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# Annual Privatization Report 2010: Surface Transportation

By Robert W. Poole, Jr.  
Edited by Leonard Gilroy



# Reason Foundation



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# **Annual Privatization Report 2010: Surface Transportation**

**By Robert W. Poole, Jr.**

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**Part 1**

# Transportation Infrastructure Finance 2010

## A. Introduction

During 2009–2010, the global infrastructure finance community struggled to recover from the credit market crunch of 2008–2009. Fewer large-scale projects got financed, and those that did were less leveraged (i.e., had a higher proportion of equity compared with debt in the financing package). Deals that had been valued and structured on the basis of pre-crunch market conditions, such as the proposed lease of Chicago’s Midway Airport, failed to reach financial close—but more realistically priced and structured airport privatizations, including the sale of London Gatwick for \$2.47 billion, took place. In the highway field, projects based on availability payments (a binding commitment by the government to annual payments over the life of the concession) rather than toll revenues (e.g., the Port of Miami Tunnel) proved easier to finance, since the private consortia in such deals did not have to accept traffic and revenue risk. But some true toll concession deals (e.g., the LBJ Freeway Express Lanes in Dallas and the North Tarrant Express in Ft. Worth) did get financed.

The financial markets struggled to cope with the disappearance of bond insurance, which made credit enhancement by other means (e.g., the federal government’s TIFIA program providing subordinated long-term debt) all the more important. Public-sector pension funds continued to move into infrastructure in the United States as they had previously done in Canada and Australia. By mid-2010, the pace of fund-raising by infrastructure equity funds had picked up considerably, suggesting gradual recovery in the infrastructure finance market.

## B. Infrastructure Investment Funds

The record year for infrastructure fund-raising was 2007, when these special-purpose equity funds raised \$34.3 billion. That declined to \$24.7 billion in 2008, with a further decrease to \$10.7 billion in 2009, according to Probitas Partners. But late in 2009 Probitas also reported that there were more than 99 new funds in or coming to market during 2010, seeking to raise a total of \$110 billion. Figures from mid-2010 support the view that the infrastructure fund market is recovering. Probitas reported that \$10 billion was raised in the first half of 2010, only slightly less than the

total for all of 2009. And a J.P. Morgan survey released at mid-year found that North American institutional investors expected to see the infrastructure category experience the largest percentage increase in portfolio allocations, going from 4.3% to 5.7% over the next several years.

In its June 2010 issue, *Infrastructure Investor* released its first ranking of global infrastructure funds, the Infrastructure Investor 30. Over the past five years, these 30 large funds alone have raised a total of \$140.5 billion (see Table 1). That is consistent with the March 2010 estimate by Kearsarge Global Advisors that *all* such funds have raised \$190 billion since their inception.

Rank	Name of Fund	Headquarters	Five-Year Capital Formed (\$B)
1	Macquarie Group	Sydney	\$30.655
2	Goldman Sachs	New York	9.100
3=	Alinda Capital Partners	New York	7.000
3=	Industry Funds Management	Melbourne	7.000
5	Ontario Muni Employees Retirement System	Toronto	6.222
6	Caisse de depot et placement du Quebec	Montreal	6.111
7	Brookfield Asset Management	Toronto	5.777
8	Global Infrastructure Partners	New York	5.640
9	Ontario Teachers Pension Plan	Toronto	4.862
10	Highstar Capital	New York	4.300
11	Canada Pension Plan Investment Board	Toronto	4.250
12	Morgan Stanley	New York	4.000
13	Arcus Infrastructure Partners	London	3.564
14	Citi Infrastructure Investors	New York	3.400
15	ABP	Amsterdam	3.191
16	Ferrovial	Madrid	2.974
17	British Columbia Investment Management Corporation	Victoria	2.683
18	RREEF Alternative Investments	San Francisco	2.659
19	Balfour Beatty	London	2.593
20	J.P. Morgan	New York	2.560
21	3i Group	London	2.453
22=	QIC	Brisbane	2.416
22=	Australian Super	Sydney	2.416
24	Tenaska Capital	Omaha	2.400
25	Public Sector Pension Investment Board	Montreal	2.314
26	UBS	Zurich	2.300
27	Actividades de Construccion y Servicios	Madrid	1.948
28	Future Fund	Melbourne	1.920
29	Steel River Infrastructure Partners	San Francisco	1.900
30	CP2	Sydney	1.859

Source: *Infrastructure Investor*, June 2010, p. 29

It is interesting to compare the nationality of the funds providing equity for infrastructure projects with the nationality of the concession companies that are implementing the projects. Table 2 is based on *Infrastructure Investor's* own analysis of the data on the 30 largest investors. As can be seen, 33% of the capital comes from Australia-based institutions, with the U.S. share nearly as large, at 31%. When you add Canada to the U.S. share, the total of North American investors is 54%. European institutions constitute just 13% of the capital.

Table 2: Nationality of Infrastructure Funds		
Country/Region	Percentage of Firms	Percentage of Capital
Australia	20%	33%
Canada	23%	23%
Europe (except UK)	13%	7%
United Kingdom	10%	6%
United States	34%	31%

Source: *Infrastructure Investor*, June 2010, p. 33

Statistics on global public-private partnership (PPP) infrastructure projects have been maintained in a database since 1991 by *Public Works Financing (PWF)*, the newsletter of record in this industry. The *PWF* database also includes figures on the world's leading PPP transportation companies as of 2009, ranked by projects under construction or in operation as well as active proposals. For these data, shown in Table 3, the project types include airports, highways, ports and rail infrastructure.

Table 3: Top PPP Transportation Infrastructure Companies, 2009				
Rank	Company	HQ Country	# Projects in Construction or Operation	# Active Proposals
1	ACS/Iridium	Spain	58	39
2	Global Via	Spain	41	27
3	Ferrovial/Cintra	Spain	41	8
4	Abertis	Spain	39	12
5	Vinci/Cofiroute	France	33	17
6	Macquarie group	Australia	33	13
7	OHL	Spain	28	17
8	NWS Holdings	China	26	2
9	Sacyr	Spain	23	30
10	Acciona/Nesco	Spain	22	11
11	Hochtief	Germany	22	11
12	Cheung Kong Infrastructure	China	21	5
13	EGIS Projects	France	20	25
14	Road King	China	18	0
15	Bouygues	France	17	21
16	Bilfinger Berger	Germany	16	9
17	John Laing	United Kingdom	16	4
18	Brisa	Portugal	14	8
19	Alstom	France	13	11

Table 3: Top PPP Transportation Infrastructure Companies, 2009				
Rank	Company	HQ Country	# Projects in Construction or Operation	# Active Proposals
20	Grupo ICA	Mexico	13	6
21	Impregilo	Italy	12	6
22	Andrade Gutierrez	Brazil	12	2
23	Strabag	Austria	10	18
24	Atlantia/Autostrade	Italy	10	8
25	Camargo Correa	Brazil	9	3
26	Transurban	Australia	9	1
27	Siemens	Germany	8	11
28	Itinere	Spain	8	5
29	Balfour Beatty	United Kingdom	8	1
30	CCR Group	Brazil	8	1
31	Skanska	Sweden	7	5
32	KKR Brown & Root	United States	7	2
33	Bombardier	Canada	6	6
34	Fluor	United States	6	4
35	Alfred McAlpine	United Kingdom	5	0

Source: *Public Works Finance 2009 Survey of Public-Private Partnerships*

As can be seen from a quick perusal of Table 3, the large majority of project experience is European. Of the top 10 companies, eight are from Europe, one from Australia and one from China. Of the top 20 companies, seven are from Spain, four from France, three from China, two from Germany, and one each from Australia, Mexico, Portugal and the United Kingdom. U.S. firms only show up in positions 32 and 34—and neither does concession projects on a stand-alone basis, since they are basically engineering/construction companies, not toll road owner/operators.

Thus, by comparing Tables 2 and 3, we can see that while the large majority of infrastructure development and operational expertise currently resides with European firms, the majority of the capital is coming from North American and Australian investment funds. Those who raise political concerns about foreigners “buying our toll roads” seem to have missed the difference between those who are building and operating concessioned infrastructure projects and those who are financing them. It may help proponents to point out that more than half of all the equity investment is coming from North American funds.

Further insight into the investment funds can be garnered from *Infrastructure Investor’s* analysis by type of institution, as shown in Table 4.

Table 4: Infrastructure Funds by Type		
Type of Fund	Percentage of Firms	Percentage of Capital
Developer	10%	5%
Fund Manager	40%	34%
Investment Bank	17%	35%
Pension Fund	27%	23%

Private Equity	3%	2%
Sovereign Wealth	3%	1%

Source: *Infrastructure Investor*, June 2010, pp. 32-33

It is important to clarify that the investment funds discussed in this section provide equity capital only. In a typical infrastructure project financing, equity may constitute between 20% and 40% of the total, with the balance being various forms of debt (such as revenue bonds). Since the credit crunch began, debt has been somewhat more of a problem for such projects than equity. This is due in part to the collapse of bond insurance companies, as well as the stresses banks have been under during the credit crunch. In the United States, the availability of subordinated debt from the federal TIFIA program has increased in importance in this environment, leading to demand for TIFIA loans far in excess of available funding.

By early 2010, the capital markets were starting to respond to this problem with new products. *Infrastructure Investor* reported in March on two new debt funds being launched. Asset management firm Duet announced that it would provide senior debt for short-term bridging facilities for U.K. projects being carried out under that country's Private Finance Initiative (PFI). And a start-up U.K. fund called Hadrian's Wall Capital plans to offer subordinated debt within senior-ranking infrastructure bonds. The aim is to enhance the underlying ratings of the bonds by reducing their risk. Their initial target is to raise about €500 million for this purpose.

### C. The Growing Role of Pension Funds

Table 4 showed that 27% of the 30 largest infrastructure investors are pension funds, accounting for nearly one-fourth of the equity capital raised over the past five years. This trend began with pension funds in Australia and Canada, and some of the largest funds in Table 4 are Canadian public-sector pension funds: Ontario Municipal Employees Retirement System (OMERS), Ontario Teachers Pension Plan, and Canada Pension Plan Investment Board. These funds have been making global infrastructure investments for a decade or more.

U.S. pension funds have only entered this "alternative investment" market within the last several years. One of the first movers was the huge California Public Employees' Retirement System (CalPERS), which entered this field in 2007 and in 2008 targeted 1.5% of its portfolio for infrastructure investments. For 2010 it plans to commit \$900 million to infrastructure funds and another \$400 million to direct investments, which will bring infrastructure to 1% of the total, en-route to its 1.5% target. The smaller California State Teachers' Retirement System (CalSTRS) in 2009 approved a plan to create a \$1 billion infrastructure portfolio, but had not yet made any investments by early 2010. Other early movers include the Dallas Police and Fire Pension System, the Teachers Retirement System of Texas, the Illinois State Board of Investments, and the Alaska Permanent Fund Corporation.

Some public employee unions have raised concerns about their pension funds investing in infrastructure. Because these pension funds are tax-exempt, they typically do not buy tax-exempt bonds, such as those typically issued by public-sector airports and toll roads. And since there is no equity in state-owned infrastructure, the only way to invest equity in infrastructure is with investor-owned infrastructure. Traditionally, that has meant electric and gas utilities, some water utilities, pipelines, etc. But now that PPP airports, seaports and toll roads exist, transportation infrastructure has been added to the list of potential equity investments in infrastructure.

And this is definitely a global market. The Canada Pension Plan Investment Board (CPPIB) has been part of several teams bidding on airport privatizations in recent years, and South Korea's National Pension Service recently bought a stake in London Gatwick Airport, following its purchase from Ferrovial by Global Infrastructure Partners (owned by Credit Suisse and General Electric). More recently, GIP sold a 12.7% stake in Gatwick Airport to CalPERS. In July 2010, CPPIB made an offer of \$3.1 billion for Intoll, the Macquarie spinoff that owns a major share in Canada's 407ETR toll road and the M7 Westlink toll road in Sydney.

## Part 2

# Long-Term Concessions, the Federal Perspective

Concerns that were raised in some quarters by the long-term leases of the Chicago Skyway in 2004 and the Indiana Toll road in 2005 (so called “brownfield leases” of existing public infrastructure assets) led to the introduction of two anti-leasing measures in Congress in 2009, neither of which went anywhere. And, as discussed in Reason Foundation’s *Annual Privatization Report 2009*, those concerns also led to several 2008 detailed policy reports on how to protect the public interest when crafting long-term public-private partnerships for major infrastructure such as toll roads. After Florida received no bids for its proposed long-term lease of the Alligator Alley toll road in May 2009, the brownfield lease issue pretty much disappeared. There has been no serious interest in re-bidding a long-term lease of the Pennsylvania Turnpike, after that state’s legislature failed to enact enabling legislation in 2008. And legislators and governors in other states where such leases had been proposed (notably Illinois) decided against pursuing them, perhaps in light of the likely lower valuations due to the ongoing credit market crunch.

As also reported in Reason Foundation’s *Annual Privatization Report 2009*, one of Congress’s most outspoken toll road leasing opponents, Highways & Transit Subcommittee chairman Rep. Peter DeFazio (D, OR) softened his all-out opposition to highway public-private partnerships. In a speech at the annual PPP conference of the American Road & Transportation Builders Association in September 2008, DeFazio reported on his then-recent fact-finding trip to Europe, in which he’d visited PPP toll roads in several countries. He told the conferees that he could support long-term PPP deals for new toll roads, as long there was regulatory oversight to protect the public interest. And the oversight could be from state governments, not necessarily the federal government, he said in response to a question.

Consequently, many were surprised and dismayed when DeFazio’s senior colleague, Rep. James Oberstar (D, MN), in August 2009 unveiled his draft bill to reauthorize the federal surface transportation program. The proposed Surface Transportation Authorization Act (STAA) would create a powerful federal regulatory authority not merely over PPP toll roads (both existing and new) but also over nearly all uses of tolling by state DOTs. The bill would create an “Office of Public Benefit” within the US DOT. It would abolish all existing toll pilot programs (e.g., the Value Pricing Pilot Program and the Interstate System Reconstruction & Rehabilitation Pilot Program) and make the use of tolling and PPPs subject to the approval or disapproval of the new

OPB. Thus, no proposal by a state to build a toll road or use a long-term PPP for a toll project could proceed unless and until the OPB approved the details of the long-term concession agreement and the toll rate schedule, as well as future changes to toll rates. And decisions by the OPB could be challenged in federal court.

Critics, including the National Governors Association, ARTBA and AASHTO, pointed to a number of problems with this approach. First, the level of detail required for OPB review would likely mean that its review could not take place until the end of a long and costly process of (1) pre-qualifying consortia, (2) evaluating responses to an RFP, and (3) negotiating a detailed concession agreement with the winning team. To place a potential veto (or deal-changing modifications) at the end of such a long and costly process would create so much risk that the private sector would likely not be willing to bid on such projects. Second, the measure would roll back what had been a steady liberalization of federal law on tolling and PPPs ever since the ISTEA reauthorization in 1991, since, among other things, this new federal regulatory approach would apply to projects on any federal-aid highway, rather than just on the Interstate system. Third, the imposition of federal regulation ignores both the strong incentives states have to protect the public interest in such deals and their growing track record in doing so.

The OPB and tolling provisions reflect an overall theme of STAA, which is toward much greater centralization of authority at the federal level. The nonpartisan Congressional Research Service's August 2009 analysis of the bill notes that the bill "reflect[s] policies that favor alternatives to the automobile, such as transit, bicycles, and walking." It does this in part by a major expansion of the transferability of highway funding to non-highway uses, by institutionalizing a number of non-highway programs in a new "Office of Livability," and by conditioning funding for Metropolitan Planning Organizations (MPOs) on their enacting "smart-growth" land-use plans.

As of mid-2010, no other reauthorization bills had been put forward, either by the Obama administration or by the Republican opposition in Congress. Transportation Secretary Ray LaHood has made statements from time to time suggesting that PPPs and tolling for new capacity are among the tools needed by states to cope with funding shortfalls. But the DOT's Draft Strategic Plan, released for comment in April 2010, is silent on PPPs and makes no explicit mention of tolling (although it does mention possible congestion pricing for urban freeways). Like the Oberstar bill, the Strategic Plan puts a heavy emphasis on centralization of transportation policy, generating criticism from AASHTO that it would reverse the federal program's historic nature as a "state-administered, federally-assisted program," and put the feds in the driver's seat. The plan also "makes no mention of increasing highway capacity as part of the solution," which is where tolling and PPPs have the most significant potential role to play.

As of this writing, the congressional calendar makes it unlikely that reauthorization will see action during the balance of 2010. While frustrating for road-builders and state DOTs, a delay until the new Congress convenes in early 2011 increases the odds of alternative legislative proposals that would be more friendly to new capacity, tolling and PPPs.

## Part 3

# New PPP Toll Roads

## A. PPP Enabling Legislation

After a flurry of legislative activity in 2009 (which saw general transportation PPP enabling legislation enacted in Alabama, Arizona, California and Puerto Rico), no such measures were passed in the first half of 2010. But other legislative efforts in this area are under way.

- Indiana:* Both Indiana and Illinois enacted bills to permit development of the proposed Illiana Expressway toll road (connecting I-65 in Indiana to I-57 in Illinois). That project had been on Indiana Gov. Mitch Daniels' PPP agenda during his first term, but could not obtain legislative approval then. The Illiana is expected to be a \$1 billion project. Indiana's legislation would also permit the use of a tolls/PPP project delivery mechanism for two new bridges across the Ohio River in the Louisville (KY) area.
- Michigan:* As of mid-2010, a transportation PPP enabling act had passed one house of the legislature but faced an uncertain future in the other house. The driving force behind the legislation is the desire of both Michigan DOT and the Canadian province of Ontario to fund a new toll bridge across the Detroit River, to supplement the limited capacity of the existing Ambassador Bridge and Detroit-Windsor Tunnel. The owner of the existing Ambassador Bridge has raised legal objections to a competing bridge and has put forward its own proposal to twin the existing bridge.
- Nevada:* State DOT officials failed to persuade legislators to enact a proposed pilot project PPP law in 2009, but plan to try again in 2010. The leading-edge project is a \$1 billion effort to create HOT lanes on I-15 and US 95 in the Las Vegas area.
- New York:* Lame-duck Gov. David Paterson's political problems led him to not appoint members to the proposed New York State Commission on Asset Maximization, intended to be the vehicle for infrastructure PPPs such as the replacement of the Tappan Zee Bridge. That task will fall to the next governor, Andrew Cuomo, who was elected in November 2010.
- Pennsylvania:* Support appears to be strong for a PPP enabling measure that would focus on new capacity projects (thereby avoiding the controversial subject of leasing existing toll roads). Among the projects discussed in recent years are express toll lanes on I-95 and the Schuylkill Expressway (I-76) in the Philadelphia area and completion of the Mon Fayette Expressway and the Southern Beltway in the Pittsburgh area. The legislation has been

introduced in a special session of the legislature called by Gov. Ed Rendell to deal with the state's transportation funding crisis.

## B. PPP Projects Financed

Two large toll PPP projects were financed during the waning months of the credit crunch of 2009–2010, both in Texas and both being developed by the same concession team. The North Tarrant Express is a \$2.1 billion project to add managed lanes (express toll lanes with HOV discounts) to I-820 and SH121 in Fort Worth. And the New LBJ Freeway (I-635) is a \$2.6 billion project adding managed lanes to that heavily congested freeway in Dallas. NTE reached financial closing in December 2009 and LBJ in June 2010. Both are being developed by the team of Cintra and Meridiam Infrastructure, in each case selected by competitive bidding as delivering the greatest value for the amount the state DOT (TxDOT) had available to invest.

Had the projects consisted solely of adding the new managed lanes, they could probably have been solely toll-financed, but both involve significant reconstruction of the freeways and frontage roads as well, and those roadway segments generate no toll revenues. Providing a portion of the equity investment for both projects is the Dallas Police & Fire Pension System, with the majority of the equity coming from Cintra and Meridiam. Both projects are using tax-exempt revenue bonds (Private Activity Bonds) as their senior debt capital, with subordinated debt from the federal TIFIA program. As reported by *Public Works Financing* and *Tollroadsnews.com*, the financial structure of the two deals is shown in Table 5.

Both long-term concession deals run for 52 years and include an array of public-interest provisions, including tolling principles consistent with the region-wide managed lanes policy adopted by the local MPO. In consideration of the TxDOT contribution to the project financing, both concession agreements provide for revenue-sharing with the state if and when toll revenues reach pre-defined levels in future years.

	NTE	LBJ
Equity	\$427M	\$665M
Senior debt (PABs)	400M	615M
Subordinated debt (TIFIA)	650M	850M
TxDOT contribution	<u>570M</u>	<u>496M</u>
Total	\$2,047M	\$2,626M

Source: *Public Works Financing*, *TollRoadsNews.com*

The fact that both of these \$2 billion-scale toll PPP projects were financed is an indication of the recovery in the infrastructure capital markets. In the prior year, the only two U.S. large-scale long-term concession projects to be financed were both based on availability payments as the revenue

source: the \$900 million Port of Miami Tunnel and the \$1.7 billion I-595 project (adding reversible managed lanes and reconstructing the entire freeway near Fort Lauderdale). Thus, in neither of those cases do the capital providers take on traffic and revenue risk. By contrast, both NTE and LBJ involve full-fledged traffic and revenue risk (as well as construction and completion risk) being taken on by the capital providers.

### C. Major Projects Status

States continue to pursue a number of major PPP projects and initiatives:

- Arizona:* With the 2009 enabling legislation in hand, Arizona DOT is gearing up to launch its PPP highway program, hiring legal and financial advisors. As of mid-2010, there is not yet an official list of high-priority projects, but a number of projects have been discussed in recent years. One would be the development of a network of managed lanes, via converting about 170 miles of HOV lanes to HOT and adding missing links to form a complete network. Another would be a bypass of I-10 through downtown Phoenix; other possibilities are the development of several long-planned freeways for which no conventional funding is available. The most dramatic possibility is the proposed new Interstate highway between Phoenix and Las Vegas, I-11, developed as a PPP toll road.
- California:* The state's new Public Infrastructure Advisory Commission selected the reconstruction of Doyle Drive—the principal approach to the Golden Gate bridge in San Francisco—as its first PPP project under the state's new PPP enabling legislation. The Doyle Drive replacement project (now called Presidio Parkway) had won a federal Urban Partnership Agreement grant in part because the original plan called for toll finance. But local political opposition killed the toll element, and without that revenue source, the PPP will be funded via availability payments. Other potential PPP projects include a replacement for the Gerald Desmond Bridge in Los Angeles, portions of the San Francisco Bay Area's HOT lanes network, the I-710 tunnel in South Pasadena, the High Desert Corridor north of Los Angeles, and the SR-91 HOT lanes project in Riverside County. On the negative side of the ledger, the state's only operational PPP toll road, the South Bay Expressway (SR-125) in San Diego County, filed for bankruptcy in March 2010, a victim of the southern California housing market collapse which drastically slowed development in the eastern portion of the county and led to traffic and revenue far below projections. The toll road continues to operate during financial reorganization.
- Florida:* Two large-scale PPP projects, the Port of Miami Tunnel and the reconstruction of I-595 in the Fort Lauderdale area, are both in the early construction stages as of mid-2010, both funded via availability payments (though the I-595 project will make use of variable tolls for its new reversible managed lanes). The next large PPP project, and the first that may make use of toll revenue financing, is the 46-mile First Coast Outer Beltway in the Jacksonville area. This \$1.8 billion project includes a major bridge over the St. John's

River. Wilbur Smith Associates submitted an updated traffic and revenue study in January 2010 and environmental studies are continuing, with a federal record of decision expected in January 2011.

- Georgia:* The State Transportation Board in December 2009 approved going forward with a \$16 billion managed lanes network for metro Atlanta. Georgia DOT intends to implement the network in phases over several decades, and plans to use the state's relatively new PPP enabling legislation for at least major portions of it. Early in 2010 GDOT announced that its first PPP project will be the "West by Northwest," which is to add managed lanes to I-75 and I-575 in the northwestern portion of the area and also on the western portion of the I-285 ring road, known locally as the Perimeter. Also high on GDOT's PPP projects list is the proposed \$3.7 billion North-South tunnel, which would extend southward from the current termination of the Georgia State Route 400 at I-85 to I-20 and I-675. The aim is to relieve congestion on the parallel Downtown Connector (I-75/I-85), the most congested portion of the freeway system. Another proposed project is the Gwinnett Connector, linking State Route 316 to Peachtree Industrial Blvd.
- Indiana and Illinois:* As noted previously, in early 2009 both legislatures approved enabling legislation to permit the new Illiana Expressway Toll Road to be developed as a PPP project. Estimated to cost \$1 billion, the road would be 25–30 miles long (depending on the final route choice).
- Indiana and Kentucky:* Indiana approved using a PPP approach for the \$4.1 billion joint effort with Kentucky to develop two new toll bridges across the Ohio River in Louisville; it has formed a bi-state commission with Kentucky for this project. The Ohio River Bridges project—which would construct two new Louisville-area bridges and a revamp of the existing Kennedy Interchange—received a federal record of decision in 2003 allowing it to move forward, but has been held up due to lack of funding (and resistance to tolls). A Wilbur Smith Associates traffic and revenue study in 2007 identified workable tolling strategies, and Kentucky resistance to tolls seems to have weakened due to the lack of other funding sources. In May 2010 KPMG won the contract to serve as strategic advisor for the project. And in June the Louisville and Southern Indiana Bridge Authority requested federal permission to toll three existing bridges in addition to the new ones to generate funding for the project.
- Maryland:* Though not a PPP toll road, Maryland's long-planned Inter-County Connector toll road is nearing completion and is expected to open at the beginning of 2011. It will operate with no toll booths or toll plazas, relying on all-electronic tolling as well as peak, shoulder and night-time rates. The toll road links I-270 on the west with I-95 and US 1 on the east.
- Michigan:* The focal point of PPP efforts here is the proposed Detroit River International Crossing (DRIC), a new toll bridge to supplement the inadequate capacity of the existing

Ambassador Bridge and the Detroit-Windsor Tunnel. The project has the support of Transport Canada, the government of Ontario and the Michigan DOT. DRIC would provide more-direct connections to I-75 on the U.S. side and H401 on the Canadian side than either of the existing crossings. The Ambassador Bridge Company has its own plans for a second span adjacent to its existing bridge, but neither government supports that alternative, in part because of poor connections to the major highways on either side of the river. A new traffic and revenue study was released in June 2010, and although it shows higher projected toll revenues than a previous study, it is not yet clear how much of the project's \$4 billion cost (including connectors) the toll revenue stream could support. About 80% of projected toll revenue would come from trucks.

- *North Carolina:* The North Carolina Turnpike Authority has three projects under way: the \$928 million Garden Parkway on the west side of Charlotte, the \$1 billion Triangle Expressway (TriEx) in the Raleigh area, and the \$650 million Mid-Currituck Bridge in the Outer Banks area. The first two are conventional state toll agency projects, but the latter may be developed as a 50-year toll concession. A competition in 2009 led to the selection of a team led by ACS Infrastructure Development to do all the preliminary work at its own expense in exchange for first dibs on negotiating a long-term concession agreement if the project appears feasible to develop that way.
- *New York:* As noted previously, the planned creation of the state's Asset Maximization Commission has been postponed until 2011 when a new governor takes office. That delays efforts to position the Tappan Zee Bridge replacement project for PPP development (and possibly other decaying state-owned bridges such as the Kosciuszko). Meanwhile, however, the Port Authority of New York and New Jersey already has PPP authority and is considering using it for the replacement of one or more of its ailing and obsolete bridges, including the Bayonne and the Goethals. In May 2010 the PA asked for private-sector expressions of interest in the latter, which is likely to be a \$1 billion project. It is also in the process of hiring a consultant to analyze the alternatives for the Bayonne Bridge. For the Goethals Bridge, although tolls will be charged, the PPP concession will likely be based on availability payments, according to the PA.
- *Puerto Rico:* In December 2009, Puerto Rico's Public-Private Partnerships Authority classified the island's three principal toll roads (PR-22, PR-66 and PR-52) as high-priority projects, i.e., among the first to be expanded and modernized as PPPs under the Commonwealth's new PPP enabling law. Two of the three need expansion and all need some degree of upgrading. In April 2010 the agency selected advisors for the PPP program, with Macquarie Capital selected for the toll road concessions. At mid-year, the Highways and Transportation Authority went out to bid for a bond defeasance advisor to figure out what portion of the agency's \$6.4 billion in bonds can be linked to the individual toll roads.

- *South Carolina*: The struggling Southern Connector toll road near Greenville, SC filed for bankruptcy in June 2010. The nonprofit entity set up to issue tax-exempt bonds for the toll road stopped making debt service payments on its bonds in January 2010. Traffic never reached more than 50% of projections, and revenue during the recession has been only one-third of projected levels. The Southern Connector was one of a handful of greenfield toll projects developed under a nonprofit corporation structure, none of which has proved successful.
- *Texas*: Four major PPP toll projects are under way in Texas, under now-repealed enabling legislation. South of Austin, the 40-mile portion of the SH-130 toll road (segments 5 and 6), funded with \$1.56 billion in private capital, is well along in construction by the Cintra/Zachry team. As noted previously, both the NTE in Fort Worth and the LBJ in Dallas have been financed and will soon be under construction. In October 2009 TxDOT signed the contract for a fourth project, the \$1 billion DFW Connector (SH-121 and SH-114) near the DFW Airport. Although that project does include some toll lanes, most of the project does not generate toll revenues, so it is being carried out as a design-build project.
- *Virginia*: The largest new PPP project is the Midtown Tunnel in the Norfolk/Hampton Roads area. This \$2.2 billion project would add a new two-lane tube to the existing Midtown Tunnel between Portsmouth and Norfolk, extend the Martin Luther King Freeway, and refurbish and toll the existing Midtown and Downtown Tunnels. The initial studies by the Skanska/Macquarie team found the project to be financially feasible, so the next stage will be negotiations on a possible long-term concession agreement. A second project would build a new toll highway parallel to US 460, from Suffolk (near Hampton Roads) to I-295 near Petersburg, a distance of 55 miles.
- *Washington*: Two major toll projects are moving forward in the Seattle area: the Alaskan Way tunnel and the replacement of the SR-520 floating bridge. The two-mile, double-decked tunnel is intended to replace the seismically questionable Alaskan Way Viaduct (SR-99), which would be torn down to permit redevelopment of the Seattle waterfront. In December 2009 Washington State DOT qualified four design-build teams for what is expected to be a \$1 billion contract to build the tunnel itself, using a tunnel-boring machine. Overall tunnel cost is put at \$1.9 billion, with total project cost (including redevelopment of the waterfront) at over \$4 billion. Replacement of the old SR-520 bridge with a new floating bridge will be toll-funded. With assistance from a federal Urban Partnership Agreement grant, WSDOT has generated public support not only to use tolling to help fund the replacement bridge, but to begin electronic tolling on the existing bridge in spring 2011 to generate more revenue sooner.

## Part 4

# HOT/Managed Lanes and Networks

The term “HOT (high occupancy toll) Lane” is gradually being supplanted by “managed lane,” which generally refers to any form of priced lane. And while individual ML projects continue to be developed (often as PPP concessions), the latest trend is for state DOTs and MPOs to plan entire networks of MLs. A brief recap of these developments follows.

- *Atlanta:* As noted previously, the State Transportation Board in December 2009 approved a \$16 billion plan to phase in a 300-route-mile network of managed lanes encompassing most of the metro Atlanta freeway system. The pilot project, a joint effort of GDOT and the State Road & Tollway Authority (SRTA), will convert 16 miles of existing HOV lanes on I-85 to Express Lanes. The go-ahead to let construction bids came in June 2010. Most parts of the network involving new construction will be done as PPPs, including the initial West by Northwest project (I-75 and I-575 outside I-285). Tier 1 of the network will also include converting existing HOV lanes within the I-285 Perimeter. The minimum occupancy policy for free passage on the network will be three or more. Tier 1 is estimated to cost \$3 billion.
- *Chicago:* A study by Wilbur Smith Associates, commissioned by the Illinois Tollway and the Metropolitan Planning Council, concluded that it would be feasible to add MLs to the Jane Addams Tollway (I-90) and the Stephenson Expressway (I-55) and to convert the currently non-tolled reversible express lanes on the Kennedy Expressway (I-90/94) to MLs. The study’s survey and outreach efforts discerned considerable support for optional congestion-relief toll lanes.
- *Dallas/Ft. Worth:* The 2030 long-range transportation plan for this metro area includes an extensive system of managed lanes and toll roads, encompassing the majority of the region’s expressway system. As noted previously, PPP concessions are being used to rebuild portions of I-635, I-820, SH-121 and SH-114 to add managed lanes, and the plans call for adding comparable facilities to a number of other freeways. Overall, the plan calls for 450 lane-miles by 2019 and 843 by 2030. The MPO has promulgated a set of managed lanes policies to ensure consistency in the operating concept and policies region-wide.

- *Houston*: In 2008 an ML network study for Houston was completed, funded by a federal Value Pricing grant. In 2009, Houston Metro announced that it will convert all 83 route-miles of existing HOV lanes on five radial freeways to managed lanes using federal stimulus funds; these are currently mostly single-lane reversible HOV lanes. At least one of those corridors, US 290, TxDOT plans for major reconstruction along the lines of the recently completed widening of the I-10 Katy Freeway. The I-10 project replaced the single reversible HOV lane with four tolled managed lanes and was a joint project of Houston Metro (HOV lane owner), TxDOT (freeway owner), and Harris County Toll Road Authority (toll revenue bond issuer and tolling operator). TxDOT's \$4 billion revamp of US 290 would likely add new managed lanes on a parallel highway while widening US 290 itself.
- *Indianapolis*: The Central Indiana Task Force released a transportation proposal in mid-2010 that includes adding tolled express lanes to two freeways in the Indianapolis metro area: I-69 and I-65.
- *Los Angeles*: Although the overall Los Angeles metro area is home to the nation's first managed lanes (on SR 91), that has remained the only ML facility in the region. But this situation is changing. Los Angeles Metro won a federal Congestion Reduction Demonstration program grant to convert existing HOV lanes on I-10 (the El Monte Busway) and I-110 (the Harbor Transitway) to managed lanes, and the planning for implementation of those two MLs is nearly completed. Both projects will be two lanes each direction. In a separate project, Riverside County plans to extend the 91 Express Lanes (which currently terminate at the Riverside/Orange County line) eastward to I-15. As noted previously, this is one of the projects that might be pursued under California's new PPP enabling law. Separate from these individual projects, a large-scale regional congestion pricing study is under way in the six-county metro area, which may propose an ML network embracing much of the region's congested freeway system.
- *Miami*: The region's only HOV lanes, on I-95 in southeast Florida, are in the process of being converted to MLs. The first phase took place in 2008–2009, replacing a single HOV lane each way between downtown Miami and the Golden Glades Interchange in northern Miami-Dade County with two tolled express lanes each way. The second phase, to begin in 2011, will extend those lanes to Fort Lauderdale. An FDOT planning study began in September 2009 on extending the I-95 MLs northward beyond West Palm Beach. A second ML project is adding three reversible MLs to the median of I-595 in the Fort Lauderdale area. And feasibility studies are under way on (1) converting the South Dade Busway into an ML facility, (2) adding MLs to the Palmetto Expressway (SR 826) in Miami, and (3) adding MLs to I-75 in Broward County. Given this level of activity, along with the existence of half a dozen toll roads in the metro area, FDOT commissioned a 2008 feasibility study of an ML network in Miami-Dade and Broward Counties, released in January 2009. A follow-up study, expanding the scope to include Palm Beach County, is currently under way.

- *Minneapolis/St. Paul:* After several years of successful operation of its MnPASS ML facility on I-394, the Twin Cities is completing the implementation of its second ML project, on I-35W. For part of its 16-mile length, existing HOV lanes were converted; for another section, the shoulder lane was converted to a managed lane for use during peak periods only, and on the remaining section, an additional lane was added. The popularity of these two projects has revived interest in a network of such lanes. In late 2009 Gov. Tim Pawlenty directed MnDOT to do a “next stage” MnPASS study to pursue more PPPs and innovative finance and to study possible MLs for I-94, the major east-west freeway linking the two downtowns.
- *San Diego:* This region’s MPO, SANDAG, was the first in the nation to include a network of managed lanes in its long-range transportation plan. The first component of the network is well along in construction, widening and lengthening the initial I-15 reversible HOT lanes to a much larger four-lane, 20-mile facility with a movable barrier to accommodate three lanes operating in the peak direction and one in the non-peak direction. Direct-access ramps will link major arterials and park-and-ride lots directly to the managed lanes. Future plans call for adding MLs on I-5, I-805, and SR 52. SANDAG’s plan emphasizes carpooling and express bus service, so it plans to retain HOV-2 as its occupancy level for no-charge access to the network. That will significantly reduce the potential revenue, but SANDAG is using local transportation sales tax money, rather than toll revenues, as its primary funding source.
- *San Francisco:* In 2008 the region’s MPO, the Metropolitan Transportation Commission, approved a \$4.8 billion plan to develop an 800-mile ML network for the Bay Area, of which 500 miles will be conversions from HOV lanes and 300 miles will be new construction. Flyover ramps will be added at six major freeway interchanges to provide seamless connections from one ML to another. Most of the network will be one lane per direction. Studies recommend an occupancy minimum of HOV-3 for no-charge access in order to generate sufficient revenue to pay for the system, but the politics of making that policy decision are still uncertain. The initial target date for having the basic ML network in place is 2020. Meanwhile, the region’s first two ML projects are moving closer to opening to traffic. The first, on I-680, opened in September 2010, while similar MLs on I-580 will open in 2011 (eastbound) and 2010 (westbound).
- *Seattle:* As the result of an extensive Vision 2040 process carried out by the MPO (Puget Sound Regional Council), the region’s mayors have endorsed an ML network spanning 300 route-miles of the regional freeway system, in addition to the tolled bridges and the new tolled Alaskan Way Tunnel. The network will be built by converting the existing HOV lanes and adding new lanes to (1) fill in gaps in the HOV network, and (2) add a lane to permit two MLs in each direction in the most congested corridors. Tentative plans aim to have the initial network in operation as early as 2020. A possible future step would be to put some form of pricing on most or all of the remaining freeway lanes.

- *Washington, DC*: The metro area has several ML projects under way, at various stages. The \$2 billion Beltway (I-495) project began construction in 2008 and is being done under a 75-year PPP concession by a Fluor/Transurban team. The project is adding two MLs each way to 14 miles of the highly congested Beltway, from the Springfield interchange on the south to Tysons Corner and the Dulles Toll Road. In June 2010 the consortium proposed an extension of the MLs northward to the American Legion Bridge over the Potomac River. The same team has proposed expanding and converting the HOV lanes on I-95/395 approaching Washington, DC from the south into a three-lanes reversible ML project, but that project has generated local opposition, including a lawsuit. The region's MPO, the Metropolitan Washington Council of Governments, completed a feasibility study of a region-wide ML network in 2008, but no decision has been made about including it in the long-range transportation plan.

## Part 5

# Overseas Concession Highway Projects

## A. Overview

Under the long-term concession model, the private sector designs, finances, builds, operates and maintains a roadway, bridge or tunnel for an extended (30- to 99-year) period and then hands it back to the government in good condition. This model has a long history outside the United States, originating in post-World War II Europe as the principal means for France, Italy, Portugal and Spain to develop modern superhighway networks. In Europe some of the toll road companies were investor-owned from the outset, whereas others were either state-owned or a mixture of state and investor ownership.

During the past decade, the governments of France, Italy and Spain sold off their remaining ownership stakes in toll road companies, putting major firms into what has become a global marketplace. Where a previously state-owned toll company had held, de-facto, permanent ownership of its toll roads, upon privatization of the company the government defined a concession term of a fixed number of years. Hence, while the companies are traded on stock exchanges, their value is based on the income from their concession agreements, not on actual ownership of the roadways they operate.

During the 1990s in particular, and continuing into the new century, the toll concession model spread to Australia and to East and South Asia (especially China and India), Latin America and much of Central and Eastern Europe. The emphasis in the Asia-Pacific and Eastern/Central European countries has been on the development of greenfield toll roads, both urban and inter-city. In Latin America, the primary focus has been on upgrading existing two-lane inter-city highways into modern, four-lane divided toll roads.

## B. Canada

The only true PPP toll road in Canada is Highway 407 in Toronto, which celebrated its 10<sup>th</sup> year of privatized operation during 2009. Called 407 ETR (Electronic Toll Route) in recognition of its complete absence of toll booths, the core segment was built as a public-sector toll road in the 1990s but was leased for 99 years in 1999, for C\$3.1 billion (which retired the Ontario government's C\$1.6 billion in toll revenue bonds). Since taking over, the 407 ETR Concession Company (a joint

venture of Cintra, Intoll, and SNC-Lavalin) has invested more than C\$1 billion on eastward and westward extensions, interchanges and lane additions. In the first quarter of 2010, traffic grew 2.2% and revenues increased nearly 10%. The Ontario government has announced plans for 29 km. worth of extensions to the 407's eastern terminus, estimated to cost up to C\$8 billion, to be procured on a design/build/finance/maintain basis. Whether or not 407ETR becomes the successful bidder, the extensions will add significant traffic to the existing toll road.

Canada's other PPP highway projects are concessions based on availability payments. That is true of the Sea-to-Sky Highway, the South Fraser Perimeter Road, and (tolled) Golden Ears Bridge project in British Columbia; ring roads around the Calgary and Edmonton metro areas of Alberta; the Disraeli Bridges in Winnipeg; and the Route 1 widening project in New Brunswick. One large project that was intended to be a toll-financed concession—the Port Mann Bridge in Vancouver, BC—fell victim to the credit crunch in February 2009. The bridge, now under construction, is being financed by the BC government and procured as a design-build project. Quebec, too, is making use of availability payment concessions for the C\$400 million A25 highway and toll bridge project in Montreal and the C\$1.2 billion A30 bypass route south of the city. Another possible PPP concession is extending the Windsor-Essex Highway to the site of the planned Detroit River International Crossing between Detroit, MI and Windsor, Ontario.

### C. Asia/Pacific

***Australia and New Zealand:*** Australia was a pioneer of toll road concessions in this region, beginning with the Sydney Harbor Tunnel in the 1990s. With the completion of the Lane Cove Tunnel in 2008, Sydney now has an “orbital” (ring road) consisting of six toll-concession highways and tunnels, as well as the separate M4 and Cross City Tunnel concessions. Australia has used toll road concessions for two decades, and the M4, its first such project, reached the end of its original 20-year concession in February 2010. The New South Wales government at that point resumed control—and proceeded to abolish the tolls, meaning that congestion on the M4 is almost certain to increase, and the roadway will lose a critical funding source for ongoing maintenance, expansion and eventual rebuilding.

Sydney's two newer tunnels, Cross City and Lane Cove, both went into receivership due to traffic running far below projections. The A\$1 billion Cross City Tunnel was placed in receivership in December 2006 and auctioned off to a replacement concession company for A\$700 million. The A\$1.6 billion Lane Cove Tunnel entered receivership in January 2010 and was purchased by Transurban for A\$630 million. In both cases, the intended risk transfer feature of long-term concessions worked as planned. There was no taxpayer bailout; only the original investors lost money.

Victoria was another PPP toll road pioneer with its successful Melbourne CityLink, the continent's first cashless toll road, developed and operated by Transurban. The state's second PPP toll road, the 24-mile A\$2.5 billion EastLink Motorway in the Melbourne suburbs, opened in mid-2008 to

disappointing traffic numbers, thanks to the recession. By mid-2009, however, traffic had increased by 18% and revenue by 22%, and the outlook for the toll road now looks more promising. Victoria's third highway concession, the A\$759 million Peninsula Link, is being done as a design/build/finance/operate concession financed via availability payments—the first use of this method in Australia.

Much recent concession activity centers on Queensland, where several major projects are under way in Brisbane. The third such project—the A\$4.8 billion Airport Link toll tunnel—began construction in late 2008 despite serious financial difficulties due to the credit market collapse. Two huge tunnel-boring machines from Germany are now at work on the project. The A\$2 billion Clem Jones Tunnel opened in March 2010. The total project is 6.8 km. in length, of which 4.8 km. consists of twin-bore tunnels beneath the Brisbane River. It was developed under a 45-year toll concession. The A\$1.9 billion twinning of the Gateway Bridge was completed with a grand opening in May 2010. The opening included the elimination of cash tolling on both spans, replaced by all-electronic tolling.

New Zealand's first modern toll road opened in January 2009—the 4.7 mile NZ\$215 million Northern Gateway Toll Road to Auckland's northern suburbs. It uses open-road video tolling, with off-line cash options. The country's first PPP concession highway may be the planned NZ\$1.5 billion 4.5 km. Waterview Connection, which would be the last link in the Western Ring Route around Auckland. If done as a PPP project, it would be financed based on availability payments. In July 2010, the government announced that the 23 km. Tauranga Eastern Link will be built as a toll road, which will enable the NZ\$455 million project to be completed seven years earlier than otherwise.

**China:** Hong Kong pioneered toll concessions for several harbor crossings, and in the last two decades China has taken up the idea in a major way. As of the end of 2008, Tollroadsnews.com reports 60,300 km. of tolled expressways were in operation, nearly all developed under long-term concessions. The goal is to complete a toll road network of 85,000 km. (53,000 mi.) by 2020. Most of the investment has come from domestic sources, but China has gradually opened up to outside investment in toll projects. In August 2008 China Infrastructure Investment Corp. secured a listing on the NASDAQ exchange. Most other publicly traded Chinese toll road companies are listed on the Shanghai and Hong Kong stock exchanges.

Some of the Chinese toll concession projects are impressive engineering feats. One is the world's longest ocean crossing: the \$2 billion, 36 km. long, six-lane Hangzhou Bay Bridge, which opened to limited traffic in July 2008. Another is the \$1.9 billion Changjiang Tunnel-Bridge Expressway linking Shanghai's Pudong area to Chongming Island. It includes a 10 km. cable-stayed bridge and 8.9 km. twin 50' 6" tunnels under the Yangtze River. An estimated 40 to 50 large-scale tunnel-boring machines are at work on such projects in China with diameters ranging from 37 to 50 feet.

**India:** This country's ambitious highway concession program was announced in early 2008. It was intended to include 175 toll concession projects encompassing nearly 18,000 km. with private

investment of \$27 billion. The government also opted for revenue-sharing, rather than upfront concession payments. A number of concessions were awarded during 2008, but the credit market crunch slowed things down considerably in 2009. In early 2010 Transport Minister Kamal Nath announced a revised program, in which the government is seeking \$41 billion in private-sector highway investment over the next four years; the plan now is to build 15,000 km. of roads, of which about half would be privately financed and developed. Nath told a *Wall Street Journal Asia* conference in March 2010 that as many as nine megaprojects will be announced during the year.

**South Korea:** Toll concessions are a key tool for delivering major infrastructure projects in South Korea. Opening late in 2009 was the 12.3 km. Incheon Bridge, which includes a 1.5-mile cable-stayed main span. The \$1.6 billion project links Incheon City with Yeongjong Island. The even bigger \$1.8 billion Busan-Geoje fixed-link project is expected to open in 2010. The 8.2 km. project includes a 3.2 km. immersed tunnel and two cable-stayed bridges. It is being developed under a 40-year toll concession by a seven-company consortium led by Daewoo. The fixed link will shorten the distance from Busan (South Korea's second-largest city) to Geoje from 140 km. to 80 km., saving 60 km. of travel.

**Vietnam:** The first toll concession highway in this formerly Communist country got under way in April 2010. According to the Nhan Dan news agency, the 15.7 km. toll expressway is being undertaken by the Ho Chi Minh City Infrastructure Investment Joint Stock Company. Groundbreaking took place in April and the \$120 million toll road is expected to be in operation by 2012. In late 2007, *Public Works Financing* reported that the Asian Development Bank planned to assist the government with a 244 km. \$1.2 billion toll road from Hanoi to Lao Cai on the Chinese border.

## D. Latin America

**Brazil:** South America's largest country continues to have the largest toll concession program. The global fiscal crunch led to the delay or cancellation of some concession projects, but the market seemed to have recovered by the second half of 2009. At the federal level, OHL is proceeding with a \$2.8 billion concession, awarded in 2007, to upgrade over 2,000 km. of federal highway to modern, limited-access toll roads. Late in 2009 the legislature approved plans to implement nationwide sticker tags, initially as electronic license plates but also suitable for nationwide tolling. Brazil's states are also awarding toll concessions. In early 2009 Sao Paulo State signed five 30-year concessions covering the upgrade of 1,700 km. of state highways. Later in 2009 it awarded a 135 km. toll concession to EcoRodovias, expected to cost \$456 million. In early 2010 that company raised \$774 million in an initial public offering (IPO) of shares on the Sao Paulo stock exchange, the first toll road IPO in Latin America. The company holds concessions covering over 1,450 km. of toll roads. The state is also upgrading Sao Paulo's ring road. CCR did the first 31 km. under a 35-year concession, and two additional sections will be concessioned in 2010. The remaining north section may be concessioned in 2013 or 2014. And the state of Bahia has awarded

a 25-year concession to an Odebrecht-led team to upgrade five highways in the Salvador metro area at a cost of \$447 million.

**Chile:** Chile has the most sophisticated toll concessions in Latin America. Over \$3 billion has been invested in a dozen major inter-city toll projects totaling more than 2,000 km., mostly created by upgrading existing highways to limited-access toll roads (as in Brazil). But Chile has also seen the development of a set of all-new urban toll roads in the capital of Santiago. Developed and operated by several different concession companies, they use an interoperable all-electronic toll system. Southern Chile's 8.8 magnitude earthquake on Feb. 27, 2010 led to about \$140 million in damages to the country's toll roads. About 100 km. (out of 2,200 km.) were affected, with damage mostly to overpasses and pedestrian bridges. Most of the cost of repairs will be covered by insurance. Prior to the quake, in January 2010, the government enacted a revised concessions law, including a new Concessions Council to advise the government, a technical panel to settle disagreements, and a revamped measure on enforcing toll payments, under which car registrations can be withdrawn until toll bills are paid.

**Mexico:** America's southern NAFTA partner was one of the pioneers of toll concession projects in Latin America, but its initial program in the 1990s was poorly structured, resulting in most of the projects being taken over by the government. Most of them are gradually being re-privatized. In addition, the government continues to offer concessions for new toll roads. In December 2009 the government introduced legislation to extend the maximum term of concessions to 50 years, as well as to give investors access to state bank credit to assist with the financing of PPP deals. Like Brazil, Mexico is introducing electronic vehicle registration nationwide in the form of sticker tags that can also be used nationwide for electronic toll collection. And spurred on in part by a 2009 law that allows pension funds to invest in infrastructure, Macquarie Capital has launched a new Fondo Infraestructura Macquarie Mexico that has attracted \$266 million from seven Mexican pension funds. The government is having mixed success with auctioning off its older toll roads, with no bids exceeding its undisclosed reserve price for the 30-year Paquete de Noreste concession that includes two operating toll roads and bridges to the United States. But it succeeded in offering a portion of a previous package of toll roads, the Pacifico Norte. The \$649 million project will upgrade the 181 km. toll road between Mazatlan and Culiacan. Concessions for new toll roads include the \$936 million expansion of the Viaducto Bicentenario elevated tollway in Mexico City, a 9 km. \$568 million section of the Mexico City beltway, and the upgrading to toll roads of 271 km. of highways in Michoacan.

**Colombia:** Several major toll concession projects are under way in Colombia. One is the 1,000 km. Ruta del Sol, for which the government in January 2010 awarded concessions for over 600 km. (Sectors I and II) and was in the process of evaluating bids on Sector III in mid-2010. A second major concession is the Transversal de las Americas, about 1,100 km. from the Panama border to the Venezuelan border. This project, estimated at over \$800 million, will upgrade an existing highway to a modern toll road. A third concession was awarded to state-owned electricity transmission company ISA (which recently acquired a 60% interest in Cintra's Chilean toll roads).

This 40-year concession will involve \$2.8 billion to upgrade 1,250 km. of highways into toll roads in Antioquia province.

**Costa Rica:** The first toll concession highway in Costa Rica opened in May 2010. The 77 km. highway links the capital city of San Jose with Caldera on the Pacific, cutting the travel time in half to 90 minutes. The \$360 million toll road was developed under a 25-year concession by a consortium headed by Global Via. A second such toll road has been proposed between San Jose and San Ramon.

**Peru:** Concession companies are hard at work on two major projects in Peru. One set of 25-year concessions covers major upgrades to Peru's portion of the Pan American Highway (Ruta del Sol). The other major project is a 2,500 km. highway system linking Brazil's Amazon region with three ports on Peru's Pacific coast. Once the three roads (Norte, Centro and Sur) are completed, by late 2010 or early 2011, they will cut the travel times from Brazil to the Peruvian coast significantly, since the project is replacing non-paved roadway with asphalt-pavement. Some stretches will have two lanes, others four.

## E. Europe

**Russia:** Concession toll roads have been discussed in Russia for the past decade, amidst considerable skepticism. Two very large and ambitious projects have received most of the attention—a tolled superhighway between Moscow and St. Petersburg and a tolled beltway around the latter city. A competition was held to select a concession team for the latter in 2008, but by mid-2010, the winning team (led by Strabag, from Austria) had yet to negotiate a final concession agreement for the \$7.7 billion project. But two other toll concession projects reached financial closings in late April 2010, thanks in part to the Russian government agreeing to guarantee their bonds. One is the \$850 million Odintsovo Bypass, linking downtown Moscow to the Moscow-Minsk highway, to be developed by a consortium of FCC, Brisa and Alpine. The other is the first 43 km. of the Moscow-St. Petersburg toll road. This project, on the Moscow end of the route, has a price tag of \$2.1 billion, of which \$787 million is coming from the federal budget, plus a \$1.1 billion loan from OAO Sberbank and revenue bonds. The consortium is led by Vinci.

**France:** The first segment of the seven-mile A86 Duplex tunnel opened in June 2009. The overall \$2 billion tunnel provides the missing link on the A86 ring road around Paris, originally planned as a surface expressway through the historic Versailles area. Cofiroute's innovative proposal to finance, develop and operate the project as a deep-bored tunnel, financed by congestion-priced tolling, was the breakthrough that led to this missing link finally being completed. Tunnel-boring for the remaining four miles was completed in 2009, and it is expected to open by the first quarter of 2011.

All of France's tolled motorways are operated by concession companies, some of which are former state-owned firms that were privatized in 2005. Recent concessions include the \$536 million

Millau Viaduct, the world's highest bridge (and longest cable-stayed bridge), developed by Eiffage under a 75-year concession and opened to traffic in 2004. In spring 2010 the French concession companies reacted negatively to a government proposal to increase the land tax on their roadways by 179% and vowed to fight it. Earlier in 2010, state-owned bank Caisse de Depots launched its CDC Infrastructure Fund, which aims to invest up to \$2 billion over the next five years in both existing assets and new PPP projects, mostly in France.

**U.K. and Ireland:** England has few tolled projects, all of them developed as concessions with the private sector. The only actual toll road (as opposed to toll bridges), the M6Toll near Birmingham, provides an alternative to the frequently congested M6 motorway. Thanks first to record-high fuel prices in 2008 and then to the recession, traffic on both M6 and M6Toll dropped significantly in 2008–2009, recovering somewhat in the first half of 2010. The M6Toll's high debt level and lower-than-forecast traffic led Standard & Poor's to downgrade its bond rating from BB to B+ in May 2010.

Britain nevertheless has a thriving highway concession industry, thanks to the country's overall Private Finance Initiative for infrastructure PPPs. In the highway sector, these projects are financed based on either shadow tolls or availability payments. A dozen design/build/finance/operate (DBFO) highway concession agreements are operational.

The largest of these is the \$9.4 billion (life-cycle cost), 30-year concession to widen and operate the principal London beltway, the M25. A consortium led by Balfour Beatty and Skanska won the bidding in July 2008, but financial closing was delayed by the credit crunch. The deal finally closed on May 20, 2010, raising \$1.4 billion in senior debt from a group of 16 banks, along with sponsor equity of \$300 million and a loan of \$280 million from the European Investment Bank.

Scotland has several shadow toll concession projects under way, using the DBFO model.

Ireland has done both toll concession projects and DBFO concessions based on availability payments. The most recent toll concession is the \$910 million Limerick Tunnel, awarded in 2006 and opened two months ahead of schedule in July 2010. In March 2009 the National Roads Authority authorized four new DBFO highway projects to be financed via availability payments.

**Italy:** As with France, all of Italy's motorways are operated under long-term concessions, with Autostrade as the largest toll company. In anticipation of the 2014 Milan World Trade Fair, a consortium led by Autostrade and Impregilo has financed a \$2 billion project to build and operate the 33 km. missing link in the eastern part of Milan's ring road, under a 50-year concession. A second major project will build a 151 km. largely sunken expressway, of which 87 km. will be tolled, between Bergamo and Varese, north of Milan, at a cost of \$6.5 billion. A third tollway will be the 82 km., \$3 billion road from Milan to Bergamo. Spain's Sacyr won a legal dispute, enabling it to proceed with a \$3.3 billion, 90 km. toll road linking Vicenza and Teviso north of Venice. And a regional consortium has been awarded a 40-year concession for the \$1.5 billion, 60 km. toll expressway Autostrade Regionale Cispadana between Reggiolo and Ferrara.

***Spain and Portugal:*** Spain's large and diverse concession toll industry developed out of the government's reliance on toll concessions to develop its initial motorway system in the 1960s and 1970s, totaling 2,000 km. by 1991. Government policy under the socialist regime in the 1980s turned against toll roads, and policy shifted toward developing non-tolled "autovias." Several financially struggling toll concession companies were nationalized by the government (only to be reprivatized in 2003). The 1990s saw a revival of toll concessions, under a conservative national government. But the early 2000s saw yet another change of government and of highway policy, this time retaining concession companies but shifting new projects to shadow tolls. Regional governments are also pursuing such non-toll concession projects.

A major problem for Madrid-area toll roads resulted from a 2009 Supreme Court decision that the payments due to landowners for the rights of way used for these toll roads should be 20 times higher than what was originally paid. The total for three radial toll roads and two others is put at \$2.9 billion. The concession companies have asked the government to "rebalance" the concession agreements to enable them to survive, and as of mid-2010 negotiations were under way on possible low-interest-rate loans.

Portugal likewise has gone through several shifts of policy, beginning with toll concessions mostly carried out by state-owned companies such as Brisa that were eventually privatized. In the 1990s, Portugal shifted primarily to concessions financed via shadow tolls, on a DBFO basis. In 2006, the government decided that the future liabilities created by these long-term concessions were unaffordable and began negotiating with the concession companies to transition them to electronic tolling, so as to phase out shadow toll payments. In late 2007 it assigned responsibility for concessions to Estradas de Portugal (EP), a state agency with the power to toll existing roads and to offer concessions to private companies under toll-sharing deals. In 2008 EP announced it would proceed with nine availability-payment concessions to upgrade 1,500 km. of highways, which will be tolled but are not expected to be self-supporting from toll revenue. Two such 30-year concessions were awarded in 2008 and 2009, under which toll revenues will go to EP, while the concession company will get most of its revenue from availability fees and the rest based on traffic volumes (i.e., shadow tolls). But with shadow tolls and availability payments estimated to have cost the government \$950 million in 2009, Portugal's Court of Auditors in early 2010 rejected nearly all the concession contracts awarded by EP, and at mid-year, negotiations on resolving the issue were continuing. Meanwhile, conversions from shadow tolls to real tolls are under way on some of the country's concession highways.

***Germany:*** The land of the non-tolled autobahn has not adopted tolling, except for heavy trucks and an occasional toll bridge or tunnel (such as the Herren Tunnel in Lübeck). Instead, the government has adopted a variant of shadow toll that it calls "A-model highways." The projects offer companies a 30-year concession to upgrade an existing highway, financed by fees linked to traffic volumes. The government is using some of its revenues from its national heavy truck tolling scheme to pay for its shadow-toll commitments. The last of the four A-model concessions was awarded in early 2009 to a consortium led by Vinci. In June 2008, Transport Minister Wolfgang Tiefensee announced that the federal government would authorize eight more concession projects with a combined value of \$2.4 billion.

***Eastern and Central Europe:*** In most of this post-Communist region, the economies are not yet strong enough to support motorway-quality highways solely from toll revenues. Thus, we see a mixture of tolling, shadow tolling and availability payment concession projects, with significant debt being provided at low interest rates by government development banks.

Hungary's showcase project is the M6 motorway from Budapest southwards. In spring 2010, the last 200 km. of this highway were opened to traffic, having been developed under three concessions totaling \$2.7 billion. The concession companies are paid availability payments, part of the cost of which is recouped from road users via purchased window stickers called vignettes. *Public Works Financing* reported in April 2010 that in light of the credit crunch, the government is "looking at how to reduce [its] commercial debt in financing future highways." Poland has used concessions for major portions of its new A1 and A2 motorways. On the \$1.8 billion western section of the A2, from the German border to Poznan, tolls will be charged but the concession company will be paid by means of availability payments. The same model is being used on the A1, which extends southward from Gdansk. The Slovak Republic has three concession motorways, of which the third began construction in February 2010, at a price of \$2.7 billion. Its financing is based on availability payments. Bulgaria and Romania each have concession projects under way, funded by a mix of tolls and availability payments.

## **F. Africa**

Until recently, South Africa was the only country in Africa making use of long-term concessions for highways. Its large professional state toll agency, SANRAL, has 1,832 km. of its own toll roads and oversees another 1,288 km. developed and operated by concession companies. SANRAL has a massive expansion and modernization of the Johannesburg metro area expressway system under way—the Gauteng Freeway Improvement Program. The \$2.7 billion project began in 2007 and is targeted for completion in 2015. Phase I involves widening major expressways and adding new ones, encompassing 185 km. Phase II will add another 180 km. of completely new road, along with upgrading others, for a total of 560 km. The entire system will be electronically tolled.

Now neighboring Mozambique is joining the toll concession trend. A consortium headed by Portuguese firms Mota-Engil and Soares da Costa has won a 30-year concession to design, build, finance, operate and maintain 700 km. of highway in Tete province. It includes taking over the existing Samora Machel Bridge over the Zambeze River and constructing a new one—the New Tete Bridge—as well as upgrading the N7, N8, N9 and N34 national highways. As reported by *Infrastructure Investor*, revenues to support the financed project costs will come initially from tolls on the existing bridge plus existing border taxes along the route. The new bridge will also be tolled, and the government is said to be receptive to tolling on the highway section between Colomue and Zobue. Should that materialize, the concession is expected to become a fully tolled concession, no longer supported by border taxes. The government is also providing minimum-revenue guarantees and will allow annual inflation adjustment of the toll rates.



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