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A. Global Overview

Long-term PPPs for highways are a global phenomenon of long duration. As documented by Jose Gomez-Ibanez and John Meyer, the phenomenon began in the 1950s and 1960s, as France and Spain emulated the model pioneered by Italy prior to World War II.[1] Italy's national motorway systems were developed largely by either investor-owned or state-owned companies, operating under long-term franchises (called *concessions* in Europe). In exchange for the right to build, operate and maintain the highway for a period ranging from 30 to 70 years, the company could raise the capital needed to build it (typically a mix of debt and equity). The model spread to Australia and parts of Asia in the 1980s and 1990s, and to Latin America in the 1990s and 2000s.

Nearly all the projects in those regions during those decades were financed based on the projected toll revenues to be generated once the highway was in operation. Some projects went bankrupt as a consequence of reduced traffic and revenues during severe economic downturns (e.g., the oil price shock of 1974), leading to nationalization of some of the companies by their governments. In the late 1990s and early 2000s the governments of France, Italy, Portugal and Spain all privatized their state-owned toll road companies and formalized the toll concession PPP model. Australia has allowed several concession company entities to go through liquidation, with the assets (in each case major highway tunnels) being acquired by new operators at a large discount to the initial construction cost.

Other governments in Europe adopted a different form of highway concession. Generally not favoring the use of tolls, they created the concept of *availability payments* as a means to finance long-term concession projects. The company or consortium selected via a competitive process negotiates a stream of annual payments from the government sufficient (the company expects) to cover the capital and operating costs of the project. The capital markets generally find such a concession agreement a sufficient basis on which to finance the project, with a mix of debt and equity. Since there are no toll revenues involved, this model is applicable to a much broader array of transport and facility projects, including rail transit and public buildings. In the highway sector, nearly all long-term concession public-private partnership (PPP) projects in Canada, Germany, the UK, and a number of countries in Central and Eastern Europe have been procured and financed as availability-payment (AP) concessions.

In a small but growing number of cases, such as major bridges, as well as highway reconstruction that includes the addition of express toll lanes, governments collect the toll revenues and use that money to help meet their availability payment obligations. We will refer to such cases as "hybrid" concessions in this section.

Global PPP concessions continued at a strong clip during 2015. A database of such projects has been maintained by *Public Works Financing* newsletter since 1988. In its latest annual review of this sector, it identified the top 10 transportation deals of 2015 (through October), presented here as Table 1.

Table 1: 10 Largest Global Transportation Deals of 2015

Project	Location	Country	Value ($B)	Type	Duration	Concessionaire
Metro Line 2+4	Lima	Peru	$6.0	DBFOM-AP	35 years	Ansaldo/ACS/ Salini Impregilo/FCC
Eglinton LRT	Toronto	Canada	$4.2	DBFM-AP	35 years	ACS/SNC-Lavalin/Ellis Don/AECON
St. Lawrence Bridge	Montreal	Canada	$3.5	DBFOM-hybrid toll/AP	35 years	SNC-Lavalin/ACS/ Hochtief
Moscow-St. Petersburg Toll Road 7+8	Moscow	Russia	$2.5	DBFOM-hybrid toll/AP	27 years	VTP Capiotal/Vinci
Metro Line 4	Milan	Italy	$2.3	DBFO-AP	30 years	Impregilo/Astaldi
Regina Bypass	Regina	Canada	$1.9	DBFOM-AP	30 years	Vinci/Parsons/ others
SH 183 Managed Lanes	Dallas	USA	$1.4	DB/gap finance/ O&M-toll/AP	25 years	Kiewit/Plenary
Second Range Crossing	Toowoomba	Australia	$1.4	DBFOM-hybrid toll/AP	25 years	Plenary/Cintra/ Acciona
Sydney Light Rail	Sydney	Australia	$1.4	DBFOM-AP	19 years	Capella/Alstom /Acciona/Transdev
Rapid Bridge Replacement	Pennsylvania	United States	$1.2	DBFM-AP	25 years	Plenary/Walsh

Source: "Top Ten Transport Deals of the Year," *Public Works Financing*, October 2015

Note:

AP=Availability Payment

DBFOM=Design-Build-Finance-Operate-Maintain

DBFM=Design-Build-Finance-Maintain

DBFO=Design-Build-Finance-Operate

DB=Design-Build

O&M=Operations and Maintenance

As reflected in this table, the growing use of AP concessions has enabled this kind of PPP to be applied to projects that do not generate their own revenues, as well as in a hybrid form where toll revenues help the government to cover the costs of its AP obligations.

1. International PPP Highway Infrastructure: 2015

Canada: Two major toll bridge projects are in the early procurement stages in Canada. The largest is the Massey Bridge project across the Fraser River south of Vancouver. It will be procured as a 30-year design-build-finance-operate-maintain (DBFOM) concession, with the developer compensated via availability payments but the cost to be fully recovered from toll revenues. It will replace the existing George Massey Tunnel. The construction cost is estimated at C$2.02 billion, and the 30-year cost, including operations and maintenance, is C$3.5 billion. The other major bridge is the planned Gordie Howe Bridge between Windsor and Detroit. It is also planned as a 30-year DBFOM availability-payment concession, with tolls expected to cover a large share of the cost. The construction cost is estimated as C$2.2 billion, but when adding in the

border facilities on both sides of the Detroit River and a new interchange with I-75 in Detroit, the total project cost will be between C$3 billion and C$4 billion.

A number of other highway P3 projects are under way at the province level, including a C$350 million expansion of Highway 427 in Toronto, the $1.9 billion Regina Bypass in Saskatchewan, and the $1 billion eastern extension of Highway 407 toll road in Toronto. All three are AP concessions, although the 407 extension will be tolled, like the existing 407.

Europe: The biggest 2015 PPP news in *France* was the selection of Vinci Concessions for the $637 million A355 Strasbourg Bypass, a 24-km, four-lane tolled motorway around Strasbourg. Since this is a traditional French toll concession, Vinci will take on full traffic and revenue risk over the 55 years of this DBFOM concession. French concession policy changed early this decade, eliminating a former policy under which existing concessionaires were encouraged, by the addition of more years to their existing concessions, to add new links that were not fully toll-feasible to their existing motorways. During 2013–2015, French concessionaires committed to invest $1.37 billion in such links. A further agreement negotiated in 2015 by their trade association, ASFA, allows for the concession companies to add $4.2 billion worth of non-tolled links, in exchange for adding from two to four years to their existing concessions.[2]

Slovakia, in December 2015, selected the winning bidder for its second highway PPP—an AP concession for two four-lane non-tolled motorways, the D4 and the R7. The 30-year concession is worth a total of $1.9 billion. The winning bidder, based on submitting the lowest required availability payment, was the team of Cintra and Macquarie. Their $62 million/year bid was less than half the $141 million figure in a government feasibility study.

Germany continued implementing non-tolled motorway upgrades in 2015, with the most recent being the final bidding for the A6 Wiesloch/Rauenberg/Weinsberg motorway (a $644 million project) and the A7 Salzgitter-Göttingen Upgrade. A January 2016 seminar on European PPP infrastructure singled out the Dutch and German markets as "the driving force of Europe's road PPP pipeline" for 2016. It noted that at the start of 2016 each country had three such projects in procurement.[3] Germany was noted to have unveiled a plan for 10 such projects in 2015.

Australia: This country continued its long-standing use of PPP highway concessions in 2015. Its largest deal the previous year was the acquisition, for $6.6 billion, of state-owned Queensland Motorways by a private-sector consortium. Australian toll concession company Transurban joined with pension fund Australian Super and Tawreed Investments in this acquisition of nearly all the tolled motorways in the Brisbane metro area, totaling 70 km. They provided 61% of the total as equity, with a club of banks providing long-term debt for the balance. The same team of equity players in 2015 was the winning bidder for the one remaining toll facility in the metro area—the bankrupt AirportlinkM7 tunnel. They paid $1.35 billion to acquire the facility from BrisConnections, the bankrupt developer of the project. Its original cost was $3.46 billion, but traffic and revenue were less than one-third of projections leading to its bankruptcy. Financial close on the acquisition occurred in April 2016.

Another major PPP project reached financial close in 2015—the M5 East Airport Link project in Sydney. It is phase 2 of the $11.5 billion WestConnex project, which widens two existing tolled motorways and links them via a $3.5 billion toll concession tunnel. The project reached financial close in November 2015, too late to be included in the October 2015 compilation of major projects in Table 1. Had it been included, it would have ranked third-largest for the year, as well as being the largest highway project in the table. The concession company comprises Leighton, Dragados and Samsung. Already under way in the Sydney metro area is the $3 billion NorthConnex project, a toll concession project building a tunnel to link the M1 Pacific Highway to the Hills M2 Motorway. Due to the high cost of the project, both the federal government and the New South Wales state government are investing alongside Macquarie, Leighton and Transurban.

The other two large highway PPPs in Australia are both hybrid AP/toll concessions: the $1.2 billion Second Range Crossing near Toowoomba (see Table 1) and the $700 million Northern Connector in Adelaide. According to *World Highways*, the Northern Connector, which will provide much-improved access to the Port of Adelaide, will be "the country's first network fee expressway where trucks are charged on the basis of road use."[4] Procurement was under way at year-end, with construction expected to begin in 2016.

Latin America: Toll concession PPP highway projects are under way in half a dozen countries in South America and Mexico. Indeed, Latin America began using toll concessions in the 1990s and is far ahead of the United States in this regard. While some of these projects are brand new highways, bridges or tunnels, the majority are privately financed conversions of mostly two-lane highways into four (or more)-lane limited-access tolled motorways.

Brazil was one of the early movers, launching its federal highway concessions program in 1993, with a second stage in 1998 and a third in 2013. But Brazil's ability to attract major infrastructure investment from overseas has been called into question by the country's severe recession and soaring interest rates. In mid-2015 the national government was targeting $69 billion in private infrastructure investment, including some 15 highway PPPs during 2015–16. The government is now liberalizing its protectionist tendering rules to permit international companies to head concession teams. An example of the government's ambitious projects is the BR-163, to upgrade an 856 km. highway via a $2.4 billion 30-year concession. Given industry concerns about the fiscal condition of the national government, larger state governments are forging ahead with PPP programs of their own. Sao Paulo state, which began doing highway concessions in 1998, has announced a plan for $3.5 billion investment in transport PPPs, to include upgrading 2,266 km of highways to tolled motorways, requiring investment of $2.75 billion.

Chile is widely acknowledged to have the best PPP concessions program in Latin America. Unlike most others, it has long welcomed unsolicited proposals, in addition to proposing projects itself. The national auditor is revising procedures for unsolicited proposals, aiming to get innovative proposals to the bidding stage more quickly.[5] An example now under way is Globalvia's $172 million project to widen the northern access to Santiago's Americó Vespucio ring road. More recently OHL has proposed a $1.8 billion addition to

Santiago's concessioned toll motorway system: a new six-lane, 22 km motorway and tunnel; it will go out to bid in 2016.

Colombia is a relatively new player, having launched a $25 billion road and rail PPP program late in 2014. The Fourth Generation (4G) highway program aims to invest nearly $16 billion in improved highways, bridges and tunnels by 2021, with about 70% of the funding to come from institutional investors, including the country's pension funds. According to *World Highways*, the aim is to put 11,000 km of highway projects out for concession by the end of 2018. Although numerous local firms are involved, Spanish concession companies such as OHL and Sacyr are also very active, with the latter heading a consortium that won a 25-year concession in July 2015 for an 80 km, $1.1 billion highway conversion. Three large concessions reached financial close in October, totaling $1.9 billion. Like Chile, Colombia is also receptive to unsolicited proposals.

Mexico's early PPP toll concessions were poorly conceived, and many of the concession companies went bankrupt due to insufficient traffic and revenue. The concessions law has been reformed several times, and many of the nationalized toll roads have been auctioned off to new operators. In 2015, infrastructure agency SCT revised the rules again to no longer terminate a concession once the company has reached its targeted rate of return; instead, the concession will be renegotiated to provide for additional investment and an extension of the term. SCT has also announced that remaining state-owned toll roads amounting to about 4,000 km will be auctioned off via public share offerings on the stock market. Also in 2015, a planned 30-year toll concession for a $325 million elevated toll highway in northern Mexico City was put on hold, after neither of the two short-listed teams had bid the required investment in local currency. Whether the project will be re-bid is uncertain.

Peru continued its relatively new PPP concession program in 2015, reaching financial close on a $400 million project for Section 2 of the Longitudinal de la Sierra toll road in December. Sacyr led the winning team for this project, which will upgrade 460 km of existing roadway, build 90 km of new roadway, and operate and maintain a total of 875 km under a 25-year DBFOM toll concession.

Finally, newcomer *Uruguay* selected the winning bidder for its first PPP highway concession. Under a 24-year, $160 million DBFOM-AP concession, a consortium led by Sacyr will upgrade Ruta 21 and Ruta 24, totaling 179 km. It is the first of six planned PPP concession projects aimed at upgrading the country's highways. The availability payments will reflect both the condition of the highway and the extent to which they attract traffic.

Asia: *India* has long been seen as a country with huge needs for infrastructure investment, frequent announcements of large-scale plans, but not that much in the way of serious projects. There are some PPP toll roads and some state-funded toll roads, but the country's 4.7 million km of highways are sorely lacking in capacity and quality. In 2015 the relatively new government announced two policy changes intended to jump-start PPP highway investment. First, it will now allow concession companies to sell their completed toll roads to other investors. Announced in August, the change has already led to infrastructure funds such as

Brookfield Asset Management and pension funds including Canada Pension Plan Investment Board to open offices in India. Both Brookfield and CPPIB have subsequently acquired existing toll concessions. The government also announced that it will sell long-term concessions of its existing state-owned toll roads, using the proceeds to invest in other highway improvements. In December, *Inspiratia Infrastructure* predicted that India will award more than 100 highway PPP concessions in 2016.

Although *Indonesia* has a large and powerful state toll road company, Jasa Marga, in 1987 the government began allowing private investment under a toll concession system. Until 2004, Jasa Marga also functioned as the regulator of toll rates, presenting a difficult environment for investor-owned concession companies. But as of 2004, the regulatory function was taken back into government with the creation of the Indonesia Toll Road Authority. At least in theory, this puts investor-owned companies on a level playing field with Jasa Marga. Between 2015 and 2019, the government aims to add 1,000 km of toll roads, and it appears that Jasa Marga will win the lion's share, with financing from state lenders. Nevertheless, a company called Wijaya Karya has won the rights to develop three toll roads worth $922 million. It hopes to finance them with a mix of state and private funding.

Two of *South Korea*'s toll concession highways went through financial restructuring in 2015: the Incheon International Expressway and the Yongin-Seoul Expressway. In both cases, part-owner Macquarie Korea Infrastructure Fund bought out several other part-owners to increase its stake, while also replacing several debt facilities. The concessions are for 30 years.

Finally, *Turkey* continues with PPP toll concession projects. Two large tunnels took the spotlight in 2015: the $1.3 billion, 3.4 km Eurasia Tunnel under the Bosphorus Strait and the $205 million Ilgaz Tunnel between Ankara and Kastamonu. The former links the European and Asian halves of Instanbul, and is projected to cut travel time from 100 minutes to just 15. The 5.4 km Ilgaz Tunnel, under the Ilgaz Mountains, will cut travel time from 25 minutes to just eight minutes.

B. U.S. Highway Concessions Overview

PPP concessions continued to make progress during 2015 in the United States. Four projects that had achieved financial close in 2014 entered the construction phase in 2015: the I-4 Ultimate project in Orlando, the SH 183 project in Dallas, the I-69 segment in Indiana being built via an AP concession, and the toll concession for phase 2 of the US 36 express toll lanes between Boulder and Denver. And three other concessions reached financial close during the year and began construction: the I-77 express toll lanes in Charlotte, the Rapid Bridge Replacement project in Pennsylvania, and the Portsmouth Bypass in Ohio.

But in terms of dollar volume and future impact, the biggest developments in 2015 were the acquisition of two major toll roads by consortia of pension funds. The government owners of the Chicago Skyway and the Indiana Toll Road—the city of Chicago and state of Indiana, respectively—entered into long-term leases with concession companies Cintra and Macquarie a decade ago. The Indiana concession fell victim to reduced traffic and revenues as a result of the Great Recession, and was unable to meet the debt service on its very aggressive debt financing. It filed for bankruptcy in 2014. While that process was under way, Cintra and Macquarie let it be known that they would consider offers for the Skyway. In the end, there was spirited bidding for both tollways, and in both cases the winning bids were from consortia of public-sector pension funds.

Australia's Industry Funds Management, on behalf of a group of public pension funds that included some of the U.S.'s largest, paid $5.725 billion for the remaining 66 years of the Indiana Toll Road concession. But in contrast to the highly leveraged deal structure used in the original privatization, the IFM group invested $3.2 billion of equity, for a very conservative 43%/57% debt-equity split. Several months later three Canadian pension funds—Canada Pension Plan Investment Board, Ontario Municipal Employees' Retirement System, and Ontario Teachers' Pension Plan—won the bidding for the Skyway by offering $2.836 billion for the remaining 89 years of that concession. Their bid was comparably conservative, with a 46%/54% debt-equity split. The pension funds in both cases were willing to invest far more equity than global infrastructure investment funds because the pensions are seeking more-modest long-term returns on their equity. They seek returns between 8% and 10% to diversify their portfolios and increase their average return on investments, at relatively low risk.

This development has profound implications for the future of tolling and PPPs in the United States. It suggests, first of all, that the more-aggressive *developers* of new toll projects have an exit option after the project is operational and demonstrating traffic and revenue results. Secondly, as a way to attract much-needed investment in replacing the U.S.'s first-generation, largely non-tolled, Interstate highways (which are nearing the end of their useful life), pension fund acquisition may be both (1) attractive to such funds and (2)

more politically acceptable to legislators and the public than acquisition by global investment funds seeking much higher rates of return (and hence requiring higher toll rates).

An overview of the U.S. highway concession market circa 2015 is provided in Table 2, listed in order of the investment value of each project. For existing toll roads now leased to private concessionaires, the length of each lease is provided. For projects that involve new construction, in nearly all cases the concession takes the form of DBFOM contracts, over terms ranging from 30 to 70 years. The majority of those concessions are based on toll-revenue financing, as indicated. The others are financed based on a state's agreement to provide annual availability payments (APs) over the life of the concession term. Some of those are "pure" availability payment deals, in which the state DOT uses part of its existing revenue sources (mostly federal and state fuel taxes) to meet its AP obligations. But the larger AP projects also involve toll revenue, which helps the state to afford its AP obligations, as noted in the table.

In the last few years, there has been a perception that the major trend in highway concessions is away from toll revenue-based financing to AP-based financing. Analysis of the 31 projects in the table calls this notion into question. In terms of numbers, 20 of the 31 projects were financed based on toll revenues. Of the others, only five were financed on a pure AP basis, with the six larger AP concessions all involving new toll revenues that will supplement the state's traditional fuel tax sources. The total dollar value of the 31 concessions is $38.5 billion. Of that amount, 67% was generated based on toll-revenue financing, with the other 33% financed based on the states' AP commitments. Toll revenues will assist on the large majority of those AP obligations.

Table 2: Largest U.S. Long-Term Highway Concessions, 2015

Project	Location	Value ($B)	Type	Begun	Concessionaire
Indiana Toll Road	Indiana	$5.725	66-year lease, toll	2015	IFM Global Infrastructure Fund
Chicago Skyway	Chicago	$2.836	89-year lease, toll	2015	CPPIB/OMERS/OTPP
LBJ Express	Dallas	$2.800	DBFOM, toll	2010	Cintra/Meridiam
I-4 Ultimate	Orlando	$2.323	DBFOM, AP/toll	2014	Skanska/Lane/Granite
Midtown Tunnel	Norfolk	$2.100	DBFOM, toll	2012	Skanska/Macquarie
NTE, phase 1	Fort Worth	$2.047	DBFOM, toll	2009	Cintra/Meridiam
I-495 Express	Northern Virginia	$1.998	DBFOM, toll	2008	Transurban/Fluor
I-595 Express	Fort Lauderdale	$1.814	DBFOM, AP/toll	2009	ACS Infrastructure
Goethals Bridge	New York, New Jersey	$1.500	DBFM, AP/toll	2013	Macquarie/Kiewit
SH 183 Express	Dallas	$1.415	DBF+OM, AP/toll	2014	Kiewit
NTE phase 2	Fort Worth	$1.400	DBFOM, toll	2013	Cintra/Macquarie
SH 130, segments 5-6	Austin	$1.358	DBFOM, toll	2008	Cintra/Zachry
East End Crossing	Louisville	$1.180	DBFOM, AP/toll	2013	Walsh/Bilfiger/Vinci
Rapid Bridge Replacement	Pennsylvania	$1.119	DBFM, AP	2015	Plenary/Walsh/Granite
PR 22, PR 5	Puerto Rico	$1.080	40-year lease, toll	2011	Abertis/GIP II
Grand Parkway F-1, 2	Houston	$1.007	DBOM, AP/toll	2013	Zachry/Odebrecht
I-95 Express	Northern Virginia	$0.940	DBFOM, toll	2012	Transurban/Fluor/Lane
Port of Miami Tunnel	Miami	$0.914	DBFOM, AP	2009	Meridiam/Bouygues
South Bay Expressway	San Diego	$0.773	DBFOM, toll	2003	Macquarie/Washington
I-77 Express	Charlotte	$0.635	DBFOM, toll	2015	Cintra/Ferrovial
Pocahontas Parkway	Richmond	$0.611	99-year lease, toll	2006	Transurban
Northwest Parkway	Denver	$0.603	99-year lease, toll	2007	BRISA/CCR
Portsmouth Bypass	Ohio	$0.557	DBFOM, AP	2015	ACS/Infrared/Star
I-69 Upgrade	Indiana	$0.370	DBFOM, AP	2014	Isolux, PSP Investments
Presidio Parkway	San Francisco	$0.365	DBFOM, AP	2012	ACS/Meridiam
Dulles Greenway	Northern Virginia	$0.350	DBFOM, toll	1993	TRIP II
Southern Connector	Greenville, SC	$0.191	DBFOM, toll	1998	Interwest
Jordan Bridge	Chesapeake, VA	$0.140	Build-Own-Operate, toll	2011	Figg/American Infrastructure
91 Express	Orange County, CA	$0.130	DBFOM, toll	1993	Level 3/Cofiroute/ Granite
US 36 HOT, phase 2	Denver-Boulder	$0.113	DBFOM, toll	2014	Plenary/Ames/Granite
Camino Colombia	Laredo, TX	$0.085	DBFOM, toll	1999	Camino Colombia/ Granite

Source: "U.S./Canada Transportation P3 Projects Scorecard," *Public Works Financing*, October 2015

Note:

AP=Availability Payment

DBFOM=Design-Build-Finance-Operate-Maintain

DBOM=Design-Build-Operate-Maintain

C. Federal Policy on PPP Concessions

1. U.S. Department of Transportation

Strong support for PPPs comes from the Office of Innovative Program Delivery of the Federal Highway Administration. OIPD was created during the George W. Bush administration and has been expanded during the Obama administration. It has developed a large array of educational and analytical materials to assist state DOTs and others in getting up to speed on innovative finance and PPPs in transportation infrastructure. Its P3 Toolkit now includes:

- Fact sheets on key aspects of PPP projects;
- Publications, including guidebooks and other documents;
- P3-VALUE 2.0 spreadsheet-based calculation tool for doing feasibility assessments of potential PPP projects;
- P3-SCREEN, a check-sheet of key factors and analyses involved in making decisions about possible PPP procurements;
- P3-VALUE Webinars for training in using the above tools;
- Training sessions for interested public officials; and,
- Frequently Asked Questions.

During 2014 and 2015, OIPD produced two model concession agreements: one for toll-financed (revenue-risk) concessions and the other for availability-payment concessions.

OIPD also offers detailed information on two federal financing programs that have been used by many PPP highway, transit and freight projects: Transportation Infrastructure Finance and Innovation Act (TIFIA) loans and Private Activity Bonds (PABs). Neither of these is available *only* for PPP projects, but any project seeking to use them must have dedicated revenue sources able to provide debt service payments for these loans and bonds.

PABs are especially useful to PPP projects because they are tax-exempt bonds that would not normally be available to projects that expect to earn a return on equity investments. Congress authorized them for PPP transportation projects on the grounds that, since these projects serve the public, there should be a level

playing field on bond interest rates between projects developed by public-sector and private-sector entities. Thus, revenue bonds issued for PPP projects as PABs will carry interest rates similar to those available for the revenue bonds of state toll agencies.

Congress created the TIFIA program to provide low-interest credit support for projects with dedicated revenue sources and that can qualify for investment-grade ratings. Although the law currently allows a TIFIA loan to cover up to 49% of a project's total cost, the TIFIA office within DOT has generally adhered to the law's original limit of 33%. This is consistent with the law's original intent that TIFIA provide gap financing, rather than being a project's primary source of debt finance. It also enables a given TIFIA budget allocation to support a larger total number of projects. Accordingly, TIFIA loans often are subordinated debt, which means senior loans or bonds have first call on project revenues. Only in the event of bankruptcy does the TIFIA loan shift to having equal status with other creditors.

Table 3 lists all current PABs and TIFIA loans for PPP highway and bridge projects through the end of the government's Fiscal Year 2015.

Table 3: Highway and Bridge Projects Financed by TIFIA and PABs

Project	TIFIA ($M)	PABs ($M)	Total Project ($M)	Year Financed
Portsmouth Bypass	$209	$227	$634	2015
I-77 Express Lanes	$189	$100	$655	2015
PA Rapid Bridge	$0	$722	$1,119	2015
I-4 Ultimate	$950	$0	$2,877	2014
I-69, Indiana	$0	$244	$370	2014
US 36, Colorado	$60	$20	$208	2014
Goethals Bridge	$474	$453	$1,436	2013
NTE phase 2	$531	$274	$1,638	2013
East End Bridge	$162	$508	$1,319	2013
I-95 Express, VA	$300	$253	$923	2012
Presidio Parkway	$150	$0	$487	2012
Midtown Tunnel	$422	$675	$2,089	2012
LBJ Express	$850	$615	$2,615	2011
NTE phase 1	$650	$398	$2,047	2009
Port Miami Tunnel	$341	$0	$1,113	2009
I-595 Express	$603	$0	$1,834	2009
SH 130, 5&6	$430	$0	$1,328	2008
I-495 Express	$589	$589	$2,068	2008
S. Bay Expressway	$140	$0	$658	2003
TOTALS:	$7,050	$5,078	$25,418	

Source: FHWA Office of Innovative Program Delivery website, accessed Feb. 22, 2016

As can be seen by comparing the column totals, $7 billion in TIFIA loans helped make possible projects worth over $25 billion. That is powerful leverage, compared with federal grants that often provide between 50% and 90% of a project's cost. Likewise, $5.3 billion in PABs also helped make that $25 billion investment possible.

Stressing the importance of increasing infrastructure investment, Secretary of Transportation Anthony Foxx unveiled a new office within DOT in September: the Build America Transportation Investment Center (BATIC). Its stated aim is to speed up the time it takes for transportation PPPs to reach financial close. The American Association of State Highway & Transportation Officials launched the BATIC Institute as a new center of excellence, to assist state DOTs in capacity-building in the area of project finance and PPPs.

2. Congress in 2015: the FAST Act

The 114th Congress reauthorized the federal highway and transit program in late 2015, enacting what it dubbed the FAST Act. This five-year law reauthorizes all the current federal highway user taxes and makes various revisions to federal programs and policies relevant to PPP highway projects. The three topics of greatest interest for PPPs concern TIFIA, PABs and federal tolling provisions.

Perhaps unfortunately for PPP projects, Congress reduced the annual funding for TIFIA loans. The previous legislation (MAP-21) had increased the annual amount to $1 billion, a very large increase from previous years. The TIFIA budget allocation covers the cost of administering the program and the approximately 7.5% of the value of each loan that is set aside to cover its default possibility. Faced with competing budget priorities, members of Congress noted that TIFIA lending across all types of transportation projects had fallen off sharply in 2015. The previous year had set a record of loans for 12 projects (many of them not PPPs) totaling $8.4 billion. But by the end of FY 2015 (Sept. 30, 2015), there were only seven loans totaling $2.384 billion. Thus, for the five years covered by the FAST Act, Congress authorized just $1.435 billion—an average of $287 million per year. But that should be sufficient to cover a fairly robust pipeline of projects, concludes Bryan Grote, the TIFIA expert at Mercator Advisors.[6] He has estimated that the TIFIA program had an unobligated funding balance of about $1.4 billion at the end of FY 2015, which includes the committed balance for funding loans of existing projects already in the TIFIA pipeline, as well as the uncommitted carryover balance. Combined with the new funding authorized in the FAST Act, this means the program should have total funding of nearly $3 billion and could support as much as $40 billion of loans in the next five years, assuming a continued subsidy rate of 7.5%.

Many PPP advocates had urged Congress to increase the current $15 billion cap on PABs for highway and transit projects, but this idea gained little traction. The Obama administration had proposed increasing the cap to $19 billion, but that went nowhere in Congress. There is speculation that Congress may return to the issue if and when it takes up comprehensive tax reform, potentially in 2017, with a new administration and Congress in place after the 2016 elections.

Given that Congress will not likely return to highway and transit policy for another five years, there is a real risk that the current $15 billion total will be used up before the next reauthorization bill. Figures from the OIPD website in January 2015 show that PABs totaling $5.879 billion have been issued across all types of transportation projects, and another $5.675 billion have been allocated to specific projects but have not yet

been issued. Although one or two of those might not go forward, the total commitment stands at $11.554 billion out of $15 billion—77% of the total.

In highway PPP projects alone, PABs issuance for the past five years has been as follows:

- 2011: $0.615 billion
- 2012: $0.928 billion
- 2013: $1.412 billion
- 2014: $0.264 billion
- 2015: $1.052 billion
- **5-year total: $4.271 billion**

That total is significantly more than the $3.446 billion remaining for the next five years in the PABs allocation.

Congress also made several changes in federal tolling policy that will affect toll-financed concession projects. One of the largest potential areas for such projects is to replace aging Interstate highways as they reach the end of their 50-year design life over the next two decades. A current federal pilot program allows three states to gain exemption from the general federal prohibition on using tolls for currently non-tolled Interstate corridors. Specifically, it allows each to use toll finance to reconstruct one Interstate, with the toll revenue dedicated to the capital and operating costs of the rebuilt facility. The potential to charge higher tolls, thereby turning the rebuilt Interstates into cash cows, has prevented support for such projects by highway user groups such as AAA and trucking organizations such as ATA.

Several groups argued for revising the pilot program to make it more customer-friendly, by explicitly restricting the use of the toll revenues to the capital and operating costs of rebuilt/replacement Interstates, and by requiring rebates of state fuel taxes for miles driven on the replacement (tolled) Interstates. Along with those provisions, they also argued that the program should be expanded to more states, and that each participating state be able to devise a long-term plan to replace all its first-generation Interstates with new ones, using toll finance.

Senate legislators heard these arguments, but were only willing to make small tweaks to the existing three-state pilot program. Since none of the three states holding the slots (Missouri, North Carolina and Virginia) has obtained legislative consent to proceed with rebuilding its designated Interstate, the FAST Act gives them a one-year deadline to get such projects authorized and moving forward, or they must give up their slot. New participants in the pilot program would have an initial two years by which time they would have to have their project authorized and moving forward.

D. State Laws and Policy on PPP Concessions

The FHWA's Office of Innovative Program Delivery has on its website a map showing 33 states that have some form of enabling legislation on their books to permit PPPs for transportation infrastructure. Despite this large number of enabling acts, actual projects of this kind have been implemented in only nine states plus Puerto Rico and projects done by the bi-state Port Authority of New York & New Jersey. Legislators in the other states may have had good intentions, but either their enabling legislation contains serious flaws or no projects have yet been identified that are a good fit for private-sector investment via a long-term PPP concession.

In December 2015 the Bipartisan Policy Center released its "Public-Private Partnership (P3) Model State Legislation." It aims to permit PPPs to be used for a wide range of infrastructure (not just transportation), to create a state office with expertise in PPPs (often called a "P3 unit"), to standardize and promote best practices, and ensure protection of the public interest. And in January 2016 the National Conference of State Legislatures issued a comprehensive review of transportation PPP measures in the states. "Public-Private Partnerships for Transportation: Categorization and Analysis of State Statutes" consists mostly of detailed tables showing which provisions, in various categories, are part of each state's enabling act. This permits comparison of states with and without serious PPP investment, as well as providing a guide for state DOTs and legislators seeking to craft effective legislation.

During 2015, seven state legislatures debated PPP legislation. In California, the impending sunset of the current enabling act, SB 4, at the end of 2016, led to several efforts to replace it with a permanent measure. Gov. Jerry Brown has proposed retaining the current law, extending the sunset date to 2027. But only one (non-tolled) transportation project has been implemented under SB 4 (whose provisions are now in Sec. 143 of the Streets & Highway Code). Among other things, it leaves significant control of project development in the hands of Caltrans, whose engineers' union (PECG) has fought both design-build and PPPs for decades. Hence, the state's largest county transportation authority, LA Metro, has put forward a more sweeping measure that would enable Los Angeles County to implement P3 projects the way states like Colorado, Florida, Texas and Virginia have been doing. ABX 1-12, introduced in a special session in August, would delegate sweeping PPP authority to LA Metro, including permission for it to use its own employees and/or consultants for project development, rather than Caltrans engineers. It provides for tolling flexibility, permits solicited and unsolicited proposals, and has no sunset date. As of early 2016, both measures, and several others dealing with PPPs, were still under discussion in the legislature.

In Connecticut, Gov. Dan Malloy has aggressively promoted his 30-year plan for $100 billion in investment in the state's surface transportation infrastructure, and there is considerable discussion of toll financing as part of the picture. In June, the Governor's Transportation Finance Panel held a workshop on the potential of

long-term PPP concessions as part of the answer. The state had a limited PPP law, enacted in 2011, that authorized up to five projects by the end of 2014. No transportation projects have resulted from this measure.

Georgia has gone through several generations of PPP legislation, but has yet to implement any significant transportation projects using such legislation. The closest it came was a competitive procurement for a DBFOM concession for the West by Northwest project (adding express toll lanes to I-75 and I-575) in 2011. Gov. Nathan Deal terminated that procurement in mid-stream, on grounds of "sovereignty"—evidently objecting to likely compensation clauses in an eventual concession agreement. In 2015 the Georgia Legislature tried again, enacting a new PPP law that the governor signed—The Partnership for Public Facilities and Infrastructure Act—but it does not apply to transportation infrastructure. The Georgia DOT is implementing several express toll lanes projects using the design-build-finance method, which involves no long-term involvement by the private sector.

Kentucky Gov. Steven Beshear has been seeking both PPP and tolling legislation in order to finance a $2.6 billion replacement of the Brent Spence Bridge on the Ohio River between Cincinnati and northern Kentucky. In 2014 the legislature passed a PPP enabling act, but the governor vetoed it because it failed to include tolling authority. A new version was considered in the 2015 legislative session; it passed the House but failed to gain approval in the Senate. The University of Kentucky's Transportation Center released a report in September, "Synthesis of Public-Private Partnerships: Potential Issues and Best Practices for Program and Project Implementation and Administration," that may ease the way toward enactment of enabling legislation in 2016.

Maine enacted a transportation PPP enabling law in 2013, which provides for both solicited and unsolicited proposals. But like a number of other PPP enabling acts which have failed to lead to projects being implemented, it includes the fatal flaw of requiring the state DOT, after negotiating a draft concession agreement with the selected provider, to submit a bill to the legislature to authorize the agreement. In 2015, the state DOT began prioritizing projects that could attract private-sector partners, but this is unlikely to lead to any long-term concessions, due to the high risk inherent in the legislative approval requirement.

New Jersey's legislature enacted SB 2489 in June. It allows PPP procurements to be conducted "outside of New Jersey's byzantine procurement laws," as noted by *Public Works Financing*. But Gov. Chris Christie vetoed the bill, objecting to its prevailing wage and project labor agreement provisions. He sent the measure back to the state Senate in hopes of having it amended to remove those provisions, but that did not happen.

In March, the New Mexico House passed a broad PPP enabling measure that would apply to nearly all types of infrastructure, including roadways. It was introduced in the Senate, but died without serious discussion.

Finally, two states that have been among the most active implementers of long-term PPP concessions—Texas and Virginia—enacted revisions to their successful enabling acts. In Texas, HB 2475, approved in June, authorized creation of the Center for Alternative Finance and Procurement within the Texas Facilities Commission. It will work with state and local agencies regarding best practices on project finance and PPPs.

Unfortunately, it also forbids agencies from considering unsolicited proposals, generally a useful source of creative thinking. The new Center and the law's provisions apply to all types of infrastructure, not just transportation.

Virginia legislators unanimously passed HB 1886, which amends the state's pioneering Public-Private Transportation Act of 1995; the new law took effect July 1. It creates a PPP Advisory Committee that must determine whether a proposed transportation PPP project is in the public interest before a state or local agency can consider it. And the public agency itself must make a finding that the project is in the public interest, including:

- Comparing the benefits to the agency of using the PPP approach versus a different form of procurement;
- Assessing whether the risks transferred to the private party will provide enough benefits to justify using the PPP approach; and,
- Finding that, if competitive negotiation is to be used, this approach offers more benefits than a competitive sealed bidding process.

In both the Texas and Virginia cases, it remains to be seen whether these changes will enable those states to continue generating significant PPP deal flow.

E. Major Highway PPP Projects by State

A September 2014 report from Moody's Investor Service found that, "The U.S. has the potential to become the largest P3 market in the world, given the sheer size of its infrastructure."[7] Despite this potential, actual deal flow in 2015 was less than many people expected. Uncertainty over when or whether Congress would reauthorize the federal highway and transit program, along with generally tight state DOT budgets, led to a more cautious approach by many state DOTs (which in most cases use federal or state fuel tax funds for a portion of transportation PPP project budgets). Long delays in getting TIFIA loans approved—and the smaller number approved during FY 2015—contributed to concerns about the PPP pipeline. But leading-edge states continued moving forward, as the following recap makes clear.

Arizona: Several years after enactment of a very workable PPP enabling law, Arizona DOT embarked on its first major transportation PPP project. Although not pursuing it as a long-term toll concession, ADOT selected a $1.9 billion megaproject as its first serious project: design, build and maintenance (DBM) of the long-planned South Mountain Freeway Loop 22), part of a beltway around downtown Phoenix. Winning the bid in December was the team of Fluor/Granite/Ames. The new freeway will have three general-purpose lanes and one HOV lane in each direction. The project's 20-year maintenance provision makes it the longest of any DBM project in the United States.

California: The only transportation project procured under the state's 2009 PPP law, the Presidio Parkway in San Francisco, opened to traffic in 2015. The only other proposed highway PPP project—a set of smaller projects including HOT lanes on a stretch of I-5 in Los Angeles—was cancelled after the lead agency, LA Metro, was unable to reach agreement with Caltrans on the two agencies' respective roles in the project. LA Metro has identified a half dozen major tolled highway PPP projects, including a tunnel beneath South Pasadena to complete the long-needed missing link in the I-710 freeway. But implementing those will depend on whether workable PPP legislation can be obtained, as noted previously.

Colorado: The Denver area's first highway PPP concession, and the region's second HOT lanes project, opened to traffic in June. The 18 miles of US 36 between Denver and Boulder now have a toll lane each way, along with new express bus service (the Flatiron Flyer). Colorado DOT (CDOT) is now in procurement for its I-70 East project, which will reconstruct a major portion of that freeway between downtown and the approach road to the Denver International Airport while adding express toll lanes. The $1.2 billion project will be a DBFOM hybrid concession, with toll revenue from the express lanes helping CDOT pay for the availability payments by which the concession company is compensated. Four consortia were short-listed in July.

Florida: Construction is now under way on Florida's largest transportation PPP to date: the $2.3 billion I-4 project in Orlando. It will rebuild 21 miles of that expressway through Orlando and add two express toll lanes each way. Because the toll revenues are likely to be insufficient to cover the total project costs, this DBFOM concession will compensate the concession company via availability payments. Many other toll projects are in the planning process, in the metro areas of Jacksonville, Miami, Orlando and Tampa. Which of them will be developed as PPP concessions remains to be seen, but the two most likely are an extension of the I-4 express lanes or the planned set of express lanes in Tampa (on I-75, I-275 and I-4 called Tampa Bay Express).

Georgia: As noted previously, current policy in Georgia does not include long-term concessions. Instead, Georgia DOT is using design-build-finance (DBF) as its procurement method for large projects, including express toll lane projects planned for much of its freeway system. In December its latest DBF procurement produced significant cost savings. Redesign and reconstruction of the congested I-285/Georgia 400 interchange had been projected to cost $1.1 billion. Ferrovial's winning bid of $460 million was $200 million less than the second-lowest offer, from Archer Western.

Illinois: This state's first highway PPP concession project was intended to be the Illiana Expressway, a new east-west toll road to connect a north-south Interstate in Illinois with another such Interstate in Indiana. But due to the state's dire condition, Gov. Bruce Rauner cancelled the project in 2015. Because toll revenue projections fell far short of what was required to finance the project, it had been planned as a toll/AP hybrid concession.

Indiana: This state has two highway PPP concessions under way, both structured as DBFOMs with the concessionaire compensated via availability payments. For the $1.2 billion East End Crossing (a new bridge over the Ohio River), toll revenues will cover a large fraction of the availability payments. But the $325 million concession to build a new segment of I-69 was planned from the start to be non-tolled, so that project is a pure availability-payment concession.

Kentucky: Kentucky DOT's first PPP project is intended to be the $2.5 billion Brent Spence Bridge linking Covington, Kentucky to Cincinnati. As noted previously, the state still lacks both PPP enabling legislation and tolling authority, so this project is still on hold.

Massachusetts: Two proposed PPP concessions are under environmental review by MassDOT: express toll lanes on Rt. 3 south of Boston and a third bridge over the Cape Cod Canal. Whichever is put forward first would be the state's first such project, making use of enabling legislation passed several years ago.

Michigan: This state has pursued no PPP concessions on its own, but is cooperating with the Windsor-Detroit Bridge Authority, a binational agency organized in Canada to procure the long-planned new bridge across the Detroit River separating the two cities. Since this is one of the busiest U.S./Canada border crossings, the project also includes construction of new customs and immigration facilities on both sides, as

well as a major new interchange with I-75 in Detroit. The bridge will be tolled, but the bridge concession will be based on availability payments.

Missouri: This is one of three states that holds a slot in the federal pilot program allowing it to reconstruct an aging Interstate highway using toll finance. The preferred alternative for the replacement I-70 (a major truck route) is a toll-financed eight-lane highway, with four of the lanes as dedicated truck lanes. Gov. Jay Nixon and Missouri DOT favor going forward with this alternative, and the DOT held a workshop in October to discuss the potential for toll concessions as the procurement model. The state's PPP law would need revision, and tolling authority is also not currently provided for. Both might be addressed by the legislature in 2016.

New York/New Jersey: Neither New York nor New Jersey has a PPP enabling law, but the Port Authority of New York & New Jersey does have the power to do PPP concessions. Its first highway concession is under way, to replace the aging Goethals Bridge. The $1.5 billion project is being developed by Kiewit/Macquarie under a DBFM concession. The Port Authority will be responsible for tolling, and will compensate the concessionaire via availability payments.

North Carolina: The state's first PPP concession reached financial close in the spring of 2015. The $650 million project, whose construction has begun, will add express toll lanes to 26 miles of I-77 in Charlotte, converting the existing HOV lane and adding one additional tolled lane. The project has strong opposition from a nearby suburban area, and opponents brought and lost a lawsuit contending that the tolls were taxes and therefore constituted an illegal delegation of taxing power to a private entity. The deal is structured as a 50-year DBFOM toll concession, with Cintra as the concessionaire. Additional equity providers are Aberdeen Global Infrastructure Partners and UK-based John Laing.

Ohio: The state's first highway PPP concession is the Portsmouth Bypass, a new 16-mile highway. Under an $850 million DBFOM-AP concession, the ACS/Infrared team is under way on this project.

Pennsylvania: Under this state's innovative Rapid Bridge Replacement program, the winning Plenary/Walsh team will rehabilitate or replace 558 bridges over a three-year period and then maintain them for 25 years. This DBFM project is a pure availability payment concession. *Infrastructure Investor* selected it as the North American PPP Deal of the Year in 2015.

Texas: Although Texas has more highway PPP investment to date than any other state, anti-toll and anti-PPP sentiment has grown stronger in Texas during the past few years. Numerous bills in the 2015 legislative session aimed to curtail tolling and/or PPPs (although only a few minor ones passed). The new governor, Greg Abbott, had campaigned on an anti-more-tolling platform and proposed a constitutional amendment to direct a sizeable portion of the state sales tax revenue to transportation. As drafted by the legislature, the amendment prohibits any of this new money (potentially several billion dollars a year) from being used for tolled projects. The amendment was passed by the voters in November. The changed political environment seems to have made PPP concessions less attractive for the next round of projects. A possible straw in the

wind was the Texas Transportation Commission's decision in September to approve the $530 million SH 281 project in San Antonio—originally envisioned as a PPP concession—to be done on a non-toll basis.

Virginia: Despite some concerns that the revisions to Virginia's PPP enabling law might shift the state away from continued use of concessions, Virginia DOT followed the new procedures in evaluating procurement options for its next major project: reconstructing 25 miles of I-66 outside the Capital Beltway to include converting the existing HOV lane each way to a toll lane, and adding an additional toll lane each way. VDOT requested qualifications from potential bidders under three procurement models: DBFOM (revenue risk), DBOM and design-build—and received interest in all three. After reviewing VDOT's analysis, the VDOT commissioner in December selected the toll concession model as the best way to proceed. All three teams for this model said they could meet or beat the state's terms for this $2.1 billion project: maximum state investment of $600 million, private financing of all other costs, support for transit in the corridor, and $350 million net present value provided for corridor improvements during the life of the concession. The competitive procurement will take place during 2016, with selection expected by autumn. In other developments, the Virginia Office of Public-Private Partnerships has identified candidates for future PPP deals including the potential Hampton Roads Third Crossing, Route 460/58/13 upgrading, and the replacement of Interstate highway lighting.

About the Author

Robert Poole is director of transportation policy and the Searle Freedom Trust Transportation Fellow at Reason Foundation. He received his B.S. and M.S. in mechanical engineering from MIT and did graduate work in operations research at New York University. He has advised the U.S. DOT Office of the Secretary, the Federal Highway Administration, the Federal Transit Administration, and the state DOTs of a half dozen states, including California and Florida. He has also testified before House and Senate committees on transportation policy issues, as well as before a number of state legislatures. He is a member of the Transportation Research Board's standing committees on Congestion Pricing and on Managed Lanes. In 1995–96 he was a member of California's Commission on Transportation Investment. In 2008 he was a member of the Texas Study Committee on Private Participation in Toll Roads, and in 2010 he served as a member of Washington State DOT's Expert Review Panel on a proposed $1.5 billion managed lanes project on I-405. And in 2010 he was a member of the transportation policy transition team for Florida Gov.-elect Rick Scott. He received the American Road & Transportation Builders Association's 2007 Private Sector Entrepreneur of the Year award, and he received the TRB Managed Lanes Committee's 2012 Leadership Award.

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