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Availability Payment or Revenue-Risk P3 Concessions? Pros and Cons for Highway Infrastructure

by Robert W. Poole, Jr.

Reason Foundation

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Executive Summary

Over the past two decades, the U.S. highway sector has seen the introduction and use of a new method of procurement: the long-term public-private partnership. Under this approach, the relevant government agency seeks competitive proposals from teams that will design, build, finance, operate, and maintain (DBFOM) a bridge, highway, or tunnel project, for terms ranging from 30 to 70 years. The detailed long-term agreement that covers each project is called a *concession*, following terminology in Europe, where the concept originated in the 1960s. Today the concession approach is widely used in Europe, Latin America, Asia, and Australia, though it is still the exception rather than the rule in the United States.

U.S. highway concession projects began with toll revenues as the funding source that permits long-term financing at the outset of a project. Within the past decade, a second type of concession has emerged in the highway sector: *availability-payment* concessions. In these cases, the usual funding source is the government's commitment of annual payments to the winning team over the life of the long-term agreement, subject to the project continuing to meet various performance requirements (i.e., to be *available* for use, in good shape). In recent years, AP concessions have slightly outnumbered toll-financed concessions in the U.S.

highway sector, for several reasons. Construction companies generally prefer AP concessions, and some state DOTs see only limited opportunities to use tolling for new or reconstructed highway infrastructure.

The two types of highway concession—which we term revenue-risk (RR) concessions and availability payment (AP) concessions—have similarities and differences that may not be well understood. Both offer several advantages over traditional procurement methods such as design-bid-build (DBB) and design-build (DB). These include (1) strong incentives to minimize not the initial construction cost but instead the *life-cycle* cost of the project, (2) competing design approaches that may result in greater value-for-money, and (3) guaranteed maintenance for the entire term of the long-term agreement. Those are important benefits that produce more bang for the buck in large highway projects.

There are also important differences, and these are less well understood. First, projects funded by a new stream of toll revenues help address the widely acknowledged gap between static or declining revenues from traditional per-gallon fuel taxes and the amount needed to improve the conditions and performance of the highway sector. Second, some AP concession projects do include tolls but those tolls are charged by and paid to the state. Hence, there is no customer-provider relationship between the highway users and the concession company in this type of structure—and that has important implications for (a) project selection, and (b) project design, in which the company seeks to attract as many users as possible to the project. In addition, AP concessions create new liabilities for governments in the form of long-term funding commitments to the project. As state treasurers and other financial officials become familiar with this point, a growing number of states are enacting limits on the amount of AP liabilities they are willing to accept.

This study explores these issues in depth, drawing on recent experiences with both revenue-risk and availability payment concession projects in the highway sector. It includes a discussion of where AP concessions can be a good fit for highway projects, as well as the limitations of this approach. The study is intended as a guide for policymakers interested in making wise use of DBFOM concessions of both types.

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Introduction

Transportation infrastructure is a central component of our economy. Having an efficient network so goods and people can move faster and more reliably establishes a foundation for an economy to grow. For years, the airwaves and newspapers have been flooded with stories about our crumbling infrastructure. The United States faces a growing highway funding shortfall due to the decreasing viability of per-gallon fuel taxes. Given current propulsion trends and regulatory requirements, future fuel tax revenues could decline to about half of today's level (unless fuel tax rates are doubled).

Over the last two decades, long-term public-private partnerships (P3) have become increasingly popular with state and local governments to help deliver much-needed infrastructure. Indeed, President Trump's infrastructure plans have discussed private capital participation via P3s as an important tool for rebuilding and modernizing U.S. infrastructure. Such P3s began in the 1990s with toll-financed projects for new highways and bridges, and later added the leasing and refurbishment of several existing highways and tunnels. This brought new investment and new revenue streams into the highway system as the private sector stepped up to offer toll-financed solutions, and take the risks where there wasn't a public toll agency or the political will to establish one. These toll-financed project are termed revenue-risk (RR) concessions.

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Availability payment P3s—where the government makes a long-term commitment to provide annual payments for delivery and operation of a project, as long as the project is "available"—have become popular with several states in recent years. In this type of P3 concession, the private partner designs, builds (or rebuilds), finances, operates and maintains the project for

the life of the agreement in exchange for fixed annual payments, contingent on satisfactory delivery of the facility and meeting ongoing performance standards. The private partner takes on the risks of construction cost overruns, on-time completion, and operating and maintenance performance during the life of the agreement, while the government is responsible for funding and making the annual payments to the concession company.

There are several reasons for this trend. First, a growing number of construction firms seeking to bid on mega-projects have become comfortable with taking the risk of construction cost overruns and late completion, given their experience with design-build projects, and they are able to contract with asset management companies to handle the ongoing maintenance obligations. But they have been leery of, or unwilling to accept, traffic and revenue risk. With AP concessions, revenue is fixed and paid by government, and private companies need only manage the risks they have more control over, such as construction costs, timely project completion, and ongoing operations and maintenance. Second, AP concessions require far less equity investment by the concessionaire, and that is attractive to construction companies. Third, tolling may be impractical or seen as controversial, and most AP projects avoid charging tolls.

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AP concession projects generally rely on existing transportation revenue streams, in comparison with revenue-risk concessions, which usually involve using tolls where there were not previously tolls (hence creating a net new revenue stream). Therefore, although AP concessions bring many of the advantages of revenue-risk concessions, they generally do not help to solve the large funding challenges facing transportation infrastructure.

This study explores the benefits that P3 concessions provide, and compares and contrasts availability payment (AP) concessions and revenue-risk (RR) concessions. It explains how rating agencies and state governments treat the obligations made under the AP type of contractual agreement. It also identifies where and when an AP concession is an appropriate tool for governments to use in the highway sector.

Part 1

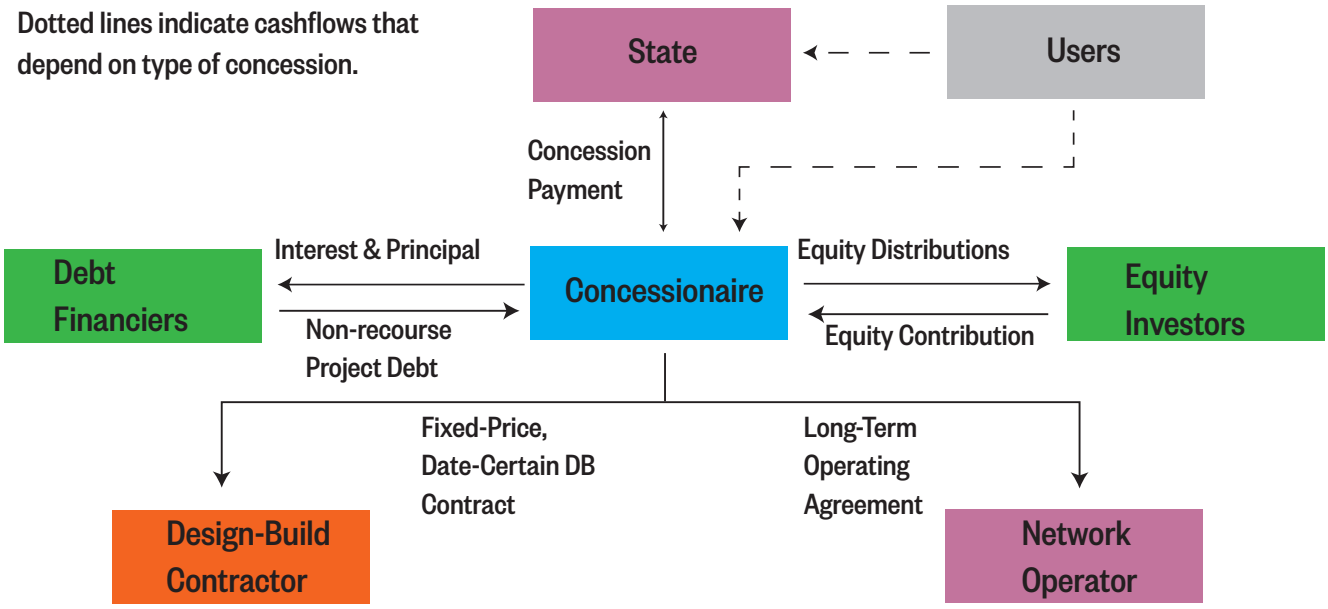
What Is a P3 Concession?

The most basic and broadest definition of a public-private partnership (P3) comes from the National Council for Public-Private Partnerships, which defines a P3 as a "contractual arrangement between a public agency and a private sector entity" where "through this agreement, the skills and assets of each sector are shared in delivering a service or facility for the use of the general public."[1] Beyond those basics, a P3 *concession* is a long-term P3 in which the private sector typically designs, builds, finances, operates, and maintains the infrastructure for a period that can be as long as the asset's useful life.

Figure 1 illustrates the basic structure of a design-build-finance-operate-maintain (DBFOM) concession. The figure highlights the various contractual relationships and flows of funds among the parties. The two central parties—the government and the private partner (concessionaire)—are bound by a long-term contractual agreement (or set of documents) called the concession agreement (CA). The CA sets out the rights and responsibilities of each party—including performance and payment mechanisms. The concessionaire raises funds from debt and equity investors to capitalize itself to deliver the project established in the CA. The concessionaire then enters into a design-build agreement with a qualified contractor and may also contract with an operations and maintenance company (or may carry out those functions itself).

[1] National Council of Public Private Partnerships. www.ncppp.org/ppp-basics/7-keys/

Figure 1: A Typical Concession Structure



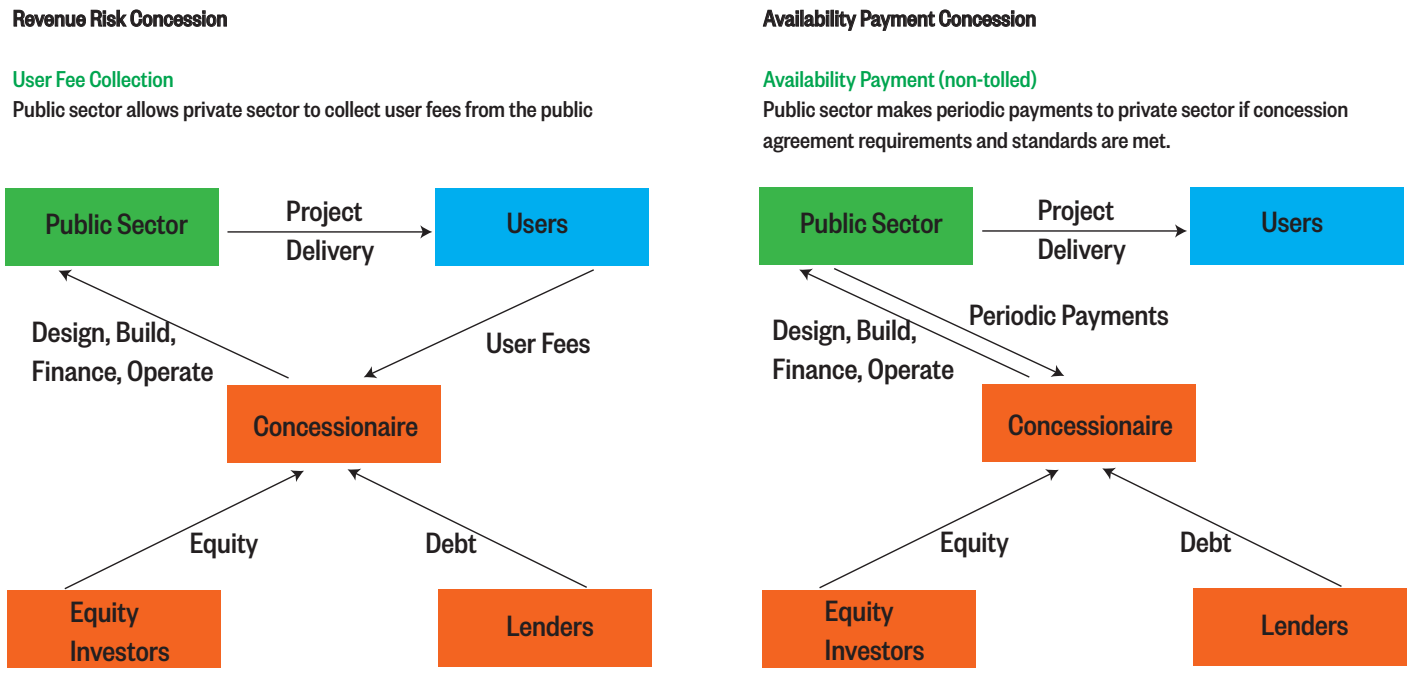
There are two types of DBFOM concessions for transportation infrastructure, as outlined in Figure 2. The traditional kind, pioneered in Spain in the 1960s and 1970s, is a toll concession (called a revenue-risk, or "RR," concession in this study), in which the primary or total revenue source is tolls paid by the highway's customers directly to the concessionaire. The financing to build the project is based on a projected toll revenue stream sufficient to cover operating and maintenance costs and make debt service payments.

While the primary source of revenue is user fees (tolls), in some cases the government makes an upfront capital contribution to the project. In the event that toll revenue alone is not projected to fully support the project, the government's contribution could bridge the gap and make the project financeable. This can include cases where express toll lanes are added to an existing freeway and the general-purpose lanes are also reconstructed, though some RR concession projects of this kind have not required such a contribution (e.g., the I-66 Express Lanes project in Virginia and the SH 288 project in Houston). Alternatively, the government may choose to make a capital contribution to effectively buy down the toll rate (as with Virginia's Midtown Tunnel project). In this case, the upfront payment effectively reduces the

project cost to the concessionaire, meaning the amount to be financed is less, thereby enabling a lower toll rate.

In an RR concession, the private partner accepts the risk of revenue being sufficient to support its capital and operating costs (hence the term revenue-risk concession). Any initial capital contributions from the government are one-time and cannot be relied on for repayment of debt or equity under this model. Further, it is becoming common—especially in projects where the government has made a contribution—for a revenue-sharing mechanism to be included. In the event that the road generates significantly more revenue than forecast, the government contractually shares in the upside of a project without bearing any of the downside revenue risk.

Figure 2: Types of DBFOM Concessions



The other DBFOM model, known as an availability payment (AP) concession, was pioneered in the United Kingdom. It uses revenue streams provided by the government (from taxes, fees, and/or tolls) to compensate the concession company based on project construction milestones and later on achieving operational performance standards. If the project is tolled, the government sets the rates and collects those revenues. The AP concessionaire accepts certain obligations and risks, including the risks of construction cost overruns, late completion, and risks related to operations, maintenance, and rehabilitation. However, it does not take on traffic and revenue risks. Those risks remain with the government.

The amount of the availability payments is determined via a competitive procurement, in which teams compete based on the lowest annual availability payment they would accept to deliver the project. The Federal Highway Administration (FHWA) suggests that availability payments may be attractive to governments that want to attract more bidders, avoid high-risk premiums (the target return on equity), alleviate public concerns over private-sector control of toll rates, and generally maintain greater control over a corridor.[2]

A variant of the availability payment idea is "shadow tolls," as used extensively in the early years of the U.K.'s Private Finance Initiative and in several other European countries. Shadow tolls are payments made by the government to the private operator, for each user of the road. The per-vehicle payment is based on the type of vehicle (e.g., car vs. truck) and the total distance traveled.

A perceived advantage of availability payments and shadow tolls is that there will be little or no diversion of traffic to other roadways, since users themselves do not pay tolls. Additionally, the concessionaire is incentivized to complete the project quickly to initiate payments, as is also the case with revenue-risk concessions.

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[2] Federal Highway Administration. "Payment Mechanisms in Public-Private Partnerships" http://www.fhwa.dot.gov/ipd/fact_sheets/p3_paymentmechanisms.aspx

In both AP and RR models, during the project development stage the public and private partners may work collaboratively to establish the project's scope and affordability. The public partner's key role is in setting the agenda and specifying the desired outcomes it wants to achieve. It establishes key policy parameters and terms of operation, including performance standards and risk sharing/transfer. But unlike in traditional design-bid-build procurements, the government (generally the state DOT) does not create a detailed design. It leaves great flexibility to the would-be concessionaires to develop their own designs, consistent with the DOT's objectives, in hopes of coming up with the most competitive approach to solving the problem.

In doing this, the bidders evaluate the government's objectives and calculate the financial impact of policy decisions and the proposed risk sharing/transfer schedule. During this process, the public partner reviews its priorities and weighs them against affordability constraints.

Part 2

Benefits of Transportation P3 Concessions

P3 concessions help address one shortfall of our current transportation investment practice. Because a DOT's budget comes from annual appropriations, large complex projects are often not funded (or put off many years) in favor of numerous smaller projects spread around the state. And a large project may have to be done in small segments, over many years, due to this "pay-as-you-go" funding. This is makes it particularly difficult to implement mega-projects that could produce large benefits, but would soak up most of the capital budget for one or several years.

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P3 concessions utilize *financing* (the "F" in DBFOM) to raise the entire construction cost of the project up-front. This enables projects to be built when they're needed, not years later when enough cash has been scraped together. By financing, the concession effectively changes the order in which projects are "funded," and allows the financed projects to be completed years or even decades earlier than they would have been otherwise.

In recent decades, little large-scale investment has been made in our congested urban expressway systems—except for those metro areas where express toll lane mega-projects have been or are being developed under P3 concession agreements (e.g., Dallas/Fort Worth, Denver, and northern Virginia, in particular).

While many infrastructure sectors have made use of P3 concessions, they are increasingly being used in large, complex transportation projects, including airport terminal development, highways, bridges, tunnels and some rail transit projects. The P3 delivery method offers substantial benefits over traditional delivery methods. P3 concessions introduce full life-cycle costing and analysis into project design and delivery. The

concessionaire in such an agreement has a long-term obligation to operate and maintain the asset for decades beyond construction. This fundamentally changes the incentives and considerations in the design phase. Decisions about materials, methods, and approach will consider whole-life cost impacts, not just the upfront capital costs. Integrating constructability, maintainability, and operational considerations into the design can generate significant cost savings over the life of the project. For example, the concessionaire may choose to build the road to a higher standard up-front to lower the long-term costs of maintenance and improvements.[3]

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Two central tenets of any concession agreement are avoiding project cost overruns and delivering the project on schedule. The concessionaire agrees to a fixed-price, fixed-time contract (though there are mechanisms for adjustments on a limited number of factors). However, cost overruns during construction and operations are generally the responsibility of the concessionaire. These costs would only be eligible for additional government financial support if the scenario was explicitly stipulated in the project agreement.

While achieving schedule and cost certainty is a great benefit by itself, it is a component of a much larger benefit: risk transfer. The concessionaire takes on design, construction, financing, operations and long-term maintenance as well as long-term rehabilitation risks. In the revenue-risk model, the concessionaire also takes on traffic and revenue risk. The private sector seeks to manage these risks effectively to maximize its return on invested capital; if it doesn't, it won't achieve the returns its investors are seeking.

While achieving schedule and cost certainty is a great benefit by itself, it is a component of a much larger benefit: risk transfer. The concessionaire takes on design, construction, financing, operations and long-term maintenance as well as long-term rehabilitation risks.

[3] NCSL/ "Public Private Partnerships for Transportation: A Toolkit for Legislators." October 2010. 10.

Another aspect of risk transfer that is not always fully understood is having the facility's long-term operations, maintenance, and rehabilitation fully funded. Too often new infrastructure falls victim to deferred maintenance and rehabilitation, when government budget priorities shift resources away from routine maintenance. This deferred maintenance often results in higher maintenance costs over time, or assets needing replacement before their intended useful life. The concession agreement, whether AP or RR, outlines strict performance requirements for asset condition, quality and ultimately handback. Failure to meet those standards can result in financial non-compliance penalties and, if not corrected, could result in termination of the concession.

Another advantage of concessions is their potential for innovation.

Another advantage of concessions is their potential for innovation. Under traditional design-bid-build procurement, the state DOT will specify *exactly* the features it wants in a new highway, bridge, or tunnel. It needs to do this so that each of the would-be construction firms is bidding on exactly the same project, with the winner being the one proposing the lowest initial cost. But that process provides little or no incentive for contractors to propose innovative ways of achieving the same result.

A concession enables the procurement to focus on performance *outcomes*, allowing the company to develop its best solution to meeting those requirements. This potential for innovation is true of both AP and RR concessions, but is greater when projects are procured under a revenue-risk model, since the concessionaire's success depends on pleasing its customers and getting them to pay to use the facility. The concessionaire is strongly induced to do so when its revenue depends on how many paying customers it can attract—an incentive not present in AP concessions.

...bidders for a concession also have strong incentives to come up with designs that minimize life-cycle costs rather than only initial costs.

As discussed above, bidders for a concession also have strong incentives to come up with designs that minimize life-cycle costs rather than only initial costs. In effect, bidders determine their design approach—either a more capital-intensive design that would require less-costly long-term maintenance or a less capital-intensive design that will require greater

maintenance—based on analyzing the net present value of the total costs of each approach. And for that very reason, the initial cost of a project done via concessions might be higher than it would be if procured conventionally. (This leads some critics to maintain that concession projects are "more costly" than traditional projects!) And since the request for proposals for a concession project is far more performance-oriented than in a traditional procurement, it encourages design and operational innovations that might not see the light of day otherwise.

When Texas DOT procured the RR concession projects to rebuild and add express toll lanes to the LBJ Freeway in Dallas and the North Tarrant Express in Fort Worth, it invited innovative approaches from the bidders. In both cases, TxDOT had a limited amount of money to invest in the project as a kind of down payment (since only the new express lanes would be tolled, and the toll revenue from only those lanes would not likely also pay for the refurbishment of the non-tolled lanes).

For the Dallas project, TxDOT told bidders it had up to $700 million in state funds available to assist with the $2.6-billion project. The winning Cintra/Meridiam proposal was based on using only $490 million of that, thanks to its cost-saving alternative design approach. Instead of adapting TxDOT's preliminary design of putting the express toll lanes in a tunnel beneath the regular lanes, they depressed the express lanes below the level of the regular lanes, but with the regular lanes partly overhanging the express lanes.

In the Fort Worth case, TxDOT invited bidders to propose how many miles of the eventually much longer NTE project they could finance and build, given the state's estimated $600-million investment in this $2-billion project. The winning proposal committed to building 169 lane-miles, versus the 64 lane-miles offered by the other team.[4] A paper presented at a 2015 P3 conference found that the design innovations in the LBJ and NTE projects added up to cost savings of nearly $2 billion.[5]

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[4] Reinhardt, William G. "Public Pension Fund Joins Private Team on Texas North Tarrant Toll Concession." *Public Works Financing*. January 2009.

[5] De Ormijana, Fidel Saenz and Nicolas Rubio. "Innovation Capture through the Alternative Technical Concept Process in PPPs in Texas: A Tool for Financial Viability." Proceedings of the 2nd International Conference on Public-Private Partnerships. University of Texas, Austin. May 2015.

Part 3

The Recent Trend Toward AP Concessions in Transportation

Availability payment concessions have recently become more popular with state DOTs and public authorities. Traffic and revenue forecasting has always been more art than science, and the impacts of the Great Recession contributed to three bankruptcy filings for revenue-risk concession projects with overly optimistic (pre-recession) traffic and revenue projections (as well as aggressively leveraged financing): the South Bay Expressway in San Diego, the Indiana Toll Road, and the SH 130 (Segments 5 and 6) in Texas. These failures highlighted the risk to investors of RR concessions (while also demonstrating that taxpayers in the affected states were protected from those risks, since there were no taxpayer bailouts). These considerations increased interest by companies and state agencies in making use of AP concessions instead of RR concessions.

Industry newsletter *Public Works Financing* recently published a table of transportation P3 concession projects that have been financed since 1993. Table 1 lists the RR concessions first, followed by the AP concessions. The financing dates in the right-hand column illustrate the increasing popularity of the AP model since the Great Recession—but also show that seven or eight RR concessions have been financed since then.

The trend toward AP concessions represents a shift of significant risk from private investors back to taxpayers, at least for those AP concessions in which the state DOT charges tolls. In those cases, the state is taking on the traffic and revenue risks that would have been borne by investors under an RR concession model. The public sector is not better equipped to assess or manage traffic and revenue (T&R) risk, but it can spread that risk over some or all of its taxpayers, rather than that risk being confined to investors. Of course, there is no free lunch. Investors take on T&R risk in hopes of earning a greater return on their investment. They put larger amounts of equity into RR projects, in part to reduce the amount that must be paid

every year in debt service on their toll revenue bonds. The larger amount of equity serves as a cushion in years when traffic and revenue may decline, due to an event such as a recession. Table 1 shows that the average equity investment in transportation RR concessions is 25%, compared with just 7.5% in AP concessions.

Table 1: U.S. Transportation P3 Concessions Financed Since 1993

Project	Type	Govt. (M)	TIFIA (M)	PABs (M)	Bank Debt (M)	Equity (M)	Total (M)	% Equity	Financial Close
91 Express Lanes	RR	0	0	0	$100	$30	$130	23	1993
Dulles Greenway	RR	0	0	0	$298	$80	$378	21	1993
S. Bay Expressway	RR	0	$140	0	$340	$130	$611	21	2003
I-495 Express	RR	$495	$598	$589	0	$630	$2,303	27	2007
SH 130, Seg. 5-6	RR	0	$430	0	$686	$210	$1,326	16	2008
N. Tarrant Express	RR	$594	$650	$398	0	$426	$2,068	21	2009
LBJ Expressway	RR	$490	$850	$606	0	$682	$2,628	26	2010
Midtown Tunnel	RR	$582	$422	$675	0	$272	$1,951	14	2012
I-95 HOT	RR	$83	$300	$253	0	$280	$916	31	2012
N. Tarrant 3A/B	RR	$379	$531	$274	0	$442	$1,626	27	2013
US 36, Ph. 2	RR	$75	$60	$21	0	$41	$197	21	2014
I-77 Managed Lanes	RR	$95	$189	$100	0	$248	$632	39	2015
SH 288, Texas	RR	$17	$357	$299	0	$375	$1,048	36	2016
Total /Average		$2,810	$4,527	$3,215	$1,424	$3,846	$15,814	25	
I-595, FL	AP	0	$603	0	$781	$208	$1,592	13	2009
Port Miami Tunnel	AP	$100	$341	0	$342	$80	$863	9	2009
Denver Eagle Rail	AP	$1,312	$280	$396	$0	$54	$2,042	3	2010
Presidio Pkway Ph 2	AP	0	$150	0	$167	$45	$362	12	2012
East End Bridge	AP	$526	$162	$508	$0	$78	$1,274	6	2013
Goethals Bridge	AP	$125	$474	$453	$0	$107	$1,159	9	2013
I-69, IN	AP	$80	$0	$244	$0	$41	$365	11	2014
I-4 , FL	AP	$1,035	$950	$0	$484	$103	$2,572	4	2014
Penn. Rapid Bridges	AP	$255	$0	$721	$0	$59	$1,005	6	2015
Portsmouth Bypass	AP	$178	$209	$227	$0	$49	$663	7	2015
Purple Line Rail	AP	$1,599	$875	$313	$0	$139	$2,925	5	2016
LaGuardia Terminal	AP	$1,200	$0	$2,400	$0	$200	$3,800	5	2016
Total/Average		$6,410	$4,044	$5,262	$1,774	$1,163	$18,622	7.5	

Source: "$5B Private Equity Invested in 25 Transportation DBFOM Deals," *Public Works Financing*, April 2017

Part 4

Where AP Concessions Fit Best in Highway Infrastructure

As noted previously, the risk transfer benefits of AP concessions are not as great as those of RR concessions for tolled highway projects. In addition, unless AP concessions include state-collected toll revenues, AP concessions do not increase the amount of investment going into U.S. roads and bridges. Nevertheless, the AP model offers many advantages over traditional highway procurement methods such as design-bid-build and design-build. What are the circumstances in which AP concessions make the most sense, compared with RR concessions?

As noted previously, the risk transfer benefits of AP concessions are not as great as those of RR concessions for tolled highway projects.

4.1 Tolling Isn't Allowed

AP concessions can be used where tolling is not currently legally allowed. There are large segments of our highway system (including most of the Interstates) that need to be rehabilitated, reconstructed and/or modernized. Federal regulation does not currently allow tolling on most Interstate highway reconstruction projects. These projects could benefit from being done via AP concessions. In this case the benefits—fixed price, date-certain delivery, and life cycle operations and maintenance—outweigh the challenges. But until Congress removes the ban on Interstate tolling, these projects will require traditional funding sources to pay for them. Hence, that will limit the number of projects that could utilize concessions without new revenue sources.

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4.2 Where Tolling Is Counterproductive or Impractical

The *Port of Miami Tunnel (POMT)* was one such case. The Port of Miami (POM) saw more than 16,000 vehicles traveling to and from the island-based port via a short bridge and using downtown streets each weekday. The city of Miami and POM wanted to make downtown streets safer, quieter, and less-congested, so they aimed to move the nearly 5,000 trucks out of downtown, enable future growth at the port, and allow for redevelopment of the northern portion of Miami's central business district.[6]

The solution was a proposed $1-billion POMT, providing a direct connection from the POM to local expressways (avoiding downtown) via a new 4,200-foot bored tunnel under the main harbor channel in Miami. Since the purpose was to move trucks into the tunnel, placing a toll on the new route was seen as counterproductive. Since the un-tolled bridge would still exist, it was assumed that the trucks and cruise ship buses would use the bridge rather than pay a tunnel toll.

Furthermore, POMT would be a technically complex project that suited it well for a P3. Indeed, the Florida DOT had never managed a bored-tunnel project before (meaning high construction risk), and its $1-billion in-house cost estimate seemed prohibitive. The competitive process for an AP concession brought in European firms with bored-tunnel experience, and the more-flexible project specifications led to a winning bid that was only 60% of the DOT's estimated cost.[7]

The competitive process for an AP concession brought in European firms with bored-tunnel experience, and the more-flexible project specifications led to a winning bid that was only 60% of the DOT's estimated cost.[8]

[6] Port of Miami Tunnel. Project Overview: http://www.portofmiamitunnel.com/project-overview/project-overview-1/

[7] Parker, Jeffrey A. "Port of Miami Tunnel – a Turning Point in U.S. Infrastructure Development." *Public Works Financing*. May 2014. 9.

[8] Ibid.

U.S. contractors had believed the conditions for utilizing a tunnel boring machine (TBM) were technically impossible in the underwater setting confronting the project. Competition and the drive for innovation from global contractors made the project work. Florida DOT achieved significant cost savings on construction, 30 years of guaranteed operations and maintenance, and significant risk transfer. Given the project's goals and purpose, tolling was not a viable option. Using an AP concession P3 structure brought significant benefits to the community and government.

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The *Pennsylvania Rapid Bridge Replacement* program is another such example. In an effort to reduce the state's 4,500 structurally deficient bridges, the Pennsylvania DOT sought a unique AP concession P3. The project is replacing 559 aging bridges throughout Pennsylvania under one agreement, in just three years.[9] The bundling approach allows economies of scale to be realized. The new bridges are using standardized designs, and many of the bridge components are being prefabricated off-site. The efficiency and speed enables far more bridges to be replaced in such a short time.

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Many of these bridges are in rural areas on smaller state highways, rather than large river crossings or Interstate bridges.[10] While these bridges don't carry a lot of traffic, they are important components of the state's highway network. Clearly it is not practical to toll these bridges; indeed, the cost of collection might exceed actual collections.

[9] "What Is the Rapid Bridge Replacement Project?" Plenary Walsh Keystone Partners and the Pennsylvania Department of Transportation. http://parapidbridges.com/projectoverview.html

[10] Ibid.

4.3 Where "Hybrid" Funding Is Feasible

Differing forms of "hybrid" AP concessions with a more traditional project finance approach, where a project has multiple sources of funding and revenue, have emerged and may have application to other projects. Different revenue sources, including tolls and general government support, can be combined to make up a portion or the entire availability payment, giving the government increased flexibility.

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The Alaska Department of Transportation had attempted such an approach to an AP concession in its Knik Arm Crossing, a new bridge planned as a 35-year AP concession. The crossing was to be tolled and include a toll rate covenant with the tolls pledged to a project reserve trust account from which the availability payments would be made. The state (or the toll authority) would retain the traffic and revenue risk and would provide a state appropriations pledge to the account in the event the toll revenue was not sufficient to make the availability payments.

The state believed that there were many benefits to this structure, despite retaining revenue risk.[11] The bridge would be tolled so new money would be brought into the system, and the state would keep any upside beyond the availability payment. Based on the state's analysis, the traffic would be sufficient to cover the annual payments and would only require minimal state support.[12] Given this analysis, the state considered the risk to be minimal and considered the other benefits of an AP concession to outweigh the risk.

One of the biggest benefits of this structure, in the state's eyes, was that it allowed the concessionaire to avoid traffic and revenue risk, thereby permitting a lower rate of return and less equity.[13] This would translate into lower availability payments. The state thought this

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11 Email correspondence with author: Kevin Hemenway, Chief Financial Officer, Knik Arm Bridge and Toll Authority. September 19, 2012.

12 Ibid.

13 Ibid.

structure would result in a lower upfront public contribution, and that the toll covenant would protect the revenue stream from politics.[14]

The project ultimately wasn't built, due to lack of local support; it was also seen as an overly expensive project that served relatively few people.

4.4 In Some Cases of Project Complexity

Sometimes AP concessions make sense because of project complexity, where more than the usual number of players would have to work together on a technically complex project. The complex Presidio Parkway project in California was being delivered in phases. After difficulties with the conventional procurement of Phase 1, state DOT Caltrans decided to use alternative delivery (an AP concession) for Phase 2. The complexity of the project presented a number of challenges, including the need to keep the roadway open during construction through a national park, as well as multiple contracts where different contractors depended on the timeliness of others.[15] The AP concession enabled the state to address these risks—keeping the implementation schedule fixed, on time, and on budget via the P3. The state felt that the concession process brought an additional layer of diligence to the technical and financial feasibility of the contractors and their ability to deliver.[16] This additional set of eyes, backed by contractual performance and timeliness goals, provided the state with a greater level of comfort in its ability to manage the complexity, keep the road open, and deliver the project on time and on budget.

Sometimes AP concessions make sense because of project complexity, where more than the usual number of players would have to work together on a technically complex project.

14 Ibid.

15 Analysis of Delivery Options for the Presidio Parkway Project. Arup & PB. January 19, 2010. 1.

16 Ibid. 5.

4.5 To Address Broader Corridor Needs

AP concessions could be used where corridor improvements are needed, but toll revenue will only support a portion of the overall project cost. Recent projects in Florida and an upcoming project in Colorado are examples. In both cases, new express toll lanes are being added in addition to broader corridor improvements that are badly needed. In each case toll revenue is only anticipated to support a fraction of the project costs.

Florida has used AP concessions for both the I-595 Express Toll Lanes project in Fort Lauderdale and the I-4 Ultimate project in Orlando. The I-595 project is a $1.6-billion project that included the development of three at-grade reversible tolled express lanes, but also the reconstruction and widening of the main line and improvements to frontage roads and ramps as well.[17] Tolls for the new express lanes are set and retained by FDOT, but produce only a little more than $1 million a year in revenue (primarily due to the large increase in non-tolled capacity).

The $2.6-billion, 21-mile I-4 Ultimate project is adding two Express Toll Lanes in each direction on I-4 through Orlando. Significant corridor improvements include replacing 74 bridges, adding 53, and widening another 13.[18] Additionally, 15 major interchanges will be completely reconstructed.

Colorado DOT is undertaking a similar effort in Denver. The project will reconstruct a 10-mile stretch of I-70—removing an aging viaduct and replacing it with depressed lanes covered by a park—while adding one tolled express lane in each direction.[19] The anticipated revenue from the toll lanes doesn't come close to paying for the project.

Arguably, with each of these projects, the complexity and challenges they presented were also reasons for using an AP concession. This P3 structure enables significant construction risk transfer and should result in a cost-efficient delivery mechanism with a guaranteed price and date of delivery. An alternative for each of these cases would have been to combine availability payments and tolls paid to the concessionaire. That would retain the incentives

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17 Florida Department of Transportation, "I-595 Express Operations FAQs." http://595express.info/faq.shtm

18 Florida Department of Transportation, "I-4 Ultimate Improvement Project FAQs." http://i4ultimate.com/project-info/faqs/

19 Colorado Department of Transportation, "Central 70." https://www.codot.gov/projects/i70east

for the concessionaire to focus the design and operations on attracting as many customers as possible to the tolled express lanes.

4.6 To Provide Pricing Flexibility

AP concessions (with tolling) can also make sense where a new project is part of a larger toll network or system of roads and bridges. An AP concession enables the agency to have a universal tolling policy, and some projects could leverage revenues from other projects. Mobility can increase with a single tolling policy (where politics allow for it) across the system, giving the authority greater flexibility and control to manage traffic demand across each of its assets. This is especially true with river crossings where different assets could be competitive.

Mobility can increase with a single tolling policy (where politics allow for it) across the system, giving the authority greater flexibility and control to manage traffic demand across each of its assets.

The Port Authority of New York and New Jersey's (PANYNJ) Goethals Bridge Replacement project presents a recent case study. In 2013, the PANYNJ reached financial close on an AP concession P3 to replace this 85-year-old, obsolete toll bridge with a new one.[20] PANYNJ will maintain the tolling policy—the same policy that it applies on its other five river crossings—and continue to collect all the toll revenue. Maintaining a single toll policy and collecting all of the revenue enables PANYNJ to better manage mobility across the region, and also to cross-subsidize new project delivery.

Here again, the AP concession allows the PANYNJ to transfer significant construction and completion risk with a fixed-price, date-certain delivery of the project.

[20] Port Authority of NY & NJ, "Goethals Bridge Replacement Project." http://www.panynj.gov/bridges-tunnels/goethals-bridge-replacement.html

Part 5

Limitations of AP Concessions for Highways

As discussed earlier, AP concessions represent a considerable improvement over traditional design-bid-build and more-recent design-build procurement methods, especially for large and complex transportation projects. But in the highways and bridges sector, AP concessions have a number of shortcomings, compared with revenue-risk concessions. Policymakers need to be aware of these differences in deciding which type of concession to use on individual projects.

5.1 Suboptimal Risk Transfer

Investors know that revenue-risk concessions are riskier than other P3s. Accordingly, the returns that investors seek on RR concessions are higher than that sought in AP concessions. However, some investors now view revenue-risk projects as even riskier than they originally thought, due to cases of inaccurate and overly optimistic traffic forecasts, as noted previously. In an AP concession structure where the project is tolled by the state, taxpayers are left owning the largest risk—inadequate traffic and revenue. Unfortunately, the public sector is not better equipped to manage or assess the revenue risk but is only able to better absorb the risk by spreading it over many more people—the state's taxpayers.[21] World Bank economist Michael Klein discussed this problem in a recent paper. He likened this shift of risk to taxpayers to requiring them to provide "unremunerated credit insurance" for the project.[22]

In tolled AP concessions, where the state DOT does the tolling, if the concessionaire is able to deliver the project on time and on budget, and then effectively manage the facility over time,

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21 Fisher, Kyle. "Investment Risk on Traffic Forecasting Accuracy: Case Studies in US Highway Public-Private Partnerships." University of Florida. Civil & Coastal Engineering.

22 Klein, Michael. "Public-Private Partnerships: Promise and Hype." Policy Research Working Paper 7340. World Bank Group. June 2015.

this results in what is almost a guaranteed rate of return in exchange for meeting performance measures.[23] The concessionaire has no built-in incentive to maximize use of the tolled facility, since its revenue is not affected by how much traffic the project can attract.

5.2 Poor Project Selection

One of the largest problems with the U.S. highway status quo is that many recent investments in our highway system don't seem to be making our economy more productive.[24] When a highway project does not have to meet a market test of demonstrating a plausible return on investment, effective project selection can be a casualty, and resources can be funneled into less-economic projects. Indeed, the Australian government, a pioneer in P3 delivery of public infrastructure, learned this lesson the hard way. A Productivity Commission review of public assets noted that "poorly chosen infrastructure projects can reduce productivity and financially burden the community for decades with infrastructure that is at once expensive to maintain and unnecessary."[25]

One of the largest problems with the U.S. highway status quo is that many recent investments in our highway system don't seem to be making our economy more productive.

Selecting productive projects is the most important aspect of achieving good outcomes. Government hasn't always been the best at determining which infrastructure projects should be developed.[26] Private financing can generate greater discipline and due diligence when it comes to project selection—if investors have to bear traffic and revenue risk.

The $2.3-billion Clem7 motorway in Brisbane, Australia only generated one-third of the anticipated traffic.[27] Investors lost their investment and the road went into bankruptcy within

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23 Gerardes, Randy. "Indiana Toll Road: Lessons Learned for the US P3 Market." *Municipal Securities Research.* Wells Fargo Securities. April 1, 2015. 5.

24 Shirley, Chad and Clifford Winston. "Firm Inventory Behavior and the Return from Highway Infrastructure Investment. *Journal of Urban Economics* 55 (2). March 2004.

25 Australian Government. Productivity Commission. "Public Infrastructure." Draft Report Volume 1. March 2014. 5.

26 Ibid. 8.

27 Ibid. 7.

a year. Had this project been developed as a state-tolled AP concession, taxpayers would have been on the hook for decades to make up the revenue shortfall.

As the Australian Productivity Commission observed, "the overarching motivation for involving the private sector in the delivery of public infrastructure services is to improve the economic efficiency by which services are delivered to the community."[28]

Private financing can generate greater discipline and due diligence when it comes to project selection—if investors have to bear traffic and revenue risk.

A recent U.S. example of a project propelled more by politics than by financial feasibility was the proposed US 460 toll road in Virginia. The project was to provide a second limited-access highway between the Hampton Roads/Norfolk area and Richmond, as a more southerly alternative to the existing (non-tolled) I-64. It would be built practically alongside the existing US 460, which goes through many cities and towns, in the manner of pre-World War II highways. The cost was estimated as $1.4 billion, and the project was first pursued by Virginia DOT as a toll concession, under the state's Public-Private Transportation Act. But when traffic and revenue studies estimated that only about 15% of the cost could be financed via toll revenue bonds, instead of dropping the project, the state went forward for political reasons, selecting a design-build contractor and setting up a nonprofit 63-20 corporation to issue tax-exempt toll revenue bonds to cover part of the cost. This kind of structure replicates the flawed model used for the unviable Pocahontas Parkway in Richmond and South Carolina's bankrupt Southern Connector. Both were developed with no equity investor—and hence, no party had a meaningful stake in those projects' long-term financial viability.

With a new Virginia governor and DOT secretary taking office in 2014, the US 460 project was put on hold, after some $250 million had been spent prior to starting any construction. In July 2015, a settlement was reached with the contractor, terminating the project and recovering $46 million from the company.[29] It's hardly surprising that a "toll road" with two parallel free highways would not attract very much of the traffic between Richmond and the Hampton Roads area. Such low demand is a strong indication that scarce highway resources should not be devoted to a project like this.

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[28] Ibid. 9.

[29] Virginia DOT. "Gov. McAuliffe Announces Settlement to Recover Taxpayer Dollars from Route 460 Contract." July 2, 2015.

Highways generally constitute a network, and for the network to be viable, it may need links that are not self-supporting. However, toll-feasibility is an important screening device for separating stronger and weaker projects, in terms of traffic demand. The decision on whether to actually build a "weaker" link should depend on overall benefit/cost analysis. A recent paper by four senior U.S. DOT analysts explained that benefit/cost analysis should be carried out at an early stage of project development to see if the project should be built. Only if it passes that basic test, and is large enough to be done as a P3 concession, should a Value for Money (VfM) analysis be done to see if it would make sense to be procured as a P3 concession.[30]

For many years, the states of Illinois and Indiana have been exploring a new toll highway, the Illiana Expressway. The project was originally conceived as an RR concession, but private operators and financiers balked at taking the traffic and revenue risk and demanded the states change the structure of the deal to one based on availability payments.

The project called for building a new east-west toll road through farmland about 45 miles south of Chicago. It was envisioned that trucks would detour to this route to avoid congestion on other east-west routes. However, it's not clear whether the time savings would merit detouring off of parallel non-tolled I-80, calling into question the projected toll revenues.[31] The call for availability payments from private investors raises two important issues. First, private investors don't believe toll revenue can finance the project, or at least they're not willing to take the risk and are pushing that risk back onto the taxpayer and the state. If toll revenue doesn't materialize to cover the availability payments, the states would have to make up the shortfall out of other transportation funds. This is especially true "in a fringe area highway where much of the projected traffic depends on residential and commercial development that may, or may not, occur."[32]

Second, if the market doesn't believe that traffic will materialize, it calls into question the basic logic behind project selection: why a project with questionable traffic volumes would be such a high priority. While both state governments may believe the project has merits

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30 DeCorla-Souza, Patrick, Douglass Lee, Darren Timothy and Jennifer Mayer. "Comparing Public-Private Partnerships with Conventional Procurement." *Transportation Research Record No. 2346.* 2013. 32–39.

31 Mildenberg, David. "Private Toll Road Investors Shift Revenue Risk to States." *Bloomberg.* November 27, 2013. 4. www.bloomberg.com/news/print/2013-11-27/private-toll-road-investors-shift-revenue-risk-to-states.html

32 Samuel, Peter. "Illiana P3 Meaning Stretched By Availability Payments – P3s 101." *Toll Roads News.* www.tollroadsnews.com/node/6834

regardless of its ability to be financed on toll revenue alone, the states must be transparent with taxpayers about the financial risks *they* will retain.

...if the market doesn't believe that traffic will materialize, it calls into question the basic logic behind project selection: why a project with questionable traffic volumes would be such a high priority.

Illinois and Indiana can look at recent history—the South Bay Expressway (SBX)—for a lesson in revenue risk and project selection. In many ways SBX is similar to the Illiana; it was conceived as a reliever route for trucking and personal traffic in the far eastern exurbs of San Diego County. It relied heavily on projected new residential and commercial development to drive traffic growth. After being plagued by a decade of environmental delays, SBX opened just before the housing crash and Great Recession, and the projected traffic never materialized. Investors quickly lost their equity investment, and the toll road was forced into bankruptcy protection. Again, if SBX had been built under a tolled AP concession, investors would have largely been shielded, taxpayers would have borne the risk, and the government would have had to use tax money to cover the shortfall.

5.3 Not Bringing Net New Investment into Highways

While suboptimal risk transfer and poor project selection are drawbacks of tolled highway AP concessions, perhaps the biggest is that availability payments, per se, don't bring new money into infrastructure. Availability payments are a method of *financing* the cost of a highway project, but they do not add any new funding to an economy's highway sector, unless the state tolls the new project itself. Otherwise, the money the DOT will spend on 35 years of availability payments will come out of its already constrained highway revenues and will be unavailable for other highway projects.

Availability payments are a method of *financing* the cost of a highway project, but they do not add any new funding to an economy's highway sector, unless the state tolls the new project itself.

In essence, committing the state to 35 years of taxpayer revenue for availability payments creates a liability for the state—a form of debt. Financially speaking, availability payment

commitments are very similar to Grant Anticipation Revenue Vehicle (GARVEE) bonds. GARVEEs are a type of bond issued by a state that pledges some of its future Title 23 federal-aid highway funding to secure the debt. The 20-odd states that have issued GARVEEs have been rather conservative in the extent to which they issue GARVEEs, perhaps recognizing that this financing tool can only play a modest, supplemental role.

However, New Jersey provides an object lesson in bonding to excess. Though it has not issued GARVEEs, the Garden State has so over-emphasized highway bonding that in 2010 the *Bond Buyer* warned that "by July 2011, its entire $895 million annual [transportation] appropriation will be needed to cover principal and interest payments on the Transportation Trust Fund's nearly $11 billion of existing debt."[33] Despite these warnings, and promises from elected officials to take a more pay-as-you-go approach, the state continued to overemphasize bonding. For the 2012–2016 fiscal years, "most of the $1.26 billion annual appropriation [was] used to fund debt service."[34] The debt service burden alone grows by approximately $75 million a year.[35]

In an effort to address this burden, New Jersey lawmakers agreed to a large increase in the state's gas tax in October 2016, to bring new money into the system. The $0.23 per gallon increase is expected to generate $1.2 billion a year through 2022.[36] But the plan also calls for continued use of bonding. Pumping more money into one of the least cost-effective state DOTs in the nation[37] could result in even higher debt burdens over the long run.

5.4 Failing to Fully Incentivize Innovation

As discussed earlier, the competition to win the bidding for an AP concession can spur bidders to come up with innovative ideas to reduce construction and operating costs, as in the case of the Port of Miami Tunnel.

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33 Kaske, Michelle. "Transportation Debt Burdens NJ." *Bond Buyer*. December 23, 2009.

34 Coen, Andrew. "New Jersey Transportation Fund Running on Fumes." *Bond Buyer*. April 22, 2016.

35 Magyar, Mark J. "Christie's Borrowing Binge Makes Transportation Trust Fund Run Dry." *NJ Spotlight*. April 3, 2014. www.njspotlight.com/stories/14/04/03/christie-s-borrowing-binge-makes-transportation-trust-fund-run-dry/

36 King, Kate. "New Jersey Deal to Raise Gas Tax Faces Uncertain Senate." *The Wall Street Journal*. June 28 2016. http://www.wsj.com/articles/new-jersey-assembly-votes-to-raise-gas-tax-cut-sales-tax-1467099426

37 New Jersey ranked 49th of 50 states in cost-effectiveness, with the highest costs per mile of all 50 states: see Hartgen, David T. and M. Gregory Fields. *22nd Annual Highway Report*. Table 3. Los Angeles: Reason Foundation, September 2016.

However, even greater scope for innovation comes about when projects are procured via RR concessions, in which the company's success depends on pleasing its customers and getting more of them to pay to use the facility. Nicolas Rubio, an executive with Cintra, notes that revenue-risk projects optimize both short-term and long-term investment to maximize usage and resulting congestion relief by attracting more traffic away from congested non-tolled routes. While an AP concession does ensure efficient long-term performance, there is no incentive for congestion relief in the technical specifications of the contract.

...even greater scope for innovation comes about when projects are procured via RR concessions, in which the company's success depends on pleasing its customers and getting more of them to pay to use the facility.

By contrast, the 407 ETR toll road in Toronto, an RR concession, has seen dramatic improvements in customer service. These improvements occurred not because of contractual obligations but because of the concessionaire's built-in economic incentives to improve the offering and make the road more appealing to customers. These improvements include everything from reducing call wait times to lane additions and roadway extensions.[38]

The experience of the 407 ETR demonstrates an often-overlooked benefit of RR concessions: a better alignment of interests between the concession company and its customers to achieve economic benefits. This is most easily done in the design phase—specifically by adjusting the project configuration to make it as easy as possible for every potential customer to access and use the tolled lanes. This may involve changes to the ramp configuration in interchanges, new on-ramps, etc. These changes may require higher initial investment than the state DOT had contemplated, but attracting more customers to the toll lanes may yield greater congestion relief and more revenue. A recent example is that the winning design for the RR concession that will add express toll lanes to I-66 in northern Virginia changed the project from one that VDOT expected would require a state capital investment to one in which the concessionaire is making an up-front payment to the state. An AP concession would not have this redesign incentive, since its focus is primarily on reducing the project's capital and operating costs.

Advertising via better signage and marketing is another way to attract more customers. The RR concessionaire has a financial incentive to ensure that every potential user knows about

[38] 407 ETR, "Awards." https://www.407etr.com/en/highway/highway/awards.html

the tolled project and its benefits. So it develops a series of robust marketing and outreach strategies to reach potential customers. Again, in an AP concession, the company does not have the same incentives.

The RR concessionaire has a financial incentive to ensure that every potential user knows about the tolled project and its benefits. So it develops a series of robust marketing and outreach strategies to reach potential customers.

In addition, in a revenue-risk procurement, the bidding teams will focus their efforts on improving the economic feasibility of projects.[39] These efforts can possibly make unfeasible projects feasible after private-sector design changes are taken into account. Furthermore, this focus helps ensure better alignment between the public and private partners, i.e., the project scope aligns with what is feasible. When the private partner does not bear the same financial risk as it would if revenues were part of its consideration, there is less incentive to appropriately scale the project to what makes financial sense.[40]

[39] Rubio, Nicolas. Email correspondence with author. December 7, 2011.

[40] Rivera, Debora. Florida Department of Transportation Director of Transportation Operations – District 6. Email correspondence with author. February 18, 2015.

Part 6

How States and Rating Agencies Account for AP Concessions

Some states currently classify their AP obligations as liabilities. This brings another layer of complexity at the state level, since governments have to manage debt caps and declining purchasing power. Indeed, in a memo to Congress's Joint Committee on Taxation, Mike Udell and Aditi Vashist note that there is "only one type of payment that does not create government liability: toll revenue payments."[41] Availability payments are structured to meet debt service requirements of any bonds or debt, as well as requirements for on-going operations and maintenance and equity returns to investors. Rating agencies have used the full amount of availability payments to determine the obligations of governments.[42] So despite the project debt being non-recourse to the government, rating agencies still count the obligation against the state's balance sheet. "This is done regardless of the ultimate responsibility for debt service payments residing with the P3 where the availability payments are the only source of revenues for the project."[43]

...there is "only one type of payment that does not create government liability: toll revenue payments."

Rating agencies generally see RR concession projects "as having greater payment risk for debt service, because the developer retains the project risk with the performance risk."[44] To bondholders, availability payment projects are less risky—from the perspective of debt repayment—because the government retains the payment risk, and is counted on to resort to its taxpayers in case of shortfalls in meeting debt service.

41 Udell, Mike and Aditi Vashist. District Economics Group, memo to Joint Committee on Taxation. "Impact of IRC section 142(m) on State Credit Ratings. June 25, 2014. 2.

42 Ibid. 2–3.

43 Ibid. 3.

44 Ibid. 5.

Each of the credit rating agencies has published papers calling availability payments "debt-like obligations" of the government.[45] This is changing the attitude of many governments that once thought of AP concessions as leases, and must now be concerned with maintaining the state's credit rating.

Each of the credit rating agencies has published papers calling availability payments "debt-like obligations" of the government.

Essentially any long-term commitments, project payments or contingent liabilities are considered government obligations, and adjustments are made "to the government's debt statement to fully capture the government's retained risk, assuming any realized liabilities would be debt-financed."[46] In other words, if the government does not have cash to pay for milestone payments, availability payments, or a potential termination payment, the rating agencies will assume those payments will be financed with new debt. By contrast, the rating agencies do not make any adjustment for revenue-risk projects.

Each rating agency takes a different approach to how it calculates the adjustments. Moody's and Fitch cap the liability at the amount of project debt.[47] In most concessions under termination for convenience by the owner, a large percentage of project debt would be repaid by the state. This protection is generally found in most concessions to keep states honest. Again, the rating agencies consider that potential payment as a liability.

S&P's treatment has a greater impact on debt limits, because it views milestone payments as debt. Further, S&P adds the net present value of the capital portion of all future availability payments to the government's debt total.

However, each rating agency will give "self-support" credit if an AP project establishes a revenue stream (such as state-collected tolls) that can be used to either fully or partially support future availability payments.[48]

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45 Hecht, Jodi. "Are Availability Payment Obligations Debt?" *Public Works Financing.* September 2015. 16.

46 Ibid. 16.

47 Ibid. 15.

48 Ibid. 17.

The impact for government treasurers is an increase in net debt. Increases in debt could have a negative effect on the government's credit rating. States and local governments—especially those with high credit ratings—guard their ratings and would be reluctant to bring new AP concession projects forward at the risk of negative adjustments to their rating. This approach favors revenue-risk concessions, for which no such adjustments are made.

John Ryan has pointed out that when a P3 project has to rely on customer revenues, the higher risk/return profile "is more likely to meet pension fund benchmark pricing requirements, while still remaining within conservative credit parameters."[49]

The following states either have existing AP concession agreements or have recently explored them.

Indiana

This state's Department of Transportation has publicly stated that it may not enter into any further AP concessions.[50] Why? "It's a lot like borrowing," a spokesman told the National Council for Public-Private Partnerships.[51] In fact, signing an AP concession agreement creates a liability on the state's balance sheet comparable to a bond issue.[52] Indiana currently spends 10% of its $1.6-billion annual budget on debt payments; when counting AP concession obligations that number rises to 17%.[53] This has led a shift within the Department to require future P3s to be supported by a reliable revenue stream.

Texas

This state, which has implemented many RR concessions in recent years, has a legislative prohibition on AP concessions.[54] Given Texas legislators' recent aversion to new toll roads, the Texas P3 market now looks particularly limited.

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49 Ryan, John. "The Public Pension Core Funding Gap and Infrastructure Public-Private Partnerships." McGraw Hill Financial Global Institute. May 14, 2014.

50 "Indiana DOT May Reconsider Availability Payments for Future P3." National Conference for Public-Private Partnerships. December 4, 2014. www.ncppp.org/indiana-dot-may-reconsider-availability-payments-for-future-p3s

51 Ibid

52 Ibid.

53 Ibid.

54 "TXDOT Seeks I-35 Guide." *Public Works Financing.* July–August 2014. 8.

Virginia

This state has used P3s to deliver a number of RR concessions. Its state attorney general ruled that availability payments are a form of debt.[55] The Commonwealth is particularly protective of its AAA credit rating. Tolling will continue to be used to support debt service on future concession projects.

Maryland

Based on preliminary guidance from the state treasurer and the state's Capital Debt Affordability Committee on its first AP concession project, "There is a strong rationale to not include the Purple Line availability payments in the State's tax-supported debt calculation."[56] The ruling was caveated though, requiring the revenue to come from a non-tax source.

The committee noted that all project debt will be non-recourse to the state and held by the private partner. Further the state was not pledging any security against the debt, and the actual payment of the availability payments is "subject to annual appropriations." The Committee also subdivided the annual payment, breaking it down into an operating payment and a capital payment, noting that operating costs can never be classified as debt and would be paid out of annual operating budgets, like any other operating cost. The capital portion will be subject to an annual legislative cap on non-traditional debt.

This treatment is in sharp contrast to how other states are treating availability payments. It is true that the debt is non-recourse to the state; however, there is an annual contractual obligation (assuming the asset performs) that looks and feels like a debt obligation.

Florida

In some cases, the state explicitly considers P3 obligations as state debt because the contracts create mandatory financial obligations that must be considered an encumbrance of future

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55 "Man of the Year Sean T. Connaughton." *Public Works Financing.* December 2013. 7.

56 Kopp, Nancy K. Treasurer. "Capital Debt Affordability Committee," Nov. 15, 2013. http://www.treasurer.state.md.us/media/59707/final_cdac_nov_15_2013_meeting_material.pdf

state resources. P3s (including several AP concessions) in Florida have added approximately $6.0 billion in state debt since inception with nearly $5.1 billion currently outstanding.[57]

Section 334.30 of the Florida Statutes mandates that no more than 15% of the total available federal and state funding in the State Transportation Trust Fund in any given year be obligated to required payments for Contract Debt and P3 contracts.[58] The cap was put in place to prevent future-year capital funds from being locked up through long-term commitments.[59] The capital portion of the availability payment is taken off the top before new commitments can be made to ensure the state doesn't get over-leveraged and that funds are available to meet future obligations. The operations and maintenance and rehabilitation components of the payment do not count against the cap.

Former leadership of Florida DOT has outlined several public policy rationales for supporting the use of availability payments. Notably: they eliminate potential private-sector windfall profits, the payments are tied to performance, and there is greater public acceptance with state control over tolls.[60] Florida remains interested in using AP concessions to gain access to improved project delivery. However, state debt caps will severely limit the potential growth and use of AP concession projects.[61]

Indeed, current obligations to Interstate 595, Port of Miami Tunnel, I-4 Ultimate and six design-build-finance (DBF) projects total more than $4.1 billion ($2.2 billion in present value).[62] The capital portion of the required payments for FDOT's P3 projects total $8.0 billion over the next 40 years.[63] Florida DOT would be in better financial shape if it used some RR concessions and not just AP concessions.

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57 Florida Division of Bond Finance. "State of Florida 2015 Debt Affordability Report," December 2015. 1. http://www.sbafla.com/BondFinance/portals/BondFinance/DebtOverview/DAR2015.pdf

58 Law Server. "Florida Statutes 334.30—Public-private transportation facilities." https://www.lawserver.com/law/state/florida/statutes/florida_statutes_334-30

59 Parker, Jeffrey. Email with author. June 16, 2010.

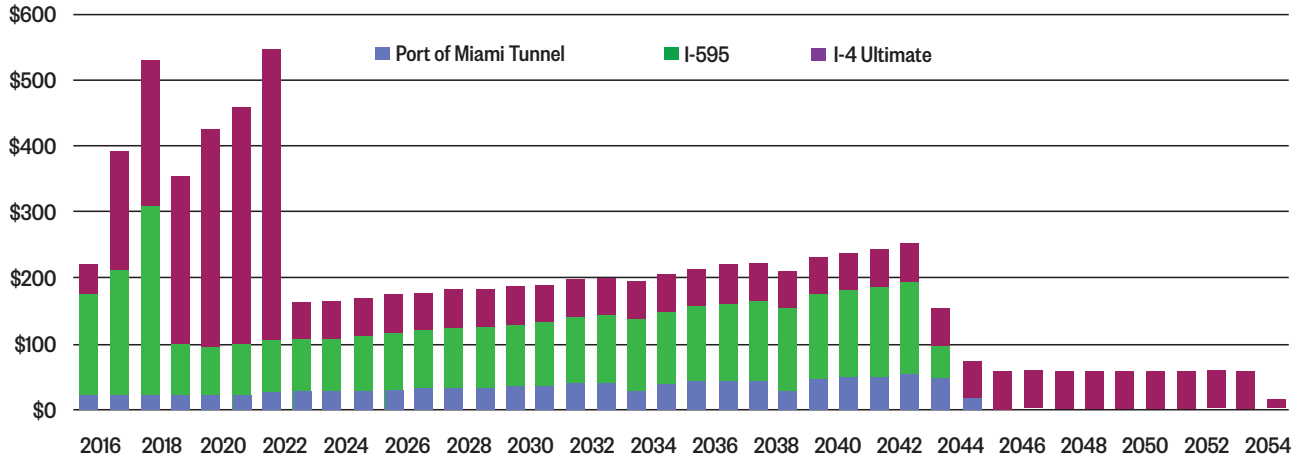
60 Prassad, Ananth. 2nd International Conference on Public-Private Partnerships. May 2015.

61 Parker, Jeffrey. email with author. June 16, 2010. 135

62 http://www.myfloridacfo.com/Division/AA/Reports/2015CAFR.pdf

63 State of Florida. *2015 Debt Affordability Report*, Division of Bond Finance. December 2015. 11.

Figure 3: Florida's AP Concession Obligations
Mandatory Payments for Capital Costs (under existing PPP contracts) in $Millions



State of Florida. *2015 Debt Affordability Report*, Division of Bond Finance. December 2015.

North Carolina

This state has an AAA bond rating and takes seriously maintaining that rating. As such, the state has a strict general-obligation debt ceiling of 4.75% of revenue, but uses an even tighter 4.0% guideline. Tax-revenue-supported debt—using motor fuels tax revenue—is slightly less restrictive and has a ceiling of 6.0%. Long-term contractual arrangements, including availability payments, are treated the same as any other debt service obligation. The debt-like characteristics of an AP concession, even if it is subject to appropriations, means that the payments are treated as a liability.[64] Thus far, North Carolina has not entered into any AP concessions.

[64] State of North Carolina. Debt Affordability Advisory Committee. Department of the Treasurer. "Debt Affordability Study." February 1, 2015. 19. https://www.nctreasurer.com/slg/Debt%20Affordability/2015_DAAC.pdf

A Cautionary Tale from Portugal

Portugal's experience presents a lesson in the dangers of over-reliance on availability payments. Portugal began a massive motorway construction program in the 1990s and had successfully procured €5 billion in roadway concessions, despite the fact it had far more motorways per capita than the European Union average."[65] These P3s were developed using both revenue-risk and shadow-toll concessions. Eight projects were procured where the concessionaire received remuneration from real tolls paid by the user, without support from the state. However, seven "SCUT" motorway projects were also developed, in which the concessionaire received payment from the state's general budget as shadow tolls. From an investor's perspective, these projects were seen as "fairly safe, with no demand risk and decent returns."[66] Under the shadow toll arrangement, the roads were non-tolled, and operators were paid by the government based on the number and class of vehicles that used the roads. Well before the financial crisis, Standard & Poors (in its 2004 report on European toll roads) predicted that the Portuguese government would need to convert its shadow toll projects into real toll projects.[67]

When the 2008 global financial crisis hit, Portugal sought to renegotiate the SCUT shadow toll projects into AP concessions, creating a €700-million obligation.[68] Tolls charged by the state were implemented, and the toll revenues were used to help cover the availability payments. Like traditional AP concession projects, the operators' risk was capped at a fixed fee for meeting performance.

The economic downturn of 2011 created additional challenges for Portugal, since traffic volumes and toll revenue declined (the SCUT conversions were never popular anyway) leaving the state with significant obligations and a fiscally unsustainably situation.[69] Portugal was left with massive obligations to the concessionaires and little toll revenue to support the payments. This obligation was estimated to be some €48 billion through 2049—"equivalent to 30% of its gross domestic product."[70]

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65 "Complicity – a New Risk." *Infrastructure Investor: Week in Review*, May 5, 2011.

66 Ibid.

67 "Smooth Ride for European Toll Roads in 2004, but Twists and Turns Ahead." Standard & Poors. 2004. 10.

68 "Portugal to Slash Availability Payments." *Public Works Financing.* November 2012. 24.

69 Presentation by Unidade Técnica de Acompanhamento de Projetos. "PPP Renegotiations in Portugal: Motorway PPP Case Study." September 10, 2014. 18.

70 "Mind the Gap." *Infrastructure Investor.* December 2010–January 2011. 7. Note: as of 2010.

Ultimately, the problem for Portugal was that the SCUT projects were not economically viable and perhaps shouldn't have been built in the first place. Portugal ended up with an oversized and expensive roadway network larger than those of Belgium, Germany, Italy and the U.K. when measured by kilometers per million residents.[71] The use of shadow tolls (and ultimately availability payments) led to overinvestment in projects that were marginally needed, if at all, leaving the state with massive obligations.

[71] "PPP Renegotiations in Portugal." September 10, 2014. 10.

Conclusions

The primary transportation challenge in the United States is funding, not just finance. The U.S. highway system needs more revenues—to support new P3 project delivery but also traditional project delivery. According to the latest U.S. DOT Conditions and Performance Report, the annual capital spending needed to maintain current highway conditions and performance is $89.9 billion.[72] To improve conditions (e.g., pavement and bridges) and performance (e.g., congestion), annual spending would have to increase to $142.5 billion.[73] Even if these numbers are skewed upwards by self-serving assumptions, and even at P3-level efficiencies, there is a large gap between current resources dedicated to the highway system and what's needed to improve current conditions and performance.

The primary transportation challenge in the United States is funding, not just finance.

Only a major additional source of funding can close this gap, and tolling should be part of the story. It is ironic that while there is growing policy discussion about the need to replace per-gallon fuel taxes with per-mile user charges, there is an opposite movement toward using AP concessions rather than RR (toll) concessions.

There is a strong need for revenue-risk concessions to leverage limited public capital with P3s to drive new investment into our highway system. Virginia DOT's unaffordable $3-billion plan to add HOV lanes to the Capital Beltway in Virginia would have remained on the shelf, had it not been for the private sector stepping forward with a plan to build express toll lanes instead, via a revenue-risk concession. An initial government contribution of only $409 million made the resulting $2.3-billion project feasible.

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72 U.S. Department of Transportation, "2015 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance," 8-5. https://www.fhwa.dot.gov/policy/2015cpr/.

73 Ibid.

Also in Virginia, the state was able to leverage an initial investment of $408 million to deliver the $1.95-billion Midtown tunnel project, which included the development of a new submerged tunnel and the refurbishment of two existing tunnels, as well as an extension of a critical local highway. For political reasons, there were subsequent state contributions to further buy down the toll rate.

These projects offer us two lessons. First, small government contributions can be leveraged where serious toll revenue is possible, to make the finances work or make the project more politically palatable. This is a better outcome than shifting the project to an AP concession largely or entirely paid for out of limited public-sector funds. Second, neither one of these projects would likely have been completed without the private sector interest, an ability to toll, and the state DOT being willing to entertain unsolicited proposals and performance-based selection criteria.

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The Virginia projects also demonstrate that governments have tools to reduce the financing risk. However, as P3 concessions gain more acceptance, public and private partners need to look at ways to expand and refine the revenue risk model, identifying ways to maintain robust private sector interest and participation without the public sector taking on significant revenue risk. Governments may need to consider mechanisms to reduce revenue risk through revenue-sharing mechanisms or minimum revenue guarantees[74] that limit the government's exposure but also accomplish some risk transfer.

A major concern with AP concessions is that they do not take full advantage of the hundreds of billions of dollars in global infrastructure equity funds seeking good projects to invest in. RR concessions require substantially more equity and offer a higher potential return on that equity.

Another key difference is that even when the state charges tolls on a project procured via an AP concession, there is no direct customer/provider relationship. In a revenue-risk

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[74] Page, Sasha. "White Paper on Revenue Risk for Highway Facilities." IMG Rebel. July 15, 2015.

concession, where road users are paying the concessionaire directly, the latter has strong incentives to design and operate the project to attract the maximum number of customers, even if this means spending more up-front on more-convenient access points. The incentives in AP concessions are focused on cost-reduction and compliance with state-defined performance metrics.

After several high-profile RR concession bankruptcies, the U.S. project finance industry shifted to greater use of AP concessions. However, RR concessions should not be avoided simply because several projects did not perform as well as investors hoped. There were winners and losers in those projects. Most notably the private investors, who invested their capital hoping to make a return, lost their equity investments. Taxpayers, however, are ultimately winners because new infrastructure was developed, and continues to operate, at no risk to them.

In a revenue-risk concession, where road users are paying the concessionaire directly, the latter has strong incentives to design and operate the project to attract the maximum number of customers, even if this means spending more up-front on more-convenient access points.

While the United States does not finance as much infrastructure as it could, our challenge is not to simply find more tools to finance projects: our challenge is a large shortfall in funding. An AP concession is simply a form of financing—a form that does carry some benefits—but it does not bring any new net investment (without some form of tolling). AP concessions may help deliver projects sooner, but they don't address the long-term sustainability challenges facing our highway funding streams.

Also, from a mobility and congestion management perspective, AP concession projects don't directly convey any pricing signals to users. Governments should be making the costs of road usage more transparent—real tolls do that. Real tolls also bring real new investment to our highway and bridge infrastructure.

Availability payment concessions can fill important niches in situations where real tolling is incompatible with the project's purpose, or where toll revenues may be too small or too uncertain to permit a project to be financed on that basis. But to address this country's huge highway funding shortfall, greatly expanded use of tolling must play a major role. "User charges should be used to the fullest extent that they can be justified…[they] represent an

effective means to reveal willingness to pay for new infra and to improve existing."[75] Implementing tolling, of some form, on AP concession projects introduces more transparency and generates new revenue streams.

While RR concessions are more advantageous and transfer more risk, a U.S. role for highway AP concession remains. However, there needs to be thoughtful project selection. Further, new revenue streams need to be established to support the limited projects where AP concessions make sense—where tolling is counter-productive or not realistic. But for projects with serious toll potential, it makes better sense for a state DOT to invest a bit more of its own money into the project up-front and finance the balance as a RR concession, rather than putting taxpayers at risk for traffic and revenue.

User fees are the norm for most infrastructure such as electricity, water and telecommunications. It's time for tolling to be implemented on a broader scale.

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[75] Australian Government. Productivity Commission. "Public Infrastructure." 11.

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. About 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. He has also served on transportation advisory bodies to the California Air Resources Board and the Southern California Association of Governments, including SCAG's REACH task force on highway pricing measures.

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*, will be published by the University of Chicago Press in spring 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 "The O'Reilly Factor," as well as ABC, CBS and NBC News, NPR and PBS. He writes a monthly column on transportation policy issues for *Public Works Financing*, and 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.

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