible for the reported increase in total estimated cost are Health, Safety, and Welfare, followed by Education and General Government. The percentage of funded infrastructure needs reported at the time the inventory was conducted increased by 1% from 2021 to 2022.



¹⁰ Federal Reserve Bank of St. Louis, State and Local Government Consumption Price Index.

¹¹ For complete listings of all needs reported in the July 2022 inventory by county and by public school system, see appendixes D and E.

Table 1. Comparison of Estimated Cost of Needed Infrastructure Improvements
July 2021 Inventory vs. July 2022 Inventory

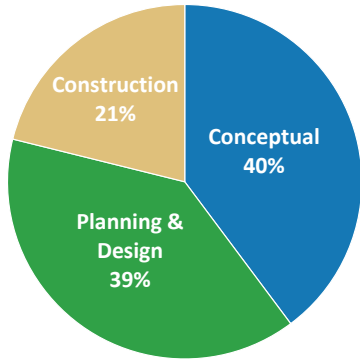
Category and Type of Infrastructure	July 2021 Inventory	July 2022 Inventory	Difference	Percent Change
Transportation and Utilities	\$ 35,266,674,212	\$ 35,307,439,611	\$ 40,765,399	0.1%
Transportation	34,752,874,212	34,721,964,611	(30,909,601)	-0.1%
Other Utilities	505,810,000	553,485,000	47,675,000	9.4%
Broadband	7,990,000	31,990,000	24,000,000	300.4%
Education	\$ 14,815,976,368	\$ 16,738,121,237	\$ 1,922,144,869	13.0%
Post-secondary Education	5,569,076,520	6,816,175,940	1,247,099,420	22.4%
School Renovations*	5,455,890,542	5,675,715,916	219,825,374	4.0%
New Public Schools & Additions	3,608,454,520	4,062,872,544	454,418,024	12.6%
Other Education**	90,170,000	128,180,000	38,010,000	42.2%
School-System-wide	92,384,786	55,176,837	(37,207,949)	-40.3%
Health, Safety and Welfare	\$ 8,949,487,932	\$ 10,957,901,089	\$ 2,008,413,157	22.4%
Water and Wastewater	5,269,214,128	6,418,370,636	1,149,156,508	21.8%
Law Enforcement	2,094,023,552	2,588,546,121	494,522,569	23.6%
Public Health Facilities	784,295,092	1,091,396,012	307,100,920	39.2%
Housing	256,984,080	233,470,350	(23,513,730)	-9.1%
Fire Protection	356,857,313	420,875,265	64,017,952	17.9%
Storm Water	109,537,474	115,735,416	6,197,942	5.7%
Solid Waste	78,576,293	89,507,289	10,930,996	13.9%
Recreation and Culture	\$ 2,275,528,258	\$ 2,511,889,567	\$ 236,361,309	10.4%
Recreation	1,785,925,373	1,920,259,506	134,334,133	7.5%
Libraries, Museums, and Historic Sites	208,908,188	206,048,188	(2,860,000)	-1.4%
Community Development	280,694,697	385,581,873	104,887,176	37.4%
General Government	\$ 1,328,740,909	\$ 2,496,495,846	\$ 1,167,754,937	87.9%
Public Buildings	1,082,802,857	2,237,257,628	1,154,454,771	106.6%
Other Facilities	245,938,052	259,238,218	13,300,166	5.4%
Economic Development	\$ 245,741,014	\$ 239,248,302	\$ (6,492,712)	-2.6%
Industrial Sites and Parks	202,121,608	187,118,896	(15,002,712)	-7.4%
Business District Development	43,619,406	52,129,406	8,510,000	19.5%
Grand Total	\$ 62,882,148,693	\$ 68,251,095,652	\$ 5,368,946,959	8.5%

*School Renovations include school technology projects with estimated costs below the \$50,000 threshold used for other types of infrastructure included in the inventory. Individual technology projects under the threshold totaled \$4,204,829 in 2021 and \$3,422,369 in 2022.

**Other Education includes infrastructure improvements reported at state educational institutions not associated with institutes of higher education or at the county, city, or special school systems level. Examples include the Tennessee School for the Deaf and Alvin C. York Institute.

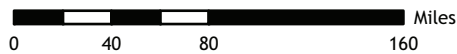
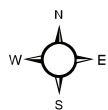
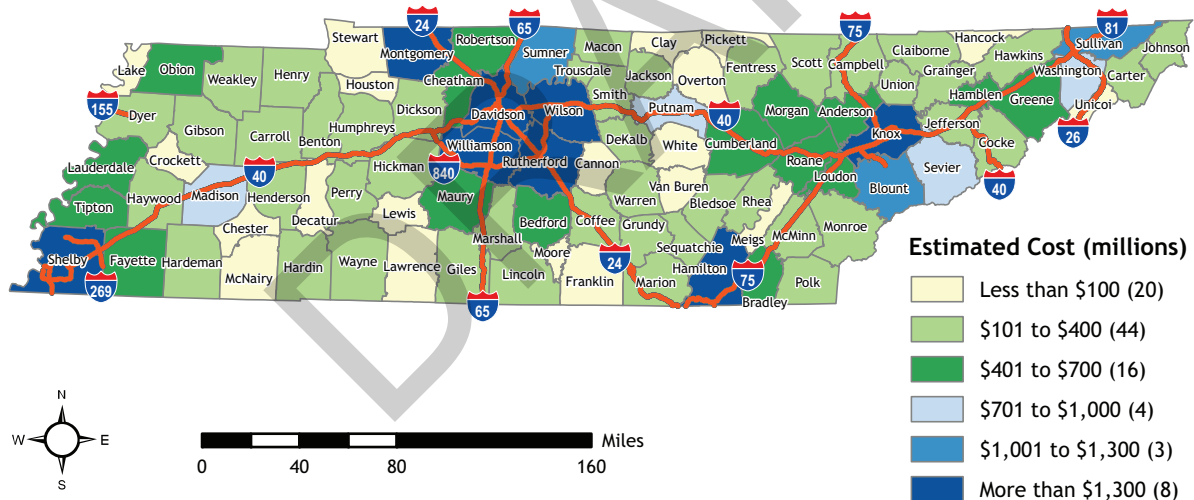
Figure 2. Percent of Total Reported Cost of Infrastructure Improvements by Stage of Development

Five-year Period July 2022 through June 2027



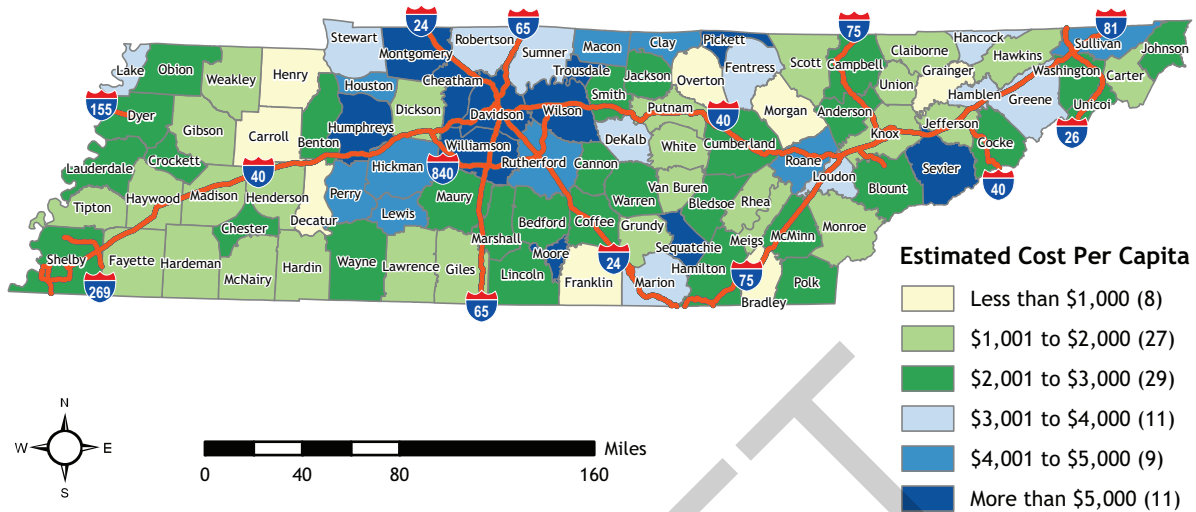
Public infrastructure is needed in every corner of the state, from highly populated counties like Shelby and Davidson to rural counties like Humphreys and Pickett. In general, it has been the case throughout the history of this inventory that the more people living in a county and the more that population grows, the more infrastructure the county will need (see map 1). However, relative to their populations, counties with small populations need just as much or more infrastructure than counties with large populations (see map 2). Individual county summaries, starting on page 21, offer a breakdown of infrastructure needs by county.

Map 1. Total Estimated Cost of Needed Infrastructure Improvements
Five-year Period July 2022 through June 2027



Note: County totals include the total estimated cost of both regional and local infrastructure needs but do not include the \$5,095,168,535 for infrastructure improvements that cross county lines.

Map 2. Estimated Cost Per Capita of Needed Local Infrastructure Improvements
Five-year Period July 2022 through June 2027



Public infrastructure needed for Health, Safety, and Welfare accounted for the largest cost increase in this year's inventory.

Health, Safety, and Welfare infrastructure needs increased by \$2 billion—37% of the overall increase in the total estimated cost of the inventory. Over half of this increase—\$1 billion—is needed for water and wastewater infrastructure improvements, including new projects and increases in the cost of existing projects. Of the new projects, four were \$30 million or more: a new water treatment plant in Wilson County (\$75 million), an intake line to the Pigeon Forge Water Treatment Plant in Sevier County (\$50 million), a sewer upgrade in Kingsport (\$40 million), and a new water plant in Lewisburg (\$30 million). The increased cost of existing water and wastewater infrastructure needs is primarily driven by a single project that increased by \$506 million (69%) as a result of updated cost estimates. That project, a water project including a river water quality update, corrective action, improvements, and upgrades to the sewer system in Nashville, is related to a consent decree enforced by the US Environmental Protection Agency. The overall increase in water and wastewater needs was offset by \$27 million in cost decreases, \$324 million in completed projects, and \$22 million in canceled projects. The largest completed project is a sewer system rehabilitation in Springfield (\$63 million).

With funds made available by the passage of the federal American Rescue Plan Act (ARP) of 2021, the Tennessee Department of Environment and Conservation (TDEC) has been administering more than \$1 billion in non-competitive and competitive grants targeting water, wastewater, and

storm water infrastructure needs.¹² TDEC has awarded 100% of the ARP non-competitive grants totaling \$996 million dollars through 337 grants to 329 local governments.¹³ As of December 12, 2023, TDEC has awarded 49 competitive grants to 41 local governments totaling \$191 million.¹⁴

Infrastructure needs reported for law enforcement, public health facilities, and fire protection also increased by over \$50 million each, totaling \$866 million. Law enforcement needs increased by \$495 million, largely driven by two projects: a new Tennessee Emergency Management Agency (TEMA) Emergency Operations Center in Nashville (\$186 million) and the expansion of the jail and justice center in Morristown, which increased by \$100 million. Needs for new public health facilities include a client services building in Middle Tennessee for the Tennessee Department of Intellectual and Developmental Disabilities (\$73 million) and a \$54 million facility to replace the Western Mental Health Institute in Bolivar. The largest cost increase for fire protection is a \$75 million project to build four new fire stations in Nashville (\$27 million increase). The other new needs and increases reported for these types of needs are smaller and scattered across the state and are offset by cost decreases and completed and canceled projects.

Education infrastructure needs increased, mostly because of post-secondary education needs.

The estimated cost of infrastructure needs for Education increased by \$2 billion (13%), which was driven primarily by a \$1 billion increase in post-secondary education needs. Examples of new post-secondary education projects include a facility to accommodate growth in the College of Business (\$227 million) and a chemistry building to replace the current building (\$151 million) at the University of Tennessee, Knoxville (UTK). Examples of increases to the cost of existing post-secondary education projects include the renovation of Neyland Stadium at UTK (\$108 million increase) and the addition to Fletcher Hall at UT Chattanooga (\$66 million increase). The increase in post-secondary education needs was offset by cost decreases, canceled projects, and completed projects, including the completion of a multi-disciplinary science lab at UTK (\$100 million) and new student housing at Tennessee State University (\$79 million).

Other infrastructure needs within the Education category—including needs for K-12 education, such as school renovations and new public

¹² Tennessee Department of Environment and Conservation. 2021. "TDEC Announces Water Infrastructure Investment Plan with Funding from American Rescue Plan Act." <https://www.tn.gov/environment/news/2021/12/17/tdec-announces-water-infrastructure-investment-plan-with-funding-from-american-rescue-plan-act.html>.

¹³ Tennessee Department of Environment and Conservation. "ARP Non-Competitive Grant Program Statistics." https://www.tn.gov/content/dam/tn/environment/arp/documents/arp_non-competitive-statistics.pdf.

¹⁴ Tennessee Department of Environment and Conservation. 2023. "TDEC Announces \$192.2 Million in Water Infrastructure Investments." December 12. <https://www.tn.gov/environment/news/2023/12/12/191-2-million-water-infrastructure-investments.html>.

schools and additions, and other education—increased by a total of \$712 million. Local officials reported an increase of \$454 million in the need for new public schools and additions, which range from a high of \$70 million for a high school in Loudon County to a low of \$20 million each for a middle school and elementary school in Athens, and an increase of \$220 million in the need for school renovations. Costs for existing projects increased by \$441 million. The need for other education projects increased by \$38 million—examples of other education facilities include the Tennessee School for the Deaf and the Tennessee School for the Blind. The increase in school renovations, new public schools and additions, and other education needs was offset by three completed schools (\$151 million total), two canceled schools (\$49 million total), decreases in school technology needs and mandates, and a decrease in school-system-wide needs because of completed projects (\$37 million). See table 2.

Table 2. Estimated Cost of School Infrastructure Improvements by Type of Need
July 2021 Inventory vs. July 2022 Inventory

Type of Infrastructure	July 2021 Inventory	July 2022 Inventory	Difference	Percent Change
New Public Schools & Additions	\$ 3,608,454,520	\$ 4,062,872,544	\$ 454,418,024	12.6%
New Schools	2,951,435,000	3,382,888,751	431,453,751	14.6%
Additions	657,019,520	679,983,793	22,964,273	3.5%
School Renovations	\$ 5,455,890,542	\$ 5,675,715,916	\$ 219,825,374	4.0%
Renovations	5,210,376,842	5,475,366,348	264,989,506	5.1%
Technology	148,074,511	113,341,954	(34,732,557)	-23.5%
Mandates	97,439,189	87,007,614	(10,431,575)	-10.7%
System-wide Needs	\$ 92,384,786	\$ 55,176,837	\$ (37,207,949)	-40.3%
Statewide Total	\$ 9,156,729,848	\$ 9,793,765,297	\$ 637,035,449	7.0%

School systems must comply with the Tennessee Constitution’s guarantee of the right of access to public education,¹⁵ as well as with the Tennessee Education Improvement Act of 1992,¹⁶ which places limits on the number of students in classrooms. School systems with growing enrollment face the challenge of providing enough space for students, while other school systems need to renovate or replace their schools because of age, condition, or issues concerning school restructuring or consolidation, all while costs increase. Similar issues face Tennessee’s public institutions of higher education—dormitories need to be replaced because of their age, and classrooms and labs need to be added or upgraded to meet typical market demands.

Because of the condition of many Tennessee schools, improvements to existing space are necessary. Although 173 public schools (10%) in Tennessee were rated by their local school officials as being in fair or poor

¹⁵ Article XI, Section 12, Constitution of the State of Tennessee.

¹⁶ State of Tennessee Comptroller of the Treasury. 2004. “The Education Improvement Act: A Progress Report.” https://comptroller.tn.gov/content/dam/cot/orea/advanced-search/orea-reports-2004/2004_OREA_EdImpAct.pdf.

condition (see figure 3), only 154 of those schools were reported as needing improvements to existing space, which accounts for 42% of total estimated needs for renovations. See figure 3, table 3, and appendix E.

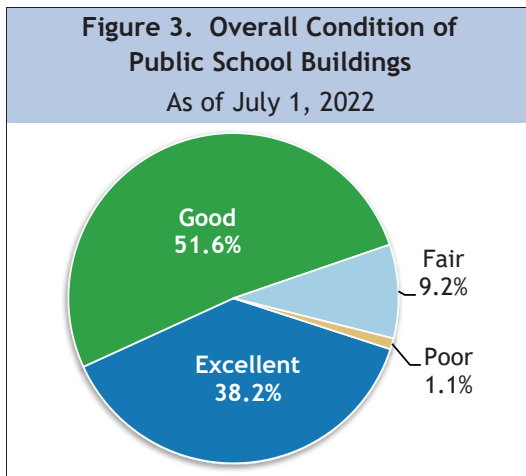


Table 3. Renovations Costs by School Condition
Five-year Period July 2021 through June 2026

School Condition	Number of Schools	Estimated Cost to Renovate	Average Cost Per School
Good or Excellent	994	\$ 3,165,615,257	\$ 3,184,724
Fair or Poor	154	2,309,751,091	14,998,384
Total	1,148	\$ 5,475,366,348	\$ 4,769,483

Note: This does not include facility upgrade costs of \$163,142 captured in the school system-wide category used for the total renovation cost in table 2.

The cost of needed education infrastructure has increased over the years mainly because of the rising cost of construction materials and labor. The US Bureau of Labor Statistics’ New School Construction Price Index rose almost 76 points (54%) from July 2012 to July 2022.¹⁷ In 2012, the average cost of a completed new school in Tennessee was \$15 million. But the three schools completed since last year’s report averaged \$51 million each, including a new \$105 million elementary and high school in Sumner County, a \$28 million middle school in the city of Bristol, and a \$20 million elementary school in Knox County. Local officials report needing 73 more schools over the next five years at an average of \$41 million each.

Within General Government, the need for public buildings drove this year’s increase.

The need for General Government infrastructure increased by \$1 billion (88%) to a total of \$2 billion. Almost all of this increase (99%) was driven by an increase in public building infrastructure needs, with much of it resulting from three new projects: a multi-agency law enforcement training academy in Nashville at Cockrill Bend (\$356 million), a replacement facility for the RS Gass state public health lab in Nashville (\$190 million), and renovations to Legislative and War Memorial Plazas in downtown Nashville (\$183 million). Costs for existing public building needs increased by \$104 million. The cost of infrastructure needed for other facilities—structures that are publicly owned but not typically open to the public, like maintenance facilities and salt bins—increased by \$13 million (5%) to a total of \$259 million. The overall increase in General Government needs was largely offset by completed public buildings and other facilities (\$130 million).

¹⁷ US Bureau of Labor Statistics. 2022. PPI industry data for new school building construction is not seasonally adjusted. <https://www.bls.gov/data/>.

The need for projects that support Recreation and Culture increased.

The estimated cost of infrastructure needs for Recreation and Culture increased by \$236 million (10%) to a total of \$3 billion. Within the Recreation and Culture category, recreation needs increased by \$134 million because of new projects totaling \$178 million and cost increases totaling \$182 million. Two examples of large new projects are renovations to Henry Horton State Park Lodge in Marshall County (\$27 million) and an education and training center at Lone Oaks Farm in Hardeman County (\$22 million). The increase in recreation needs was offset by \$91 million in cost decreases and canceled projects and \$140 million in completed projects. The largest cost decrease was for the new Clarksville Athletic Complex (\$54 million), and the two largest completed projects were the Paris Landing Inn in Henry County (\$44 million) and the Fall Creek Falls State Park Inn in Van Buren County (\$39 million). Of the other types of infrastructure within the Recreation and Culture category, community development needs increased by \$105 million mostly because of the \$100 million increase in the cost of infrastructure improvements around the soccer facility at the Nashville fairgrounds, while needs for libraries, museums, and historic sites decreased by \$3 million.

Although the overall needs for the Transportation and Utilities category increased, transportation needs decreased slightly.

Infrastructure needs for Transportation and Utilities increased for the eighth year in a row (\$41 million), but by less than in previous years, primarily because transportation needs decreased. However, it continues to be the category with the largest cost in the inventory, with \$35 billion in total needs (52% of the inventory). The total cost of transportation projects decreased by \$31 million, less than 1%, largely because project completions (\$1 billion) and cost decreases (\$632 million) offset new projects (\$535 million) and cost increases (\$2 billion).

Although reported transportation needs decreased, the needs for other infrastructure within the Transportation and Utilities category increased. For example, needs reported for other utilities, including projects such as installation of gas lines and electrical cables, increased by \$48 million (9%) in this year's inventory and now total \$554 million. Local officials also reported an increase of \$24 million in needs for broadband infrastructure totaling \$32 million—four times as much as was reported in last year's inventory. The increase is because of one new project: the Harriman Utility Board will install broadband infrastructure in Roane County (\$24 million). Broadband needs in the inventory include only projects owned by government entities. As a result, the inventory doesn't fully capture the need for expanded access to broadband in many communities because broadband deployment in many areas relies less on municipal utilities,

which are sub-entities of municipal governments, and more on privately owned entities.

Economic Development needs decreased in this year’s inventory—mostly because of completed industrial sites and parks.

Infrastructure needs for Economic Development decreased by \$6 million (3%). The decrease was driven by a \$15 million decrease in the estimated cost for needed infrastructure at industrial sites and parks, which largely comes from \$30 million in completed projects—including the completion of an 80-acre industrial park site (\$15 million) at the Tri-Cities Airport and a substation (\$8 million) to accommodate Nokian Tyres in Dayton—and a canceled industrial park building in Van Buren County (\$7 million). The overall decrease in Economic Development needs was offset by new industrial sites and parks (\$17 million) and cost increases for both industrial sites and parks and business district development (\$14 million).

In this year’s inventory, funding has not been identified for two-thirds of the estimated cost of needed improvements.

Information about funding for public infrastructure needs reported by officials indicates that 67% of the funds required to meet those needs was not available at the time the inventory was conducted. Excluding improvements needed at existing schools and those drawn from capital budget requests submitted by state agencies—neither of which includes funding information—only \$17 billion in funding is available for the remaining \$50 billion in needs (see table 4). Typically, as a project evolves, funding sources are identified and pursued. Regarding the infrastructure inventory process, planning and design cannot take place without acquiring some funds. Of course, a lack of funding will prevent certain projects from ever being completed. In fact, most of the infrastructure needs reported in the July 2017 inventory that were not already fully funded were still needed five years later. As in prior years, funding for needs reported in the inventory comes from federal, state, and local sources.

Table 4. Public Infrastructure Needs Summary of Funding Availability*
Five-year Period July 2022 through June 2027

	Funding Available [in billions]	Funding Needed [in billions]	Total Needed [in billions]
Fully Funded Improvements	\$ 15.8	\$ 0.0	\$ 15.8
Partially Funded Improvements	0.8	6.5	7.3
Unfunded Improvements	0.0	26.7	26.7
Total	\$ 16.6	\$ 33.1	\$ 49.8

*Excludes infrastructure improvements for which funding availability is not known.

Note: Totals may not equal 100% because of rounding.

The government that owns the infrastructure typically funds the bulk of its cost, and a variety of revenue sources are used. For example, the state collects taxes and appropriates funds for its own projects but also provides grants to local governments through programs in various state agencies. Even so, cities and counties fund most of their infrastructure improvements with their own property and sales tax revenues, while utility districts fund their improvements primarily with dedicated revenue sources in the form of user fees.

Because most of the state's infrastructure needs are not included in this funding analysis, local government sources—mainly counties and cities—provide most of the capital for all the fully-funded needs presented here. Exceptions include transportation, which is funded primarily by the federal and state governments. Industrial sites and parks also receive a substantial portion of funding from federal and state government. Broadband; recreation; storm water; housing; and libraries, museums, and historic sites also rely on the federal government for significant portions of their reported funding (see table 5). Although table 5 shows no state funding for new public schools, the state does generate funding for capital outlay through its Basic Education Program (BEP) funding formula. The state's share accounts for half of capital outlay funding in the BEP—half of \$852 million in fiscal year 2022-23.¹⁸ Because those funds are not earmarked for that specific purpose, school systems have the flexibility to use those funds for operating costs rather than capital outlay,¹⁹ and state and local funds that are used for capital outlay have city or county as their source in table 5. The BEP will be replaced by Tennessee Investment in Student Achievement in the 2023-24 school year.

¹⁸ Copy of the Basic Education Program Funding Formula provided to Commission staff by the Tennessee Department of Education on September 8, 2023.

¹⁹ Tennessee Comptroller of the Treasury. 2017. "Basic Education Program: A Funding Formula, Not A Spending Plan." <https://comptroller.tn.gov/content/dam/cot/orea/documents/bep/BEPFundingInfographic.pdf>.

Table 5. Funding Source by Category and Type of Infrastructure for Fully Funded Improvement Needs [in millions]
Five-year Period July 2022 through June 2027

Category and Project Type	State		Federal		Other		City		County		Special District		Total Amount
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	
Transportation and Utilities	\$ 1,416.4	15.3%	\$ 4,589.6	49.5%	\$ 89.4	1.0%	\$ 788.4	8.5%	\$ 2,364.5	25.5%	\$ 28.8	0.3%	\$ 9,277.0
Transportation	1,416.4	15.8%	4,581.9	51.0%	89.2	1.0%	530.1	5.9%	2,364.5	26.3%	0.8	0.0%	8,982.8
Other Utilities	0.0	0.0%	6.8	2.3%	0.0	0.0%	257.4	88.1%	0.0	0.0%	28.0	9.6%	292.2
Broadband	0.0	0.0%	0.9	45.2%	0.2	9.0%	0.9	45.7%	0.0	0.0%	0.0	0.0%	2.0
Health, Safety, and Welfare	\$ 58.7	1.2%	\$ 153.7	3.1%	\$ 120.6	2.4%	\$ 2,247.9	45.4%	\$ 2,093.6	42.3%	\$ 279.8	5.6%	\$ 4,954.2
Water and Wastewater	39.9	1.0%	112.9	2.8%	98.6	2.4%	1,896.0	46.5%	1,655.0	40.6%	277.3	6.8%	4,079.8
Law Enforcement	5.2	1.1%	10.0	2.1%	0.0	0.0%	97.2	20.4%	364.2	76.4%	0.0	0.0%	476.6
Housing	0.5	0.3%	2.3	1.2%	20.9	11.0%	166.1	87.5%	0.0	0.0%	0.0	0.0%	189.8
Fire Protection	0.0	0.0%	5.6	5.3%	0.0	0.0%	81.4	77.1%	18.5	17.5%	0.0	0.0%	105.6
Public Health Facilities	11.3	17.2%	12.7	19.3%	0.0	0.0%	0.0	0.0%	41.5	63.4%	0.0	0.0%	65.4
Storm Water	0.0	0.0%	6.5	49.4%	0.0	0.0%	5.6	42.2%	1.1	8.4%	0.0	0.0%	13.2
Solid Waste	1.9	7.8%	3.6	15.1%	1.0	4.2%	1.6	6.5%	13.4	56.1%	2.4	10.2%	23.8
Education	\$ 0.0	0.0%	\$ 37.3	6.6%	\$ 0.0	0.0%	\$ 84.0	14.9%	\$ 421.8	74.8%	\$ 20.5	3.6%	\$ 563.6
Post-secondary Education	0.0	0.0%	0.4	80.0%	0.0	0.0%	0.0	0.0%	0.1	20.0%	0.0	0.0%	0.5
New Public Schools	0.0	0.0%	32.7	6.1%	0.0	0.0%	84.0	15.8%	416.4	78.1%	0.0	0.0%	533.1
School-System-wide	0.0	0.0%	4.2	14.0%	0.0	0.0%	0.0	0.0%	5.3	17.6%	20.5	68.4%	30.0
Recreation and Culture	\$ 15.7	3.0%	\$ 95.7	18.1%	\$ 15.2	2.9%	\$ 258.0	48.7%	\$ 145.4	27.4%	\$ 0.0	0.0%	\$ 530.0
Recreation	14.5	3.4%	74.7	17.5%	12.3	2.9%	208.8	48.9%	116.7	27.3%	0.0	0.0%	427.0
Libraries, Museums, and Historic Sites	0.5	1.8%	10.4	37.2%	0.0	0.0%	1.9	6.8%	15.1	54.2%	0.0	0.0%	27.9
Community Development	0.7	0.9%	10.6	14.2%	2.8	3.8%	47.3	63.0%	13.6	18.1%	0.0	0.0%	75.1
Economic Development	\$ 25.9	25.9%	\$ 8.7	8.7%	\$ 4.5	4.5%	\$ 19.4	19.4%	\$ 40.1	40.2%	\$ 1.4	1.4%	\$ 99.9
Industrial Sites and Parks	25.9	31.2%	7.7	9.3%	4.5	5.4%	3.5	4.2%	40.1	48.4%	1.4	1.7%	83.0
Business District Development	0.0	0.0%	1.0	5.9%	0.0	0.0%	15.9	94.1%	0.0	0.0%	0.0	0.0%	16.9
General Government	\$ 0.8	0.2%	\$ 16.2	4.2%	\$ 19.4	5.1%	\$ 183.2	47.7%	\$ 164.2	42.8%	\$ 0.0	0.0%	\$ 383.8
Public Buildings	0.8	0.3%	11.9	3.8%	0.0	0.0%	150.0	47.6%	152.5	48.4%	0.0	0.0%	315.2
Other Facilities	0.0	0.0%	4.3	6.2%	19.4	28.3%	33.2	48.4%	11.7	17.0%	0.0	0.0%	68.5
Grand Total	\$ 1,517.5	9.6%	\$ 4,901.1	31.0%	\$ 249.0	1.6%	\$ 3,580.9	22.7%	\$ 5,229.6	33.1%	\$ 330.5	2.1%	\$ 15,808.5

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