Market Overview of U.S. Highway and Bridge Public Private Partnerships

With Application to the Southern State Parkway

August 4, 2022

American Road & Transportation Builders Association

Outline

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  - Breakdown of different uses, delivery models, and financing methods
  - Benefits and risks of P3

- P3 Activity in the United States
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- Insights from Existing P3 Work
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- Southern State Parkway (SSP) Application
  - Introduction to the SSP and its infrastructure challenges
  - LITP 2000 study recommendations for the SSP
  - P3 adaptation of the LITP 2000 proposal
  - Project profiles of existing P3s with related characteristics

Executive Summary

- **Over the last three decades, 53 transportation-related P3 projects reached financial close in the US, totaling about $71.3 billion (nominal) in project costs.**
  - Despite lacking comprehensive enabling legislation, New York has leveraged the P3 model to successfully deliver three major transportation projects (Goethals Bridge Replacement, LaGuardia Airport Central Terminal Redevelopment, Moynihan Train Hall Conversion).

- **The P3 model can create value for the public by expanding project opportunities, accelerating project schedules, delivering innovation/quality improvements, lowering transaction costs, and transferring risk.**
  - Best practices have evolved to help ensure P3 models deliver ongoing public value, effectively align public and private interests, and balance risk considerations.

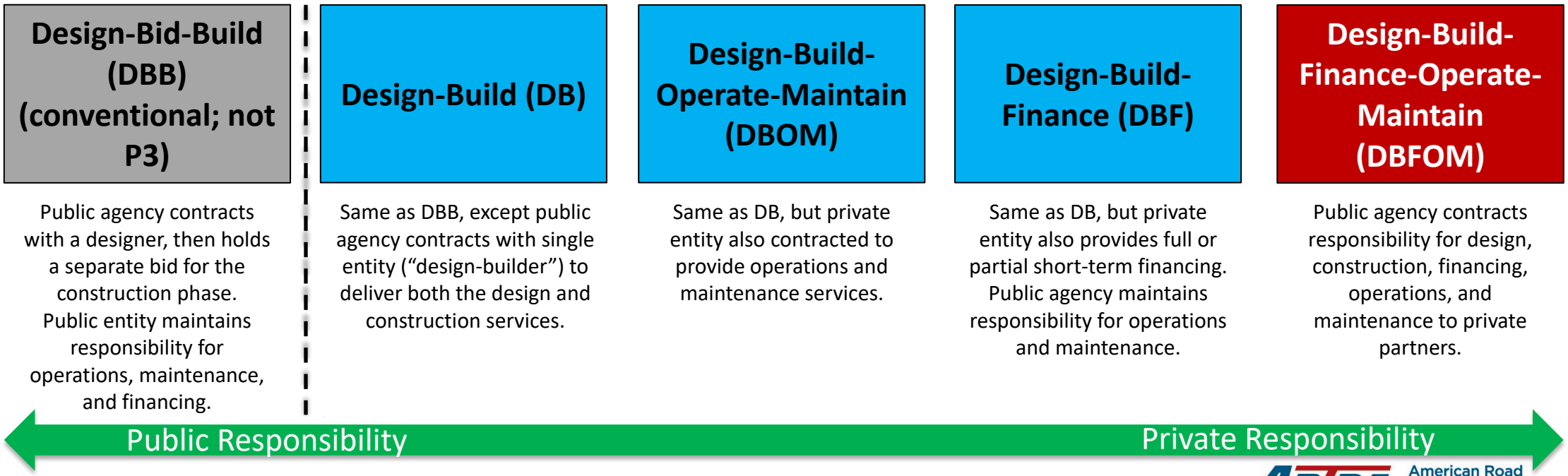
- **The Long Island Contractors' Association (LICA) recommends revisiting and expanding previous proposal (LITP 2000) to improve safety and congestion on the Southern State Parkway (SSP), potentially using a P3 model.**
  - Population in Nassau/Suffolk counties has nearly tripled since 1950 without any major improvements to the SSP.
  - In 2019, there were 1,138 accidents on the SSP resulting in injury or death (a 16% increase over 2012).

- **The proposal suggests adding two additional travel lanes on the SSP that function as high-occupancy toll (HOT) lanes and implementing the LITP 2000 plans to reconstruct 50 bridges and deliver roadway improvements.**
  - Future toll revenue could be dedicated in P3 framework to help finance the project.
  - ARTBA has identified and profiled similar projects from across the country that were successfully advanced using a P3 delivery model.

What is a P3?

- Public-Private Partnerships, or P3s, are defined by the FHWA as "contractual agreements between a public agency and a private entity that allow for greater private participation in the delivery of transportation projects."
- There are many types of P3 arrangements for transportation construction projects, which can vary by delivery model, extent of risk transfer, contractual configuration, payment mechanism, and financing structure.
- This report focuses mostly on the DBFOM model to quantify P3 construction activity, which involves the largest transfer of responsibility and risk to the private sector.
  - The DBFOM model is often used interchangeably with "P3," whereas design-build (DB) procurement and other models that do not transfer financial and/or operational control are not always considered true P3s.

P3 Delivery Models for Transportation Construction



Sources: Federal Highway Administration, KPMG.

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Use of P3s for Transportation Infrastructure

- In addition to building new assets, P3s are also used in the transportation space to lease existing facilities.
- The market overview in this report categorizes P3 activity by financing method for both new construction and the lease of existing assets:

Build New Facilities

Used for construction, modernization, expansion, or upgrade of public surface transportation assets

Financing Methods:

1. DBFOM Toll Concessions
2. DBFOM Availability Payment Concessions

Lease Existing Facilities

Used for leasing publicly-tolled transportation assets to a private partner in exchange for operation, maintenance, and in some cases improvement

Financing Methods:

3. Long-Term Lease Concessions

The Port of Miami Tunnel was constructed under a P3 DBFOM Availability Payment concession structured in 2009.

Operations of the Chicago Skyway Toll Bridge were awarded as a P3 lease concession in 2004.

Photo Sources: Florida Department of Transportation (top); MILLER+MILLER Architectural Photography (bottom).

Source: Federal Highway Administration.

Design-Build-Finance-Operate-Maintain (DBFOM) Toll Concessions

- Under a DBFOM toll concession, a private party finances design, construction, operation, and/or maintenance costs in exchange for future toll revenues.
- The private party bears the downside risk of costs exceeding toll revenues during the concession period.
- Should toll revenues exceed certain thresholds during the concession period, some arrangements also include revenue-sharing provisions with the public entity.

Project Types

Toll Road Construction

Construction of toll roads in areas previously without highway facilities. The lack of established driving patterns in these areas creates revenue uncertainty, which can imply a significant risk transfer from the public to private entity.

Priced Managed Lanes

Construction of designated lanes or roadways within existing highway corridors, where traffic flow is managed by eligibility restrictions, access limits, or variable tolling. Revenue forecasting can still be complex for these projects, despite the availability of historical traffic data.

Waterbody Crossings

Construction or capacity expansion of tolled bridge or tunnel water crossings. For projects spanning multiple jurisdictions, different P3 legislation in each area can affect project financing and logistics.

Source: Federal Highway Administration.

Design-Build-Finance-Operate-Maintain (DBFOM) Availability Payment Concessions

- Under a DBFOM availability payment concession, a private party finances design, construction, operation, and/or maintenance costs in exchange for availability payments (i.e., performance payments).

- Unlike under a toll concession arrangement, the public entity maintains project revenue risk during the concession period, whereas the private entity receives predictable payments subject only to state default risk.

- Availability payments are financed through the state budget using traditional revenue sources (e.g., state gas tax, federal transfers) and sometimes supplemented with toll proceeds or other transportation revenues.

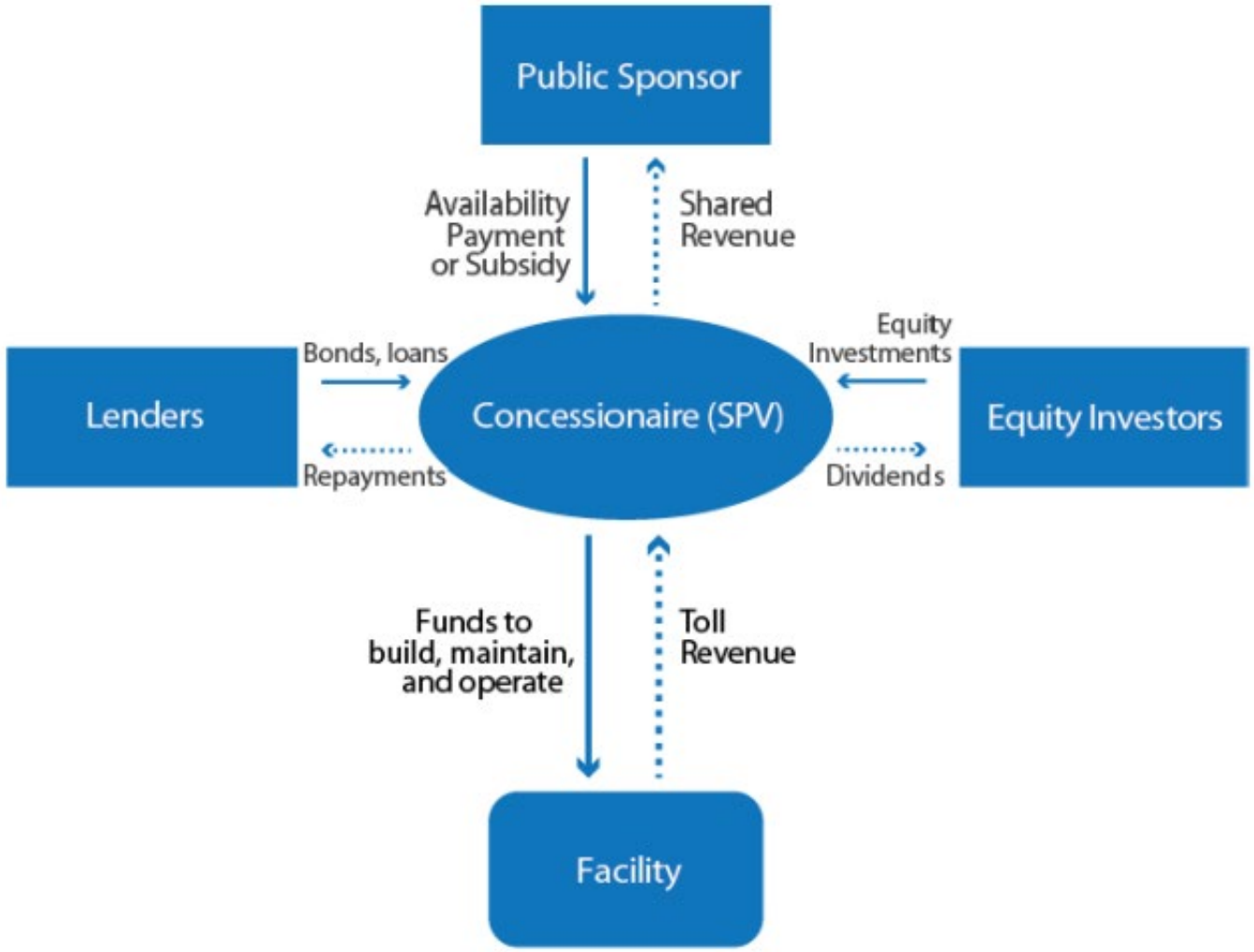
- Periodic payment amounts may be conditioned on the private entity meeting specific performance or traffic service standards.

- Payment structures may also include “milestone” payments upon completion of certain tasks, or a one-time payment at the close of construction.

- This mechanism can be used for the same project types as toll concessions.

Source: Federal Highway Administration.

Model of Financial Flows in a DBFOM P3 Toll Road Project



Source: Federal Highway Administration, *Risk Assessment for Public-Private Partnerships: A Primer*.

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Long-Term Lease Concessions

- Under a long-term lease concession, existing publicly-financed toll facilities are leased to private entities.
- During the concession period, the private entity receives the right to collect tolls in exchange for operating, maintaining, and in some cases improving the facility.
- The private party must also pay an upfront concession fee, which is often the most important bidding criterion for awarding these concessions.

Lease Concession Arrangements

Debt Transfer Lease Transaction	Hybrid Debt Transfer & New Construction Lease	Value Extraction Lease
Private concessionaire provides an upfront concession fee to defease the public entity's debt on the toll facility, in exchange for toll revenues generated during the concession period. Private entity is responsible for maintaining road standards and in some cases for capital repairs.	Similar to debt transfer lease, except private entity is also responsible for completing new center-line construction to extend the existing toll facility. No additional payments are made in excess of the debt applicable to the existing facility.	In addition to the upfront concession fee paid by the private entity to defease existing public debt on the facility, a supplemental payment is made to the public entity. Private entity again is responsible for maintaining road standards and in some cases for capital repairs.

Source: Federal Highway Administration.

Benefits and Risks of P3s

Potential Benefits

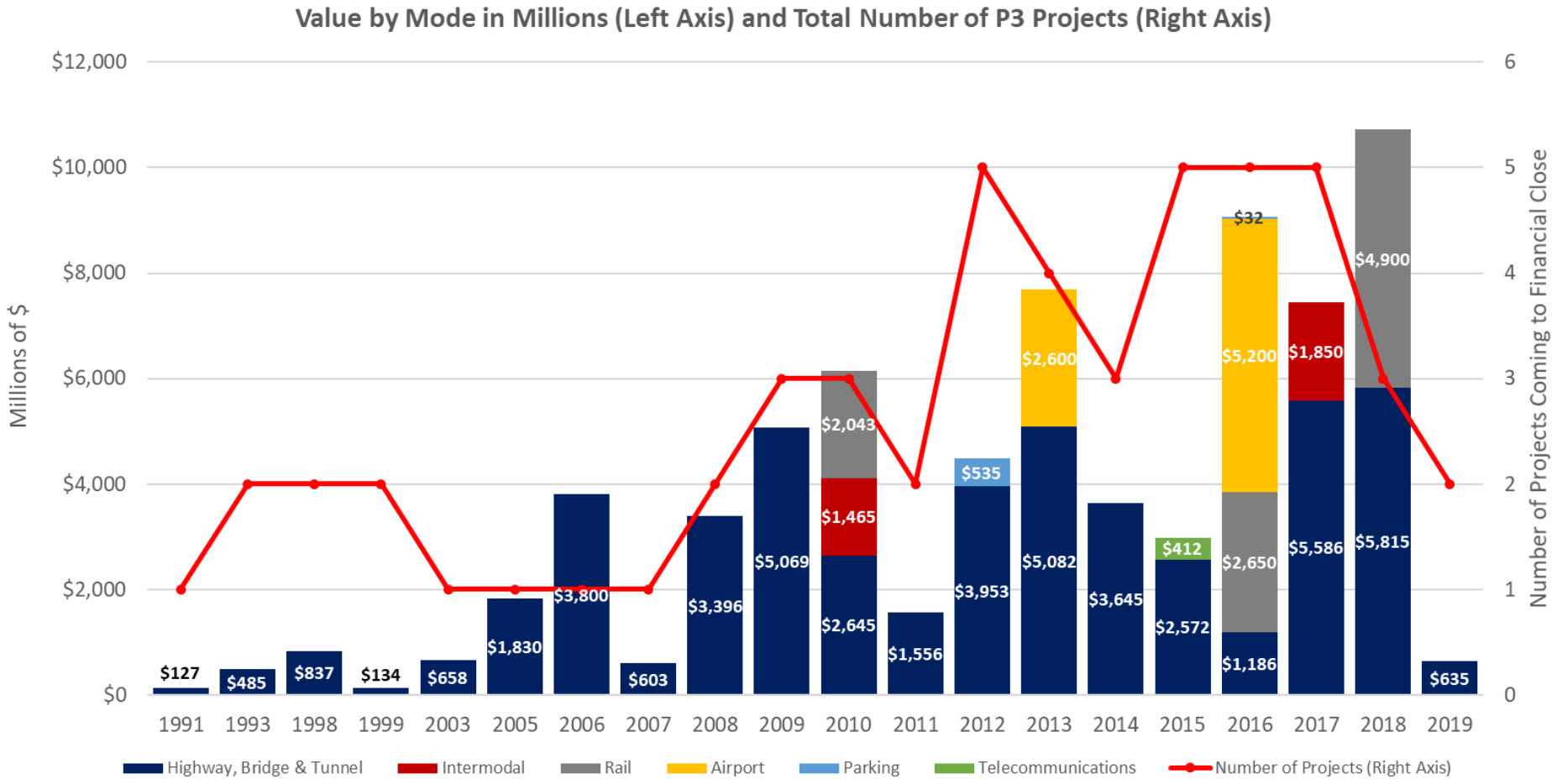
- **Expand opportunities by attracting private capital to transportation projects**, which face growing demands and often constrained public budgets.
- **Accelerate project schedules** by consolidating the contracting process, leveraging private sector expertise, and/or providing direct incentives.
- **Spread investment costs over the lifetime of the asset**, rather than facing large upfront obligations.
- **Increase efficiency, cost savings and quality** due to private sector competition, innovation, and management capabilities.
- **Transfer some of the risks** associated with financing, building, maintaining, and/or operating transportation projects from the public sector to the private sector.
- **Monetize existing assets** to secure capital for other public uses and/or improve the public entity's financial position.

Potential Risks or Concerns

- **Risk of undervaluing public assets**, thereby transferring excess value to the private sector.
- **Loss of future public revenues** and potentially control over infrastructure planning decisions.
- **Risk of bankruptcy, default, or costly disagreements** with private partners.
- **Private management decisions may be less aligned with the public interest**, such as on labor issues, environmental policies, or the transparency of operations.
- **Amount of risk retained by the public may exceed desired tolerance (ex-post).**
- **High consulting costs to navigate P3 arrangements** may cannibalize savings from efficiency gains.
- **Access to attractive P3s may be limited** in rural areas or those with lower traffic volumes.

Sources: Congressional Research Service, National Conference of State Legislatures.

P3 Activity in the United States



- Over the last three decades, 53 transportation-related P3 projects reached financial close in the US, totaling about $71.3 billion (nominal) in project costs.
- 43 of these projects, valued at $49.6 billion, are in the highway, bridge, & tunnel space.
- The average P3 project cost in this space is about $1.15 billion (nominal).

Sources: Federal Highway Administration; Public Works Financing P3 Projects Database.

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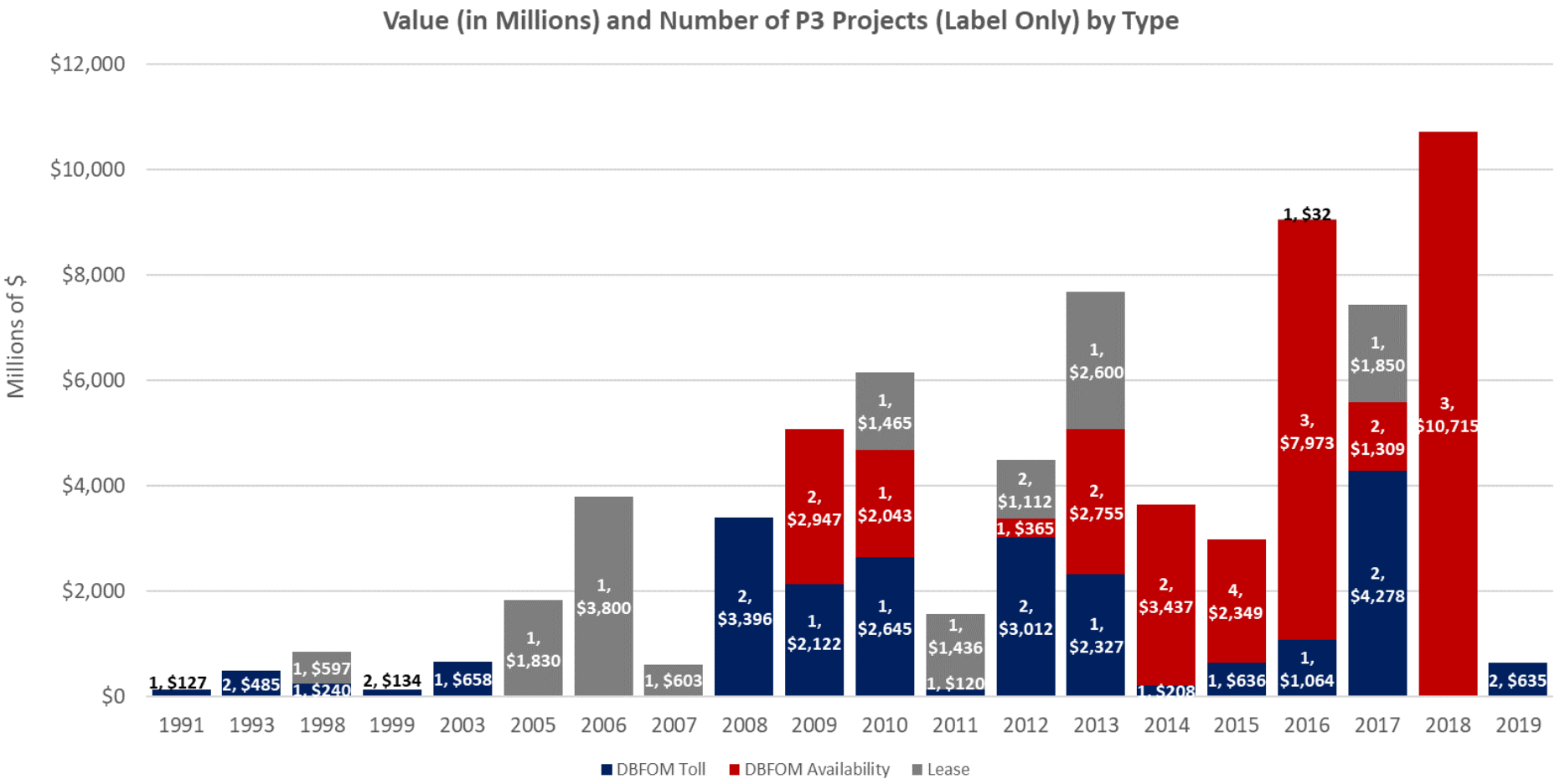
P3 Activity in the United States



- Among the 53 transportation-related P3 projects reaching financial close since 1991, 22 (valued at $22.1 billion) used a DBFOM toll structure, 20 are DBFOM availability ($33.9 billion), and 11 are long-term lease concessions ($15.3 billion).
- Among the 43 highway, bridge and tunnel projects, 22 are DBFOM toll ($22.1 billion), 15 are DBFOM availability ($18.7 billion), and 6 are long-term lease concessions ($8.8 billion).

Sources: Federal Highway Administration; Public Works Financing P3 Projects Database.

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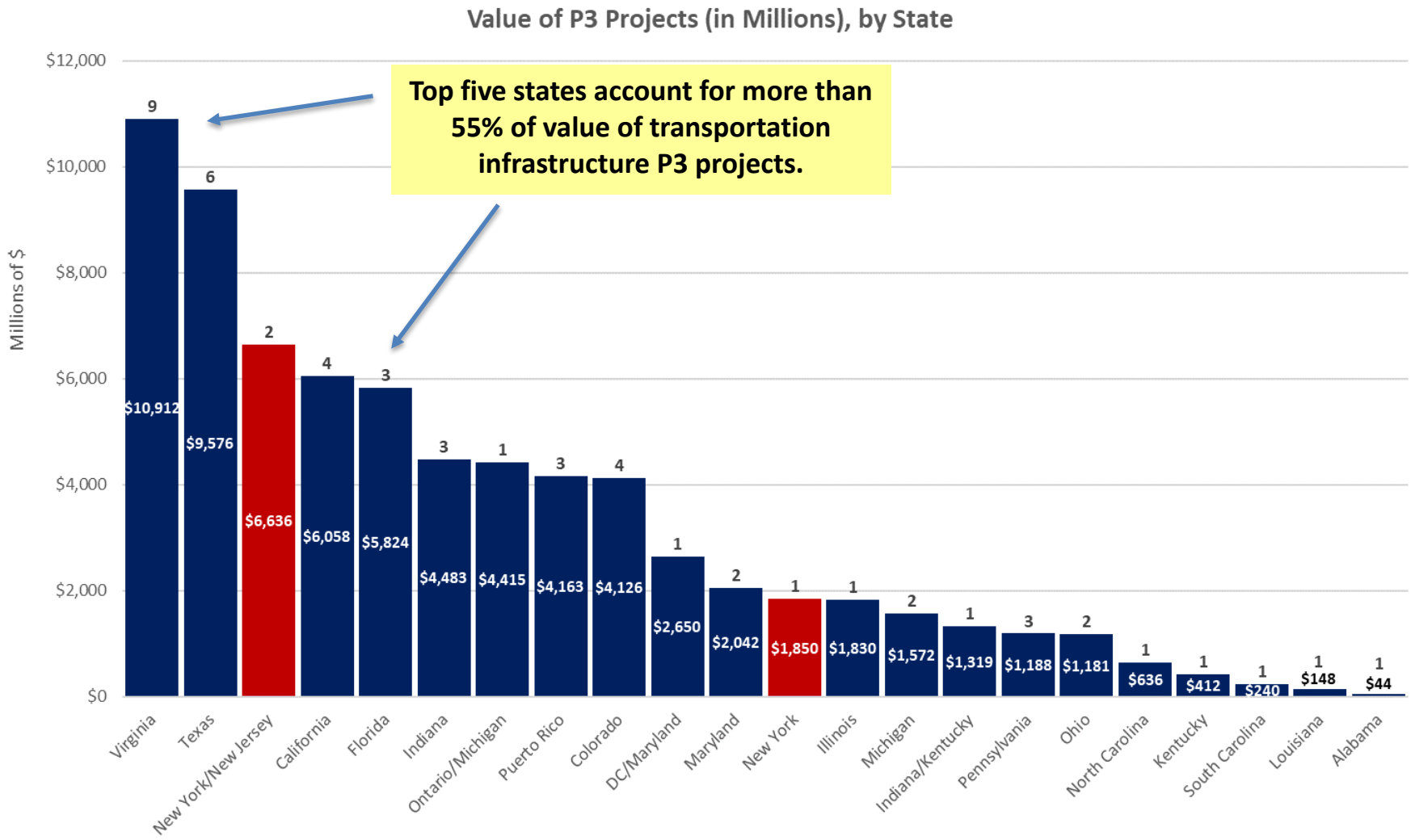
P3 Activity in the United States



- The majority of P3 activity and value is concentrated in a small number of states, including New York.
- New York has initiated three P3 projects totaling $8.5 billion in value, two of which are jointly financed with New Jersey.
- These projects include the Goethals Bridge Replacement (2013), LaGuardia Central Terminal redevelopment (2016), and Moynihan Train Hall improvements (2017).
  - See later slides for project descriptions.

Note: Top bar label indicates the total number of projects

Sources: Federal Highway Administration; Public Works Financing P3 Projects Database.

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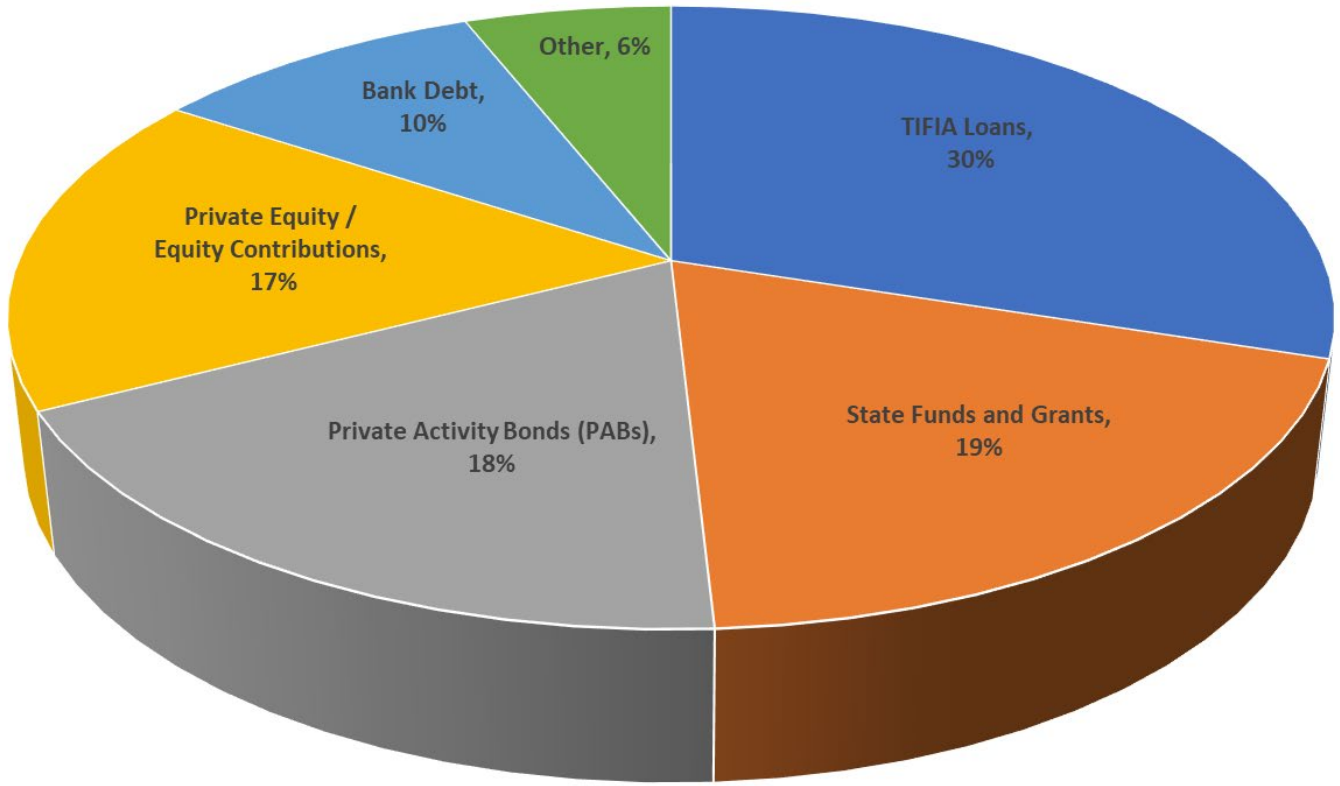
P3 Activity in the United States

Funding Profile of Major Highway P3 Projects



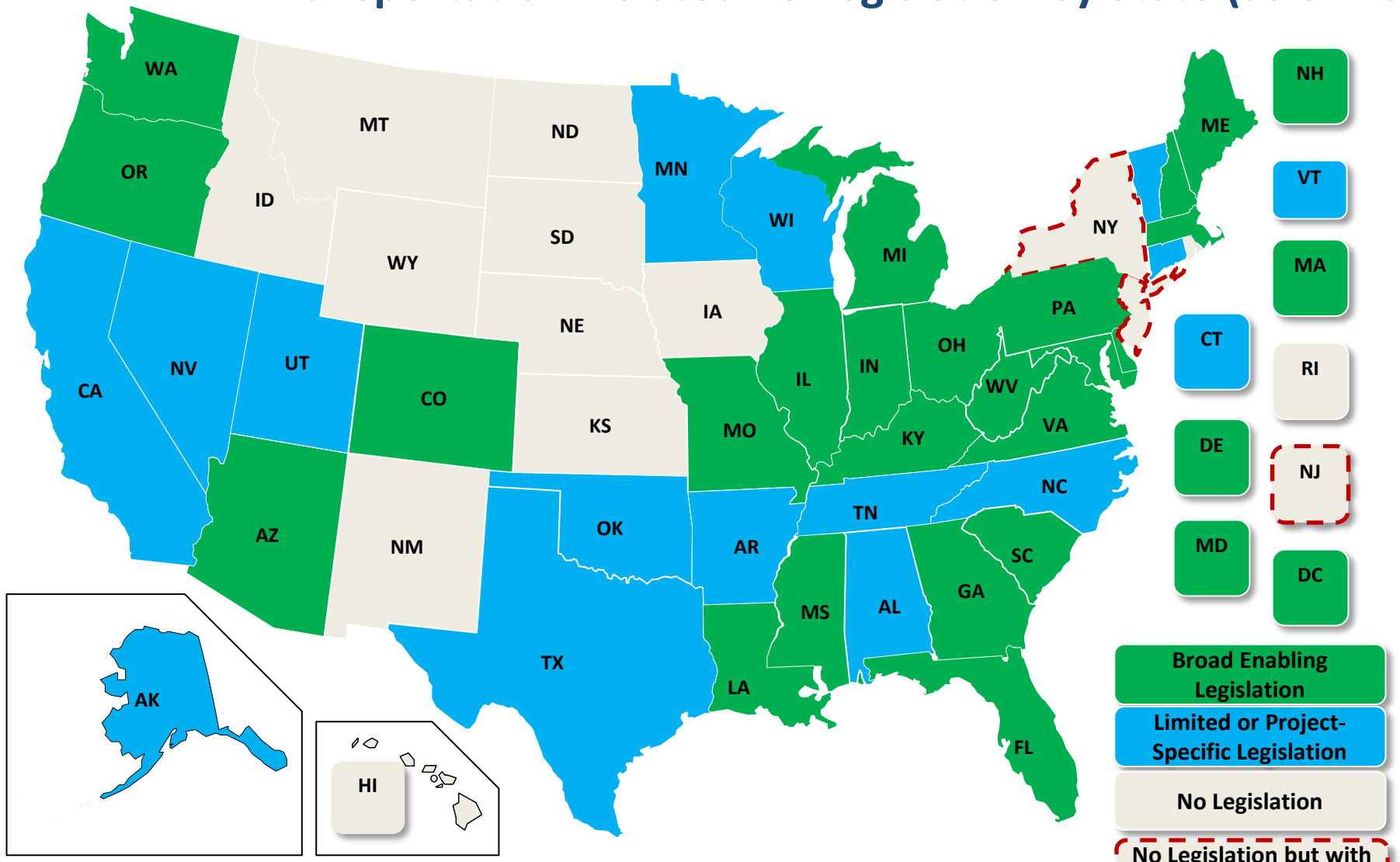
- This chart shows the funding structure for the nine major P3 highway projects profiled in the final section of this report (total value of $14.6 billion).

Key Takeaways

- Less than one-fifth of funding comes from upfront state funds, a benefit of P3 financing.
- Together, TIFIA loans (30%) and PABs (18%) account for nearly half of P3 financing.
- **TIFIA Loan:** federal credit assistance program with favorable rates and flexible terms for eligible major surface transportation construction projects.
- **Private Activity Bond:** municipal bonds issued by a state or local government to attract private investment for projects of public benefit; tax-exempt status provides reduced financing cost.

Data Source: Federal Highway Administration.

Transportation-Related P3 Legislation by State (as of August 2018)



- A total of 37 states (and the District of Columbia) have passed enabling legislation for P3 transportation projects since California approved the first modern framework in 1989.
- Among this group, 14 states limit the use of P3 procurements to specific projects and/or sponsoring agencies, whereas 23 states (and D.C.) allow broad authority.
- Benefits of enabling legislation include (a) demonstrating commitment to private sector engagement for project delivery, (b) removing legal uncertainty regarding P3 partnerships and arrangements, (c) customizing guidelines that best meet the state's needs/goals, and (d) establishing a transparent structure that can create new opportunities and deliver cost savings (New York Law Journal, NCSL).
- New York is one of only 13 states without enabling legislation, but transportation-related P3 projects have been approved and successfully completed in the state (more details in subsequent slides).

Note: This chart does not classify standalone design-build (DB) provisions as P3 legislation.

Sources: FHWA, National Conference of State Legislators and KPMG.

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P3 Legislation in New York

As indicated previously, New York has not implemented enabling legislation for comprehensive P3s (e.g., DBFOM), but has in recent years expanded access to design-build (DB) procurement:

- **New York State Infrastructure Investment Act (2011):** permits DB procurement under a specific set of conditions.
  - Use is limited to five state agencies, including the New York State Department of Transportation, for capital projects related to the state's physical infrastructure (authority not extended to municipalities and their agencies).
  - Requires a two-part procurement process: (1) initiate Request for Qualifications to obtain list of capable contractors; (2) choose the "best value" proposal that optimizes quality, cost, efficiency, price, and performance criteria.
  - Comptroller approval is required for project advancement.
  - Submitted contracts must include a procurement record detailing the procurement approach and justifying the basis for award.
  - Has been re-enacted following original sunset date of December 7, 2014.

- **Transformational Economic Development Infrastructure and Revitalization Projects Act (2016)**: extends DB authority to the Empire State Development Corporation and its subsidiaries for certain redevelopment projects.

- **New York City Public Works Investment Act (2019)**: for the first time, enables DB authority in a municipality (New York City).
  - Authority is restricted to seven NYC agencies, including the New York City Department of Transportation.
  - The relevant NYC entities are required to report annually to the Governor on details such as DB cost, performance, and equity.

Despite the absence of enabling legislation, two DBFM/DBFOM P3s (Goethals Bridge, LaGuardia Central Terminal) and one Long-Term Lease Concession (Moynihan Train Hall) have been successfully implemented in NY, as detailed in the subsequent slides.

These P3s were able to move forward because they were implemented by the Port Authority of New York and New Jersey (a bi-state agency) and the Empire State Development Corporation (a public-benefit corporation), which are not subject to New York state procurement laws.

Sources: Office of the New York State Comptroller, New York Law Journal, City & State New York, Project Finance International, Nixon Peabody LLP.

P3 Activity in New York

Goethals Bridge Replacement
(DBFM Availability)

Photo Source: NJ.com

LaGuardia Airport – Central Terminal Redevelopment
(DBFOM)

Photo Source: Skanska.

Moynihan Train Hall Conversion
(Long-Term Lease Concession)

Photo Source: New York Times.

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P3 Activity in New York

Goethals Bridge Replacement (DBFM Availability)

- Project involves construction of two cable-stayed bridge spans connecting Staten Island and New Jersey over the Arthur Kill strait, replacing the functionally obsolete cantilever bridge built in 1928.

- Port Authority's first new bridge in over 80 years; first comprehensive surface transportation P3 in the Northeast Region that includes project financing and long-term maintenance.

Project Cost: $1.436 billion

Timeline: Contract awarded April 2013; construction began May 2014; eastbound span opened June 2017; westbound span May 2018

Sponsor: Port Authority of New York and New Jersey

Leadership Team: Contract awarded to the NYNJ Link Partnership, a joint venture between Macquarie Infrastructure & Real Assets and Kiewit Development. Lead contractors include Kiewit Infrastructure, Weeks Marine, Massman Construction, and Parsons Transportation Group of New York.

Photo Source: Skanska.

Financial Structure: Funding sources include $474 million TIFIA loan (excluding capital interest), $453 of private activity bonds, $107 million of equity contributions from the developer, $125 million of Port Authority milestone payments, and $300 million of pre-development costs funded by the Port Authority.

Structured as a 40-year DBFM concession. Port Authority retains control of operations and toll setting/collection. Concessionaire receives milestone payments as construction reaches substantial completion, as well as annual $56.5 million availability payments not tied to bridge usage but subject to performance deductions.

Sources: FHWA, Port Authority of New York.

P3 Activity in New York

LaGuardia Airport Central Terminal Redevelopment (DBFOM)

- ❑ Project involves construction of a new 1.3 million square foot Terminal B for LaGuardia Airport as part of a broader initiative to expand, unify, and improve the historic airport.

- ❑ The redevelopment includes a new 35-gate terminal, a Central Hall, a parking garage, and supporting roadways.

Project Cost: $5.2 billion ($4.2 billion in construction value); largest aviation P3 in US history

Timeline: construction began June 2016; opening ceremony held Jan 2022 (with minor additions to be completed spring 2022)

Sponsor: Port Authority of New York and New Jersey

Leadership Team: LaGuardia Gateway Partners (LGP), composed of Vantage Airport Group, Skanska, Meridiam, and JLC Infrastructure for development and equity investment; Skanska Walsh for the design-build; HOK and WSP | Parsons Brinckerhoff for design; and Vantage Airport Group for terminal operations management

Photo Source: Skanska.

Financial Structure: Initial construction funding included $2.5 billion in project bonds issued by New York Transportation Development Corp. (with LGP as borrower), $1.5 billion contribution from the Port Authority, $200 million equity contribution from LGP.

LGP granted a 35-year lease (through 2050) to operate and maintain Terminal B in exchange for revenues from airline terminal rentals, ramp fees and charges, food, beverage, and retail sales, and terminal ads.

Sources: Port Authority of New York and New Jersey, Dentons, A New LGA, LaGuardia Gateway Partners.

P3 Activity in New York

Moynihan Train Hall Conversion (Long-Term Lease Concession)

- Converted and expanded the James A. Farley Post Office building into a new train station that connects to Penn Station and serves as the new home of Amtrak in NYC.

- Phase II of a broader initiative (the Gateway Program) to relieve congestion at Penn Station – the busiest transportation facility in the US – and enhance the experience for riders with state-of-the-art architecture, new retail space, and improved passenger service.

Project Cost: $1.85 billion

Timeline: Construction began Aug 2017; opened to the public on Jan 1, 2021

Sponsor: Empire State Development Corporation

Leadership Team: Related Companies and Vornado Realty LP form the development team; Skanska USA is the builder

Photo Source: Marc Glucksman.

Financial Structure: Funding sources include $526 million TIFIA loan, $475 million ESD contribution, $230 million developer payment, $150 million capital contribution from the Port Authority of NY/NJ, $105 million capital contribution from Amtrak, and $55 million capital contribution from Metropolitan Transportation Authority (MTA).

Structured as a 99-year lease to Related Companies and Vornado Realty LP (in return for developer payments) to operate and lease the commercial portion of the project, including retail and office space.

Sources: FHWA, The New York Times.

Noteworthy Design-Build (DB) Projects in New York

Governor Mario M. Cuomo Bridge
(Tappan Zee Bridge Replacement)

Photo Source: New York State Thruway Authority

Largest bridge construction project in NY history and first major use of DB procurement. Now one of the widest cable-stayed bridges in the world.

Project cost: $4.98 billion

Timeline: contract awarded Jan 2013; construction began Aug 2013; opening ceremony held Sep 2018

Sponsor: NY State Thruway Authority

Design-Builder: Tappan Zee Constructors, LLC

Kosciuszko Bridge
(Replacement of 1939 Truss Bridge)

Photo Source: Jim Henderson

Cable-stayed bridge spans constructed to replace original truss bridge; supports more daily traffic than both the Cuomo (Tappan Zee) Bridge and Goethals Bridge. Largest ever single NYSDOT contract.

Project cost: $873 million

Timeline: contract awarded May 2014; construction began Dec 2014; opening ceremony held Aug 2019

Sponsor: NY State Department of Transportation

Design-Builder: Skanska, Kiewitt and Ecco III

Source: FHWA, New York State Department of Transportation, The General Contractors Association of New York.

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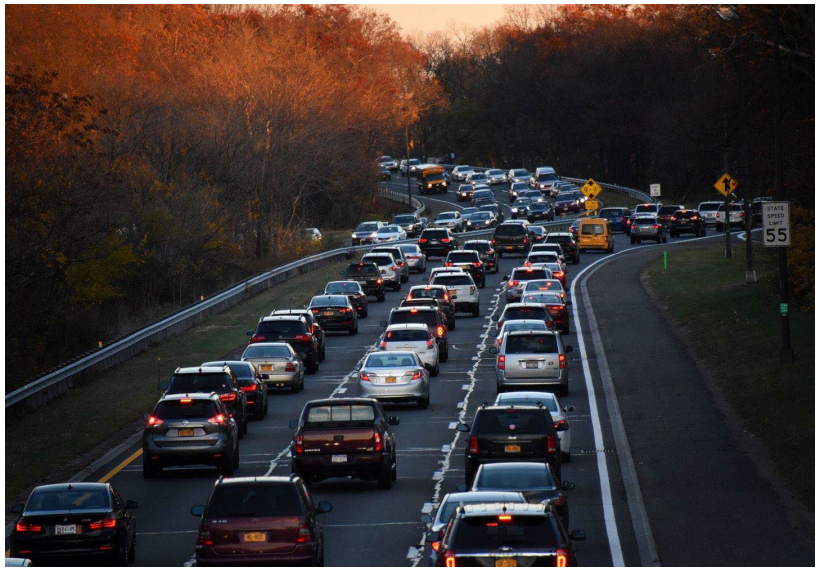
Best Practices for P3 Implementation

- The US DOT policy document "Successful Practices for P3s," provides a detailed set of experience-driven principles for managing each phase of a P3 project:
  1. Legislation and policy
  2. Project development
  3. Procurement
  4. Performance monitoring and oversight

- DOT also offers four cross-cutting themes, independent of project phase, that embody the core of successful P3s:
  - **Ensure the P3 option creates value for the public**
  - **Maintain transparency and conduct outreach throughout the P3 process**
  - **Foster fair competition and long-term partnership**
  - **Build a strong P3 program with adequate resources**

- Additional P3 resources:
  - National Conference of State Legislatures
  - Federal Highway Administration
  - Eno Center for Transportation
  - ARTBA

Southern State Parkway Application



- The Southern State Parkway (SSP) is a 25.5 mile limited-access highway on Long Island, NY.
- Initially constructed as a four-lane undivided parkway beginning in 1925, the SSP was later widened into a divided eight-lane system from the city line to Hempstead Lake and a divided six-lane system east of there; construction was completed in 1962.
- According to NYSDOT estimates, the SSP handles nearly 200,000 vehicles per day through Nassau County and 130,000 vehicles per day through western Suffolk County.
- Despite some improvements, the design of the SSP is largely unchanged since the first section opened in 1927, when it was built to improve beach access for automobiles traveling 35 miles per hour.
- Population growth in Nassau/Suffolk counties (nearly 200% since 1950), surging commercial activity, and increases in vehicular power have fueled congestion and safety concerns related to the SSP's antiquated design.
- The 10-mile stretch between Exit 17 in Malverne and Exit 32 in Farmingdale has been nicknamed "Blood Alley" due to its hazardous conditions, which include "sharp curves, short acceleration and deceleration ramps, the profusion of smaller exits, and the close proximity of three intersecting north-south highways (the Meadowbrook State Parkway, the Wantagh State Parkway, and the Seaford-Oyster Bay Expressway)."
- Between 2012 and 2019, there were 15,768 accidents on the SSP resulting in property damage, 8,443 resulting in injury, and 78 resulting in death according to data from the NYSDOT.
- A study of accident data from 2010-2012 by Little Rebellion, a SUNY New Paltz news outlet, found that the SSP had 1.1 fatal accidents per mile versus only 0.21 on the Northern State Parkway.

Photo Sources: ABC7 New York (top); Danielle Finkelstein.
Data Sources: NYC Roads; Office of New York State Senator John E. Brooks; Office of New York State Senator Todd Kaminsky, Katherine Carroll, Office of the NYS Comptroller.

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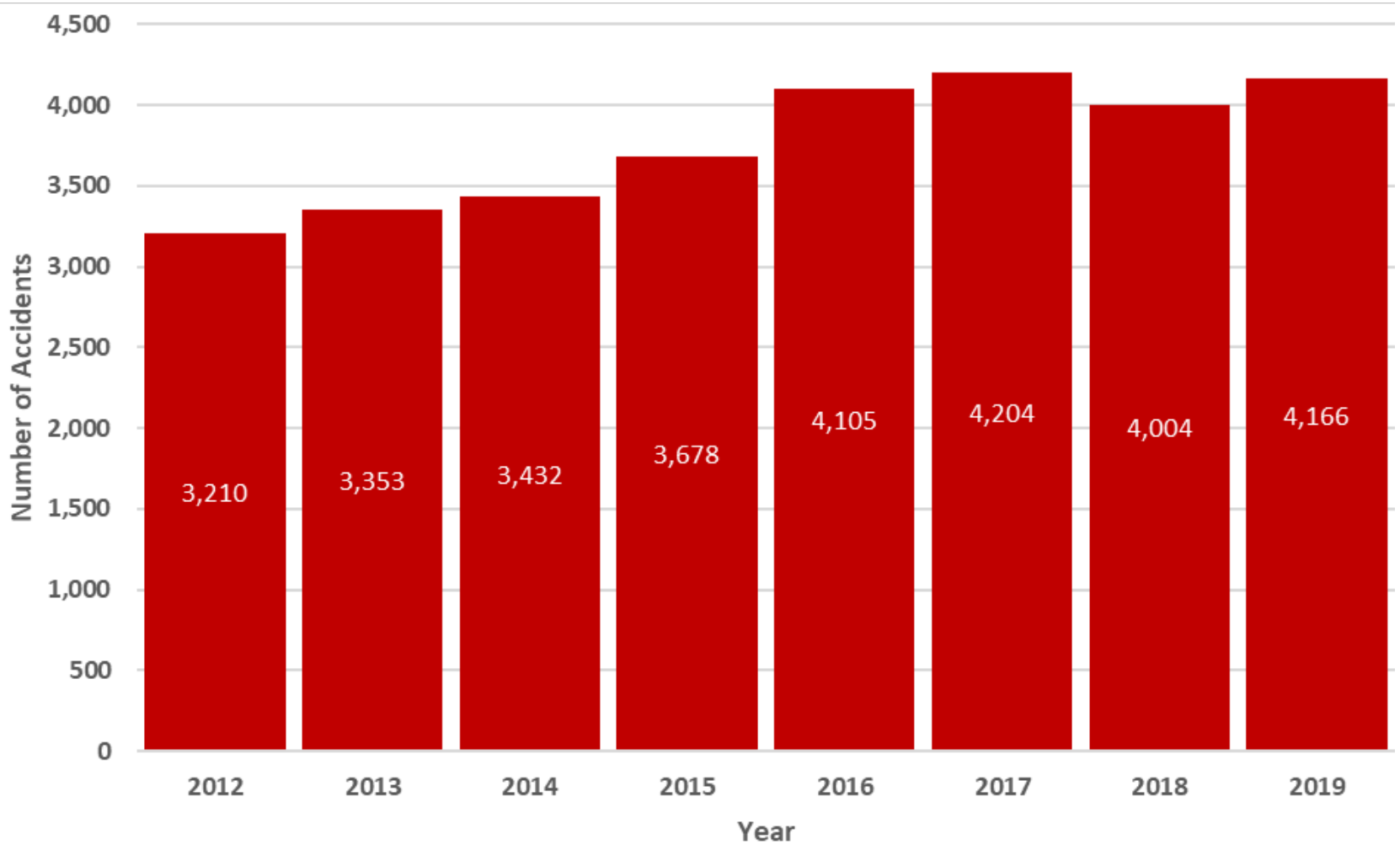
Long Island Transportation Plan to Manage Congestion (LITP 2000)

- In 1995, the NYSDOT facilitated a study with consultant Parsons Brinckerhoff and a 40-member technical advisory committee to develop a transportation infrastructure improvement plan (LITP 2000) that would support Long Island's growing population and manage increasing congestion.
- The study – completed in 2000 – recommended four alternative plans for second phase testing.
- One of these alternatives recommended adding two additional travel lanes on the SSP that would function as high-occupancy vehicle (HOV) lanes, in addition to the reconstruction of 50 bridges and roadway improvements.
- Ultimately, the study was never formally accepted and released by the NYSDOT, seemingly due to cost concerns and pushback from environmental groups.
- Since then, safety and traffic concerns on the SSP have only gotten worse, as indicated by the NYSDOT data summarized in the following three slides.

Photo Source: NYC Roads.
Sources: Institute of Transportation Engineers Metropolitan Section of New York & New Jersey, Long Island Business News.

Southern State Parkway Application

Total Number of Accidents on the Southern State Parkway



In 2019, there were 4,166 total accidents on the SSP – a 30 percent increase over 2012.

Source: NYSDOT via FOIA request.

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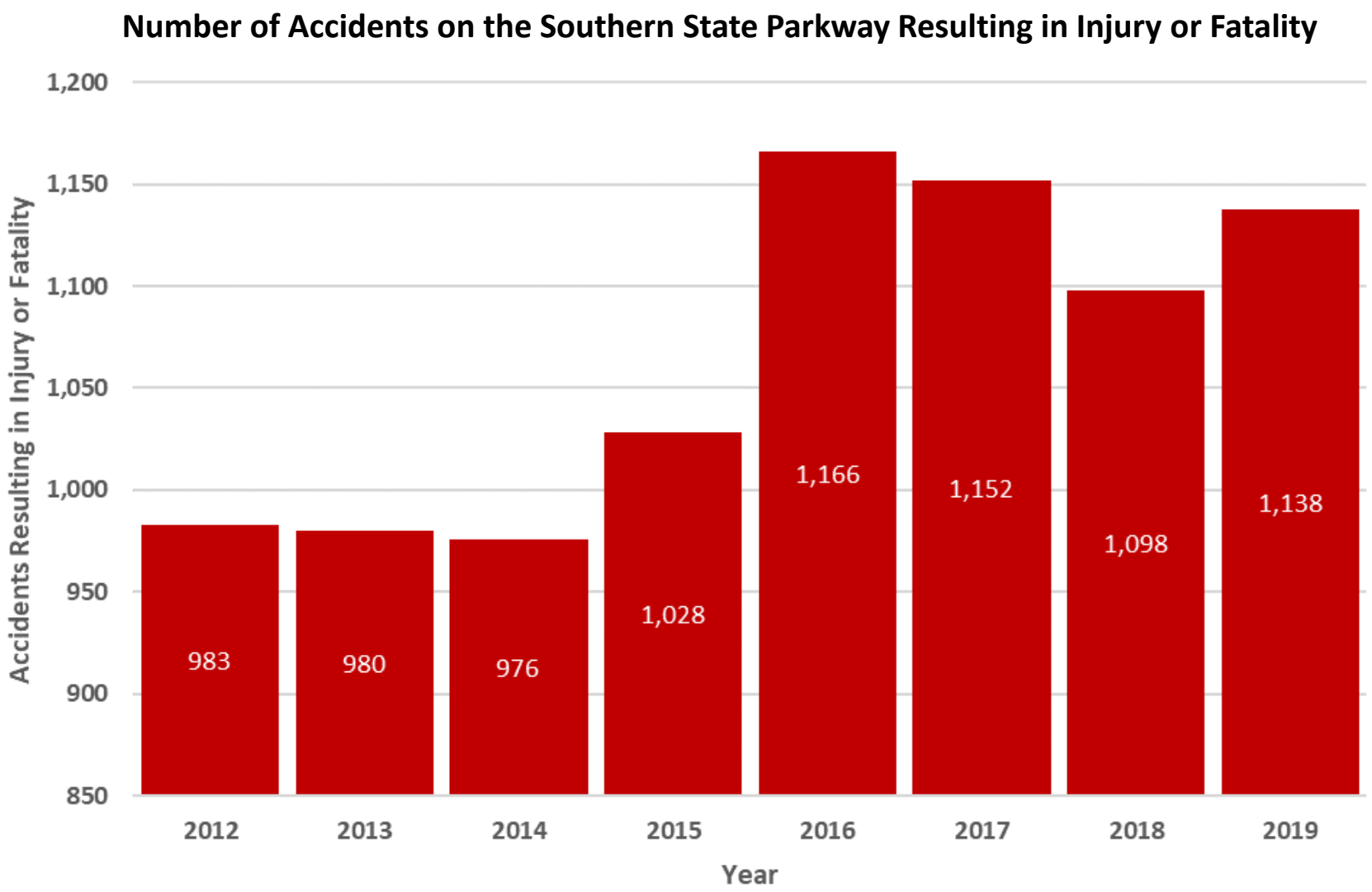

In 2019, there were 1,138 accidents on the SSP resulting in injury or death – a 16 percent increase over 2012.

Source: NYSDOT via FOIA request.

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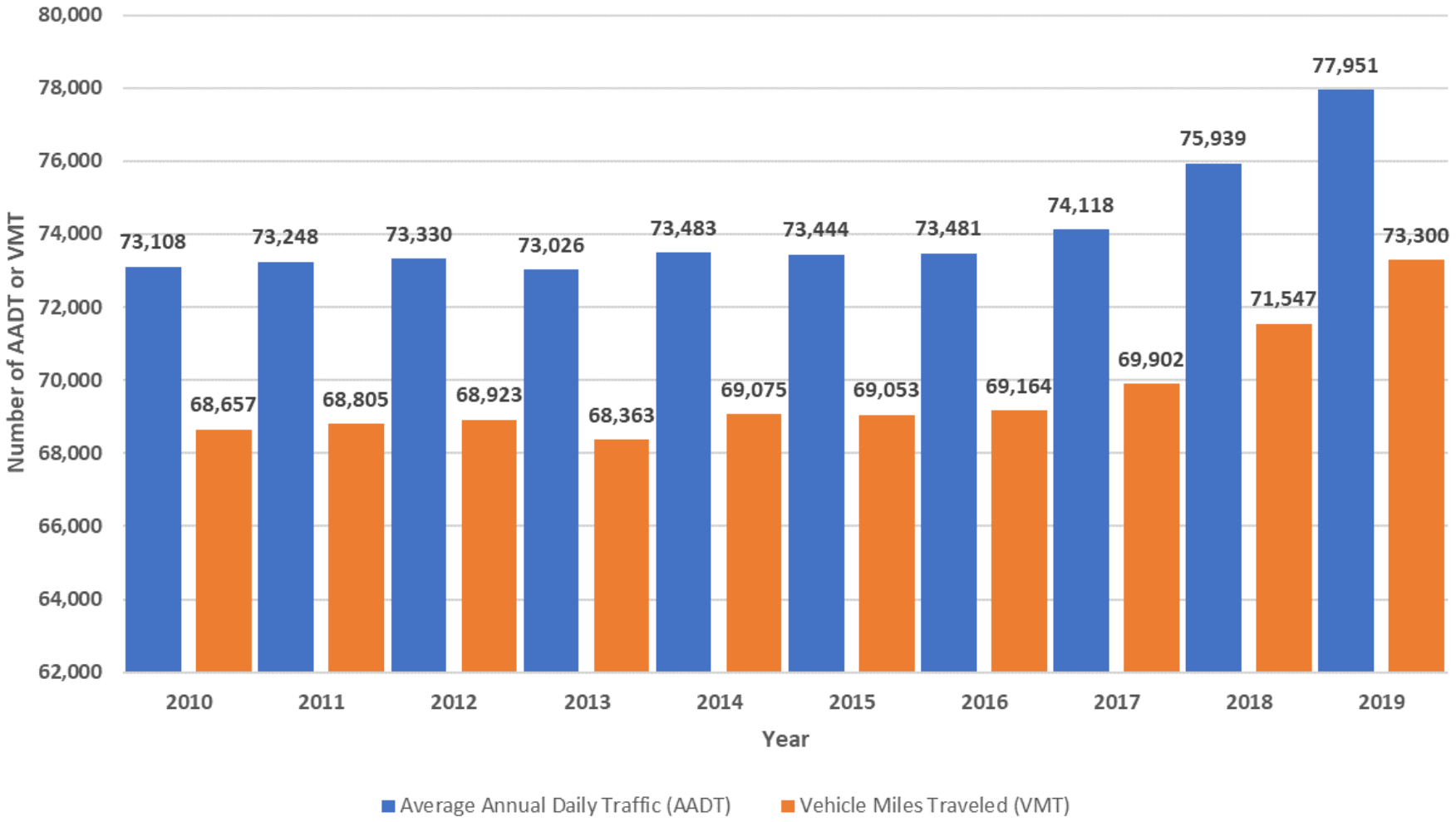
Average Annual Daily Traffic (AADT) and Vehicle Miles Traveled per Segment-Direction of the SSP



- There are 32 segments on the SSP with average length just below 1 mile.
- This chart shows average annual daily traffic (AADT) and vehicle miles traveled (VMT) for an average single direction across the 32 segments.
- In 2019, both AADT and VMT were 7 percent higher than 2010 levels.
- Some segments experienced greater than 20 percent growth in AADT and VMT over this period.

Source: NYSDOT via FOIA request.

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P3 Adaptation of the LITP 2000 to Improve the Southern State Parkway

- LICA recommends reconsidering a modified version of the LITP 2000 proposal that introduces high-occupancy toll (HOT) lanes on the SSP, rather than HOV lanes.

- Unlike HOV lanes, which restrict traffic to vehicles meeting certain occupancy requirements, HOT lanes permit access to all vehicles but charge a toll (or a higher toll) to those not meeting these requirements.
  - According to the FHWA, HOT lanes have proven to be more efficient than HOV lanes for maintaining reliable system performance both within and outside the managed corridor.

- Additionally, an HOT model could be attractive for P3 financing opportunities that leverage the incoming toll revenues, alleviating upfront costs for the public.
  - **DBFOM toll concession model:** private concessionaire would finance a share of upfront construction costs and operate/maintain the HOT system in return for ongoing toll revenues over a specified concession period.
  - **DBFOM availability model:** the public would retain tolling revenues, but instead provide periodic payments to the concessionaire (conditioned on performance) over the concession period.

- The SSP could be an especially attractive candidate for a P3 model:
  1. Established roadway with consistently high traffic volume
  2. Large project with significant upfront costs
  3. Major P3 projects have been successfully completed in New York

- As detailed in the subsequent slides, P3s have been implemented successfully to deliver similar projects in other states.

Project Profiles of P3s with Similar Characteristics

Capital Belt I-495 HOT Lanes (VA)

- Constructed four new lanes (two in each direction) along 14-mile phase of the Capital Beltway in Virginia
- Implemented first HOT lanes in the state of Virginia
- Replaced more than $260 million of infrastructure, including 50 bridges and overpasses
- Constructed carpool ramps connecting I-95 with Capital Beltway to deliver HOT/HOV network

Delivery Model: DBFOM toll (85 years)

Cost: $2.068 billion

Timeline: Financial close in Dec 2007; construction began spring 2008; facility opened to traffic in Nov 2012

Financing: Private Activity Bonds ($589M), TIFIA loan ($589M), Commonwealth of VA grant ($409M), VDOT change-order ($86M), interest income ($47M), private equity ($348M)

Public Sponsor: Virginia DOT

Private Partner: Capital Beltway Express, LLC (Fluor and Transurban joint venture)

Photo Source: P3 Virginia

Other Notes

- Delivered on-time and on-budget
- HOT lanes use dynamic pricing based on real-time traffic conditions
- First time PAB plus TIFIA financing used for HOT lanes in the US
- Toll revenues fell below expectation in first two years; private partner contributed additional equity and project reserves in May 2014 to restructure the project's debt

Sources: FHWA, VDOT.

Project Profiles of P3s with Similar Characteristics

I-95 HOV/HOT Lanes (VA)

- Introduced 29.4 miles of HOV/HOT lanes along I-95 and I-395 in Northern Virginia, providing congestion relief and connectivity to the heavily traveled centers in NoVA and DC
- 8.3 miles of new construction (including 7 new bridges)
- 7.0 miles of two-lane HOV conversion (two-lane reversible)
- 14.1 miles of two-lane HOV conversion (three-lane reversible)

Photo Source: Fluor

Delivery Model: DBFOM toll (76 years)

Cost: $922.6 million (plus $25.4 million of early development costs paid by VDOT)

Timeline: Financial close and construction began Aug 2012, open to traffic Dec 2014

Financing: TIFIA loan ($300M), private activity bonds ($252.6M), Commonwealth of VA grant ($82.6M), private equity ($280.4M), TIFIA capitalized interest ($6.5M), interest earnings ($0.6M)

Public Sponsor: Virginia DOT

Private Partner: 95 Express Lanes LLC (Fluor and Transurban joint venture)

Other Notes

- 95 Express Lanes linked directly to the 495 Express Lanes at the Springfield Interchange (same partners as 495 project)
- Both projects are operated centrally and share traffic and tolling management systems
- More than 12,500 jobs supported and $1.5 billion of commercial activity generated over project's life cycle
- Project received ARTBA's Transportation Development Foundation 2014 Contractor Safety Award

Sources: FHWA, Fluor.

Project Profiles of P3s with Similar Characteristics

I-395 Express Lanes (VA)

- Provided three reversible express lanes in the median of an eight-mile corridor connecting Alexandria and Arlington to the border of Washington, DC
- Converted two existing HOV lanes to express lanes and added a third express lane
- Additional work included widening, interchange modifications, and bridge repairs

Photo Source: FHWA.

Delivery Model: DBFOM toll (70 years)

Cost: $553.7 million

Timeline: Financial close in June 2017; construction began Aug 2017; opened to traffic Nov 2019; completion in Dec 2020

Financing: Toll revenue bonds ($251.4M); Virginia Transportation Infrastructure Bank loan ($45M); private equity ($179M)

Public Sponsor: Virginia Department of Transportation

Private Partner: 95 Express Lanes LLC (joint venture between Fluor Enterprises, Inc. and Transurban DRIVe)

Sources: FHWA, VDOT.

Other Notes

- Provided connections to the 95 Express Lanes and interchange access to the 495 Express Lanes, creating continuous stretch of express lanes all operated and maintained by same private partner
- Express lane system provides significant congestion relief for one of the nation's most heavily-trafficked areas
- Project estimated to generate more than 8,700 jobs and $1 billion in economic impact

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Project Profiles of P3s with Similar Characteristics

I-4 Ultimate (FL)

- Reconstructed and widened 21 miles of highway from Orange County to Orlando
- Fully reconstructed the existing general purpose lanes, which were about 50 years old and subject to significant congestion
- Added four express toll lanes in the median, built or repaired 140 bridges, and reconstructed 15 major interchanges

Photo Source: I-4 Ultimate Improvement Project.

Delivery Model: DBFOM availability (40 years)

Cost: $2.877 billion

Timeline: Financial close in Sep 2014; construction began Feb 2015; toll lanes opened Feb 2022

Financing: Senior bank debt ($484 million); TIFIA Tranche A loan ($127 million); TIFIA Tranche B loan ($822 million); equity contribution ($103 million); FDOT milestone payments during construction ($1.035 billion); TIFIA capitalized interest and interest income ($306 million)

Public Sponsor: Florida Department of Transportation

Private Partner: I-4 Mobility Partners (joint venture between John Laing Investments Limited and Skanska Infrastructure Development)

Other Notes

- FDOT estimates a timeline of more than 20 additional years if the P3 model was not available and project had to be funded as public dollars became available
- Project delivered innovations in safety, technology, traffic flow, community connections, and sustainability, including usage of 25 approved alternative technical concepts, which offer an equal or better approach than the FDOT requirements
- Design improvements allowed for increase of speed limit from 50 MPH to 55 MPH in certain areas

Sources: FHWA, I-4 Ultimate Improvement Project.

Project Profiles of P3s with Similar Characteristics

I-75 Modernization, Segment 3 (MI)

- Reconstruction and widening of 5.5-mile segment in Metro Detroit, completing final phase of broader 18-mile project
- Includes complete pavement reconstruction, freeway modernization, ITS upgrades, 28 bridge replacements, drainage improvement, and a safety upgrade near the 11 Mile Road exit to separate entering and exiting northbound traffic
- HOV/general purpose lane added in both directions of widened portion

Delivery Model: DBFM availability (30 years)

Cost: $1.4 billion (includes present value of long-term maintenance)

Timeline: Financial close in Nov 2018; construction began fall 2019; expected completion in fall 2023 (construction 55% complete as of April 2022)

Financing: $725 million provided by concessionaire for construction costs, including from private activity bonds ($610M), letter of credit ($50M), and private equity ($47M). State and federal resources for pre-development costs, milestone payments during construction, and availability payments over the concession period for capital repayment and maintenance costs

Public Sponsor: Michigan Department of Transportation

Private Partner: Oakland Corridor Partners (joint venture between John Laing, AECOM, Dan's Excavating, AJAX Paving, and Jay Dee Contractors)

Sources: FHWA, Modernize 75.

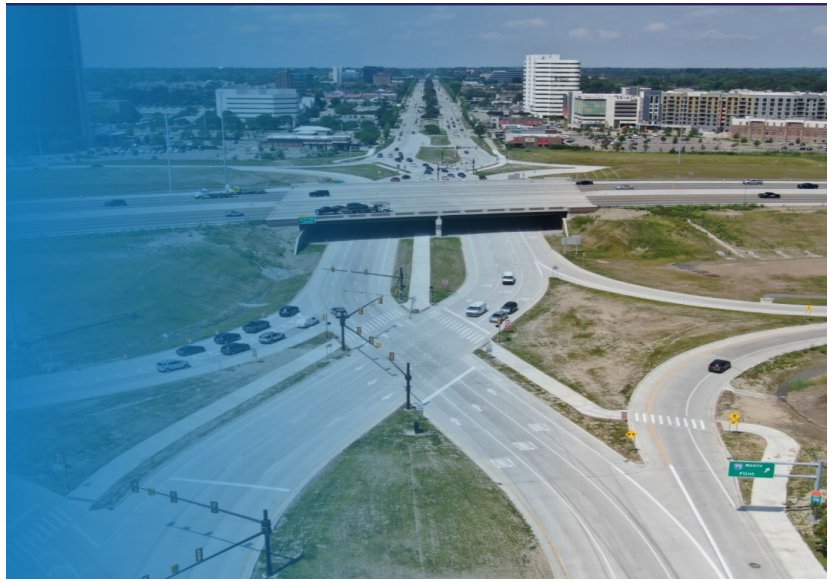

Photo Source: Modernize 75.

Other Notes

- First comprehensive improvement since the 1960s, after which the corridor's growth as a vital commercial, commuter, tourist and local area business route has fueled congestion and safety concerns
- Concessionaire responsible for maintenance throughout concession period to keep system in reliable condition (public owner maintains operation authority)
- P3 financing model allowed public owner to spread out payments, freeing up capital to invest in other needed transportation improvements

Project Profiles of P3s with Similar Characteristics

Central 70 (CO)

- Redesign and capacity expansion on 10 miles of I-70 in Denver
- Includes full reconstruction, widening, and/or restriping based on segment
- One new express toll lane added in each direction, with potential to add a second lane in the future
- Designed to reduce travel time by 33-50% by 2035, accommodate population growth, and provide safety improvements via shoulder and interchange redesign

Photo Source: Colorado DOT.

Delivery Model: DBFOM availability (30 years)

Cost: $1.2 billion

Timeline: Financial close in Dec 2017; construction began Aug 2018; completion of road elements expected late 2022 (landscaping and park elements into 2023)

Financing: $961.2 million in concessionaire's financing for construction includes TIFIA loan ($416M), TIFIA capitalized interest ($39M), milestone payments during construction from CDOT enterprises ($319M), private activity bonds ($121M), equity ($66M), and interest income ($0.4M)

Public Sponsor: Colorado Department of Transportation

Private Partner: Kiewit Meridiam Partners LLC (joint venture between Kiewit Development Company and Meridiam)

Other Notes

- Largest transportation project in Colorado's history
- Projected to drive $17.8 billion in new economic activity via job creation, congestion relief, and safety improvements
- Kiewit Meridiam Partners LLC will operate and maintain the highway in return for availability payments throughout concession period; CDOT enterprises will set toll rates and collect toll revenue

Sources: FHWA, Central 70.

Project Profiles of P3s with Similar Characteristics

SH 288 Toll Lanes Project (TX)

- Comprehensive DBFOM addition of four new toll lanes extending 10.3 miles along the median of SH 288, a 61-mile highway between Houston and the Gulf of Mexico that has not been changed since 1984
- Reconstructed 75 percent of the I-610 interchange
- Added direct connector ramps at several segments
- Contract includes maintenance of existing general-purpose lanes

Delivery Model: DBFOM toll (52 years)

Cost: $1.064 billion

Timeline: Financial close in May 2016; construction began October 2016; opened to traffic in November 2020

Financing: Private activity bonds ($299M); TIFIA loan ($357M); private equity ($375M); TxDOT funds ($17M); TIFIA capitalized interest ($15M); interest income ($0.7M)

Public Sponsor: Texas Department of Transportation

Private Partner: Blueridge Transportation Group, LLC

Sources: FHWA, Drive 288.

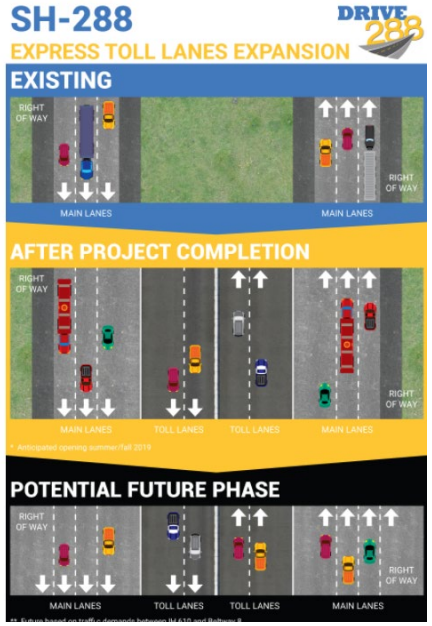

Photo Source: Drive 288.

Other Notes

- Upfront costs fully financed by the private sector, except for TxDOT's $17 million contribution for direct connectors to the Texas Medical Sector
- Toll lanes apply variable pricing based on time of day and volume of traffic
- Construction extended beyond original 1,000-day projection due to adverse weather events, including Hurricane Harvey

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Project Profiles of P3s with Similar Characteristics

LBJ Express (TX)

- Reconstructed the main lanes and frontage roads along 13 miles of I-635, north of Dallas
- Added up to 6 managed lanes along the stretch, including both subsurface and elevated lanes
- Managed lanes use dynamic pricing, following 6-month introductory period with fixed-price schedule; HOV2+ users receive a 50% discount during peak driving periods
- Constructed new bridge structures, lighting and retaining walls

Delivery Model: DBFOM toll (52 years)

Cost: $2.645 billion

Timeline: Financial close in June 2010; construction began January 2011; opened to traffic in September 2015

Financing: Private activity bonds ($606M); TIFIA loan ($850M); equity contribution ($682M); toll revenues during construction ($17M); public funds ($490M)

Public Sponsor: Texas Department of Transportation

Private Partner: LBJ Infrastructure Group, LLC (joint venture between Cintra Concessiones, Meridiam Infrastructure Finance, Dallas Police and Fire Pension System and APG Investments)

Sources: FHWA, Ferrovial.

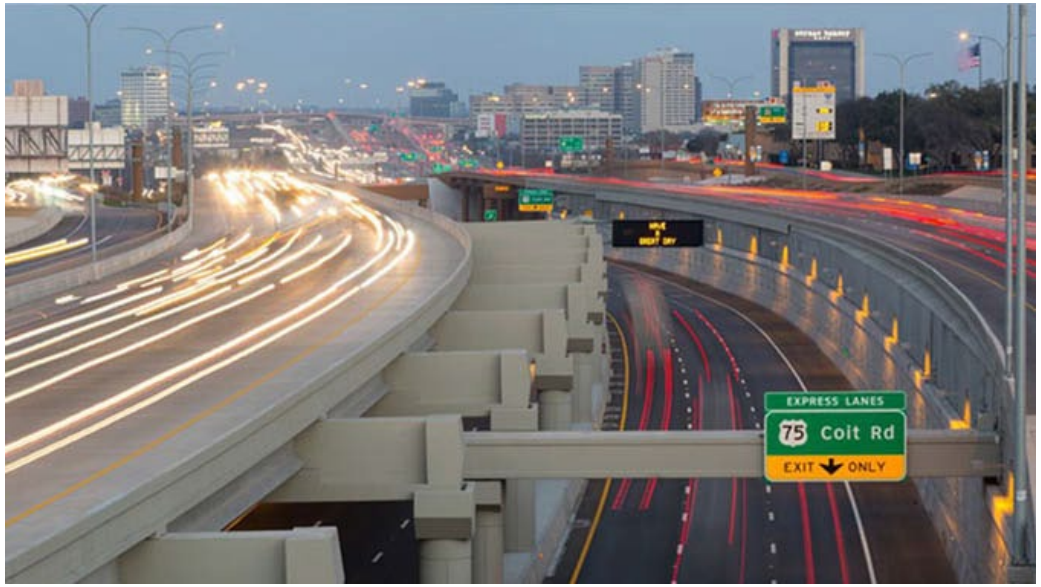

Photo Source: FHWA.

Other Notes

- Project completed on budget and three months ahead of schedule, with zero contingencies, fines or environmental penalties incurred
- New lane system gives drivers the choice of taking the variably-priced managed lanes – with toll rates visible to motorists – or the free main lanes
- Innovative design method cantilevered general-purpose lanes above the managed lanes in existing right of way, delivering significant cost savings

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Project Profiles of P3s with Similar Characteristics

I-595 Corridor Roadway Improvements (FL)

- Reconstructed and widened I-595 mainline over 10.5-mile segment in Broward County, which experienced rapidly increasing demand since 1989 opening
- Improved frontage roads and several interchange ramps
- Constructed three at-grade reversible express toll lanes known as 595 Express, operated as managed lanes with variable pricing and reverse traffic flow during peak hours

Photo Source: FHWA.

Delivery Model: DBFOM availability (35 years)

Cost: $1.834 billion

Timeline: Financial close in March 2009; construction began June 2009; completed March 2014

Financing: Senior bank debt ($781M); TIFIA loan ($603M + capitalized interest); equity ($208M); revenues ($10M); FDOT qualifying development funds ($232M)

Public Sponsor: Florida Department of Transportation

Private Partner: I-595 Express, LLC (joint venture between ACS Infrastructure Development and TIAA)

Other Notes

- First use of availability payments for U.S. transportation project
- No payments required from FDOT to concessionaire until corridor was fully operational
- Availability payments are subject to downward adjustment if quality and performance requirements specified in the contract are not met

Sources: FHWA, FDOT.

About the Authors

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ARTBA's Economics & Research Team is led by Senior Vice President & Chief Economist Dr. Alison Premo Black. Dr. Black has a PhD in Economics from the George Washington University in Washington, D.C. Since joining ARTBA in 2000, Dr. Black has led teams and authored over 100 studies examining state transportation funding and investment patterns. She earned her M.A. in International Economics & Latin American Studies at the Johns Hopkins School of Advanced International Studies (SAS) and is magna cum laude graduate of Syracuse University with multiple majors.

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