

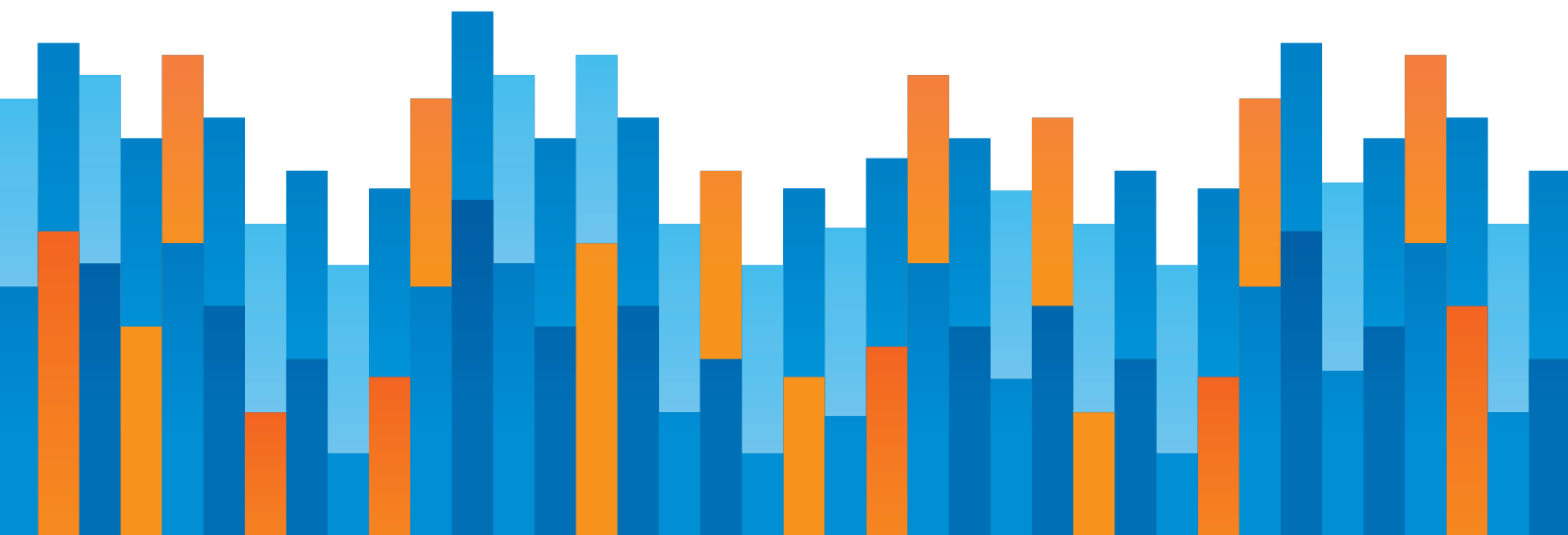


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SHOULD GOVERNMENTS LEASE THEIR TOLL ROADS?

by Robert W. Poole, Jr.

August 2020





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EXECUTIVE SUMMARY

The Covid-19 recession is putting large fiscal stress on state governments, including major negative impacts on their transportation budgets and under-funded pension systems. One tool that may help is called *asset monetization*, sometimes referred to as *infrastructure asset recycling*. As practiced in Australia and several other countries, the concept is for a government to sell or lease revenue-producing assets, unlocking their asset values to be used for other high-priority public purposes. The asset continues in operation under new professional management.

This study focuses on the potential of state-owned toll roads as candidates for this kind of monetization. There have been five U.S. leases of toll roads under a long-term public-private partnership (P3) concession agreement. The best-known of these are the P3 leases of the Chicago Skyway and the Indiana Toll Road. Although both of those toll facilities are part of the Interstate Highway System, like all of that system, they are not federally owned: the Skyway is owned by the city of Chicago and the Toll Road is owned by the state of Indiana. In both cases the entire set of lease payments was made in a lump sum at the start of the long-term concession term, providing a major windfall that was used in the first case to pay down debt and in the second case for major capital investment in other highways.

This study explores the potential of long-term P3 leases of nine state-owned toll road systems:

- Florida's Turnpike
- Illinois Tollway
- Kansas Turnpike
- Massachusetts Turnpike
- New Jersey Turnpike
- New York Thruway
- Ohio Turnpike
- Oklahoma Turnpike
- Pennsylvania Turnpike

The study draws on data from a number of overseas toll road P3 transactions in recent years to estimate what each toll road system might be worth to infrastructure investors. The gross valuation is what would apply globally. But in the United States, a change of control (such as a long-term lease) requires that existing tax-exempt bonds be paid off. Hence, the net value of each toll road is the gross value minus the value of its outstanding bonds. The estimated net values in this study range from \$2.8 billion to \$19.4 billion.

Since P3 toll road leases are still uncommon in the United States, this study provides a brief history of long-term franchises for investor-financed toll roads. It then discusses the three categories of likely investors in U.S. toll roads. First is the growing number of global toll road companies that operate extensively in Europe, Latin America, Australia, and Asia. The second group is numerous infrastructure investment funds that have raised over \$1 trillion to invest in revenue-generating infrastructure during the last 15 years. And the third category is public pension funds, which have been increasing their investments in infrastructure in recent years, seeking to reverse the decline in their overall rates of return on investment. All three types of investors have long time horizons and are comfortable investing in and further developing assets such as toll roads.

The study explains that if the proceeds from the lease of a toll road area are paid in a lump sum up front (as often occurs), that windfall should be used to strengthen the state's balance sheet, rather than being used for short-term operating needs. It discusses three potential uses:

- Invest the proceeds in needed but un-budgeted infrastructure;
- Use the proceeds to pay down existing state debt, potentially improving the state's bond rating; and,
- Use the proceeds to reduce the state's unfunded pension system liabilities.

On the last of these points, the study compares the estimated net toll road P3 lease proceeds with the state's unfunded pension system liabilities.

If, on the other hand, the lease payments are made annually over the long term of the lease, they would constitute a kind of annuity that could be dedicated to an ongoing purpose such as transportation infrastructure.

The relative attractiveness of using lease proceeds for each of the above purposes will likely depend on the specific situation and needs of the state in question. A state with a pressing need for an unfunded infrastructure project or program may find that use the most attractive, while a state where unfunded pension liabilities threaten either large tax increases or something akin to bankruptcy may prefer using its toll road windfall to shore up its pension system.

The study's first section reviews the long history of investor-owned turnpikes, the invention of the superhighway in Europe, and the revival there of the investor-owned turnpike model after World War II. Part 2 then explains the adaptation of this model in the United States, via long-term public-private partnership (P3) projects for new highway projects, as well as five cases of P3 leases of existing U.S. toll roads.

Part 3 compares and contrasts the state toll agency model and the investor-financed long-term P3 lease model on a number of dimensions. Part 4 then draws on international data to estimate the potential lease value of the nine state toll road systems selected for this study. And Part 5 provides information on the three categories of investors that typically form consortia to bid on such P3 leases: global toll road companies, infrastructure investment funds, and public pension funds.

Part 6 takes a closer look at the potential role of pension funds as toll road investors, suggesting that their participation could alter the politics of this category of asset recycling. And Part 7 provides U.S. examples of the three principal uses of the proceeds of long-term toll road P3 leases.

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PART 1

CHANGING TOLL ROADS GOVERNANCE AND OPERATION

1.1

INVESTOR-OWNED TOLL ROADS IN THE 19TH CENTURY

The idea of toll roads as business enterprises has a longer history than most people realize. In the 19th century, most inter-city roads in England and the United States were toll roads developed as (mostly nonprofit) corporations. Developers received time-limited franchises allowing them to build, operate, and charge tolls for roadways connecting cities. The British Parliament formalized this process via its Turnpike Act of 1707, authorizing the creation of turnpike trusts. The number of U.K. turnpikes grew substantially during the century that followed, peaking at 1,116 turnpike trusts in 1837.¹

Following the British model, toll bridges began in New England in 1785, with a bridge across the Charles River to link Boston with Charlestown. The state charter for that bridge allowed the company to charge tolls for 40 years to recoup the costs of construction and

¹ Benson, Bruce L. "The Rise and Fall of Non-Government Roads in the United Kingdom." In Gabriel Roth (ed.). *Street Smart: Competition, Entrepreneurship, and the Future of Roads*. Transaction Publishers. 2006.

operation, after which the bridge would be turned over to the state. Its success led to a toll bridge boom in the Northeast, with 59 toll bridge companies in operation by 1800.²

The first U.S. turnpike charter was issued by Pennsylvania in 1792 for a toll road linking Philadelphia to Lancaster. Between then and 1845, 1,562 toll road companies were incorporated in the Northeast and Midwest.³ These were mostly intended as for-profit companies and were financed by private stock sales. As the West was being settled later in the 19th century, a similar turnpike boom took place in California, Colorado, and Nevada.⁴

In both Britain and the United States, these early turnpikes were eventually put out of business by two other forms of infrastructure. For hauling freight, canals in the Northeast and Midwest proved to be less costly for shippers, especially since many of these canal projects were subsidized by state governments. And as railroads developed, they offered faster passenger and freight transport than horse-drawn wagons on mostly gravel turnpikes.

When state governments began paving roads via fuel taxes early in the 20th century, the 19th-century turnpike model was largely forgotten. But it survived as the best way to finance the construction of numerous bridges. Among the largest of these was the Ambassador Bridge between Detroit and Windsor, Ontario, which opened in 1929 under a perpetual franchise.⁵ Other major toll bridges developed under state-granted franchises to investors, including four of the six major bridges crossing the San Francisco Bay: the Antioch, Carquinez, Dumbarton, and San Mateo bridges.⁶ All four were financed and built in the 1920s, but could not survive the Great Depression when traffic and revenue plummeted, and they were bought out of bankruptcy by the state of California.

In the Northeast, a number of tolled suburban “parkways” were built as government projects prior to World War II. These included Connecticut’s Merritt and Wilbur Cross Parkways and New York’s tolled Bronx River Parkway, Hutchinson River Parkway, Saw Mill

² Dresden, Matthew. “Must a Bridge Be Beautiful, Too?” *Access*, No. 28. Spring 2006.

³ Klein, Daniel B. “Private Toll Roads in America: The First Time Around.” *Public Works Financing*. September 1993.

⁴ Klein, Daniel B. and Chi Yin. “Use, Esteem, and Profit in Voluntary Provision of Toll Roads in California, 1850-1902.” *Economic Inquiry*. October 1996.

⁵ “History of the Ambassador Bridge.” www.ambassadorbridge.com/Downloads/History.pdf.

⁶ Poole, Robert W., Jr. *Rethinking America’s Highways*. University of Chicago Press. 2018. 40.

River Parkway, and several others.⁷ But these projects were the exception in the pre-war years; nearly all highways were being built and operated by state highway departments, funded largely by state gasoline taxes.

1.2

TOLLED SUPERHIGHWAYS

The superhighway was invented in Italy in the 1920s, with the first one opening between Milan and Varese in 1924, privately financed under a long-term franchise from the national government. By the end of the 1930s, there were more than 250 miles of *autostrade* superhighways in the country. After the devastation of World War II, the national government took over the toll roads and created a state-owned company—Autostrade Concessions and Construction—to operate and expand the system.⁸

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Italy’s autostrade were the inspiration for the Pennsylvania Turnpike, which was planned in the 1930s.

Italy’s *autostrade* were the inspiration for the Pennsylvania Turnpike, which was planned in the 1930s. Though financed by toll revenues, it departed from the 19th-century turnpike model (and the original *autostrade* approach) by using the public authority model—essentially, a state-owned company. This was the model developed by Robert Moses for a whole set of parkways and major bridges in New York City.⁹ The first (160-mile) section of the Pennsylvania Turnpike opened in 1940, linking Pittsburgh to Harrisburg. It reduced the travel time from six hours on the old US 30 to just 2.5 hours.¹⁰

After World War II, tolled superhighways proliferated in both Europe and the United States. Italy greatly expanded its *autostrade* system, with some 2,000 miles operated just by the

⁷ Caro, Robert A. *The Power Broker: Robert Moses and the Fall of New York*. Random House. 1974.

⁸ “Autostrade of Italy.” Wikipedia. http://en.wikipedia.org/wiki/Autostrade_of_Italy, accessed March 10, 2014.

⁹ Caro. *The Power Broker*.

¹⁰ Cupper, Dan. *The Pennsylvania Turnpike: A History*. Applied Arts Publishers. 1995.

Autostrade company by the end of the century. France launched a system of non-tolled four-lane *autoroute* superhighways but, due to their high cost, in 1955 the government allowed them to be developed as toll roads by mixed government/private companies, and later allowed fully private companies to develop such motorways. By 1997 the system had 5,550 miles of *autoroutes* in operation, of which nearly three-quarters were developed on the franchised turnpike model.¹¹ Spain and Portugal followed suit, respectively, in the 1950s and 1960s. Both used state-owned companies as well as franchised private companies, and in both cases, as in France, the majority of the superhighways were toll-financed.¹²

On this side of the Atlantic, a new turnpike era began after World War II. With the Pennsylvania Turnpike as their model, state after state created agencies to build and operate tolled superhighways connecting major cities. Many of those routes were corridors that had been identified in planning documents in the late 1930s and 1940s as links in the envisioned Interstate Highway System, but for more than a decade after the end of the war, it was uncertain when or even whether the federal government would decide to partially fund that system. So the states took the initiative. Table 1 lists these initial U.S. tolled superhighways, by their initial opening date.

TABLE 1: 20TH CENTURY U.S. TOLLED SUPERHIGHWAYS

Name	Opening Year
Pennsylvania Turnpike	1940
Maine Turnpike	1947
New Hampshire Turnpike	1947
Massachusetts Turnpike	1951
New Jersey Turnpike	1951
Oklahoma Turnpike	1953
Garden State Parkway (NJ)	1954
New York State Thruway	1954
Ohio Turnpike	1954
Illinois Tollway	1954
Connecticut Turnpike	1955
Indiana Toll Road	1956
Kansas Turnpike	1956

¹¹ Perrot, Jean Yves and Gautier Chatelus. *Financing of Major Infrastructure and Public Service Projects: Public-Private Partnerships*. French Ministry of Public Works, Transportation, and Housing. 2000. 147.

¹² Poole. *Rethinking America's Highways*. 55-57.

Name	Opening Year
Florida Turnpike	1957
West Virginia Turnpike	1957
Delaware Turnpike	1963
Kennedy Memorial Hwy. (MD)	1963

When Congress authorized the Interstate Highway System in 1956, and created the federal Highway Trust Fund and new, dedicated federal gasoline and diesel taxes as its funding source, all the above toll roads (except Florida's) were incorporated into the Interstate system. Since they had been long-term-financed via toll revenues, they were allowed to keep their tolling in place indefinitely (since the toll roads would later need widening and eventually reconstruction, in addition to ongoing maintenance). All the other Interstates were paid for out of the annual receipts of federal and state fuel taxes, rather than being bond-financed—and the 1956 legislation prevented them from being tolled.

1.3

THE 21ST-CENTURY LONG-TERM TOLL CONCESSION MODEL

In the 1990s, Europe underwent a sweeping movement for governments to raise capital by selling government-owned businesses—a form of asset monetization. This began in the U.K. with the privatization of British Airways, British Gas, British Steel, British Telecom, the water and electric utilities, British ports, and the British Airports Authority. In most cases, the privatizations took place via the government selling shares (usually a majority or even 100%) to investors, with those shares then trading on stock markets. In other cases, the government invited competing bids from qualified companies.

Other European governments soon began doing likewise, with total or part-privatization of airports, railroads, seaports, utilities, and then tolled motorways. When it came to motorways, most governments did not sell shares to the public. And they did not “privatize” the motorways as the British had done with many state-owned enterprises. Rather, they hearkened back to the early turnpike franchise model. The state-owned motorways were divided up into companies operating sets of motorways. What the government sold was a set of long-term franchises for each group of motorways. The term for this in Europe was a long-term *toll concession* for each motorway. Each consists of a long-term lease governed by a public-private partnership (P3) agreement.

France also opened the market for new toll projects to private bidders, rather than just assigning new projects to one of the state toll companies. This led to toll concessions for the \$2 billion A86 tunnel beneath Versailles¹³ and the 1.5-mile Millau Viaduct in southern France,¹⁴ both of which opened in the early 2000s. And in 2001, the government asked for bids on the three state-owned motorway companies: Autoroutes du Sud de la France (ASF), Societe des Autoroutes Paris-Rhin-Rhone (SAPRR), and Societe des Autoroutes du Nord et de l'Est de la France (SANEF). The sales were all completed by 2005, and the French government gained \$17.8 billion from the sale of concessions.¹⁵ Notably, the terms of the concessions for various motorways vary in duration. When they expire, the motorway must be returned to the government in good condition, at which point the government can engage in a new concession competition or operate the motorway itself.



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Italy privatized Autostrade in 1999 via a public share offering. Its various motorways were given concession terms of various lengths, which was already the pattern followed for several smaller toll road companies. The company was renamed Atlantia in 2007.¹⁶

Spain had evolved a mixed system in which some toll roads were developed and operated by private firms under long-term concessions. However, 293 miles of the country's tolled *autopistas* had been developed and operated by Empresa Nacional de Autopistas (ENA), a

¹³ Samuel, Peter. "French Low-Ceiling Tunnelways of Duplex A86 Comfortable to Drive, Not Claustrophobic." *Tollroadsnews.com*. December 24, 2008.

¹⁴ Foster, Norman and Thomas Leslie. *Millau Viaduct*. Prestel Publishing. 2012.

¹⁵ Reinhardt, William. "All Eyes on French Toll Road Sale." *Public Works Financing*. September 2005.

¹⁶ "Atlantia Profile, History." www.atlantia.it/en/profilo/storia.html. Accessed March 10, 2014.

state-owned toll company. ENA was privatized via competitive bidding in 2003; the winning bidder was Spanish toll concession company Sacyr, paying \$1.8 billion.¹⁷

Portugal followed a similar course. Its initially-private toll motorway company, Brisa Auto-estradas de Portugal, fell victim to a recession in 1975 and became partially government-owned. By 1997 the company had reimbursed the government for the aid it had provided, and the government sold 35% of Brisa in 1997, another 35% in 1998, and 13% more in 1999, leaving the government with only a 13% share.¹⁸ When it joined the European Union in 1986, Portugal had opened the toll road market to other companies, which led to seven new toll concessions being awarded between 1997 and 2000.

Australia adopted the long-term toll concession model at the state level, primarily for tolled urban expressways. The largest state, New South Wales, has developed nearly all of its urban expressway network, including major bridges and tunnels, via long-term toll concessions.¹⁹ Second-largest Victoria has granted several major concessions. The first one, the A\$1.8 billion Melbourne CityLink, opened to traffic in 1999 as the country's first all-electronic toll road.²⁰ Queensland, whose major city is Brisbane, followed suit a few years later, but several very large tunnel projects had overly ambitious traffic and revenue projections and went bankrupt. Under Australian toll concession laws, there were no state bailouts of the investors. The Queensland Investment Corporation bought the tunnels out of bankruptcy and later sold them at a profit to Transurban, an Australian toll road company.²¹

¹⁷ Reinhardt, William. "Sacyr Now Spain's No. 2 Toll Operator." *Public Works Financing*. June 2003.

¹⁸ Perrot and Chatelus. *Financing of Infrastructure and Major Public Service Projects*. 148-149.

¹⁹ Carr, Bob. "Good Roads Sooner: Public-Private Partnerships in New South Wales." Reason Foundation. January 29, 2010.

²⁰ Tagaza, Emilia. *Journey and Arrival: The Story of the Melbourne CityLink*. Institution of Engineers. Australia. 2002.

²¹ "Queensland Motorways Acquisition FC." *Inspiratia Infrastructure*. July 4, 2014.



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The long-term toll concession model has also been widely adopted in Latin America and parts of Asia over the past several decades. In countries including Argentina, Brazil, Chile, Colombia, Mexico, and Peru, the general pattern has been for government to seek bidders to upgrade existing two-lane highways into four-lane limited-access toll motorways. Chile has also followed Australia's lead and developed an extensive tolled urban expressway system in Santiago using long-term toll concessions.²² Toll-concession motorways have also been developed in Hong Kong, Indonesia, Malaysia, and the Philippines.

Thus, much of the world now sees toll roads as investor-owned businesses operating under long-term franchises (called *concessions* nearly everywhere). The roads themselves remain owned by the government, but the financing, construction (including expansion and reconstruction), operation, and maintenance are all the responsibility of the concession company.

²² Reinhardt, William. "Chile Concession Law Reforms Set." *Public Works Financing*. January 2008.

PART 2

TOLL CONCESSIONS IN THE UNITED STATES

The global toll concession model was launched in the United States via two privately financed toll projects in the late 1990s. This model expanded significantly after the turn of the century for both new-capacity (“greenfield”) and existing (“brownfield”) toll projects.

2.1

P3S FOR NEW-CAPACITY PROJECTS

Despite this country’s extensive 19th-century and more-limited 20th-century experience with private-sector toll franchises, that model (along with the increasing global model of P3 concessions) remained essentially unheard of in post-war United States. But two key developments in the mid-1990s brought these ideas back.

The Dulles Greenway is a 14-mile extension of the existing state-run Dulles Toll Road in Virginia. The Greenway was financed and developed privately under that state’s public utility laws, which means it is regulated by the state’s public utility commission. It opened to traffic on September 29, 1995. The other project added two express toll lanes each way to the congested SR 91 freeway in Orange County, California. It was developed as a long-

term toll concession under a pilot program authorized by the state legislature in 1989. It opened in December 1995.

Both the Virginia and California projects were conceived as entirely “private toll roads,” with no federal, state, or local tax support. Arizona, Minnesota, and Washington State passed similar private toll road laws in the 1990s, but despite considerable private-sector interest, public opposition (to tolling in some cases, to new highways of any kind in other cases) led to no projects getting built under these laws.



The breakthrough came in Virginia in 1995, when Virginia DOT came up with the idea of authorizing toll projects as long-term public-private partnerships, and the legislature enacted a legal framework for such projects.



The breakthrough came in Virginia in 1995, when Virginia DOT came up with the idea of authorizing toll projects as long-term *public-private partnerships*, and the legislature enacted a legal framework for such projects. The partnership concept meant the state DOT would work with private companies, selecting the best one for each project via a competitive process, and providing explicit oversight of toll rates and performance via a detailed public-private partnership (P3) agreement.

Initial results of the P3 law included the \$2.3 billion I-495 Express Lanes project (which provided congestion relief on the most congested section of the heavily traveled Capital Beltway) and the \$2 billion Elizabeth River Crossings project (which refurbished two existing tunnels and built a third under the river between Norfolk and Portsmouth).

Virginia’s political and economic breakthrough was soon emulated in Texas. That state’s Transportation Commission, faced with massive population growth and increasing freeway gridlock, proposed sweeping legislation to allow long-term P3 concessions. Following its enactment in 2004, over \$8 billion worth of projects were financed, built, and put into operation within a decade, including the \$2.6 billion reconstruction of the LBJ Freeway in Dallas (with the addition of up to three express toll lanes each way in a depressed median),

the \$3.69 billion North Tarrant Express project in Fort Worth (adding mostly elevated express toll lanes to two intersecting freeways), and a \$1.3 billion, 41-mile segment of the new SH 130 toll road linking Austin and San Antonio. Subsequent P3 toll projects have been or are being implemented by private companies and the state DOTs of California, Colorado, Florida, Georgia, Indiana, Maryland, and North Carolina (as well as additional projects in Texas and Virginia).

As of early 2020, total investment in U.S. toll-financed new-capacity P3 highway projects had reached \$21 billion.²³ All but two of the 17 projects involved some investment by the state DOT, in addition to the private sector's investment of equity and its legal obligation to pay off revenue bonds. The *average* project finance package had the following components:

Investor equity investment	28.7%
Bank debt	8.1%
Tax-exempt revenue bonds (PABs)	22.7%
Federal TIFIA loan	26.7%
State DOT investment	13.8%

In other words, instead of investing in 100% of the project (as in a traditional highway project), the state DOT leveraged its funding more than seven times thanks to the financing made possible by the toll revenues. In addition, the state in these projects transferred several key risks to the investors (rather than to the taxpayers), including cost overruns, late completion, and inadequate traffic and revenue.

2.2

P3 LEASES OF EXISTING TOLL ROADS

Less widely known than P3 procurement of greenfield projects, five U.S. jurisdictions thus far have used a long-term P3 lease mechanism to obtain better management and future upgrades of existing toll facilities, while recovering the asset value of each facility. The long-term concession agreement is essentially the same as for greenfield P3 toll projects, covering finance, operations, maintenance, and in most cases requirements for future expansion and/or reconstruction. The five P3 leases are listed in Table 2.

²³ Poole, Robert W., Jr. "Annual Privatization Report: Transportation Finance." Reason Foundation. May 2020. Table 8.

TABLE 2: U.S. TOLL ROAD P3 LEASES

Jurisdiction	Facility	Lease Term	Gross Valuation
Chicago	Chicago Skyway	99 years	\$1.83 billion
Indiana	Indiana Toll Road	75 years	\$3.85 billion
Puerto Rico	PR 22 and PR 5	40 years	\$1.14 billion
Colorado	Northwest Parkway	90 years	\$0.60 billion
Virginia	Pocahontas Parkway	90 years	\$0.60 billion

The first three were classic cases of monetizing the underlying asset value of the facility in question by governments that needed the money, while the last two were what might be considered “distress sales” of then-money-losing toll roads.

The Chicago Skyway had lost money for several decades after it was built by the city of Chicago, opening in 1958. In 1993, when the tollway had finally turned profitable, a boutique investment banking firm headed by a former director of the Illinois Tollway made an unsolicited proposal to put the Skyway up for sale to investors, and a Democratic legislator, Jeff Schoenberg, drafted legislation for that purpose.²⁴ But the idea went nowhere until a decade later when then-Mayor Richard Daley proposed a long-term P3 lease. He argued that running a toll road was not a core function of city government, and that the proceeds from a lease could help the city’s troubled finances. The competition led to a winning bid of \$1.83 billion, higher than anyone had expected.²⁵

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²⁴ O’Leary, John (ed). *Privatization 1994: Eighth Annual Report on Privatization*. Reason Foundation. 1994. 28

²⁵ Kass, John. “Let It Be Said: Daley Brilliant in Skyway Deal.” *Chicago Tribune*. Oct. 20, 2004.

The Skyway lease increased the visibility of U.S. P3 concessions to companies and financiers in Europe. Knowing this, newly elected Indiana Governor Mitch Daniels decided to do a similar P3 lease of the poorly run Indiana Toll Road. Daniels' problem was the need for major statewide highway improvements, despite meager resources of Indiana DOT at that point. Overcoming considerable political controversy, Daniels succeeded in getting legislation passed to authorize a P3 lease. And as in Chicago, the size of the winning bid of \$3.85 billion came as a surprise. The governor used the proceeds to fully fund a 10-year highway improvement program.²⁶



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Puerto Rico's government was in dire financial straits in the early 2000s. Reform governor Luis Fortuño created a public-private partnerships authority that developed an inventory of potential candidates for sale or long-term lease. The island's two toll roads, PR 22 and PR 5, were P3-leased for 40 years in 2011.²⁷ The San Juan International Airport was leased in 2013, also for 40 years.

The other two cases in Table 1 were government-financed greenfield toll roads that were not generating enough toll revenue to meet their debt-service obligations. In both cases, state officials worked out refinancing by offering very long-term P3 leases to toll road companies.

During the same first decade of the 2000s, a number of other governments considered long-term P3 leases of existing toll roads. The best-known was the effort of Gov. Ed Rendell in 2007 to lease the Pennsylvania Turnpike, in hopes of both improving its management and improving the state's finances. There was bipartisan opposition in the

²⁶ Reinhardt, William G. "Indiana Trumpets Its \$3.85 Billion Toll Road Privatization." *Public Works Financing*. January 2006.

²⁷ Reinhardt, William G. "PR-22 Financial Close Sets the Market for Leases." *Public Works Financing*. September 2011.

legislature, because historically both political parties had seen the Turnpike as a place to reward supporters with administrative jobs.²⁸

Rendell proposed that all the lease proceeds be put into a fund with 100% of the earnings devoted to highway and transit projects statewide. With the legislature still balking, Rendell went ahead with a request for proposals (RFP) and his team selected the winning bidder, a consortium formed by Spain's Abertis and CriteriaCaixa with U.S.-based Citi Infrastructure Fund. They offered \$12.8 billion for a 75-year lease. But the legislature did not enact the enabling legislation.²⁹

Other toll road leases were proposed and/or studied for the Alligator Alley (I-75) toll road in Florida, the urban toll roads of the Harris County Toll Road Authority in Houston, the Illinois Tollway system, and three toll roads in New Jersey: the New Jersey Turnpike, the Atlantic City Expressway, and the Garden State Parkway. None of these got as far as the issuance of an RFP.

²⁸ Keisling, William. *Helping Hands: Illegal Political Patronage in Pennsylvania and at the Pennsylvania Turnpike*. Yardbird Books. 1995.

²⁹ Reinhardt, William G. "Pennsylvania Turnpike Privatization Rejected." *Public Works Financing*. September 2008.

PART 3

HOW TOLL ROAD COMPANIES DIFFER FROM TOLL AGENCIES

In general, toll roads are better managed than comparable non-toll roads because they are operated more as businesses than are state-run highways. Toll roads consider those who drive on them as “customers,” whereas state DOTs refer to their counterparts as “users.” This is more than semantics. A toll road operator must offer a value proposition to customers—i.e., using the toll road must offer benefits to the customer greater than the amount of the toll. Customers pay the toll directly to the road provider. By contrast, drivers on Interstates and other state highways pay their fuel taxes to the state government, and the legislature decides how much of that money gets spent on which highway (and non-highway) projects. There is no direct customer/provider link.

“
*Toll roads consider those who drive on them as “customers,”
whereas state DOTs refer to their counterparts as “users.”*

”

Toll roads are also better maintained than comparable non-tolled roads, for two reasons. First, bondholders demand proper maintenance, since a poorly maintained toll road will attract fewer toll-paying customers. Second, the toll operator itself understands this, independent of the demands of its bondholders.

For these reasons, state government policymakers can legitimately wonder whether a toll road financed, operated, and maintained by an investor-owned company would at least equal the performance of the current toll agency, if not exceed that performance. Here are six points to consider in answering that question.

3.1

GOVERNANCE

How do public policymakers ensure that a state-owned enterprise, such as a toll agency, is properly run? Economists refer to this kind of question as the “principal-agent” problem. In the corporate world, shareholders are the *principals*, and the company managers are their *agents*. The larger shareholders hold seats on the board of directors. But things are less clear-cut for state-owned enterprises (SOEs) such as toll agencies. Economist Richard Geddes has noted that, “Since a toll authority SOE has no well-defined active group of owners, its goals remain fuzzy, open to debate, and susceptible to external influence.” This could lead to an “absence of managerial accountability.” He goes on to say that the lack of direct shareholders means that “no one bears directly the consequences . . . of managerial decisions.”³⁰ A frequently cited World Bank report suggests that managers of SOEs sometimes “face contradictory goals and perverse incentives that can distract and discourage even very able and dedicated public servants.”³¹

Toll agencies do receive ongoing scrutiny from bondholders and bond-rating agencies. Some also have oversight/advisory boards. Legislatures also exercise some degree of oversight, but this can also create problems, as discussed in section 3.3 under “politicization.”

³⁰ Geddes, Richard. *The Road to Renewal: Private Investment in U.S. Transportation Infrastructure*. AEI Press. 2011.

³¹ The World Bank. *Bureaucrats in Business: The Economics and Politics of Government Ownership*. Oxford University Press. 1995.

In the case of a long-term P3 lease, the companies that win the competition form a special-purpose company, or “vehicle” (SPV), that negotiates the long-term concession agreement and will be required to comply with its terms and conditions for its entire duration, whether it be 40 years or as many as 75. Under its terms, the SPV will finance the acquisition and design and build of any needed improvements, replace facilities when they wear out, operate and maintain them for the duration of the agreement, and hand them back in specified good condition at the end of the lease term.



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The concession agreement is a long-term contractual agreement that *regulates and governs* how the toll road is operated and managed. While the agreement for a major toll road or system would typically run to hundreds of pages, key factors it must address include:

- The payment to be made to the state for the long-term lease;
- Further investment to be made by the SPV to modernize, expand, and/or replace portions or all of the toll road in future years;
- The key performance indicators that the SPV is held accountable to achieve;
- The rates that can be charged to motorists and truckers (often linked to an inflation measure such as the CPI); and,
- Any agreed revenue sharing during the term of the lease.

A toll road or toll system operated in accordance with such an agreement will clearly be transparent and accountable to policymakers, potentially more so than is typical with state toll agencies.

3.2

MANAGEMENT AND PERSONNEL

In some cases, the CEO of a state toll agency is appointed by the incoming governor and serves at the pleasure of the governor. An extreme example was the Massachusetts Turnpike Authority during the decades under which the notorious Big Dig project was planned, designed, and built. The average CEO tenure during that extended period was just two years. As one transportation journalist reported, “Often those people were former legislators or persons aspiring to higher political office. Their preoccupation was to avoid trouble during their time at the helm.”³² One result was a serious lack of transparency about the burgeoning cost overruns on the project. The state’s attorney general subsequently found that “Big Dig managers decreased the [internal] \$13.8 billion estimate to \$8 billion for public relations purposes in 1994-95, by applying a series of exclusions, deductions, and accounting assumptions.”³³

In some toll agencies, most staff are covered by civil service regulations, the same as staff at the state DOT. This usually means that engineers and other professionals will have lower pay and benefits at the toll agency and the DOT than they would have in the private sector. And while most DOTs and toll agencies do contract with outside firms for some engineering and other services, without high-level professionals on its own staff, the agency may pay the contractors more than it should. Over the past two decades, toll agency staff have generally become more professional, but the pay disparity between civil service and private-sector engineers and managers (and the resulting turnover) remains a potential problem.

The staff of the SPV that manages a toll road or system under a long-term P3 will be career transportation professionals, compensated at market rates. Private-sector firms often base part of their staff compensation on performance, which motivates people to excel and be accountable for results. Civil service systems generally do not permit this kind of compensation, though some do allow for merit-based increases.

³² Poole, Robert W. Jr. and Peter Samuel. “Transportation Mega-Projects and Risk.” Reason Foundation. February 2011.

³³ Cerasoli, Robert A. “A History of the Central Artery/Tunnel Project Finances.” Massachusetts Office of the Inspector General. March 2001.



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3.3

POLITICIZATION

Politicization is a very real danger that has occurred in some of America's largest toll agencies. Their large revenue-generating capacity tempts elected officials to use some of that user-fee money for non-user purposes. Chapter 6 of the author's recent book recounts a dozen examples of large toll agencies where this has happened, some dating back to the 1960s.³⁴ The most common form of revenue diversion is to support mass transit in one or more of a state's urban areas, but other revenue diversions have included canals, real-estate projects, economic development, and tourism. Here are three examples:

- **Port Authority of New York & New Jersey:** This agency (which operates airports, seaports, and tolled bridges and tunnels) in 1962 was required to take over the money-losing PATH subway between New York and New Jersey, as a political condition for also using toll and airport revenues to build the World Trade Center. More recently, in 2015 the Port Authority diverted \$1.8 billion to refurbish New Jersey's Pulaski Skyway, a non-Port Authority roadway owned by the state of New Jersey.³⁵ And several respected good-government organizations have recently taken the Port Authority to task for diverting large sums to money-losing economic development projects.³⁶
- **Pennsylvania Turnpike Authority:** In 2007, as an alternative to Gov. Rendell's proposal to lease the Turnpike and use the lease proceeds as an endowment for state transportation projects, the legislature passed Act 44, which required the

³⁴ Poole. *Rethinking America's Highways*. Chapter 6.

³⁵ Boburg, Shawn. "Port Authority Road Fund Probe Intensifies." *NorthJersey.com*. July 4, 2015.

³⁶ Poole, Robert W., Jr. "Reinventing the Port Authority of New York & New Jersey." Reason Foundation and Manhattan Institute, 2017. Part 3.

Turnpike to divert \$450 million per year to the state DOT to be used for highways and transit statewide. In order to continue to pay debt service on its outstanding bonds, in addition to this large new expense, the Turnpike Authority has had to enact a series of toll rate increases, which amount to a tax imposed solely on Turnpike customers.

- **Dulles Toll Road (Virginia):** In order to secure additional funding for the \$5.7 billion extension of the Washington Metro subway system to Dulles Airport and beyond, the legislature transferred ownership of the Toll Road from the state DOT to the Metropolitan Washington Airport Authority (which wanted the rail connection to Dulles Airport). The Airport Authority then enacted a series of toll rate increases to generate several billion dollars for the new Metro line.

While legislators may always be tempted to treat toll roads as cash cows, the provisions of the long-term concession agreement, together with legally enforceable covenants with the toll roads' bondholders, may offer stronger protection against this kind of politicization. It is interesting to note that franchised electric utilities are not generally treated as cash cows by legislatures.

3.4

CAPITAL INVESTMENT

State-owned toll roads finance their capital investments by issuing tax-exempt revenue bonds. Bond buyers are risk-averse, and they put a premium on conservative financing policies. They require the toll agency to maintain large reserve funds and pledge large amounts of revenue to ensure a high debt-service coverage ratio (e.g., 1.8 times annual debt service payments) to deal with recessions when traffic and revenue typically decline.

“

Toll road company SPVs use a somewhat different financing model. Instead of 100% debt finance, they employ a mix of debt and equity, with debt often constituting 60%-75% of the total, and equity the rest.

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Toll road company SPVs use a somewhat different financing model. Instead of 100% debt finance, they employ a mix of debt and equity, with debt often constituting 60%-75% of the total, and equity the rest. This provides some resilience in recessions, in that bondholders have first claims on the toll revenue, while equity providers may get nothing in a year where revenue is only enough to cover that year's debt service.

In times of economic growth, on the other hand, equity investors may be willing to accept somewhat greater financial risk in order to make needed improvements or additions. Equity investors in general seek a higher rate of return than bondholders, since they take on more risk than bondholders. This can be important in times of significant population and/or economic growth, when equity investors are willing to take on the risk of a construction project that may occur several years earlier than in a 100% bond-financed situation. A good overview of the role of equity investment in P3s is Chapter 7 of the final report of the National Surface Transportation Infrastructure Financing Commission.³⁷

Some have pointed out that, even when tax-exempt private activity bonds (PABs) are available for P3 projects, the overall cost of capital will be higher due to the return on the equity sought by the investors. While that is technically correct, an important report from the National Cooperative Highway Research Program explains that the state gets significant *benefits* from having equity as part of the financing.³⁸ One benefit was noted above: greater resilience during times of recession when toll revenues are reduced. Another is that equity investors take the risk of cost overruns (on widening, new interchanges, etc.), rather than the state. Still another is that the SPV is insured, whereas many government entities are implicitly self-insured. And also, to the extent that the SPV covers all its costs and makes a profit, it will pay state and federal taxes, like any other business.

³⁷ "Private Sector Financial Participation." *Paying Our Way: A New Formula for Transportation Financing*. National Surface Transportation Infrastructure Financing Commission. February 2009. 173-183.

³⁸ Jenkins, Bryant, et al. "The Role of Equity in Private Equity in Public-Private Partnerships." *Leveraging Private Capital for Infrastructure Renewal*. NCHRP Synthesis 540, Transportation Research Board, 2019.

3.5

PRICING OF SERVICES

The pricing of toll road services differs in several ways between most state toll agencies and investor-owned toll road companies. One concerns basic toll rates. Due to political concerns, some toll agencies go for many years without increasing their toll rates, while both operating costs and construction costs continue to increase. When Gov. Mitch Daniels looked into the details of how state-owned Indiana Toll Road was operating, his team discovered that there had not been a toll increase for 20 years, and that the cash-only toll system was charging as little as 15 cents at some locations, which was more than the cost of collection.



When Gov. Mitch Daniels looked into the details of how state-owned Indiana Toll Road was operating, his team discovered that there had not been a toll increase for 20 years, and that the cash-only toll system was charging as little as 15 cents at some locations, which was more than the cost of collection.



Eventually, there is a need for a large catch-up increase in toll rates, which often causes negative reactions from customers as well as legislators. By contrast, most toll road companies operate under concession agreements that allow them to adjust toll rates annually, generally based on an inflation index. This prevents the kind of “earthquake pricing shock” that occurs after a decade or two without an increase. In recent years, a growing number of state toll agencies have received legislative permission for annual CPI-based increases. The shift from cash tolling to all-electronic tolling is making this much easier, since customers do not have to find coins totaling, say, 73 cents or \$1.13 to pay a CPI-adjusted electronic toll. Such tolls do not have to be set at multiples of 25 cents.

Variable pricing has proved to be an effective way to manage traffic to keep it flowing at reasonably high speed and throughput, even during peak periods. Only a handful of toll agencies have adopted modest peak/off-peak rates in an effort to spread out traffic flows, thereby reducing congestion.

More controversial among toll agencies has been the implementation of express toll lanes, which use market-based variable pricing to offer premium service to those willing to pay a higher, variable toll. Toll concession companies and state DOTs have, as of spring 2020, implemented 53 variably priced express toll lane projects across the country, but thus far only one state toll agency—Florida’s Turnpike—has done likewise. When most toll agencies encounter the idea, they deride it as “a toll within a toll” and see it as somehow unfair to their customers. Yet there is extensive evidence that people’s value of time and value of reliable trip times both vary enormously among commuters in general.³⁹ Moreover, the same individual may more highly value a faster, on-time trip on one day than on another day, depending on the trip’s purpose.⁴⁰

As of 2020, the only toll road system besides Florida’s that has implemented variably priced express toll lanes is the largely urban toll road system in San Juan, Puerto Rico. The SPV for that system added express toll lanes on PR 22 in 2013, and they have been well-accepted there.⁴¹

3.6

INNOVATION EXAMPLES

A long-term P3 concession opens the door to innovations that might not be considered within the public sector context.

Toll regime: A toll road P3 lease does not automatically mean higher toll rates. Toll rates are negotiable in terms of the length of the concession, the initial toll rates, the rate-escalation schedule, and any cost-sharing or revenue-sharing that is included in the agreement. In Chile and Colombia, the bidding for some toll concessions involves a model that could lead to lower toll rates than would otherwise be the case.⁴² Under this

³⁹ Small, Kenneth A, Clifford Winston and Jia Yan. “Differential Road Pricing, Express Lanes, and Carpools.” Brookings-Wharton Papers in Urban Affairs. 2006. 53-96.

⁴⁰ Bento, Antonio, Kevin Roth, and Andrew R. Waxman. “Avoiding Traffic Congestion Externalities: The Value of Urgency.” NBER Working Paper 26956. April 2020.

⁴¹ Colucci, Benjamin. “Dynamic Toll Lane: A Success Story as Part of the Public-Private Partnership in the Commonwealth of Puerto Rico.” Proceedings of the 2nd International Conference on Public-Private Partnerships. University of Texas, Austin. May 2015.

⁴² Engel, Eduardo, Ronald Fischer, and Alexander Galetovic. *The Economics of Public-Private Partnerships: A Basic Guide*. Cambridge University Press. 2014.

procedure, the winner is not the SPV that offers the largest up-front payment. Rather, it is the SPV that can meet all the performance requirements for the lowest net present value of toll revenue over the life of the concession term. This requires the government to accept a variable length (number of years) of the concession term.

Forms of competition: An unusual form of competition was used for a greenfield P3 project in the Dallas/Ft. Worth metro area. Instead of having bidders compete for a completely designed express toll lanes project, Texas DOT identified the amount it was willing to contribute to the project (the North Tarrant Express) and based the competition on which team could deliver the most lane-miles with that amount of DOT support. Cintra won the competitions by a significant margin, delivering more lane-miles thanks to creative engineering and financing.⁴³

Increased safety: For its Queensland (Australia) toll roads network, Transurban operates its own incident response team to respond to accidents. Its 2018 report to the Transport and Public Works Committee cited rapid clearance of incidents thanks to the company's own incident response crews.⁴⁴ Incidents were reduced 50% and were cleared 40% faster.

Improved Customer Service: Among the improvements Transurban has made since winning the concession for the Queensland toll roads is upgrading customer service. This includes a mobile app for infrequent users, and a number of policy changes aiming to reduce fees and fines. Its 2018 submission reported reductions of \$36.5 million in fees for late payments and saving customers an additional \$100 million in state enforcement penalties in the most recent financial year.

This is not to say that a toll agency could not take similar actions. The point is to illustrate that an investor-owned SPV operating under a well-drafted concession agreement has incentives to produce benefits for its customers and the owner of the assets, the state.

⁴³ Reinhardt, Bill. "Texas North Tarrant Road Financers Take Traffic Risk." *Public Works Financing*. December 2009.

⁴⁴ Transurban Queensland. "Inquiry Into the Operations of Toll Roads in Queensland." Submitted to the Transport and Public Works Committee. 7 August 2018.

PART 4

POTENTIAL VALUE OF STATE TOLL ROAD SYSTEMS

4.1 HOW INVESTORS VALUE INFRASTRUCTURE

Infrastructure investors consider many factors when they assess possible investments in revenue-producing infrastructure, whether this be railroads, pipelines, or electricity and natural gas utilities. In the United States, most of those entities are already in the private sector and function fully as businesses. When investors consider a long-term P3 lease of a facility that is currently owned and operated by a government, which they plan to make operate more as a business, they assess both its current operations and financial condition, and also its potential for improvement as a commercial business.

For this kind of infrastructure acquisition, a widely used metric for assessing current value is **earnings before interest, taxes, depreciation and amortization (EBITDA)**. It provides a measure of near-term operational performance, as measured by operational cash flow. Interest payments on existing debt are a significant factor in that cash flow, but government-owned enterprises such as U.S. airports and toll roads are generally exempt from taxation. Depreciation and amortization are non-cash expenses.



When investors consider a long-term P3 lease of a facility that is currently owned and operated by a government, which they plan to make operate more as a business, they assess both its current operations and financial condition, and also its potential for improvement as a commercial business.



Acquirers of airports, seaports, toll roads, and other infrastructure use the facility's current financial statements to calculate its EBITDA. They develop valuation rules of thumb, based on recent transactions for the type of facility, of what multiple of EBITDA investors that won competitions agreed to pay. Thus, if a decade's worth of toll road purchases or long-term P3 leases averaged 20 times each facility's EBITDA (written as 20X), then that would be a good way to *estimate* such a facility's acquisition price. (And for *long-term* leases, the price would be about the same for a 50-year P3 lease and an outright purchase.) On the other hand, an actual offer to lease the toll road would be based on a significantly more detailed study of the specific toll road and its potential under private management.

In a recent Reason Foundation study on infrastructure asset recycling, data assembled from such transactions in the recent decade yielded the following average EBITDA multiples:⁴⁵

Airports	16X
Seaports	14X
Toll roads	26X
Parking facilities	22X
Water/wastewater	12X

⁴⁵ Poole, Robert W., Jr. "Asset Recycling to Rebuild America's Infrastructure." Reason Foundation. October 2018.

Those numbers are averages across a set of transactions, with a range of values on either side of the average, depending on the specifics of the facility in question. It should also be noted that the near-term effects of the Covid-19 recession may reduce EBITDA multiples in the short term, despite toll roads being long-term investments.

4.2

SELECTED U.S. TOLL ROADS AND THEIR ESTIMATED VALUATIONS

For this study, nine major state-owned toll road systems were selected for analysis. Table 3 lists those toll roads and the owner of each.

To estimate the possible acquisition value of each toll road, data were obtained from each toll agency's financial statements. For each toll road system, the table shows the EBITDA number derived from the financial data. In each case, a low, medium, and high EBITDA multiple was used to estimate gross valuations. This range is based on a data set assembled by Macquarie and made available to the author. It covered 10 major toll road transactions from 2008 through 2015, with EBITDA multiples ranging from 18.3X to 35.5X, with an average of 26.2X. To be conservative, this study's low estimate uses 20X, the mid-range estimate uses 25X, and the high estimate uses 30X. The discussion that follows uses the mid-range estimate.

Multiplying a toll system's EBITDA number by the appropriate multiple yields the estimated gross valuation. But that number is not the end of the story. Under federal tax law, facilities that have been financed via federally tax-exempt bonds cannot be transferred to P3 investors unless those bonds are paid off or refinanced. Hence, Table 3 also lists the outstanding bonded indebtedness of each of the toll road systems. That number must be subtracted from the gross value estimate to yield the net proceeds that would be available to the government owner. For example, using the mid-range case, the Florida Turnpike system has an estimated gross valuation of \$17.2 billion. After subtracting its \$2.7 billion debt, the net valuation estimate is \$14.5 billion.

TABLE 3: STATE-OWNED TOLL ROAD SYSTEMS' ESTIMATED VALUATIONS (\$M)

	FY2019 EBITDA	FY19 Outstanding Debt	20x		25x		30x	
			Gross	Net	Gross	Net	Gross	Net
Florida Turnpike	\$689	\$2,724	\$13,780	\$11,056	\$17,225	\$14,501	\$20,670	\$17,946
Illinois Tollway*	\$1,034	\$6,444	\$20,680	\$14,236	\$25,850	\$19,406	\$31,020	\$24,576
Kansas Turnpike	\$50	\$140	\$1,000	\$860	\$1,250	\$1,110	\$1,500	\$1,360
Mass Turnpike	\$413	\$1,848	\$8,260	\$6,412	\$10,325	\$8,477	\$12,390	\$10,542
NJ Turnpike	\$1,159	\$11,553	\$23,180	\$11,627	\$28,975	\$17,422	\$34,770	\$23,217
NY Thruway	\$352	\$6,028	\$7,040	\$1,012	\$8,800	\$2,772	\$10,560	\$4,532
Ohio Turnpike	\$206	\$2,274	\$4,120	\$1,846	\$5,150	\$2,876	\$6,180	\$3,906
OK Turnpike*	\$215	\$1,985	\$4,300	\$2,315	\$5,375	\$3,390	\$6,450	\$4,465
Penn Turnpike	\$827	\$13,917	\$16,540	\$2,623	\$20,675	\$6,758	\$24,810	\$10,893

NOTE: Toll agency financial statements for FY 2019, except those denoted with an asterisk, which use FY 2018 data.

There is uncertainty about the impact of the Covid-19 recession on the valuation of airports and toll roads in the next several years, since both have seen large decreases in traffic and revenue due to the pandemic and government lockdowns. Bond rating agencies in April reviewed the toll roads whose bonds they have rated. For example, Moody's reviewed European toll roads and changed its outlook (potential future ratings change) for some from stable to negative, while affirming the stable outlook of others.⁴⁶ Moody's said that it thinks there will be a recovery in road traffic during the second half of 2020. In a negative sign, the winning bid for an 81.1% stake in Portugal's largest toll road operator (Brisa) was estimated by one source to be only 11X EBITDA,⁴⁷ although another knowledgeable source estimated it as closer to 15X. India's National Highway Authority delayed its planned spring 2020 set of long-term toll road leases (its fourth batch, estimated as worth \$1 billion) due to perceived investor uncertainty.⁴⁸

On the other hand, two of Canada's largest public employee pension systems went ahead with the late-April acquisition of a 40% stake in Mexican company IDEAL, which operates 13 Mexican toll roads in addition to other infrastructure.⁴⁹ Abertis completed the acquisition of a 72.3% stake in Mexican toll road operator RCO in early June.⁵⁰ Another

⁴⁶ Rivera, Fernando Moncada. "Plunging Traffic Hits European Toll Road Ratings." *Inspiratia Infrastructure*. April 17, 2020.

⁴⁷ Berra, Stefano. "APG Team to Buy Brisa Majority for Around 11X." *Inframation News*. April 28, 2020.

⁴⁸ Dhanjal, Swaraj Singh. "Lockdown Derails NHA's Plan to Monetize \$1 Billion of Toll Road Assets." *LiveMint*. May 7, 2020.

⁴⁹ Kolivakis, Leo. "CPPIB, OTPP, and PSP Complete Big Deals." *Pension Pulse*. April 21, 2020.

⁵⁰ Rivera, Fernando Moncada. "Abertis Closes Mexican Toll Road Deal." *Inspiratia Infrastructure*. June 8, 2020.

positive sign was a statement by the CEO of major Australian toll road company Transurban about its view of toll roads as of early May:

The best time to buy toll roads was after the collapse of many that were over-leveraged and over-engineered [following the 2008 financial crisis]. We're preparing for the opportunity to invest in infrastructure to facilitate economic recovery. We're investing for 40, 50, 60 years, and we still have a lot of belief in the long-term economic ability of cities like Sydney, Brisbane, Melbourne, and Northern Virginia and Quebec. So maybe one of the opportunities is to invest on the other side of this [Covid-19 recession] when people are in need of economic support and recovery.⁵¹

Another point in support of higher EBITDA multiples is that interest rates worldwide are now at historic lows, which means a company can borrow more against the same revenue stream because its interest payments will be lower. The final point to remember is that a 50-year P3 lease is a long-term investment, and most projections of post-Covid vehicle-miles of travel are higher than before the pandemic, due to some expected shifting from transit to personal vehicles and some shift of jobs from central cities to suburban locations better reached by personal vehicle than transit.

4.3

THE NINE STATE TOLL ROAD SYSTEMS

The nine toll road systems selected for this study are all large, state-owned systems with generally strong finances.

Florida's Turnpike includes the mainline from Miami-Dade County north to I-75 west of Orlando; including its Homestead Extension (HEFT) to southern Miami-Dade County, the mainline is 367 miles. The Turnpike operates 10 stand-alone toll roads in or near the four major metro areas—Jacksonville, Miami, Orlando, and Tampa totaling 178 miles—for a total of 545 miles, none of them designated as Interstate. The Turnpike manages a statewide electronic tolling system called SunPass, and it is in the process of phasing out cash tolling on the mainline. SunPass has become inter-operable with E-ZPass as of 2020, but is inter-operable with the electronic toll systems of Georgia and North Carolina.

⁵¹ Drummond, Shawn. "Transurban Flags Positive Signs as Traffic Declines Moderate." *Inframation News*. May 4, 2020.

The **Illinois Tollway** operates six tolled expressways in the Chicago metro area, with 294 route-miles in operation. Its major corridors include tolled portions of I-39, I-80, I-88, I-90, as well as I-294 and I-355. Its IPASS electronic tolling system is part of the 17-state E-ZPass system.

The **Kansas Turnpike** is a 236-mile toll road that encompasses portions of I-35, I-335, I-70, and I-470. Its stand-alone electronic toll system is called K-TAG, which is inter-operable with electronic tolling systems in Dallas and Houston. K-TAG is not part of the E-ZPass system.

The **Massachusetts Turnpike** is a 138-mile east-west system from the New York State line on the west to Rt. 1A east of Boston's Logan Airport. It carries the Interstate designation of I-90. The Turnpike is operated by the Massachusetts DOT. Electronic tolling was introduced in 1998 and was made compatible with E-ZPass in 2012.

The **New Jersey Turnpike** system includes the 117-mile Turnpike and the 172-mile Garden State Parkway. The Turnpike is designated I-95 for much of its length, while the Parkway is not part of the Interstate system. New Jersey is a member of the E-ZPass system.

The **New York Thruway** is a 570-mile toll road from the New York City suburbs on the east to the Pennsylvania border on the west. The section from the Bronx to Albany is designated I-87 and the mainline portion from Albany to the western border is designated I-90. The mainline itself comprises 496 miles of the 570-mile total. The Thruway is an E-ZPass member and is in the process of converting to all-electronic tolling.

The **Ohio Turnpike** is a 241-mile east-west toll road that spans Ohio from Pennsylvania on the east to Indiana on the west. The southeastern section is designated as I-76 and the balance is designated I-80/I-90. Ohio is an E-ZPass state, but the Turnpike is not yet converting to all-electronic tolling.

The **Oklahoma Turnpike** system consists of 10 toll roads in various parts of the state, encompassing a total of 606 miles, the most mileage of any of the nine systems in this report. Portions of three of its toll roads are designated as I-44; the rest are state highways. Its electronic toll system is called Pikepass. It is not inter-operable with E-ZPass but is compatible with the Kansas K-TAG and electronic toll systems in Austin and Houston, Texas.

The **Pennsylvania Turnpike** is a 360-mile system that traverses the state from Philadelphia on the east to Pittsburgh on west, with several branches to other cities. Most of it is designated I-70 or I-76, but smaller segments are signed as I-276 and I-95. Its transponder system is E-ZPass, but it still retains cash tolling and a ticket system for much of its length.

PART 5

WHO WOULD BID ON TOLL ROADS?

If a state government decided to explore a potential long-term P3 lease of its toll road system, the first step would be to work with experienced advisors to assess the pros and cons, to be sure the process would lead to a result that is in the public interest. The first external step would be to issue a Request for Qualifications (RFQ) to potential bidders. This document would provide basic information to potential bidders about the toll road system and explain the state's interest and objectives in pursuing a long-term lease.

The most likely responses would come from teams formed specifically in response to this opportunity. Based on both the global and U.S. experience, such teams generally involve an experienced toll road developer/operator and one or more equity investors. The latter would generally be either an infrastructure investment fund or a public-sector pension fund (or both). This section provides an overview of some of the leading entities in each category.

5.1

GLOBAL TOLL ROAD OPERATORS

Given the long history of toll concessions in Europe, and in recent decades in Australia and Latin America, there is now a global toll roads industry skilled at building and operating limited-access toll roads in both developed and developing countries. This section provides

capsule descriptions of 12 of these companies. Some of these companies have sister companies that engage in major infrastructure construction, and some have subsidiaries specializing in electronic tolling systems.

Abertis is the world's second-largest toll road company, with over 8,600 km of toll roads in 13 countries. It is owned jointly by two of the other companies on this list: ACS and Atlantia. Its only U.S. toll roads are PR 5 and PR 22 plus the Teodoro Moscoso bridge, all in the San Juan metro area. Abertis was the leading bidder for the proposed 2008 P3 lease of the Pennsylvania Turnpike.

ACS has over 40 such motorways in operation worldwide, totaling 871 km. Its U.S. highway concessions include the I-595 project in Florida and the SH 288 project in Texas. Its sister company, Dragados, is active in U.S. infrastructure construction. ACS also has a number of non-tolled P3 motorway projects in Canada.

Atlantia is the world's largest toll concession company, with 14,000 km in operation in 23 countries, including 3,000 km in Italy. It was involved in the early stages of the Dulles Greenway toll road in Virginia, but has no current U.S. toll road operations.

Brisa is a mid-size international toll road company, with 12 toll roads totaling 1,014 km, mostly in Portugal. For some years in the last decade, it was part-owner of the concession for the Northwest Parkway in the Denver metro area.

CCR is a Brazilian toll concession company with 11 toll road networks totaling 3,000 km. Along with Brisa, it was a part-owner of the Northwest Parkway concession, but currently has no U.S. operations.

Cintra is a subsidiary of Spanish multinational Ferrovial, which is a major infrastructure provider, operating 1,474 km of toll roads worldwide. It has developed and operated five U.S. toll managed lanes projects (in North Carolina, Texas, and Virginia) and also owns a large share of the toll concession for Highway 407ETR in Canada. Parent company Ferrovial often partners with Cintra on projects that involve major construction.

Cofiroute/Vinci Highways are sister companies of Paris-based Vinci. The company develops and operates infrastructure concessions worldwide. Its toll motorway projects span 3,564 km in 14 countries, mostly in Europe and Latin America. Its Cofiroute division operates

tolled projects, including the SR 91 Express Lanes in California, which was developed originally as a toll concession with Cofiroute as the operating partner.

Globalvia operates 1,500 km of tolled motorways in seven countries, including the United States (Pocahontas Parkway), Latin America (Chile, Costa Rica, and Mexico), and Europe (Ireland, Portugal and Spain).

Itinera is the world's third-largest toll road company, with 4,156 km of toll roads in Europe and Brazil. Not yet directly involved in the U.S. market, Itinera's sister company, construction specialist Halmar International, is based in the New York metro area.

ROADIS operates 1,882 km of concessioned toll roads in India and Spain. It is wholly owned by Canadian pension fund PSP Investments. In 2019 it made an unsolicited proposal for the E-470 toll road in Denver.

Sacyr operates 1,892 km of toll roads in Spain, Portugal, Chile, Costa Rica, and Ireland. Its CEO recently expressed interest in possible toll concessions in the United States.

Transurban operates 18 toll roads, 14 of them in its homeland of Australia, three express toll lane concessions in northern Virginia, and a major toll road in Canada, totaling 304 km. Its CEO has recently expressed interest in P3 leases of additional toll roads.

5.2

INFRASTRUCTURE INVESTMENT FUNDS

During the past 15 years, a new phenomenon has emerged in the financial field: funds specializing in investing equity in infrastructure. Many focus primarily or exclusively on upgrades to existing government-owned infrastructure, such as airports, seaports, toll roads, water and wastewater systems, etc. Many invest in projects to develop entirely new infrastructure, such as new toll roads or energy facilities.

These funds seek sophisticated investors, who generally take part as limited partners. The majority of the infrastructure funds are "closed-end," meaning that they are set up for a specific period, such as 10 years, though some are open-end and can focus on longer-term investments. Large infrastructure endeavors, whether to improve and operate existing facilities or to develop and operate new ones, require financing. The funds exist to invest equity, with the majority of most project costs being financed via long-term revenue bonds. Equity returns are higher than

the interest rate on bonds, because the equity providers are willing to take higher risks than bond buyers, and hope to receive a reward for taking those risks.



During the past 15 years, a new phenomenon has emerged in the financial field: funds specializing in investing equity in infrastructure. Many invest in projects to develop entirely new infrastructure, such as new toll roads or energy facilities



The publication *Infrastructure Investor* covers this field and reported that such funds raised a near-record \$97.3 billion in 2019.⁵² That publication also each year creates an index of the largest 50 funds, based on the total they have raised over the most recent five-year period. Its latest report found that the current top 50 have raised \$496 billion over the previous five years.⁵³ The top-10 funds from that table are listed in Table 4.

TABLE 4: WORLD'S 10 LARGEST INFRASTRUCTURE INVESTMENT FUNDS, 2019

Rank	Fund Name	Headquarters	5-Year Total (\$B)
1	Macquarie Infrastructure & Real Assets	London	\$60.77
2	Global Infrastructure Partners	New York	\$57.42
3	Brookfield Asset Management	Toronto	\$38.69
4	KKR	New York	\$20.19
5	AMP Capital	Sydney	\$18.25
6	EQT Partners	Stockholm	\$17.85
7	IFM Investors	Melbourne	\$17.70
8	Stonepeak Infrastructure Partners	New York	\$14.95
9	Blackstone Infrastructure Fund	New York	\$14.00
10	BlackRock	New York	\$10.50

Source: *Infrastructure Investor*

⁵² PEI Staff. "2019 Is Infra's Second-Best Fund-Raising Year." *Infrastructure Investor.com*. Jan. 21, 2020.

⁵³ "The Infrastructure Investor 50." *Infrastructure Investor*. November 2019.

As should be clear from this discussion, there is no shortage of equity capital available to invest in revenue-generating infrastructure. Funds such as these have taken part in many toll road privatizations and P3 leases in recent years, and they are motivated to add U.S. toll roads to their growing portfolios of infrastructure. In short, for toll roads with sound financials and reasonable growth prospects, financing long-term P3 leases should not be a problem.

5.3

PUBLIC PENSION FUNDS

Public pension funds have traditionally invested a small portion of their portfolio in investor-owned infrastructure such as railroads and utilities. But until recently, they did not invest in airports, seaports, toll roads, or most water and wastewater systems because in the United States and most of the world, these were all government-owned and operated. Those facilities' large capital projects were financed 100% via municipal bonds. But pension funds invest *equity*—i.e., they buy shares in investor-owned freight railroads and utilities. It was not until governments in Europe began privatizing (selling shares in) airports and other government-owned utilities that pension funds became able to invest equity in these additional categories of infrastructure.

In the transportation sector, many toll concessions in Europe and Latin America have attracted investment from public pension funds. The special-purpose vehicle (SPV) to finance, construct or modernize, and operate the toll road often includes one or more pension funds, as noted earlier in this report. Pension funds invest equity in such SPVs, just as infrastructure investment funds do.

Australian and Canadian public pension funds were among the first to see the potential of diversifying their portfolios by investing equity in privatized and P3 infrastructure such as airports and toll roads. In both countries, a handful of pension funds have built in-house staffs with expertise in privatized and P3 infrastructure. They create diversified infrastructure portfolios partly by investing in individual projects. The vast majority of pension funds do not have that kind of expertise, so they invest by placing allocations of equity with one or more of the major infrastructure funds discussed in the previous section.

One of the top-50 funds in Table 4 is an Australian firm, owned by 27 Australian pension funds, that specializes in investing in infrastructure on their behalf globally: IFM Investors.

It has grown to become world's seventh largest infrastructure investment fund. Other pension funds with deep knowledge and expertise in infrastructure include the following:

- Australian Super (Australia)
- Queensland Investment Corporation (Australia)
- Caisse de depot et placement du Quebec, CDPQ (Canada)
- Canada Pension Plan Investment Board, CPPIB (Canada)
- Ontario Teachers Pension Plan, OTPP (Canada)
- Ontario Municipal Employees Retirement System, OMERS (Canada)
- PSP Investors (Canada)

Here is a sampling of major pension fund toll road activities in 2019.

- **Canada Pension Plan Investment Board** (CPPIB) acquired majority control of the Toronto-area Highway 407ETR concession company (the SPV), by purchasing an additional 10.1% from other shareholders. CPPIB partnered with Allianz Capital to purchase nine toll road concessions in India from development company SIPL; OMERS was also part of that consortium. And CPPIB and Astra Infra acquired 55% of the Cipali toll road concession in Malaysia.⁵⁴
- **Ontario Teachers Pension Plan** (OTPP) joined with CPPIB to acquire majority ownership of Mexican toll road developer/operator IDEAL. The three were already partners in two Mexican toll roads.
- **Ontario Municipal Employees Retirement System** (OMERS) bought a 22.4% stake in Indian toll road operator IndInfravit.
- **Caisse de depot et placement du Quebec** (CDPQ) agreed to buy the Highway Concessions One portfolio in India, besting offers from CPPIB and India's own National Investment & Infrastructure Fund (NIIF).
- **Australian Super** and OTPP each committed \$250 million to NIIF, and NIIF in turn has invested in toll road company ROADIS.

One of the few U.S. public pension funds that is developing direct-investment expertise is the largest: the California Public Employees' Retirement System (CalPERS). It was one of

⁵⁴ These and other examples are reported and footnoted in Poole, Robert W., Jr. "Annual Privatization Report: Transportation Finance." Reason Foundation. May 2020. 19-21.

the first American pension funds to begin investing in privatized and P3 infrastructure, with an investment early on in London Gatwick Airport, and others in the Port of Melbourne (Australia) and the Indiana Toll Road SPV. But even with its growing expertise, most of CalPERS' infrastructure investments are being made via placing funds with large infrastructure investment funds, such as GIP Strategic Alliance and J.P. Morgan Infrastructure Investments Fund.⁵⁵



One of the few U.S. public pension funds that is developing direct-investment expertise is the largest: the California Public Employees' Retirement System (CalPERS).



The Chicago Skyway Concession Company is owned by OMERS, CPPIB, and OTPP. And the Indiana Toll Road Concession Company is owned by more than 70 U.S. pension funds organized by IFM Investors.

⁵⁵ "Inframation Deals—California Public Employees' Retirement System."
<https://www.inframationnews.com/investors/institutional-profiles>, accessed Jan. 9, 2020.

PART 6

PENSION FUNDS AS TOLL ROAD INVESTORS

6.1

THE TWO-FOR-ONE ASPECT OF PENSION FUNDS AND INFRASTRUCTURE P3S

Two trillion-dollar scale U.S. problems are crying out for fresh approaches. One is under-investment in refurbishing and modernizing critically important infrastructure, such as airports, highways, water and wastewater systems, etc. Airports and toll roads are generally in better shape than other U.S. infrastructure, but there is a large need for hundreds of billions in highway investment in coming decades, and much larger sums to refurbish and/or replace aging water and sewer systems and other vital infrastructure.

The other massive problem is the underfunding of U.S. public pension systems. Many state and municipal pension systems failed to recover from the losses they experienced in the wake of the 2008 financial crisis. Many therefore entered 2020 significantly under-funded and at risk of further deterioration during the Covid-19 recession. Even prior to the onset of the pandemic, state and local governments had \$1.43 trillion in unfunded liabilities (fiscal year 2018) in their public employee pension systems.⁵⁶ On average, these systems had only 72.8% of the assets needed to remain on track to pay all promised pension obligations in

⁵⁶ Aubry, Jean-Pierre and Caroline V. Crawford. "Update on the Funded Status of State and Local Pension Plans—FY 2018. Center for Retirement Research. October 2018.

the future—and the economic impacts of the Covid-19 recession will significantly worsen their situations. Moreover, the Federal Reserve has lowered interest rates further, which will make it even more difficult for pension funds to recover.⁵⁷

Over the past decade, U.S. pension funds have sought to increase their overall return on investments by diversifying into alternative investments, including infrastructure. CalPERS, a leader of this trend, currently allocates 1.3% of its \$370 billion portfolio to infrastructure. *Inframation* reports that its five-year return on infrastructure investment was 12.7%, well above its *overall* rate of return.⁵⁸ But U.S. pension funds face a dearth of privatized or P3 infrastructure to invest in within the United States. With few or no airports or toll roads on the market here, they must invest overseas if they wish to add these kinds of assets to their portfolios.



Two trillion-dollar scale U.S. problems are crying out for fresh approaches. One is under-investment in refurbishing and modernizing critically important infrastructure, such as airports, highways, water and wastewater systems, etc.



Therefore, a policy of increasing investment by U.S. pension funds in U.S. infrastructure would require a greater use of P3 leases than is the case today. Were Congress or a state government to embrace this approach, it would stimulate new investment to refurbish or expand existing infrastructure while helping secure the retirements of public employees. Beyond providing financial benefits for the government owner of the leased asset, addressing *two* major problems via a single policy change would be a broader justification for P3 leases of existing facilities such as toll roads.

⁵⁷ “U.S. Pensions Take Big Coronavirus Hit.” *Pension Pulse*. April 3, 2020.

⁵⁸ “Inframation Deals—California Employees’ Retirement System.”

6.2

PENSION FUNDS AND THE POLITICS OF TOLL ROAD P3 LEASES

The P3 lease of a large or medium toll road system in the United States will likely be controversial, at least until the practice becomes as familiar as it now is in much of Asia, Australia, Europe, and Latin America. It would be a significant departure from the status quo that has prevailed for more than 75 years. That status quo is familiar to the legislative and executive branches of state governments, and it is also familiar to U.S. trucking companies and motorists.

Significant departures from the status quo are difficult, unless a large problem with the status quo is understood and appreciated. That was the case in San Juan, where the government was in dire financial straits and the San Juan metro area toll roads were poorly managed. As noted in Part 3, some U.S. toll roads are subjected to political micromanagement by legislative bodies, which get involved in many details that should be the province of the toll road operator. Also, some toll roads have relatively short-term political appointees as managers, rather than career transportation professionals. But the main problem to be addressed is not toll agency management but the state government's dire financial condition.

Will the kinds of factual arguments presented in this study prevail over emotional arguments defending the status quo? These include:

- “We don’t want foreign companies managing our toll road.”
- “No one should make a profit from providing a vital public service like highways.”
- “Wall Street (or London) financiers—the 1%—will make toll roads and highway travel unaffordable for ordinary people.”
- “The trucking industry should not have to pay for super-profits of toll road companies.”

There are sensible answers to these kinds of statements, but in political decision-making, emotionally laden claims can be very powerful.



A decade ago, American public employee unions objected vociferously to their pension funds investing in privatized and P3 infrastructure. But CalPERS is no longer being criticized for the 12.7% return on its infrastructure portfolio, helping to increase the fund's overall rate of return from its current 6.7% return on investment.



But consider the difference if increasing the viability of state employee pension funds is inherent in the P3 lease of a toll road. A decade ago, American public employee unions objected vociferously to their pension funds investing in privatized and P3 infrastructure. But CalPERS is no longer being criticized for the 12.7% return on its infrastructure portfolio, helping to increase the fund's overall rate of return from its current 6.7% return on investment.⁵⁹ Public pension funds deliberately joining toll road P3 lease competing teams—and explaining why they are doing so—could have an important impact on public opinion.

6.3

ADDRESSING THE STATE'S OWN PENSION SYSTEM SHORTFALL

All the state governments that own and operate the nine toll road systems analyzed in this report have partially unfunded public employee pension systems. Table 5 provides a summary of the situation. For each jurisdiction, the table lists both the total unfunded liability (in dollars) and the percent that the system is funded (compared with the needed 100%).

⁵⁹ Wiley, Hannah. "CalPERS Narrowly Misses Its Annual Investment Target." *The Sacramento Bee*. July 11, 2019.

TABLE 5: STATE PENSION SYSTEM UNFUNDED LIABILITIES AND PERCENT FUNDED

State	Actuarial Accrued Liability (AAL)	Actuarial Value of Assets (AVA)	Unfunded Pension Liability	% Funded
Florida	\$185,950,079,000	\$156,104,350,000	\$29,845,729,000	83.9%
Illinois	\$265,557,863,790	\$129,386,915,580	\$136,170,948,210	48.7%
Kansas	\$28,153,826,990	\$19,246,613,270	\$8,907,213,720	68.4%
Massachusetts	\$92,109,896,000	\$53,305,950,000	\$38,803,946,000	57.9%
New Jersey	\$158,328,373,970	\$85,611,902,920	\$72,716,471,050	54.1%
New York	\$336,354,100,000	\$325,127,500,000	\$11,226,600,000	96.7%
Ohio	\$246,412,764,720	\$185,959,518,730	\$60,453,245,990	75.5%
Oklahoma	\$35,015,831,305	\$28,731,058,841	\$6,284,772,464	82.1%
Pennsylvania	\$157,174,024,940	\$89,529,645,130	\$67,644,379,810	57.0%

Source: Center for Retirement Research Public Plans Database, accessed April 2020.

Pension System Unfunded Liability Calculations

The analysis of the unfunded pension system liabilities of the jurisdictions that own the nine toll road systems in this study was carried out by the Pension Integrity Team of Reason Foundation (<https://reason.org/pension-integrity-project>).

For purposes of this study, pension figures include all public pension plans of the state government in question. The accounting of liabilities and assets comes from public financial reports compiled by the Center for Retirement Research's Public Plans Database. The study's pension numbers include all public plans that are managed by the state governments discussed in this report.

The calculations use each plan's stated Actuarial Value of Assets (AVA), but the market value of assets (MVA) is also available in the raw data. The difference between these numbers is a matter of asset smoothing, whose methodology can vary from plan to plan. AVA numbers aren't as impacted by the results of a single year. The analysis also uses Actuarially Accrued Liabilities (AAL) to represent the total amount in pension obligations that have been promised to the jurisdiction's public workers. Combined plan actuarial value of assets (AVA) is used to determine the amount the state has on hand to uphold its pension promises. Subtracting the combined assets from the combined liabilities gives the jurisdiction's total unfunded pension liability—the amount it is short on pension obligations. Dividing the AVA by the AAL gives the funding ratio.

One possible use of proceeds from the P3 lease of a toll road (or any other revenue-producing infrastructure asset) is to pay down the unfunded liability of the pension system. Sooner or later, the system must pay all promised benefits. The available alternatives are (1) politically difficult reforms to adjust the rules under which the system operates, (2) increasing taxes on the jurisdiction's citizens, (3) crowding out other areas of public spending in order to increase the amount devoted to pension systems, or (4) devoting unexpected windfalls to increasing the pension system's assets. If some or all of the toll road's net asset value is paid up-front in a lump sum, that could be considered an unexpected windfall.

There are several different ways in which P3 lease proceeds could be used. Some further discussion of the alternatives is provided in Part 7.

PART 7

WISE USE OF P3 LEASE PROCEEDS

7.1

OVERVIEW

“
For those P3 lease agreements that are based on a large up-front payment, this section argues that a one-time windfall should not be used to avert a short-term operating budget problem.

There are several ways in which the SPV that wins the bidding and negotiates the long-term lease of a toll road system could make the lease payments. Worldwide, for revenue-producing assets such as airports and toll roads, the most common approach is for the SPV to pay the entire amount up-front. But there is also a trend in which the winner pays a portion of the total up-front and then pays a fixed or variable amount each year of the lease term. A number of airport P3 leases have been configured in this way, sometimes with no up-front payment but rather (1) a commitment to specific amounts of capital investment to improve/expand the facility and (2) a defined share in the annual gross or net revenue. In the toll road sector, most greenfield P3 concessions have involved no up-

front payment but a major investment in new capacity. Both Texas and Virginia DOTs have engaged in concession agreements in which an escalating share of gross toll revenue goes to the state as total revenue increases over time.

Whichever method of paying for the long-term lease is adopted, the state must decide the wisest use of the proceeds. For those P3 lease agreements that are based on a large up-front payment, this section argues that a one-time windfall should not be used to avert a short-term operating budget problem. It is a contribution of capital and should be used to improve the government's balance sheet, rather than its income statement. On the other hand, an annual share of the project's revenue over the life of the long-term agreement is analogous to an annuity, and should be dedicated to a specific ongoing expense category.

7.2 INVESTING IN OTHER NEEDED INFRASTRUCTURE

In some countries, including Australia and India, a policy known as “infrastructure asset recycling” has been explicit government policy. The best-known approach was a federal program in Australia several years ago. The federal government sought to encourage state governments to sell or lease revenue-producing facilities (such as seaports and state-owned utilities) and use the proceeds to invest in needed infrastructure that was currently unbudgeted. In 2014, Australia's federal government created a formal asset recycling policy to encourage state governments by offering them grants equal to 15% of the value of the net proceeds from the sale or P3 lease of state assets. Importantly, the policy stipulated that the proceeds were to be invested in new infrastructure only. Over a several-year period, this program led to A\$20 billion in new infrastructure investment, primarily in New South Wales and in the Australian Capital Territory.⁶⁰

More recently, the National Highways Authority of India has been auctioning long-term P3 leases of toll roads under its Toll-Operate-Transfer (TOT) program, with the proceeds invested by NHAI to upgrade lower-level roads.⁶¹ Pension funds CDPQ and CPPIB have been among the bidders for Indian toll road leases.

⁶⁰ Poole, Robert W., Jr. “Asset Recycling to Rebuild America's Infrastructure.” Reason Foundation. October 2018. Part 3.

⁶¹ Srivastava, Vikas. “NHAI Plans Fifth TOT Auction in Feb to Raise Rs 3,000 Crore.” *Financial Express*. Jan. 22, 2020.



In the United States, the long-term P3 lease of the Indiana Toll Road (ITR) in 2006 is a good example of asset recycling. The winning bidder paid \$3.8 billion, all of it up-front.



In the United States, the long-term P3 lease of the Indiana Toll Road (ITR) in 2006 is a good example of asset recycling. The winning bidder paid \$3.8 billion, all of it up-front. After paying off the \$200 million in ITR debt, the state created a 10-year, \$2.6 billion statewide highway improvement program called Major Moves. It also put \$500 million into a Next Generation Trust Fund to provide long-term maintenance for the new highway infrastructure created by Major Moves.⁶² In this case, it turned out to be fortunate that the state of Indiana received 100% of the lease payments up-front, because the original SPV was so highly leveraged that it was unable to make scheduled debt service payments during the Great Recession, and ended up filing for Chapter 11 bankruptcy in 2014. A consortium of pension funds, organized by IFM Investors, then paid \$5.7 billion for the remaining years of the 75-year lease, which paid off the former SPV's creditors.⁶³

The United States faces a large shortfall in infrastructure investment, as chronicled every two years by the American Society of Civil Engineers. Its series of Report Cards estimates needed refurbishment and modernization of existing infrastructure and addition of new infrastructure in the categories of transportation (airport, highways, transit, etc.), energy and environmental facilities, and other public facilities.⁶⁴ ASCE's latest estimate of 10-year investment needs is \$2 trillion. A state policy of infrastructure asset recycling would first define assets that could be sold (such as real estate) and revenue-producing infrastructure that could be P3 leased to competent companies, financed by infrastructure investment funds and/or pension funds. Toll roads could be one of the assets identified under such a policy.

⁶² Poole, "Asset Recycling to Rebuild America's Infrastructure." 22–24.

⁶³ "IFM Investors Completes Acquisition of Indiana Toll Road Concession Company." *Businesswire.com*. May 27, 2015.

⁶⁴ "America's Infrastructure Scores a D+." American Society of Civil Engineers. No date. <https://infrastructurereportcard.org>.

If the lease payments were made annually over the life of the long-term concession agreement—either at a pre-defined rate or as a percentage of gross revenue—one of the best uses would be as a new revenue stream for transportation investment, such as the Major Moves program in Indiana.

7.3

PAYING DOWN GOVERNMENT DEBT

Another way to use a one-time windfall to improve a government's balance sheet would be to pay off portions of the jurisdiction's bonds, avoiding future debt service costs and improving the jurisdiction's overall bond rating. Such a policy would, in effect, add some reserve bonding capacity for times in the future when that may be required.

When the city of Chicago leased the Chicago Skyway via a 99-year P3 lease in 2005, it used most of the \$1.8 billion proceeds for balance-sheet improvements.⁶⁵ They included:

- Retire its existing Skyway bonds: \$463 million
- Pay down long-term city debt: \$134 million
- Eliminate short-term debt obligations: \$258 million
- Establish a long-term reserve: \$500 million
- Establish a mid-term reserve: \$375 million
- Create a neighborhood investment fund: \$100 million

In another Chicago example, the city leased four underground parking garages, owned by the city and the Chicago Parks District. They constituted the country's largest underground parking system, and garnered considerable interest from investors and parking companies. The 99-year P3 lease generated \$563 million for the city and the District. The city used most of its share to pay off debt, and the District paid off debt and established three funds for different park improvements.⁶⁶

When financially strapped Puerto Rico leased its two toll roads, it received \$1.136 billion up-front, plus the SPV's commitment make capital investments in the toll roads. Most of the

⁶⁵ "Infrastructure Case Study: Chicago Skyway Bridge." Bipartisan Policy Center. October 2016.

⁶⁶ "The Chicago Parking Garage Leases." The Civic Federation. Dec. 15, 2010.

up-front proceeds were used to retire the \$850 million debt of the two toll roads. The use of the \$286 million balance was not specified, but after the transaction closed, the government received its first credit rating upgrade in 23 years.⁶⁷

7.4

REDUCING UNFUNDED PENSION SYSTEM LIABILITIES

Unfunded public employee pension obligations are a very large component of the liabilities on many state balance sheets. As mentioned briefly in Part 6, another prudent use of up-front P3 lease proceeds would be to reduce those unfunded liabilities by transferring some or all of the toll road lease proceeds to the jurisdiction's pension system.

The extent to which the estimated mid-range valuation of each toll system could reduce the jurisdiction's unfunded pension liability varies considerably, as Table 6 reveals.

TABLE 6: TOLL ROAD NET LEASE PROCEEDS VS. UNFUNDED PENSION LIABILITY

State	Actuarial Accrued Liability (AAL)	Actuarial Value of Assets (AVA)	Unfunded Pension Liability	% Funded	Net Proceeds at 25X	% of Unfunded Liability
Florida	\$185,950,079,000	\$156,104,350,000	\$29,845,729,000	83.9%	\$14,501,000,000	49%
Illinois	\$265,557,863,790	\$129,386,915,580	\$136,170,948,210	48.7%	\$19,406,000,000	14%
Kansas	\$28,153,826,990	\$19,246,613,270	\$8,907,213,720	68.4%	\$1,110,000,000	12%
Massachusetts	\$92,109,896,000	\$53,305,950,000	\$38,803,946,000	57.9%	\$8,477,000,000	22%
New Jersey	\$158,328,373,970	\$85,611,902,920	\$72,716,471,050	54.1%	\$17,422,000,000	24%
New York	\$336,354,100,000	\$325,127,500,000	\$11,226,600,000	96.7%	\$2,772,000,000	25%
Ohio	\$246,412,764,720	\$185,959,518,730	\$60,453,245,990	75.5%	\$2,876,000,000	5%
Oklahoma	\$35,015,831,305	\$28,731,058,841	\$6,284,772,464	82.1%	\$3,390,000,000	54%
Pennsylvania	\$157,174,024,940	\$89,529,645,130	\$67,644,379,810	57.0%	\$6,758,000,000	10%

Source: Reason Foundation Pension Integrity Team and data from Table 3

The best-funded pension system in the table is New York State's, at 96.7%. However, the net proceeds under our mid-range valuation at 25X EBITDA yield only enough to cover 25% of the unfunded liability. By contrast, the Florida pension system, which is 83.9% funded, would have high enough net proceeds to cover 49% of the unfunded liability. Illinois, with the lowest pension funding at 48.7% has large net lease proceeds, but its unfunded liability is so large that the net proceeds would cover only 14% of that \$136 billion liability. New Jersey has the second-lowest funding percentage (54.1%) and the modest net lease

⁶⁷ Reinhardt. "PR-22 Financial Close."

proceeds of \$2.77 billion would cover only 25% of its \$11.2 billion unfunded liability. The state that could cover the largest share of its unfunded pension liability is Oklahoma, which could cover 54% of its \$6.28 billion liability.

Several cautions should be noted in considering this use of toll road P3 lease proceeds. Pension liabilities have accumulated over decades due to an array of decisions made by legislative bodies to provide retirement benefits with insufficient concern for where the resources would come from to fully pay for those benefits to future retirees. Often, elected officials voted for these rules and provisions while aware that by the time the pension system reached the point where promised benefits vastly exceeded the resources needed to pay them, those elected officials would be retired or dead and not able to be held accountable. A one-time infusion of a windfall from lease proceeds can improve the near-term solvency of the pension system, but if rules and provisions remain in place that create more promised benefits than projected revenues can cover, the problem will be postponed, rather than being solved.

The state government responsible for the toll road systems discussed in this report will have to weigh the alternative uses of the lease revenues from any transaction such as the P3 lease of the toll system. Whether investing those proceeds in needed infrastructure, in debt reduction, or in pension fund solvency is the best use will be a decision specific to each state government.

PART 8

CONCLUSIONS

This study has explained that state government owners of nine major toll road systems have an option that few have actually considered in the post-Covid-19 recession: leasing their toll road system via a long-term public-private partnership (P3) agreement, under which the owner can use the lease proceeds for general governmental purposes.

Global infrastructure investment funds as well as public pension funds are eager to invest in revenue-producing assets such as toll roads. And the emergence of a global toll roads industry means that states can select among world-class companies to operate, manage, and invest in their toll road system, while holding the company accountable for performance via a detailed long-term public-private partnership agreement.

This study found that, based on valuations of overseas toll roads in recent privatization and P3 transactions, the large majority of the nine states studied here would have significant net proceeds after paying off outstanding tax-exempt toll road bonds (as required by U.S. tax law).

Since fiscal prudence dictates that a large windfall be devoted to strengthening a state's balance sheet, rather than dealing with short-term budget-balancing, states considering leasing their toll road systems should weigh the trade-offs among three alternatives as they work to recover from the Covid-19 recession. As discussed previously, the wisest alternatives are to:

- Invest the windfall in needed infrastructure that cannot otherwise be funded in the post-pandemic environment;
- Strengthen the state government's balance sheet by paying down existing debt, potentially increasing its bond rating by doing so; or
- Put the windfall into the state's under-funded pension system, bringing that system closer to solvency, while preserving current tax revenue for ongoing government operations.

Alternatively, if lease payments were to be made annually, the most direct use would be as a kind of annuity to support ongoing investment in the state's transportation system. The best choice will depend on the circumstances each state finds itself in during the economic recovery.

APPENDIX: SHOULD A STATE GIVE ITS TOLL ROAD SYSTEM TO ITS PENSION FUNDS?

An alternative proposal for using infrastructure to strengthen ailing public pension funds is called Asset-in-Kind Transfer (AIK). It is being presented as an alternative to long-term P3 leases for this purpose.

Proponents argue that P3 infrastructure is politically unpopular, in part due to fears of “foreign control” and an allegedly higher cost of capital than via municipal bond financing.⁶⁸ Asset-in-Kind (AIK) transfer is described as follows. A government with a revenue-producing infrastructure asset, such as a toll road or airport, would *give* the facility to the jurisdiction’s pension fund as an additional asset on the fund’s balance sheet. The pension fund would hire a private-sector manager to “transform the asset into a performance-driven enterprise.” Once it has been transformed, the pension fund might then sell a 5% to 10% stake to an independent third party, which would permit a market-based

⁶⁸ Klagic, Ray, et al. “Transforming Public Infrastructure Assets Under Public Pension Stewardship for Public Benefit.” (PowerPoint presentation) American Public Infrastructure. November 2019.

estimate of its value on the pension fund's balance sheet. Proponents acknowledge that several federal tax code changes would be needed to make this model viable.

Several key, but questionable, assumptions are built into this model.

- First, it assumes that the asset would be valued by the pension fund at “fair market value.” As anyone knows who has observed large-scale real estate transactions or mergers and acquisitions, the only way to ascertain true market value is through a competitive process. Would-be private-sector purchasers or lessees (under long-term P3s) would value the asset based on its potential after transformation, not on any kind of static assessment.
- Second, the model assumes that private contract management—without an ownership interest—would be capable of truly transforming the asset into a performance-driven enterprise. The absence of meaningful incentives for a contract manager to make such sweeping changes is one reason why long-term P3s have emerged after decades of only minor efficiency improvements under contract management.
- Third, this model assumes that the potentially higher capital costs of a P3 (meaning the potential return on the equity invested) do not add value. But there are significant risk transfers in long-term, revenue-based P3s.⁶⁹ In exchange for the opportunity to seek, say, a 12% return on the equity invested in the asset, the private partner takes on the risk of cost overruns on new/rebuilt facilities, insufficient revenue to fully cover capital and operating costs, and insurance, among other things. Those risks would all be borne by the pension fund and its retirees under the AIK model.

Proponents cite as evidence of the viability of this approach the transfer of the Queensland Motorways to a major pension fund in Australia. This case proves the opposite of what is argued by Asset-in-Kind proponents, so it is worth reviewing in some detail.

The Global Projects Center at Stanford University did a detailed case study of this asset transfer.⁷⁰ The case concerns the 2011 transfer from the state government (Queensland) of

⁶⁹ Poole, Robert. “Availability Payment or Revenue-Risk P3 Concessions? Pros and Cons for Highway Infrastructure.” Reason Foundation. November 2017.

⁷⁰ Bennon, Michael, Ashby H.B. Monk, and Young-Joon Cho. “In-Kind Infrastructure Investments by Public Pensions: the Queensland Motorways Case Study.” Stanford Global Projects Center. June 5, 2017.

several bankrupt highway/tunnel projects, which the state had acquired post-bankruptcy, to the pension fund called Queensland Investment Corporation (QIC). Over several subsequent years, QIC acquired several additional highway assets in the Brisbane metro area and put them all under a single management as Queensland Motorways Ltd. (QML).

QML made a number of upgrades to convert the highways into a network, financed by increases in toll rates. In late 2013 QIC's board decided that the value of QML had increased to the point where it was inconsistent with QIC's commitment to a diversified investment portfolio. It then organized a competitive process for a long-term P3 lease of QML, which was won in July 2014 by a consortium of a leading toll road company (Transurban), a major Australian pension fund, and a sovereign wealth fund. They paid QIC \$6.6 billion for the P3 lease.

On the surface, this shows benefits to a pension fund from an Asset-in-Kind transfer. However, the authors of the case study are at pains to point out how unique QIC is, especially compared with U.S. public pension funds. QIC is one of the largest pension funds in Australia, with over A\$79 billion of assets in its portfolio, including A\$9.5 billion of infrastructure investments. Like IFM Investors, CPPIB, and OMERS, QIC has "built a team of investment professionals and developed the in-house capability to assess and manage infrastructure assets directly." Among its other infrastructure assets are the privatized Brisbane Airport and the Port of Brisbane. The case study authors add that, "The operational improvements at QML were possible only due to the rare capability at QIC as a state-level pension fund manager to directly invest in and manage infrastructure assets. This internal capability is rare in public pensions Without QIC's dedicated infrastructure team, QML would also likely have not realized the same level of operational turnaround." Referring directly to advocates of AIK transfers to ordinary pension funds, the authors write that "It is unclear whether a similar transaction could be replicated in which the public pension uses some kind of external management contract with a service provider to assess and operate the in-kind asset without losing the competitive advantages that QIC's internal team enjoyed."

The alternative to AIK transfers is for the state or local government owner of the troubled asset to contract with professional legal and financial advisors to structure a competitive bidding process for a long-term P3 lease of the revenue-producing asset. Such a proposal was made by Jeff Schoenberg, former assistant majority leader in the Illinois Senate, in March 2019: a long-term P3 lease of the Illinois Tollway system with the net proceeds used

to shore up that state's grossly underfunded public pension systems.⁷¹ Schoenberg cited the large asset values received by the city of Chicago for the P3 lease of the Chicago Skyway and by Indiana for the P3 lease of the Indiana Toll Road. And he cited a study from last decade that he co-chaired, under which Credit Suisse estimated that a 75-year lease of the Illinois Tollway system could generate as much as \$23.8 billion. This would be far more effective than simply giving the Tollway to the state's beleaguered pension funds.

⁷¹ Schoenberg, Jeff. "The Road to Solvent Illinois Pensions Requires a Tollway Lease." *Crain's Chicago Business*. March 5, 2019.

ABOUT THE AUTHOR

Robert W. Poole, Jr. is director of transportation policy and the Searle Freedom Trust Transportation Fellow at Reason Foundation, a national public policy think tank based in Los Angeles.

His 1988 policy paper proposing supplemental privately financed toll lanes as congestion relievers directly inspired California's landmark private tollway law (AB 680), which authorized four pilot projects including the highly successful 91 Express Lanes in Orange County. Over two dozen other states have enacted similar public-private partnership legislation. In 1993 Poole oversaw a study that introduced the term HOT (high-occupancy/toll) Lane, a concept which has become widely accepted since then.

Poole has advised the Federal Highway Administration, the Federal Transit Administration, the White House Office of Policy Development and National Economic Council, the Government Accountability Office (GAO), and the California, Florida, Georgia, Indiana, Texas, Utah, Virginia, and Washington State Departments of Transportation. He served 18 months on the Caltrans Privatization Advisory Steering Committee, helping oversee the implementation of AB 680. He was appointed by Gov. Pete Wilson as a member of California's Commission on Transportation Investment in 1995-96.

Poole is a member of the board of the Public-Private Partnerships (P3) division of ARTBA and a member of the Transportation Research Board's Managed Lanes Committee. From 2003 to 2005, he was a member of the TRB's special committee on the long-term viability

of the fuel tax for highway funding. In 2008 he was a member of the Study Committee on Private Participation in Toll Roads, appointed by Texas Gov. Rick Perry. In 2010 he was a member of the Washington State DOT's Expert Review Panel on the proposed Eastside Managed Lanes Corridor. Also in 2010, he served as a transportation policy advisor on the transition team of Florida Gov. Rick Scott.

Poole is the author of dozens of policy studies and journal articles on transportation issues. His book, *Rethinking America's Highways*, was published by the University of Chicago Press in 2018. Poole's popular writings have appeared in national newspapers, including *The New York Times* and *The Wall Street Journal*; he has also been a guest on such programs as "Crossfire," "Good Morning America," and "Huffington Post," as well as ABC, CBS and NBC News, NPR and PBS. He produces the monthly e-newsletter *Surface Transportation Innovations*. *The New York Times* has called him "the chief theorist for private solutions to gridlock."

Poole received his B.S. and M.S. in mechanical engineering at MIT and did graduate work in operations research at NYU.

