PUBLIC PRIVATE PARTNERSHIPS

Rationale and Motivation

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Agenda

1. The transportation infrastructure problem
2. Understanding the Private Sector's role and potential
   - Rationale
   - Business Model
     - How does a private developer make money
     - Key takeaways. Competition. Risk is always in your mind
3. Private sector driver and public sector risk on alternative delivery models
4. Wise public investment: leveraging public funds
   - Availability vs. revenue risk models
5. Theory in Action: Case Studies
   - Indiana Toll Road vs. Texas' SH121
   - 407 ETR (Ontario)
   - Managed Lanes
6. The future of PPPs and challenges ahead

The Problem, and facts we all agree on

The American highway system is in crisis

1. Infrastructure dating from the 60's in critical condition
   - $1.6 tr of additional investment needed by 2020 (ASCE)
   - 70,000 structurally deficient bridges across the country (FHWA)
2. Facing a growing demand: up to 3% annual urban population growth
3. Shortage in traditional Funding – ca. $100 bn annual State and Federal gas tax
   - Annual surface transportation funding gap of approximately $94 billion (ASCE 2013)

Facts we all agree on

1. Three funding potential sources: dedicated taxes, general taxes or user fees (funding and financing are different things)
2. There is private capital available to be invested in US Infra (S&P: $100bn+/yr)

Flawed assumptions when dealing with this problem

This is just about funding

No. Spending is as important as funding

- Where to invest?: Where it is most critically needed - PPPs and tolling bring rationality
- How to invest?: In the most efficient way (more congestion relief per $ invested)

Spending is a given, not related to funding and delivery options

- PPPs and traffic risk can significantly improve efficiency (more bang for the buck)
- Tolling provides more efficient investment and reliefs more congestion. And is fair.

Public infrastructure should preferably be developed by the Public Sector

- "Transportation is a key element of people's lives, **should be free** and **not** handled by the **private sector"**… Why?
  - Efficiency for the taxpayer and Social Welfare should be driving the discussion.
  - If the private sector can be more efficient, give it a chance!

2.- Understanding the Private Sector's role and potential

PPP Rationale and Motivation:
Two Key Conceptual Misunderstandings

Rationale for the private sector involvement in the development of infrastructure

Business model of a concession (Motivation, *"Chercher la Femme")*

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Negative definition: What PPP's rationale is not

"governments are increasingly turning to the private sector as an alternative additional source of funding to meet the funding gap"

World Bank
http://pppirc.worldbank.org/public-private-partnership/overview/ppp-objectives

… so PPPs are a "necessary evil", just needed when no public funds are available?

PPPs are justified because they are more efficient. How?

1. **Integrating activities** under a single point of responsibility.
   - Holistic approach to design, construction, finance, and operation and maintenance, to achieve their most effective combination
   - Integration facilitates innovation

2. Developing projects with a **lifespan perspective**
   - taking into consideration at an early stage life-cycle and asset management cost optimization concerns;

3. **Transferring risks** that can be better handled by the private sector
   - The economic value of the risks the Public Sector retains is a key element of any comparison between delivery options

4. **Setting the right incentives**: Interests are better aligned:
   - Private developer returns dependent on ultimate project service success
   - Private developer incentivized to proactively address risks

5. **Accountability**: contractual to the Public Sector, economical to Shareholders

6. **Competition** encourages innovation and brings efficiency

How does a developer make money?

Common understanding:

Developers make money by getting right in their forecasts:

- Financial cost
- Short Term Capital Expenditure (construction cost & time)
- Revenue (traffic and tariff),
- Operating expenses,
- Long Term Capital Expenditure

Developers are successful when they **create value** for their investors…

and that value is **recognized**

What many times goes unnoticed:

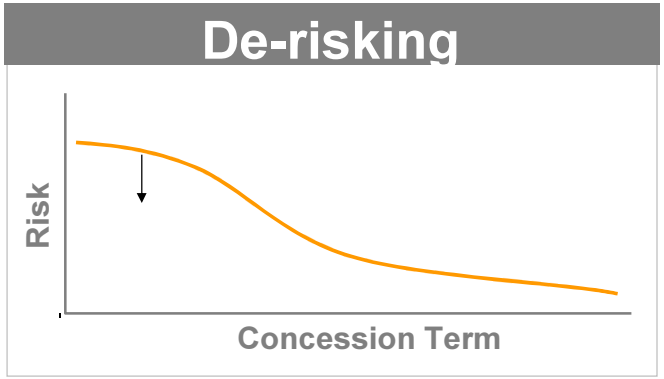
To create value, being right in the forecasts is as important as being able to “De-Risk” the investment, putting risks behind

a step back: the business model of a concession

- Financially, a concession can be represented as a string of cash flows that reflect annual monetary values of contractual rights (net of obligations).
- At the initial moment of the life of the concession, the Internal Rate of Return (IRR) of these expected cash flows is a measure of the expected reward of the sponsors.
  - If the concession is tendered under perfect competition, this expected IRR is also the cost of capital of the project.
  - The premium (over the Risk-Free Rate, RFR) of this IRR reflects the risks of the project undertaken by the sponsor.

De-risking

- Putting risks behind while meeting expected cash flows.
  That is, de-risking or reducing the (market) discount rate of the business.



The potential of value creation is closely related to the risk premium

- Example of value creation via de-risking, investing € 100 M in a toll road at an IRR of 14,00%:

Amount Invested	Discount Rate (Ke)	Value generated (1)	Value Creation Multiple (2)
€ 100 Mn	14,00% (Bid IRR)	€ 0 Mn	1,0x
€ 100 Mn	12,00%	€ 28 Mn	1,4x
€ 100 Mn	10,00%	€ 80 Mn	2,1x
€ 100 Mn	8,00%	€ 176 Mn	3,3x
€ 100 Mn	6,00%	€ 364 Mn	5,5x
€ 100 Mn	3,60% (RFR)	€ 874 Mn	10,9x

RFR. 30-yr US Government Bond: 3,60%

(1) Value Generated: present value of cash flows discounted at Ke.
(2) Value Creation Multiple: 1 + value generated / present value of equity investment at Ke.

Project features drive value creation

- **BID IRR**: the larger the risk, the larger the reward

	Amount Invested	Bid IRR	Maximum Value Creation Over RFR
11% IRR Concession	€ 100 Mn	11,00%	€ 473 Mn
14% IRR Concession	€ 100 Mn	14,00%	€ 874 Mn
			184,66%

- **Concession term:** the longer, the larger the reward

	Amount Invested	Bid IRR	Maximum Value Creation Over RFR	IRR when Shareholder CF -20%
40 yr Concession Period	€ 100 Mn	14,00%	€ 536 Mn	12,54%
100 yr Concession Period	€ 100 Mn	13,98%	€ 1.923 Mn	12,76%
			358,85%	

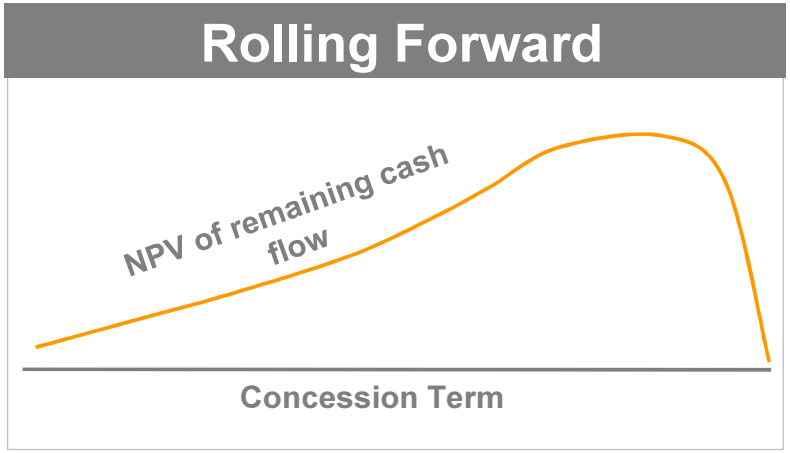
Bonus: More robust concession or less IRR elasticity to revenue variance

- **The cash flow stream profile:** the more back ended, the larger the reward.

	Amount Invested	Bid IRR	Revenue CAGR	Maximum Value Creation Over RFR	IRR when Shareholder CF -20%
Availability Payment	€ 100 Mn	14,00%	1,70%	€ 614 Mn	12,25%
Revenue Risk	€ 100 Mn	14,00%	8,50%	€ 874 Mn	12,68%
				142,32%	

Bonus: more robust concession or less IRR elasticity to revenue variance.

the rolling forward effect



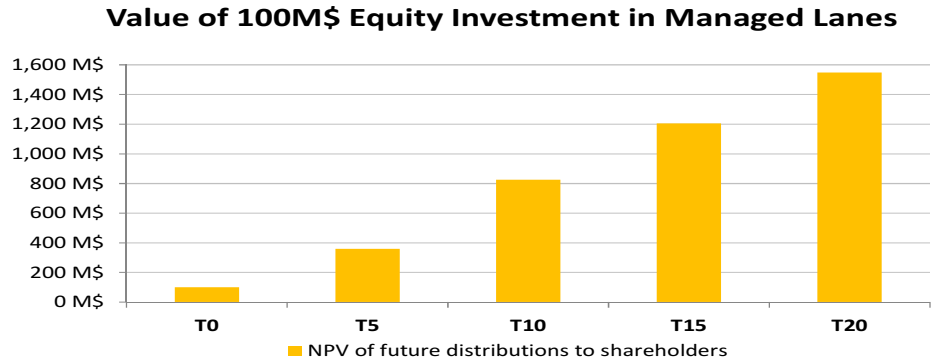
Example of value creation via de-risking and rolling-forward, investing €100Mn in a revenue risk toll road at an IRR of 14,00%:

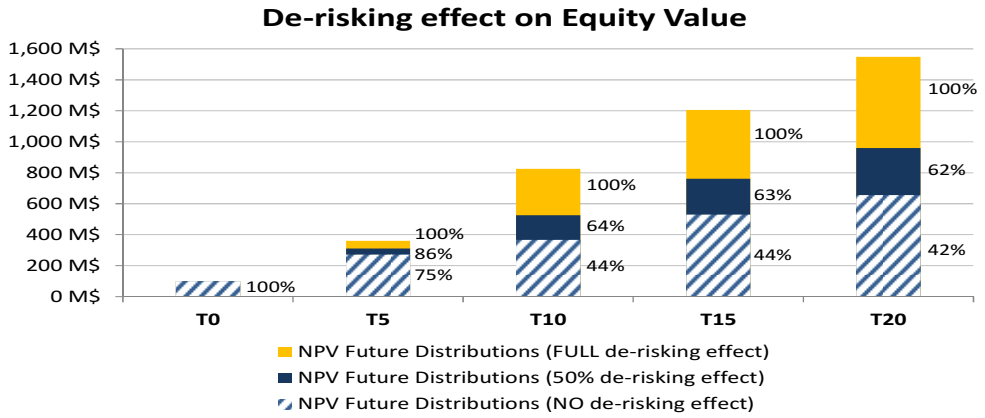
Amount Invested	Date	Discount Rate - Rolling Forward	Value generated. Pure rolling forward effect (1)	Discount Rate - Derisking	Value generated. Combined (1)
€ 100 Mn	Bid Submission	14,00% (Bid IRR)	€ 0 Mn	14,00% (Bid IRR)	€ 0 Mn
€ 100 Mn	Constr + 3 years	14,00% (Bid IRR)	€ 212 Mn	12,50%	€ 255 Mn
€ 100 Mn	Constr + 10 years	14,00% (Bid IRR)	€ 350 Mn	8,00%	€ 733 Mn
€ 100 Mn	Constr + 15 years	14,00% (Bid IRR)	€ 471 Mn	7,00%	€ 1.030 Mn
€ 100 Mn	Constr + 20 years	14,00% (Bid IRR)	€ 618 Mn	6,00%	€ 1.356 Mn
€ 100 Mn	Constr + 25 years	14,00% (Bid IRR)	€ 783 Mn	5,00%	€ 1.633 Mn

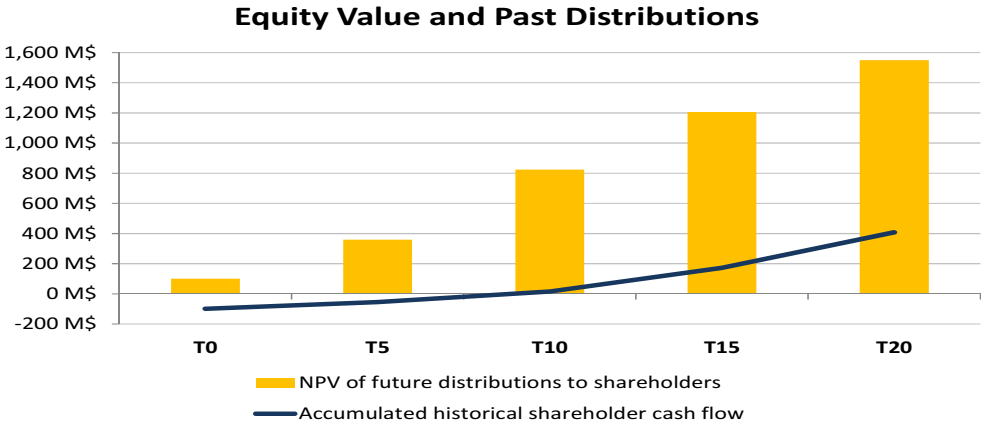
(1) Value Generated: present value of cash flows discounted at Ke.

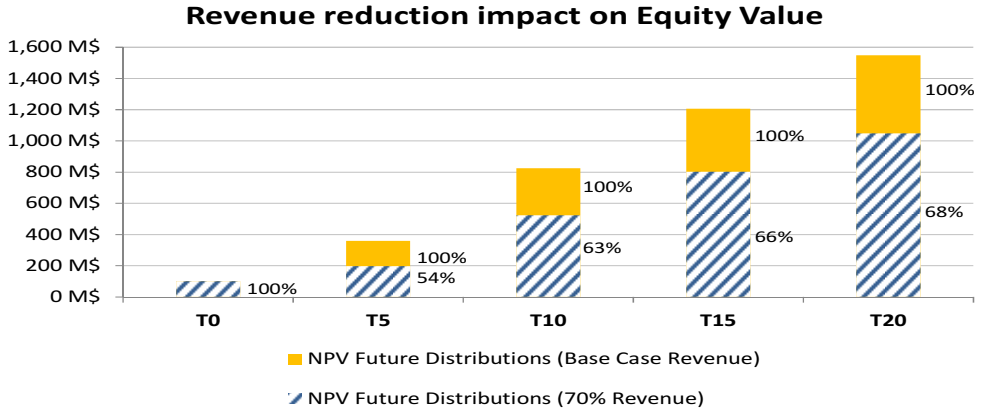
Chicago Skyway $1.8bn to $2.8bn in 10 years (underperforming)

value, distributions, de-risking and forecast









- T0: Beginning of Operations
- T5: Year 5 of Operations
- T10: Year 10 of Operations
- T15: Year 15 of Operations
- T20: Year 20 of Operations

Key take aways

In order to be successful a Private Developer is incentivized to:

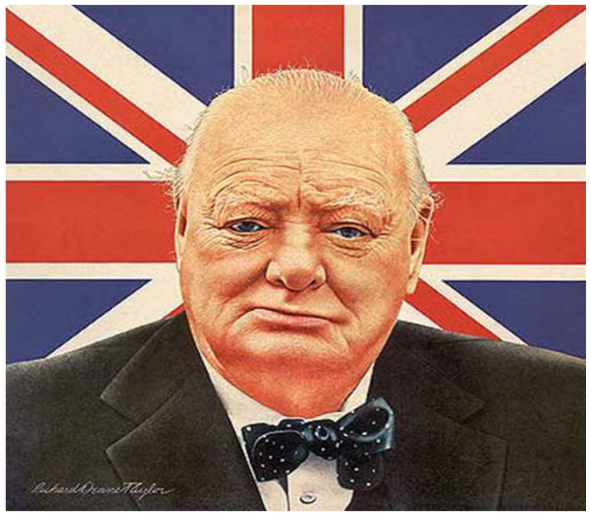
1. Achieve or exceed operational cash-flow expectations
   - Improve service to increase revenue
   - Keep costs under control
2. Reduce overtime the risk profile of the project
   - Comply with contract and legal framework
   - Protect and improve its reputation
   - Address issues as fast and as best as possible
3. And, because projects are procured in open competition,
   - Develop expertise and competitive advantages to win contracts and yet be profitable
   - Be efficient and innovative

Competition: necessity is the mother of invention

“Battles are won by slaughter and maneuver.

The greater the general, the more he contributes in maneuver, the less he demands in slaughter“

Winston Churchill



Key conditions for the private investor: Risk is always in your mind

country

- Economic and political **stability**.
- Independent and effective **legal system**.
- Developed financial market: long term local **currency** financing.
- Acceptable **counterpart risk** (critical in availability payment deals).

location

- Acute necessity, when **revenue risk**: congested urban corridors in growing economic environment.

toll setting mechanism

- Real toll avoids **sovereign risk** and can generate more value.
- Flexible toll setting mechanisms can maximize the potential for private financing in traffic risk models.

concession term

- Longer terms make more **robust** investments:
  - Resilience to economic downturns.
  - Increases value creation potential.
  - Facilitates deleveraging.

Investments with greater value generation potential through active management of project risks.

3.- Private sector driver and public sector risk on alternative delivery models

Alternative delivery models, driver and risk

Delivery Model	**Private Sector Driver** (Maximize Return)	**Public Sector Risk**
Design, Bid, Build		
Design & Build		
Availability Payment: Design, Build, Finance, Operate		
Revenue Risk Transfer: Design, Build, Finance, Operate, Toll		

Traditional approach: design – bid - build

Delivery Model	Private Sector Driver (Maximize Return)	Public Sector Risk
Design, Bid, Build	**While meeting construction standards**	**Prescription adequacy, ROW, Quantities, Design fit for construction**
Design & Build		
Availability Payment: Design, Build, Finance, Operate		
Revenue Risk Transfer: Design, Build, Finance, Operate, Toll		

Improved initial delivery: design & build

Delivery Model	Private Sector Driver (Maximize Return)	Public Sector Risk
Design, Bid, Build	While meeting construction standards	Prescription adequacy, ROW, Quantities, Design fit for construction
Design & Build	**While optimizing initial investment within standards**	**Adequacy of technical specifications for routine and long term maintenance**
Availability Payment: Design, Build, Finance, Operate		
Revenue Risk Transfer: Design, Build, Finance, Operate, Toll		

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Taking finance and life-cycle cost into account: Availability

Delivery Model	**Private Sector Driver** (Maximize Return)	**Public Sector Risk**
Design, Bid, Build	While meeting construction standards	Prescription adequacy, ROW, Quantities, Design fit for construction
Design & Build	While optimizing initial investment within standards	Adequacy of technical specifications for routine and long term maintenance
Availability Payment: Design, Build, Finance, Operate	**While optimizing life-cycle cost and service standards**	• **Congestion relief incentive?** • **L T effective specs?** • **Usage Risk (purpose)**
Revenue Risk Transfer: Design, Build, Finance, Operate, Toll		

Full integration and alignment of interests: revenue risk

Delivery Model	**Private Sector Driver** (Maximize Return)	**Public Sector Risk**
Design, Bid, Build	While meeting construction standards	Prescription adequacy, ROW, Quantities, Design fit for construction
Design & Build	While optimizing initial investment within standards	Adequacy of technical specifications for routine and long term maintenance
Availability Payment: Design, Build, Finance, Operate	While optimizing life-cycle cost and service standards	• Congestion relief incentive? • L T effective specs? • Usage Risk (purpose)
Revenue Risk Transfer: Design, Build, Finance, Operate, Toll	**While efficiently relieving congestion and servicing the public**	**Public perception:** • **Loss of control** • **Private partner default** • **Windfall profit**

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Alternative delivery models, driver and risk

Integration efficiency

Delivery Model	Private Sector Driver (Maximize Return)	Public Sector Risk
Design, Bid, Build	While meeting construction standards	Prescription adequacy, ROW, Quantities, Design fit for construction
Design & Build	While optimizing initial investment within standards	Adequacy of technical specifications for routine and long term maintenance
Availability Payment: Design, Build, Finance, Operate	While optimizing life-cycle cost and service standards	• Congestion relief incentive? • L T effective specs? • Usage Risk (purpose)
Revenue Risk Transfer: Design, Build, Finance, Operate, Toll	While efficiently relieving congestion and servicing the public	Public perception: • Loss of control • Private partner default • Windfall profit

Public Sector Risk

Private value creation potential

P3s encourage a healthier alignment of interests resulting in a more efficient delivery of infrastructure.

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4.- Wise public investment: leveraging public funds

Leveraging Public Funds

"The federal role is increasing because states pursuing P3 agreements appear to be moving away from P3 revenue-risk agreements, and instead are increasingly relying on P3 availability payment agreements. The increased reliance on federal credit lowers the private partner's cost of capital at the expense of federal taxpayers and increases the amount of the federal government's implicit equity and risk."

U.S House of Representatives Report on PPPs, September 2014

Leveraging Public Funds

15 TIFIA financed PPPs - $22 billion

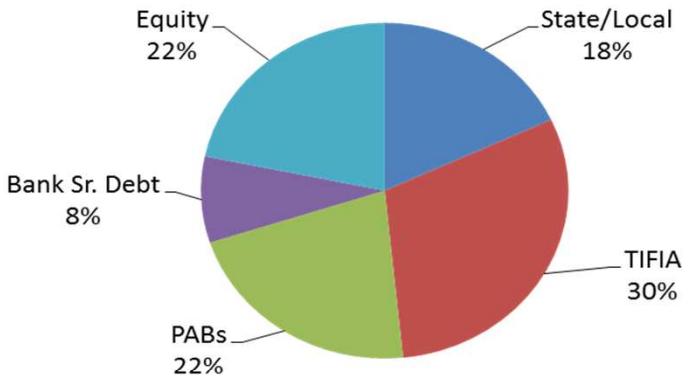
9 Revenue Risk Projects

- $13.1 billion investment
- $ 2.8 billion private equity
- $ 4.0 billion TIFIA loans
- **72 cents of equity for every TIFIA $**
- **45 cents for each (TIFIA+State) $**

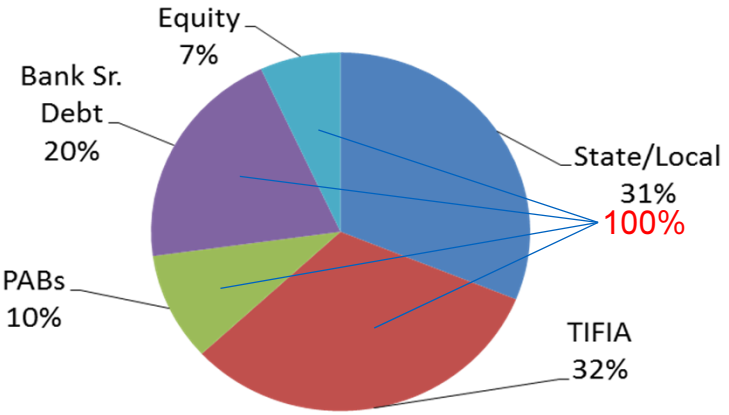
6 Availability Payment Projects

- $ 8.8 billion investment
- $ 0.6 billion private equity
- $2.8 billion TIFIA loans
- **22 cents of equity for every TIFIA $**
- **11 cents for each (TIFIA+State) $**

Toll Revenue Risk



Availability Payment



Source: *Public Works Financing* (11/14)

Towards an Availability Payment Model?

- Illinois Department of Transportation Commissioner Karl Browning said he doesn't think the state should commit to any more "availability payments," a type of public-private partnership used to finance section five of the Interstate 69 project and Indiana's share of the Ohio River bridges project.

  "It's a lot like borrowing," Browning told the Indiana Chamber of Commerce recently. "I would be more than cautious about the notion of doing public-private partnerships of the nature of some of them that we've done."

  Associated Press, November 2014

  The Portuguese Highway case
  - Program originally developed with Shadow Toll PPP contracts
  - Had to implement tolling in all its network 10 years later

What if the project is not self-sustainable just with tolls?

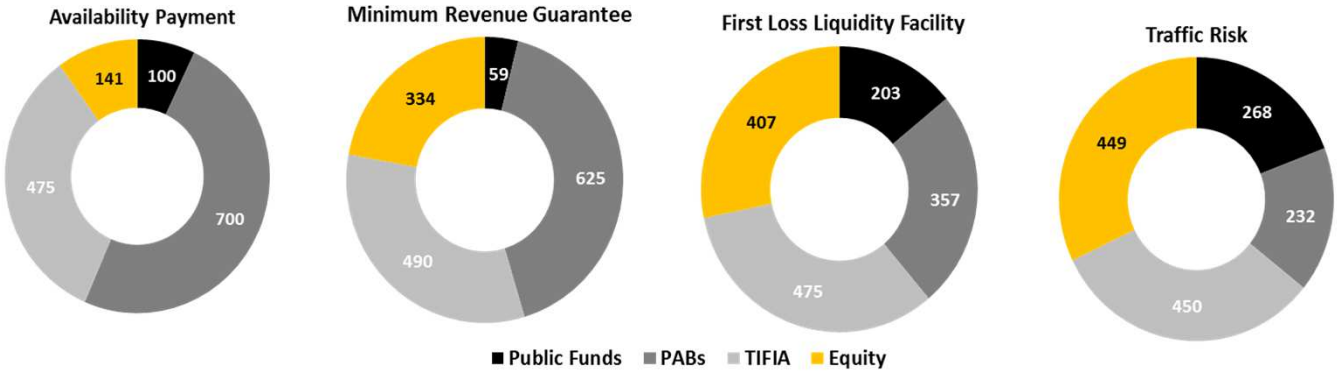
Procurement Method	Availability Payment	Minimum Revenue Guarantee	First Loss Liquidity Facility	Traffic Risk
Public Funds Amount	1647[1]	59	203	268
Size of Guarantee	n/a	1115[2]	100	-
Guarantee Triggered	n/a	-30%	-24%	n/a
Breakeven with Traffic Risk[3]	n/a	-55%	-57%	n/a
Breakeven with First Loss[3]	n/a	-49%	n/a	n/a

[1]NPV of Availability Payments (5% Discount Rate) + PFA; Public Entity keeps Toll Revenue

[2]Backstop of full debt amount

[3]Reduction in revenue until the NPV of future public fund outlays plus initial public funds equals the upfront public funds of comparison case

Total Investment = $1.4 billion [similar to NTE 3A project]



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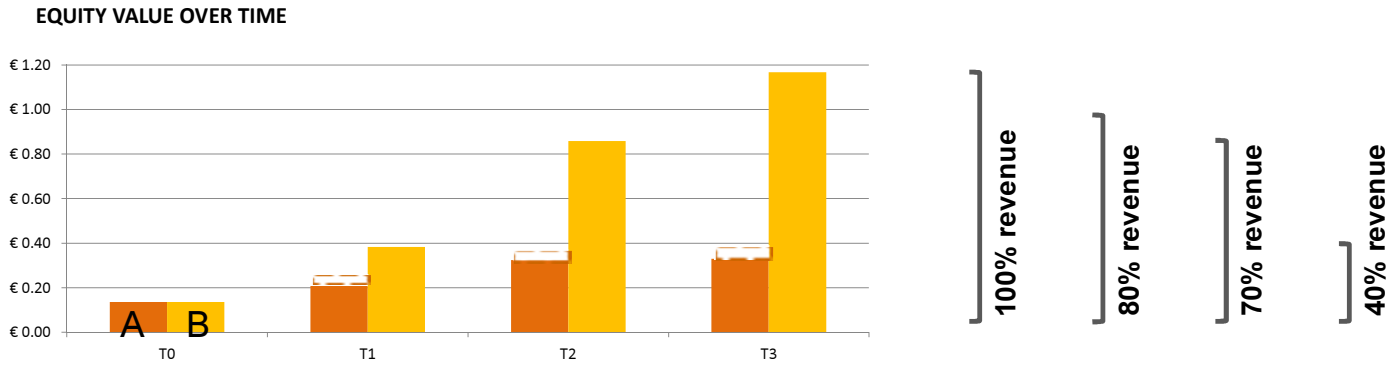
value creation: availability vs. traffic risk

- **Over time value comparison**
  - **A.- Availability Payment (low risk, low value creation), equity IRR 13.00%**
  - **B.- Revenue risk, high value creation potential highway, equity IRR 14.50%**



- T0: Bid submission. Discount rate: Bid IRR
- T1: Construction + 3 years. Discount rate: 10% (A Project); 12.5% (B Project)
- T2: Construction + 10 years. Discount rate: 7% (A Project); 8% (B Project)
- T3: Construction + 15 years. Discount rate: 7%

- **When meeting expectations, high value creation projects generate 5 times more equity value than low value creation projects.**
- **Even when not meeting expectations, high value creation projects generate more value than low value creation projects.**

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5.- Theory in Action: Case studies

Accountability: NO BAIL-OUT, the system works

Indiana Toll Road

- In sixty years of state operation, the Toll Road never covered its costs
- Up-front payment to the State of Indiana (2006): $3.85 billion
- $458 million invested in additional capacity and other improvements
- Infrastructure condition in 2014:
  - Bridge Sufficiency Rating 84.7%
  - Improved pavement condition
- Public opinion (2012 survey)
  - 76% favorable impression
  - 2.4 to 1 opinion ITR is safer than other highway alternatives
  - 3 to 1 opinion ITR is better maintained than other highway alternatives
- 2007 Economic Crisis hit traffic and financial markets
  - ITR restructured at no cost to the Public Sector, protected first by equity then debt shield

SH121 in Texas

- Assigned to the NTTA in early 2007 in exchange of a $3 billion up-front payment
- Hit by the 2007 economic and financial crisis
- NTTA was forced by financial contracts to rise by 32% tariffs across its whole system in July 2009


407 ETR
Express Toll Route
30 km
Greater Toronto Area
40 km
60 km
407 ETR SPANS 108 KM ACROSS THE TOP OF THE GTA

CUSTOMER SERVICE

1999	2010
21 workstations	174 workstations
21 telephone lines	640 telephone lines
Long wait time	<30 sec. wait since 2003
1,400 sq. ft. call centre	13,800 sq. ft. call centre

Call Center Performance – Q3 2014

Compared with average Call Center performance in eight sectors: Public Transit, Banking, IT, Healthcare, Insurance, Telecom, Utilities, Toll Roads (3,443 NorthAmerican Call Centers)

- #1 average speed of answer (19 sec) – *overstaffed?*
- #1 average abandoned calls (0.9%)
- #5 average handle time (6.58 min) – customer oriented
- #1 customer satisfaction (84%)
- #1 lowest cost per call ($4.40) – *cost oriented*

Not a prescription nor performance-based contract requirement

July 8th 2013 Floods in Toronto

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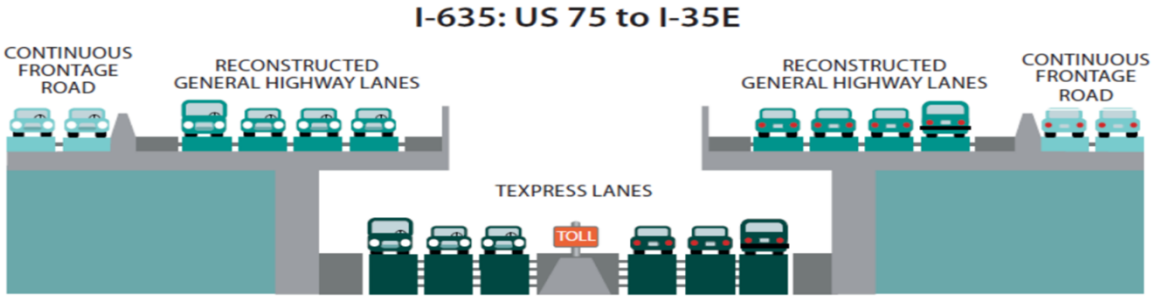
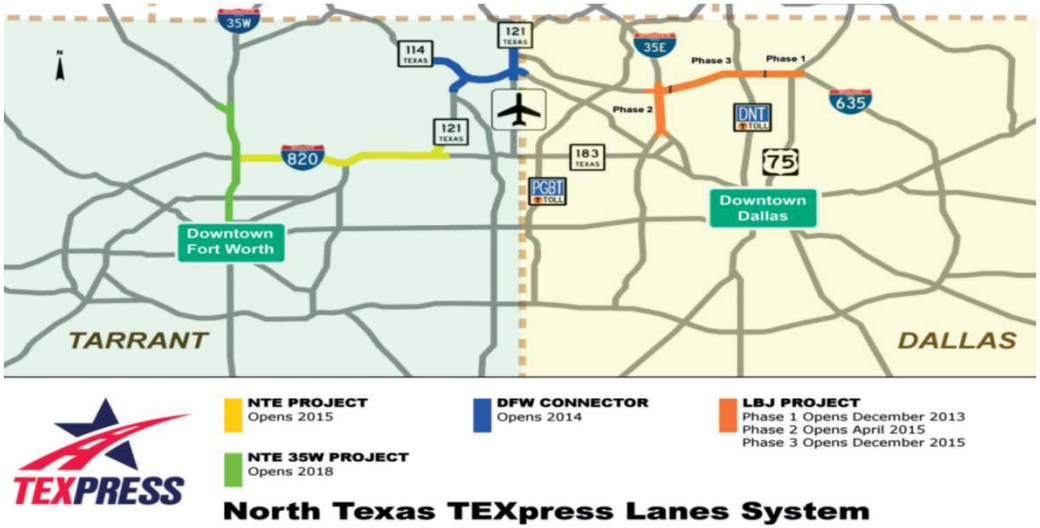
Managed Lanes Projects

LBJ TEXpress Lanes

managed lanes: facts and figures

- Reconstructing existing toll-free highways adding new express toll lanes
- Maintaining and operating the full highway through the 50 year concession period





- Managing traffic with dynamic toll pricing:
  - Ensures minimum average speed (50 mph) improving traffic flow by up to 60%
  - Allows revenue optimization
  - See video

Financial Highlights

Initial capital expenditure	2010-2018	$5.34 Bn

- Construction cost:
  - NTE $ 1.7 Bn
  - LBJ $ 2.1 Bn
  - NTE 35W $ 1.1 Bn
- Subsequent CAPEX 2016-2062 $1.94 Bn (NPV@5%= $448 M)
- Maintenance expenses 2010-2062 $2.61 Bn (NPV@5%= $711 M)

Funding

- Shareholders equity $1.52 Bn
- Private Activity Bonds $1.29 Bn
- TIFIA debt $2.03 Bn
- TxDOT contribution $1.12 Bn

taxes back to the public sector

- NPV@5% $3.5 Bn

managed Lanes efficiency: more bang for the buck

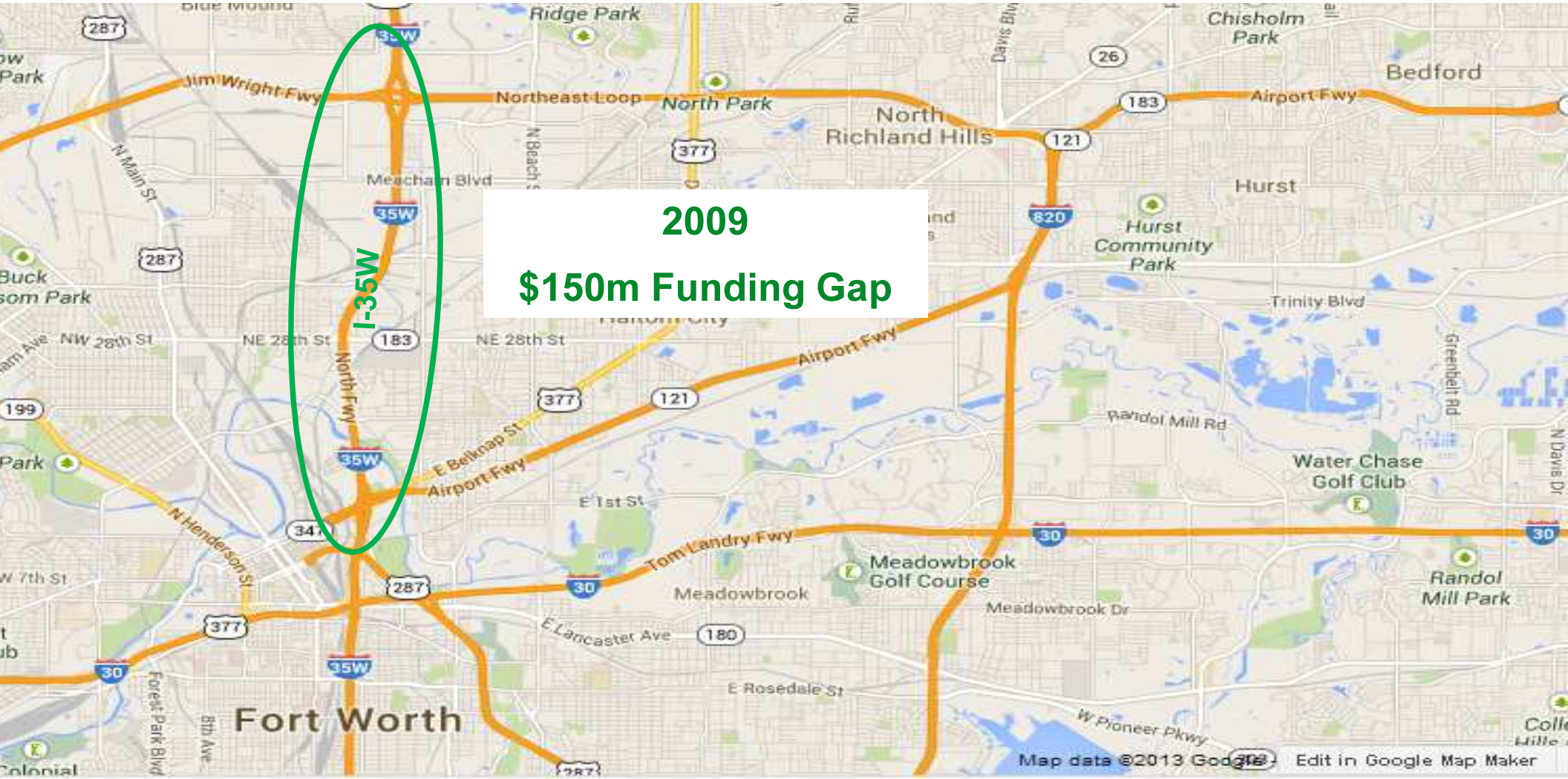
Alternative Technical Concepts and P3 Industry Review Improvements

Project	Submitted		Accepted as ATCs		Incorporated as RFP option		Implemented	
	#	Est. Value	#	Est. Value	#	Est. Value	#	Est. Value
NTE 1&2W	9	$486.5 M	-	-	3	$480 M	3	$480 M
NTE 35W	4	$150.0 M			4	$150 M	4	$150 M
IH 635 (LBJ)	24	$1.9 B	12	$403 M	1	$1.3 B	3	$1.32 B
Totals	**37**	**$2.54 B**	**12**	**$403 M**	**8**	**$1.93 B**	**10**	**$1.95 B**

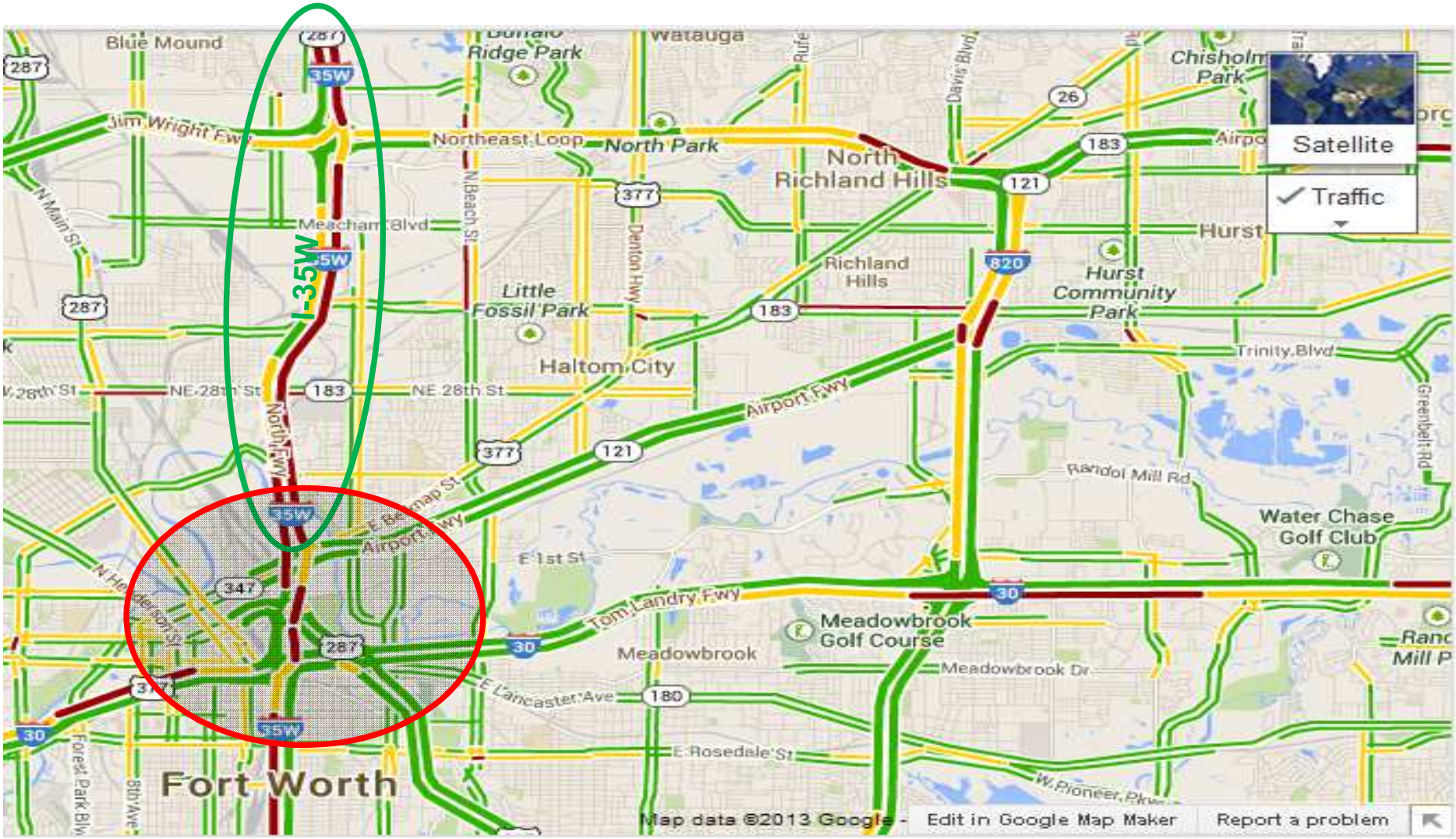
Project	Estimated Cost before efficiencies	Implemented Efficiencies	Actual Investment
NTE 1&2W	$2.29 B	$480 M	$1.81 B
NTE 35W	$1.49 B	$150 M	$1.34 B
IH 635 (LBJ)	$3.52 B	$1.32 B	$2.20 B
Totals	**$7.30 B**	**$1.95 B**	**$5.34 B**

27% lower spending

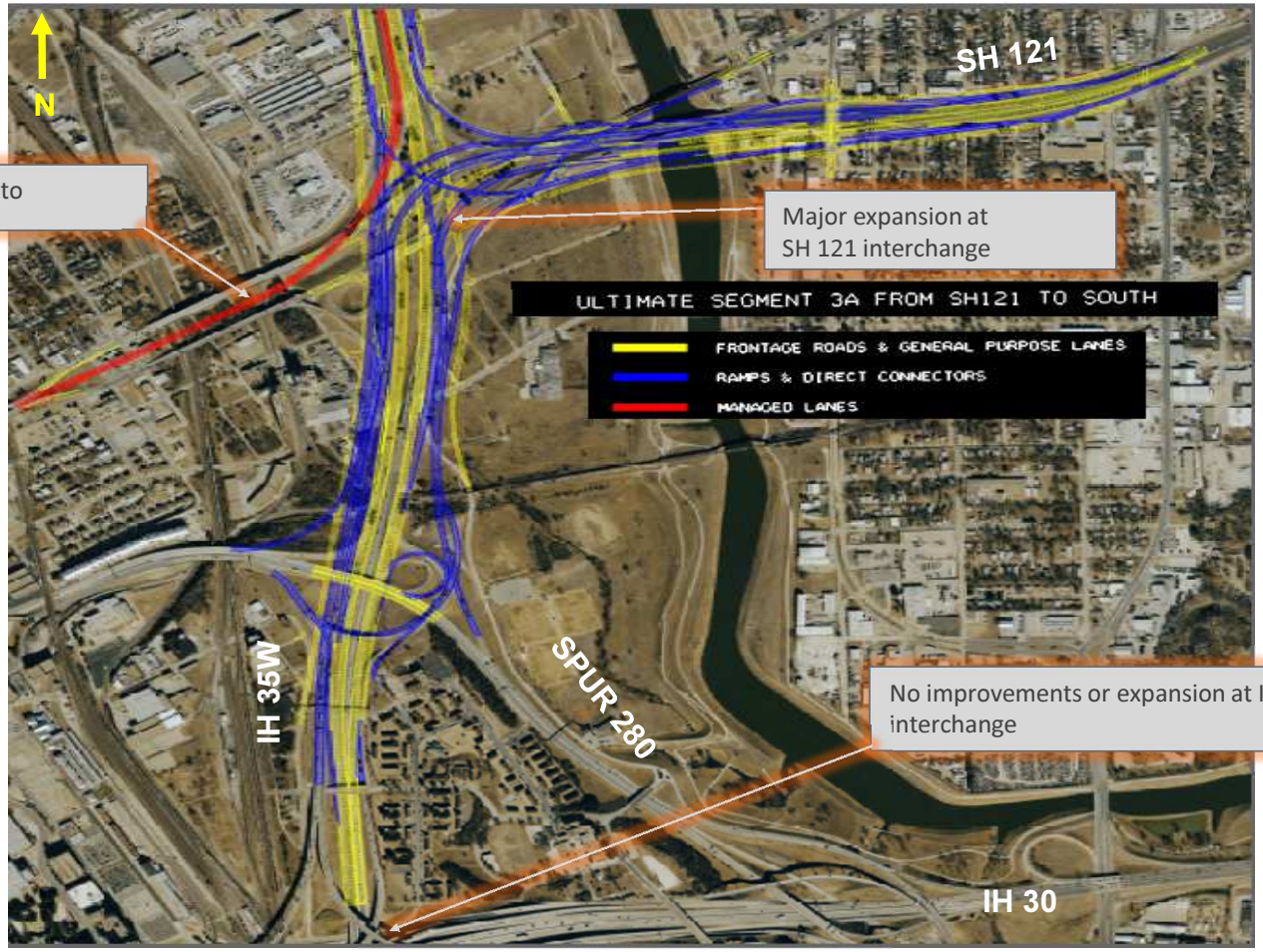
I-35W Project Development Agreement



I-35W at Fort Worth, Friday 5.30 pm



Original Schematics South Terminus



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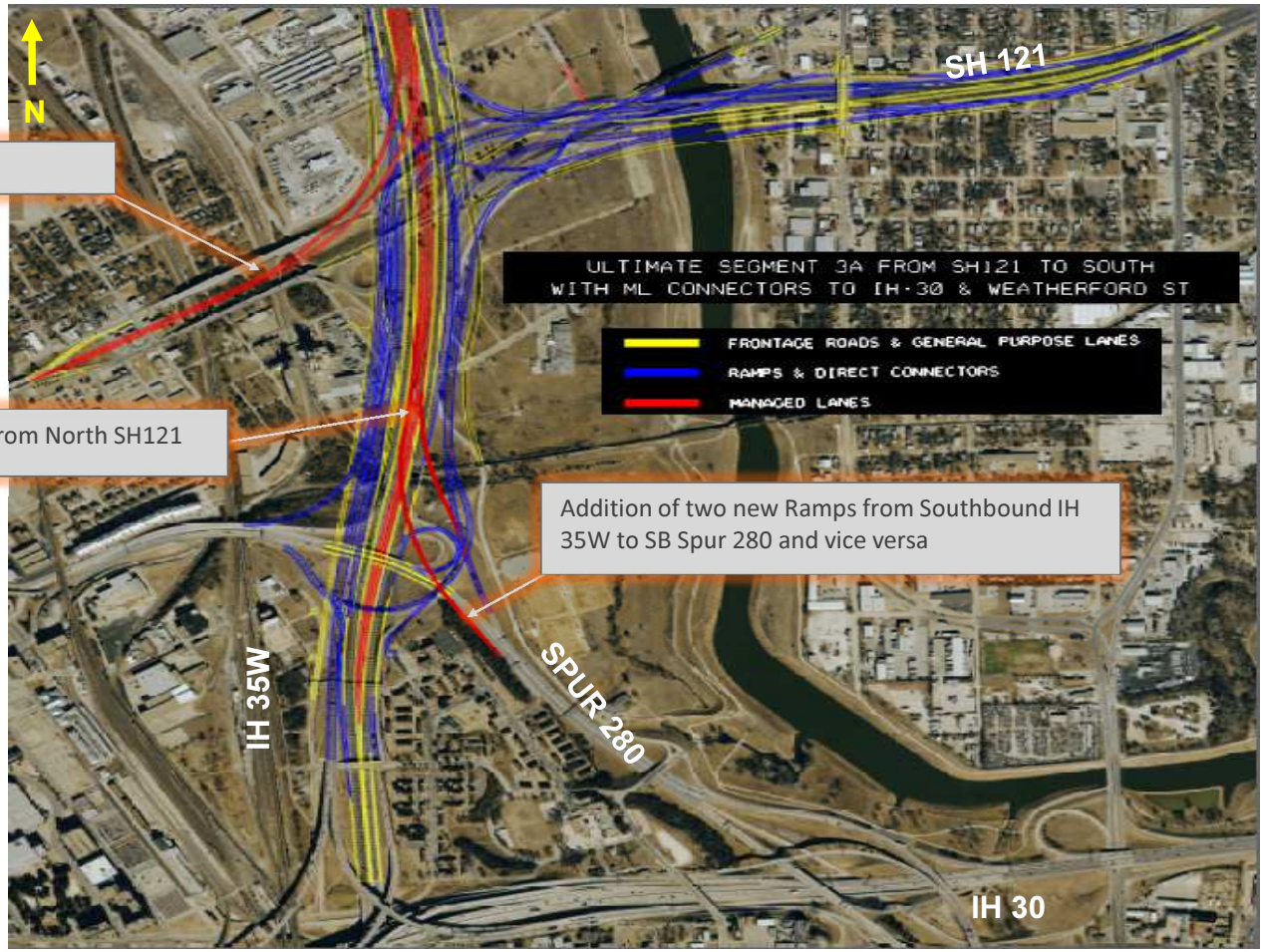
Proposed Improvements



Downtown ML connectors

IH 35 ML extended from North SH121 to North of IH-30

Addition of two new Ramps from Southbound IH 35W to SB Spur 280 and vice versa

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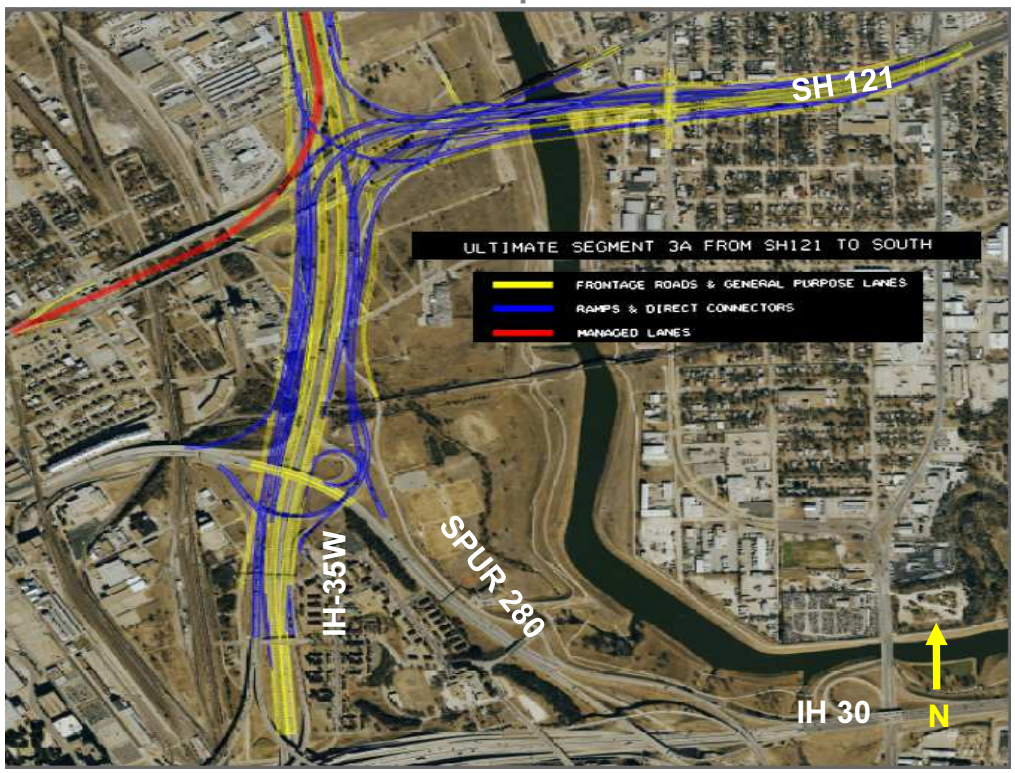
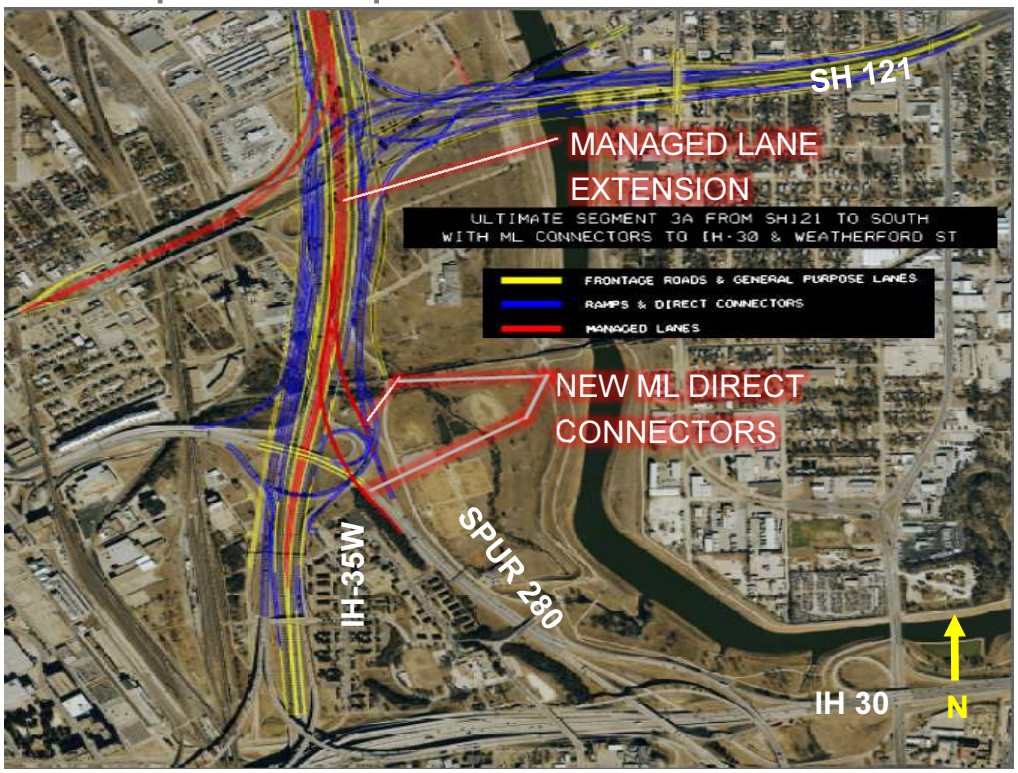
Original schematics vs. proposed Improvements

Present Concept



Proposed Improvement



+$100m construction

+$250m Revenue NPV

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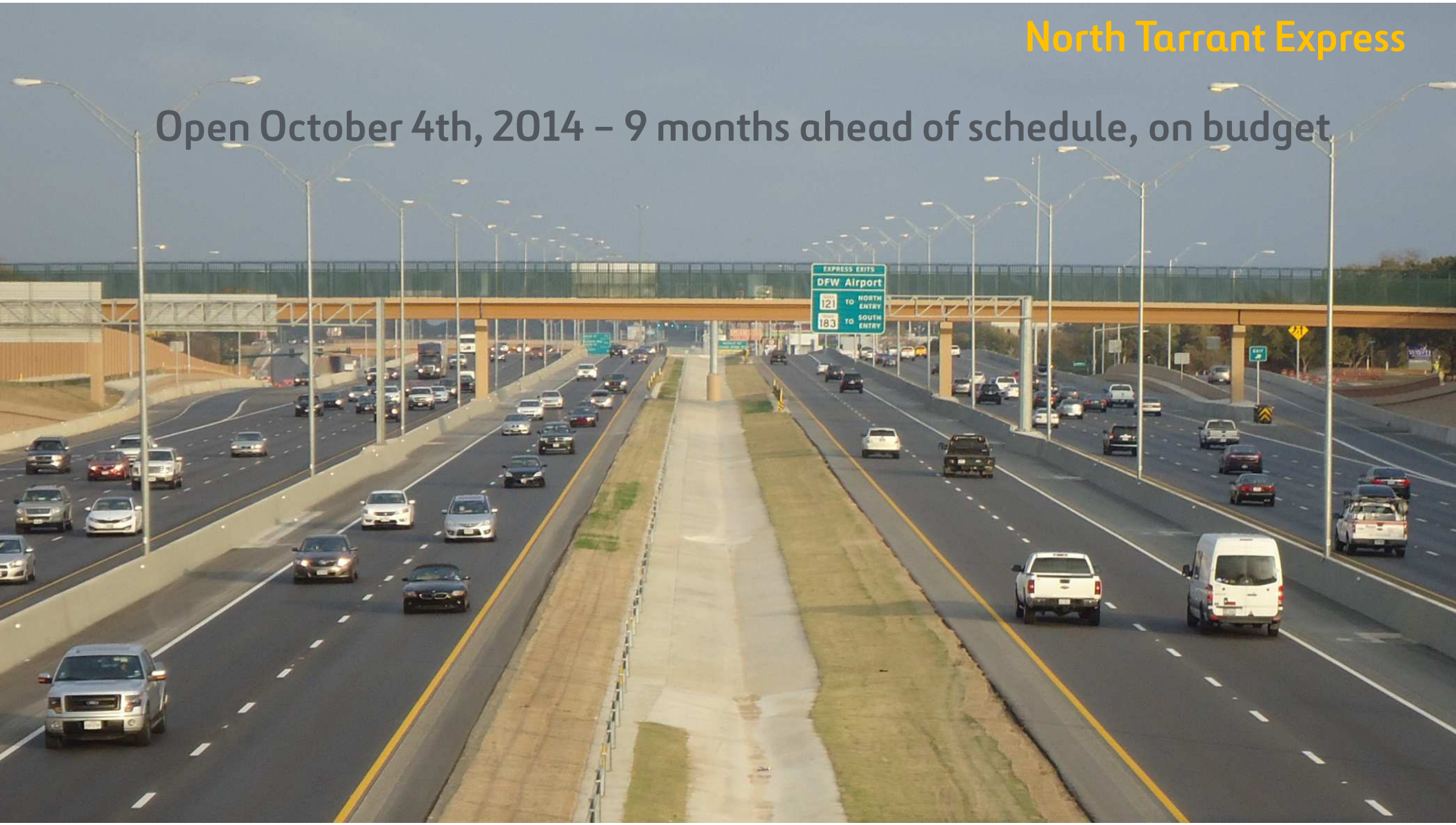
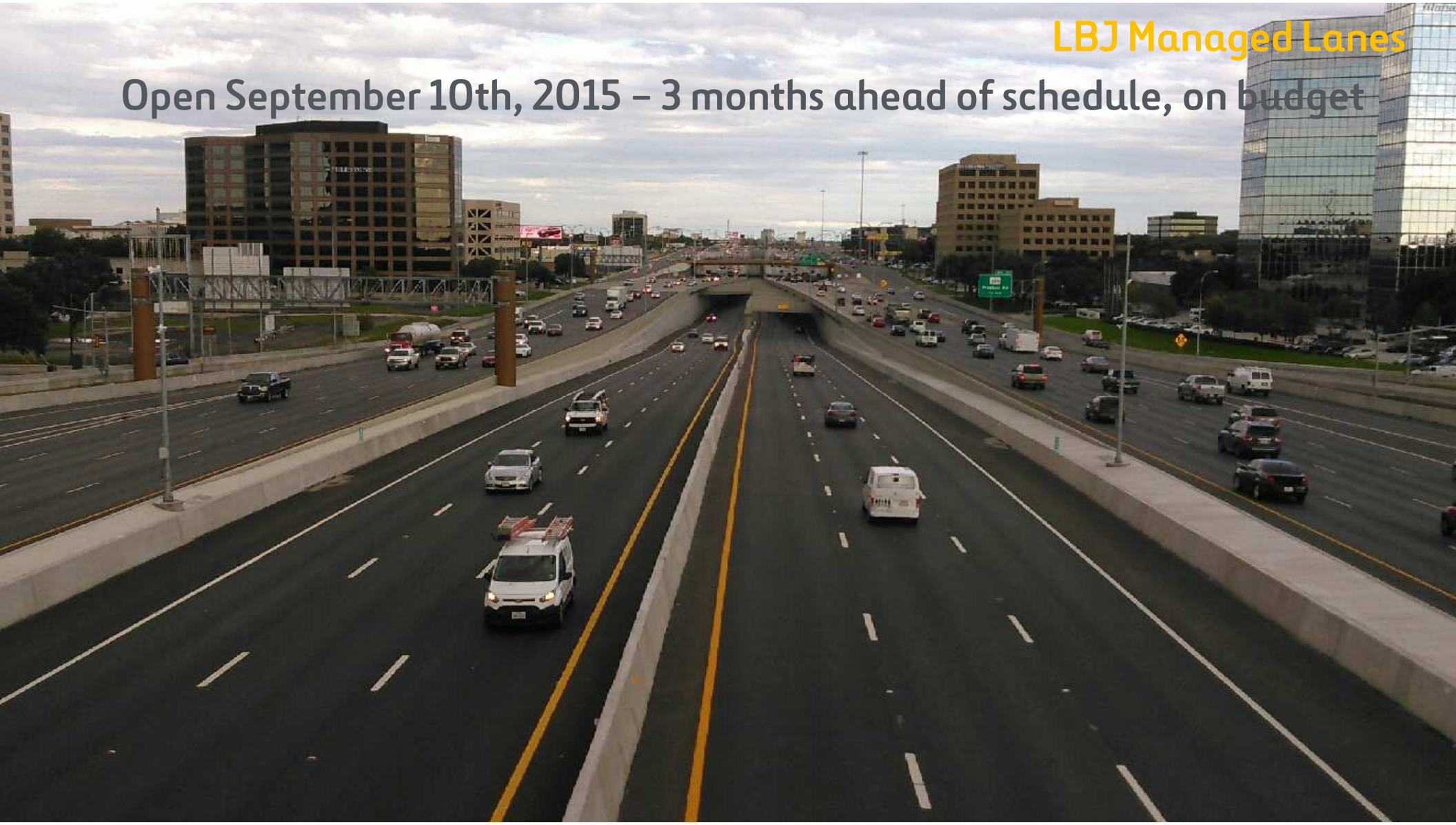
Public benefits

1. Completed 9 months ahead of schedule, on budget
2. 27% lower investment due to PPP and traffic risk driven efficiencies
3. 24% Highway corridor growth over pre-construction levels
4. 80% Congestion improvement for toll-free lanes users
5. Global air emissions decrease
6. Better network management (SR91's proven 60% higher traffic throughput)
7. Excellent public perception:
    - Project Favorability 70%; Maintenance Satisfaction 78%

North Tarrant Express



Open October 4th, 2014 – 9 months ahead of schedule, on budget


LBJ Managed Lanes
Open September 10th, 2015 – 3 months ahead of schedule, on budget

6.- The Future of PPPs and Challenges ahead

There is a need: back to slide 1, "What we all agree on"

1. Infrastructure dating from the 60's in critical condition.
   - $1.6 tr of additional investment needed by 2020 (ASCE)
   - 70,000 structurally deficient bridges across the country (FHWA)
2. Facing a growing demand: up to 3% annual urban population growth
3. Shortage in traditional Funding – ca. $80 bn annual State and Federal gas tax
4. Funding potential sources: dedicated taxes, general taxes or user fees
5. There is private capital available to be invested in US Infra (S&P: $100bn+/yr)

PPPs (especially Revenue Risk)**, can help addressing the need**

- An effective and efficient delivery and operation model
- Not necessarily fit for every situation: Projects need to make economic sense

However, there are big challenges ahead

- Controversial delivery model
- Too many ornaments knock down the Christmas Tree
- Need to recognize and value the risks the Public Sector is taking in traditional and availability models

PPPs: the Paradise of misconceptions

- PPPs involve the "sale" of roads to private interests
- Private toll road operators can charge unlimited tolls in PPP deals
- Government loses control of public assets in PPP deals
- PPP deals include "non-compete clauses" that prevent state and local officials from building nearby, competing roads
- PPPs involve selling our roads to foreign companies
- Governments give private companies the authority to take private property through eminent domain in transportation PPP deals.
- Government ends up holding the bag if a PPP project goes bankrupt and fails
- PPPs are unfair and should be avoided because they commit future generations when policymakers today cannot predict what the needs will be
- Private developers make money even if the project is not successful
- The cost of finance is higher in a PPP than in an equivalent publicly funded project
- Tolling is unfair. Voters are against tolls.
- Managed Lanes are Lexus Lanes

Not without Challenge: controversy on PPPs

The private involvement in the Development of Infrastructure is controversial. Why?

- Rational arguments? Misconceptions
- Sentimental and "principle" arguments:
  - We do not want to pay for something that has traditionally been free
  - It "smells" bad: private profits, government intervention, foreign entities
  - It hurts the traditional contractor and engineering industries
    - Too large contracts not fit for traditional local contractors
    - Engineering firms need to compete on price (Brooks Act, 1972)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