

Blanco Center Policy Brief: Funding Infrastructure in Louisiana

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BENEFITS OF TRANSPORTATION INVESTMENTS

Transportation infrastructure goes beyond physical structures to provide critical access to markets, skilled labor, and important locations.¹ Transportation improvements can spur additional investments as businesses and families make location decisions based on access provided by transportation infrastructure. Improving access to markets and enhancing agglomeration economies tends to increase the rate of return for public dollars as these investments help support long-run economic growth.

Infrastructure investments are often touted for their near term job creation benefits. Beyond the immediate benefit of new jobs, an improved transportation system can reduce the costs of travel and provide better access to markets and high value locations such as recreation or storm evacuation routes. Infrastructure investments in areas that generate any of these benefits can improve the overall return on transportation investment. Different categories of infrastructure projects have different rates of job creation.² At a national level, about 68 percent of jobs created by infrastructure investment are created in the construction industry and 10 percent are created in the manufacturing industry.³ Maintenance projects create more jobs per \$1 billion and generally create jobs more quickly than projects that add new roadways or lanes.^{2,4} Though expanded capacity may be needed in some areas to support long run economic growth. In general, a quicker pace of investment in infrastructure produces more rapid overall economic growth.² The average new transportation infrastructure project may take close to a decade to obtain the required approvals, delaying the impact of spending so “shovel ready” projects are often prioritized when looking to infrastructure investments to boost economic activity.⁵

Beyond direct transportation-related benefits, such as time savings, transportation investments can work in tandem with other conditions such as labor markets

HIGHLIGHTS

- **Louisiana’s base gas tax of 16 cents implemented in 1984 has lost 61.5 percent of that purchasing power due to inflation. In other words, the gas tax would need to be increased by 25.5 cents to be on par with the value in 1984.**
- **Louisiana benefits from federal infrastructure dollars like other states, but state investments lag the nation with Louisiana’s state dollars making up only 49% of transportation investments in the state compared to an average of 73% state funding nationally.**
- **The return on infrastructure investments depends on the type of project and existing conditions, but a review of literature suggests that a return on investment of 4 is a reasonable benchmark for Louisiana when considering additional infrastructure spending.**

and investment factors.¹ Together, these conditions can spur more economic investment than transportation investments alone. Secondary effects of transportation investment, such as reduction in congestion, can shift business and residential location decisions and make regions more competitive when compared to other metropolitan areas.⁶ At a broad scale, investment in transportation infrastructure has a likelihood of impacting long-term economic growth more than other types of public spending.⁷ Returns from transportation investments tend to be considerably stronger in the long-run than the short-run,⁸ perhaps taking into account secondary factors such as changing business location decisions that take into effect reductions in travel time and travel cost to destinations.

STATE OF LOUISIANA’S TRANSPORTATION NETWORK

Louisiana has a large and diverse set of transportation infrastructure. The state maintains just over 16,500

miles of state highways and close to 950 miles of Interstate highways. Nearly 50% of Louisiana’s major roads are rated in poor or mediocre condition.⁹ Louisiana has 12,982 highway bridges, 14% of which are considered structurally deficient.¹⁰ Fifty-seven percent of Louisiana’s highway bridge area per square mile is in fair or poor condition in the region, only second behind Alabama with 63%. Louisiana has more bridge area (square meters) in poor conditions than any state in our region. Moreover, Louisiana is second to Alabama in terms of the percent of bridge area in fair or poor condition, that being 57%.¹¹ After normalizing bridge area to the size of the state, Louisiana stands out as having by far the worst condition of bridges with the amount of bridge area in poor condition more than 9 times as much Texas and Alabama, more than 7 times as much as Florida, and more than 3 times as much as Arkansas or Mississippi.^{11,12} The state transportation network includes over 30 ports, 6 major (Class 1) railroads, and almost 70 airports.¹³

Louisiana’s transportation infrastructure has a growing backlog of delayed improvements and postponed services. In fiscal year 2019, DOTD calculated a \$14.8 billion backlog of state highway and bridge needs awaiting funding. The backlog includes over \$6.7 billion needed for improving conditions, such as resurfacing roads, structurally deficient bridges or bridge painting. Reducing congestion and building capacity by adding or widening lanes will also require almost \$6.7 billion. Over \$1 billion in delayed safety issues and almost \$0.2 billion in operations and motorist services add additional projects to the transportation infrastructure backlog.¹⁴ Delayed service, repairs, and upgrades leave Louisiana with a long infrastructure backlog history. Between 2012 at 2019, the DOTD infrastructure backlog grew from \$12.1 to \$14.8 billion (Figure 1).

Figure 1: Louisiana Infrastructure Backlog, FY 12-19¹⁴



FUNDING TRANSPORTATION INVESTMENTS

The state uses a combination of state revenue, largely generated through a state gas tax, and federal funds, primarily from a state distribution of the federal gas tax. States can use federal cost-sharing for a range of highway and highway-related projects, air quality improvement programs, transportation alternative programs, transportation projects on federal lands, and some public infrastructure projects.¹⁵ The vast majority of the federal funding is not eligible for use on maintenance projects or operations. Depending on the transportation project, states are required to provide a match on federal transportation funds. Most highway projects require a 10-20% state match, but a few, such as those targeting safety improvements, are covered 100% by the federal government.¹⁵ In addition to dollars from the federal gas tax, federal discretionary spending can offer additional opportunities for states to compete for additional dollars, but require various amounts of matching and ensuring the state has adequate matching dollars and a strong financial proposal can help Louisiana secure more of these funds in future years.

On average, states fund more than 73% of transportation investments using state dollars, while the remaining dollars come from the federal government through grants and the federal highway trust fund. However, the level of state investment in Louisiana is much lower with less than 49% of the transportation budget coming from state sources.^{16,17} Louisiana's transportation expenditures as a percent of total state expenditures are the lowest in the Southeast and the second lowest in the nation. In 2020, Louisiana spent 4%, Texas spent 10.8%, Mississippi spent 6.%, and Florida spent 11.8% on transportation expenditures as a percent of all state expenditures.¹⁷

Other options to support transportation projects include tolling, project finance, public private partnerships, and value capture programs.¹⁸ However, these programs are more limited in use and may undermine future investments. For example, one project finance option, Grant Anticipation Revenue Vehicles (GARVEE), allow states to expand access to capital for highway construction projects using a debt instrument to pledge future federal funding toward it. Although this method accelerates current construction, it consumes revenue from future years by directing an expected future federal allocation to pay for debt service on the GARVEE.¹⁹ In Louisiana, state statute limits the use of GARVEE bonds to 10% of the annual

federal highway funds (i.e., up to 10% of the state’s annual federal funding can be used for bond debt service). Louisiana has also taken advantage of the federal Transportation Infrastructure Finance and Innovation Act (TIFIA) loan program, which will be repaid with state dollars but helped accelerate construction of LA 3241 (a TIMED project) and will be repaid with BP settlement funds from the Deepwater Horizon oil spill. Public private partnership options are limited by the need for interested private sector partners and, similar to tolling and value capture programs, are only appropriate and feasible for select large-scale transportation projects.

Many state transportation responsibilities are not eligible for federal cost share and must be supported by state sources alone. According to the Institute on Taxation and Economic Policy (2011), state taxes are “the most significant source of highway funding under the control of state lawmakers.”²⁰ In addition to gas taxes, states can redirect traditional revenue sources toward transportation. Three states, Nebraska, Utah, and Wisconsin, have used continuous diversion of state general-funds to supplement their state transportation trust fund.²⁰ A majority of states, including Louisiana, have made one-time general fund diversions or used general obligation state bonds to support transportation projects.¹⁷ Redirecting state general funds acknowledge the importance of a strong transportation network to a state’s economy and can be seen as an illustration that current funding sources provide insufficient revenue to meet this pressing need. Yet, despite this type of additional spending Louisiana’s infrastructure backlog has continued to grow.

LOUISIANA’S GAS TAX

In Louisiana, drivers pay \$0.20 in state taxes and \$0.184 in federal taxes on each gallon of gasoline. While state taxes are the same price per gallon for diesel, federal taxes cost \$.244 per gallon.^{22,23} Louisiana’s base gas tax of \$0.16 was enacted in 1984.²⁴ An additional \$0.04 to support a specific list of projects was approved in 1989 and went into effect in 1990.²⁵ This additional \$0.04 is dedicated to paying for 16 projects identified in 1989 through the Transportation Infrastructure Model for Economic Development (TIMED) project.²⁶

The TIMED tax was initially levied for fifteen years, 1990-2005. In 1998, the four cents were extended until completion of bond payments, now expected to be paid in full by 2045. Bonds worth \$2.85 billion were initially



Photo Credit: Darrell Miller.²¹

issued in 2012, but as a result of the 2005 hurricane season, the expected cost of construction for the 16 projects increased to \$5.24 billion. TIMED funding supported \$4.65 billion of the costs with additional costs funded by other state highway bonds. Fourteen of the 16 projects were funded and completed in 2016. The two remaining projects received additional funding from the Louisiana Highway Priority Program.^{13,26}

All but two other states have raised their gas tax more recently than Louisiana. Since 2010, 36 states have raised their gas tax through legislation or an automatic formula used to adjust the tax rate.²⁷ Nationally, the average state tax rate is nearly \$0.37 per gallon including taxes and other fees.²² Benchmarking to national averages, or states with similar infrastructure needs to Louisiana may offer a useful perspective for thinking about the adequacy of Louisiana’s current gas tax. However, a simple comparison of the purchasing power of the state’s gas tax when it was first enacted to the purchasing power today provides a useful backdrop of thinking about the size of potential gas tax changes.

Because the additional \$0.04 is dedicated to TIMED-related bond payments, we focus on the \$0.16 base gas tax. The 37-year time period since Louisiana’s current gas tax was established stretches across such a long time horizon that no single measure of inflation can be

used for a direct comparison. The Federal Highway Administration developed a National Highway Construction Cost Index (NHCCI) for purposes of comparing highway expenditures in real terms over time. However, the metric began in 2003 so alternate measures of inflation are used in earlier years. Specifically, we combine the Producer Price Index (PPI) for Highways and Roads for the period 1987-2003 and the PPI for all goods for 1984-1987 (which shows a modest decrease in prices). Using each of these series in sequence, we find that the \$0.16 in 1984 would be worth approximately \$0.415 in current dollars. In other words, the gas tax would need to be increased by \$0.255 per gallon to be on par with the value in 1984. Alternatively, it could be said that inflation alone has eroded 61.5% of the value of the gas tax since 1984. Beyond the impact of inflation increases in fuel efficiency also mean that more miles are being driven per gallon of gas, further eroding the state's ability to maintain its infrastructure with the current gas tax.

As in many states, the reduction in driving due to COVID-19 has further reduced gas tax revenues. While the COVID-19 pandemic initially caused a large decrease in vehicle miles traveled, travel has begun to rebound. Nonetheless, lower gas tax revenue resulting from reduced gas purchases has impacted both state and federal transportation funding.

DOTD projections show that the estimated amount of total TIMED debt service will increase over time above the revenues generated by the \$0.04 dedicated tax. To service this debt, DOTD projects the need to use an increasing share of the base \$0.16 gas tax further reducing the dollars available to address Louisiana's transportation needs. The estimated amount of revenue needed from the \$0.16 gas tax to cover TIMED debt service coverage is \$16.7 million in FY21, \$49.8 million for FY30, and \$85.3 million for FY43.¹⁴ This is more than two of the base 16 cents that will be redirected to cover the TIMED debt service. Over the last 12 months, Louisiana has been able to refinance several long-term debt obligations, which collectively lowered future bond payments by a total of \$201 million.

VALUE OF NEW TRANSPORTATION INVESTMENTS

Transportation investment has the potential to drive broad economic growth. Most studies find a positive relationship between transportation investment and economic benefit; however, depending on the type of

investment, there can be a large range in the rate of return.²⁸ Meta-analysis of transportation studies suggests that investment returns are uneven among industries. Some sectors, such as manufacturing and construction, receive a higher return on a state's investment than others, and the benefits may manifest over different time horizons.⁸

Different types of transportation projects can have different returns and each state must calculate the mix of highway, bridges, maintenance, public transportation, and other projects that require funding. The broad mix of projects and state-level choices about specific projects that improve accessibility and connectivity all impact the economic return from transportation funding. A Federal Highway Administration (1996) report looked at four decade-long periods between 1950-1989 and found an annual rate of return between 10-35 percent for highway capital with an average return of 28 percent.²⁹ More recently, several states have conducted analyses of their own transportation department funding. Florida found their transportation dollars returned \$4 for every \$1 invested between 2019 and 2023 for an expected total monetized benefit of approximately \$164 billion by 2048.³⁰ Missouri's Department of Transportation's (MDOT) evaluates their economic return from transportation investments annually. MDOT has a target return goal of above \$3.62 for every dollar invested, the performance level achieved during the 2014-2018 transportation return evaluation. Since 2016, the MODT transportation investment return has fluctuated between \$2.44 and \$2.50.³¹ States that have conducted repeated return on investment (ROI) studies have concluded that as sustained investments improve the quality of the system, the ROI begins to fall suggesting that states with more deferred maintenance may see benefits at the larger end of the spectrum seen in prior studies. Given Louisiana's large backlog, the ROI for high priority projects in the near term could potentially be at or above the high end of the range seen in recent literature and Louisiana may see an elevated ROI for an extended period of time as the state chips away at the infrastructure backlog. To provide policy makers with better guidance when making revenue generating and budget prioritization decisions, Louisiana should undertake in depth and ongoing research to study the return on investment of Louisiana's infrastructure spending as has been done by many other states.

Transportation investments that increase economic activity tend to move growth towards “nodes or corridors” thereby increasing population and/or employment density. In contrast, transportation investment that reduces population or employment density also reduces economic activity.³² Transportation projects do not have a uniform benefit across a state or region. Investments affect regions and states differently, with reduced effects when evaluated at smaller scales.³³ Highway capital projects have a positive impact on economic output in the area where the investment is made with diminishing returns as distance from the investment location increase.³⁴

The quality of the infrastructure is as much a part of access as the network itself. Inadequate infrastructure increases marginal costs for businesses, reducing productivity. Improving infrastructure can change market structure and the production and consumption processes. Enhancing infrastructure that impacts the distribution and movement of goods and services may have a higher impact on economic benefits than other types of publicly funded infrastructure.^{35,36} Developing regional amenities, such as through improved transportation access and quality, may attract households and firms and increase the regional impact of public investment.³⁵

SUMMARY

Louisiana faces a large and growing backlog of infrastructure needs with stagnant funding that has lost considerable value since its passage over 30 years ago. Inflation alone has eroded 61.5 percent of the purchasing power of the state’s gas tax while increases in fuel efficiency and increased pressure on those dollars to cover other commitments further exacerbate Louisiana’s inability to maintain and grow the state’s infrastructure at a level acceptable to the public and that maximizes economic opportunity. However, the opportunity to make new investments brings the promise of a sizeable return on investment with results from recent literature suggesting that an ROI of 4 is a reasonable benchmark for Louisiana when weighing the value of new infrastructure spending. In other words, an increase in spending of \$100m on high priority infrastructure could be expected to generate \$400m in economic benefits.

REFERENCES

- Banister, D. & Berechman, Y. Transport investment and the promotion of economic growth. *J. Transp. Geogr.* **9**, 209–218 (2001).
- Heintz, J., Pollin, R. & Garrett-Peltier, H. *How Infrastructure Investments Support the U.S. Economy: Employment, Productivity and Growth*. 1–65 https://www.americanmanufacturing.org/wp-content/uploads/2017/03/Infrastructure_2009.pdf (2009).
- National Economic Council & President’s Council of Economic Advisers. *An Economic Analysis of Transportation Infrastructure Investment*. 1–26 https://obamawhitehouse.archives.gov/sites/default/files/docs/economic_analysis_of_transportation_investments.pdf (2014).
- Perlich, P., Nelson, A. C., Ewing, R., Sanchez, T. W. & Bartholomew, K. Economic stimulus through construction and repair of transportation infrastructure. in *The Best Stimulus for the Money: Briefing Papers on the Economics of Transportation Spending* 5–9 (Metropolitan Research Center at the University of Utah, 2009).
- Nelson, A. C., Ewing, R., Perlich, P., Sanchez, T. W. & Bartholomew, K. Economic stimulus by creating transportation jobs now. in *The Best Stimulus for the Money: Briefing Papers on the Economics of Transportation Spending* 3–9 (Metropolitan Research Center at the University of Utah, 2009).
- Sweet, M. Does Traffic Congestion Slow the Economy? *J. Plan. Lit.* **26**, 391–404 (2011).
- Kollias, C. & Paleologou, S.-M. Guns, highways and economic growth in the United States. *Econ. Model.* **30**, 449–455 (2013).
- Melo, P. C., Graham, D. J. & Brage-Ardao, R. The productivity of transport infrastructure investment: A meta-analysis of empirical evidence. *Reg. Sci. Urban Econ.* **43**, 695–706 (2013).
- TRIP. *Louisiana Transportation by the Numbers*. 1–17 https://tripnet.org/wp-content/uploads/2019/10/LA_Transportation_by_the_Numbers_TRIP_Report_October_2019.pdf (2019).
- TRIP. *Preserving Louisiana’s Bridges*. 1–33 <https://tripnet.org/reports/preserving-louisianas-bridges/> (2018).
- Federal Highway Administration. Bridge Condition by Highway System 2020. <https://www.fhwa.dot.gov/bridge/nbi/no10/condition20.cfm> (2020).
- U.S. Census Bureau. *State Area Measurements and Internal Point Coordinates*. <https://www.census.gov/geographies/reference-files/2010/geo/state-area.html> (2018).
- House Legislative Services. *State Government Functions: Transportation and Infrastructure*. 2E-1-2E – 8 <https://house.louisiana.gov/slg/PDF/Chapter%202%20Part%20E%20-%20Transportation%20and%20Infrastructure.pdf> (2011).
- Waguespack, D. *Fiscal Year 2020-21 HB105 Budget Review: Department of Transportation and Development*. 1–39 https://house.louisiana.gov/housefiscal/DOCS_APP_BDGT_MEETINGS/DOCS_APPBudgetMeetings2020/DOTD%20-%20PUBLIC.pdf (2020).
- Federal Highway Administration. Federal Share - FAST Act Fact Sheets - FHWA | Federal Highway Administration. <https://www.fhwa.dot.gov/fastact/factsheets/federalsharefactsheets.cfm> (2016).
- National Governors Association. *Transportation funding and financing during COVID-19*. 1–15 <https://www.nga.org/wp-content/uploads/2020/12/COVID-Memo-Transportation-Funding.pdf> (2020).



17. National Association of State Budget Officers. *State Expenditure Report*. 1–120 <https://www.nasbo.org/reports-data/state-expenditure-report> (2021).
18. Center for Innovative Finance Support, Federal Highway Administration. Innovative Finance Support Fact Sheets. (2021).
19. Center for Innovative Finance Support, Federal Highway Administration. Grant Anticipation Revenue Vehicles (GARVEEs). (2021).
20. Institute on Taxation and Economic Policy, C. *Building a Better Gas Tax: How to Fix One of State Government's Least Sustainable Revenue Sources*. 24 <https://itep.sfo2.digitaloceanspaces.com/bettergastax/bettergastax.pdf> (2011).
21. Creative Commons Artwork. *This work is licensed under the Creative Commons Attribution-Non Commercial 2.0 Generic License*. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc/2.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA. (2021).
22. American Petroleum Institute. *Motor Fuel Taxes*. <https://www.api.org/oil-and-natural-gas/consumer-information/motor-fuel-taxes> (2021).
23. Office of Highway Policy Information. *Federal tax rates on motor fuels and lubricating oil*. <https://www.fhwa.dot.gov/policyinformation/statistics/2019/fe101a.cfm> (2019).
24. Louisiana State Legislature. *Revised Statutes 47:711*. 711 (1984).
25. Louisiana State Legislature. *Revised Statutes 47:820.1*. (2006).
26. Federal Highway Administration. *Project Profile: Louisiana's TIMED Project*. https://www.fhwa.dot.gov/ipd/project_profiles/la_timed.aspx (2021).
27. Davis, C. *How Long Has It Been Since Your State Raised Its Gas Tax?* <https://itep.org/how-long-has-it-been-since-your-state-raised-its-gas-tax/> (2020).
28. Bhatta, S. D. & Drennan, M. P. The Economic Benefits of Public Investment in Transportation: A Review of Recent Literature. *J. Plan. Educ. Res.* **22**, 288–296 (2003).
29. Madrick, J. *Economic returns from transportation investment*. 1–72 <https://www.fhwa.dot.gov/policy/otps/060320a/060320a.pdf> (1996).
30. Florida Office of Policy Planning. *Macroeconomic Analysis of Florida's Transportation Investments*. 1–39 https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/policy/economic/2020-florida-macroeconomic-analysis_technical-report.pdf?sfvrsn=fb59bcd7_2 (2020).
31. Grosvenor, T. & Prestwood, E. *Economic Return from Transportation Investment*. <https://www.modot.org/economic-return-transportation-investment-7a>.
32. Nelson, A. C., Ewing, R., Perlich, P., Sanchez, T. W. & Bartholomew, K. Economic stimulus through transportation investments that facilitate agglomeration economies. in *The Best Stimulus for the Money: Briefing Papers on the Economics of Transportation Spending* 25–28 (Metropolitan Research Center at the University of Utah, 2009).
33. Elburz, Z., Nijkamp, P. & Pels, E. Public infrastructure and regional growth: Lessons from meta-analysis. *J. Transp. Geogr.* **58**, 1–8 (2017).
34. Ozbay, K., Ozmen-Ertekin, D. & Berechman, J. Contribution of transportation investments to county output. *Transp. Policy* **14**, 317–329 (2007).
35. Eberts, R. W. Public Infrastructure and Regional Economic Development. *Fed. Reserve Bank Cleveland*. **Q1**, 15–27 (1990).
36. Lakshmanan, T. R. Infrastructure and Economic Transformation. in *Advances in Spatial Theory and Dynamics* vol. 20 241–261 (Elsevier Science Publishers, 1989).