Transportation P3s – Case Studies contrasting the Canadian and U.S. Approaches
NUTC Spring Industry Workshop
May 2017
Why Governments Use P3 for Infrastructure

**RISK TRANSFER**
- Reallocate risks to the private sector
  - Revenue/Rates
  - Construction
  - Technology
  - Operations/Maintenance
  - Lifecycle/Capital Reinvestment

**EXPERTISE**
- Access to top international firms
- New technologies
- Operational best practices
- Drive value with lifecycle costing
- ‘Pre-paid’ O&M and Lifecycle

**RESOURCES**
- Minimize use of scarce public resources
  - Personnel
  - Monetary
- Access private sector capital to reduce/delay public sector outlays
  - Debt and equity
- Cost certainty
- Projects return to the Public Sector

**TIME**
- Accelerate delivery of high priority projects
- Streamlined development process
- Fast-tracked financing using private sector experience and capital resources
- Government can present that projects are moving forward and completed
Infrastructure Procurement Alternatives

<table>
<thead>
<tr>
<th>ALTERNATIVE</th>
<th>DESCRIPTION</th>
<th>GOVERNMENT RETAINED RISKS</th>
</tr>
</thead>
</table>
| Design – Bid – Build | Traditional Procurement  
Designer/Architect is agent of the government  
Significant skill required to manage cost over-runs/change orders | Some price mitigation from fixed price contracts  
Significant interface risk between contractor and designer/architect  
Key criteria is low construction price and not whole life costing |
| Design – Build | Government contracts for the design and construction of assets directly  
Contractor Coordinates  
Mix of interim and completion payments  
Government to manage and operate assets | Construction (mitigated through time-certain, fixed-price contract)  
Financing, operations, maintenance, residual value retained by government entity |
| Design – Build w/ operating contract | Traditional procurement with an operating contract with Private sector for operating the assets post construction  
Often operating contract includes a payment penalty mechanism to ensure performance  
Only format that allows municipal bond financing for non-transportation assets | Construction, financing, maintenance, residual  
Operations outsourced to Private sector with payment penalty mechanism  
Often used with already constructed assets or Governmental services |
| Design – Build – Finance | Government contracts with Private sector to deliver constructed assets  
Payment at completion or paid over time as lease  
Government to manage and operate assets | Private sector takes construction and financing risk  
Government retains ownership risks including operating, maintenance and residual |
| Design – Build – Finance – Operate – Maintain | Government contracts with Private sector to deliver constructed assets and manage and operate assets under long-term concession  
Option for Government to pay fixed “availability” amount or have Private sector collect fees or tolls on asset | Private sector takes all risks except residual as assets typically revert to Government at end of concession  
Payment over time often with monetary penalties for substandard performance |
Public-private partnership ("P3") concession structures vary by:

- **Scope**: Greenfield (new construction) vs. Brownfield (asset monetization); and
- **Payment Mechanism**: Revenue Risk (tolling/user fees) vs. Availability Payments (from government to private sector)

Greenfields facilitate project delivery and Brownfields result in an upfront payment to the government sponsor (e.g. for budget deficit reduction)

### DBFOM Model – Four Project Types

<table>
<thead>
<tr>
<th>Revenue Risk</th>
<th>Higher Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private developer collects user fee revenues from the project</td>
<td>Greenfield Construction</td>
</tr>
<tr>
<td></td>
<td>Midtown Tunnel</td>
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<table>
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<tr>
<th>Availability Payment</th>
<th>Lower Risk</th>
</tr>
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<tbody>
<tr>
<td>Governmental sponsor makes performance-based payments to the private developer</td>
<td>Brownfield Asset Monetization</td>
</tr>
<tr>
<td></td>
<td>Chicago Skyway Indiana Toll Road San Juan Airport Chicago Parking Garages Chicago Metered Parking</td>
</tr>
</tbody>
</table>

### Risk Matrix

**Higher Risk**
- **Revenue Risk**
  - Private developer collects user fee revenues from the project
  - Midtown Tunnel
  - SR-125
  - North Tarrant Expressway
  - JFK Terminal 4

**Availability Payment**
- Governmental sponsor makes performance-based payments to the private developer
- Presidio Parkway
- Denver FasTracks
- Port of Miami Tunnel
- Long Beach Courthouse
- East End Crossing
- Indianapolis Courthouse
- Penn Bridges

**Lower Risk**
- **Revenue Risk**
  - Chicago Skyway
  - Indiana Toll Road
  - San Juan Airport
  - Chicago Parking Garages
  - Chicago Metered Parking

- **Availability Payment**
  - Several portfolio sales in Canada and Europe

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Market Comparison – Closed Transactions

Canada & US P3 Greenfield Financial Close by Sector
1992-2015, InfraDeals data

<table>
<thead>
<tr>
<th>Sector</th>
<th>Canada</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>37</td>
<td>33</td>
</tr>
<tr>
<td>Water/Sewer/Waste</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Power</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Communications</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sports/Entertainment</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Education</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Gov't-Other</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Healthcare</td>
<td>71</td>
<td>0</td>
</tr>
<tr>
<td>Justice/Corrections/Defence</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Market Comparison – Closed Transactions

Canada & US: Number of P3 Deals
Financial Close, InfraDeals data

# of Deals

2007 2008 2009 2010 2011 2012 2013 2014

Canada
US
Market Comparison – Closed Transactions

Canada & US: Avg P3 Deal Size
Reported Financial Close, InfraDeals data

Average Deal $:

2007 2008 2009 2010 2011 2012 2013 2014

Canada
US
The Virginia Department of Transportation (“VDOT”) and Elizabeth River Crossings OpCo LLC (“ERC”) entered into a 58-year DBFOM public private partnership to toll the Elizabeth River crossing in Norfolk, Virginia.

- ERC will carry out three major infrastructure improvement programs across the Elizabeth River (the “Project”):
  - New Midtown Tunnel
  - MLK Expressway Extension
  - Improvement of Existing Assets

- ERC is owned by Macquarie (50%) and Skanska (50%)
  - ERC will transfer all design and construction obligations to the design-build contractor (“DBJV”), a joint venture of major construction firms including Skanska, Kiewit and Weeks Marine.
  - Construction works will be performed over a 5 year period at a cost of $1.47 billion
  - Tolling and maintenance operations will be carried out by Federal Signal through an Operating Agreement

- Project financing involves an innovative capital structure utilizing a mix of private activity bonds (“PABs”), subsidized loans from the U.S. DOT (“TIFIA Loans”), VDOT public funding, private equity contributions and revenues during construction
  - Tolling proceeds during the operational phase are the only source of revenue for repayment for the Project capital sources

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### SOURCES AND USES OF PROJECT FUNDING ($000S)

<table>
<thead>
<tr>
<th>Sources</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>PABs plus Original Issue Premium $675,003</td>
<td>Construction Works $1,468,460</td>
</tr>
<tr>
<td>TIFIA Loan 467,977</td>
<td>Tolling and O&amp;M 219,762</td>
</tr>
<tr>
<td>Revenue During Construction 368,212</td>
<td>Debt Interest &amp; Fees 225,628</td>
</tr>
<tr>
<td>VDOT Public Funds 308,605</td>
<td>Debt Service Reserve 18,547</td>
</tr>
<tr>
<td>Equity Contribution 221,043</td>
<td>Major Maintenance Reserve 46,573</td>
</tr>
<tr>
<td>Transaction Costs</td>
<td>Transaction Costs 61,870</td>
</tr>
</tbody>
</table>

$2,040,840 $2,040,840
The Indiana Finance Authority ("IFA") is procuring the Ohio River Bridges – East End Crossing project ("ORB" or the "Project") as a public-private partnership.

The scope of the Project includes the design, construction, financing, operation and maintenance ("DBFOM") of a new river crossing across the Ohio River, connecting Indiana and Kentucky just northeast of the city of Louisville.

The Project will be delivered under a ~39-year Public-Private Agreement ("PPA"):
- Estimated 4 year construction period plus scheduled 35 year operating period.
- Estimated capital requirement of $1+ billion will be funded through private sources on a non-recourse, project financing basis.
  - Debt and equity investors will be repaid through milestone payments made from the IFA during construction and through availability payments made by the IFA during the operating period.
- Financial close reached in March 2013.
  - Project was funded through long-term, tax-exempt private activity bonds issued in the U.S. capital markets.
## Availability Evolution – the 407 Experience

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>Revenue</td>
<td>Availability</td>
</tr>
<tr>
<td><strong>Term</strong></td>
<td>99 years</td>
<td>30 years + construction</td>
</tr>
<tr>
<td><strong>Financing</strong></td>
<td>Short Term bank Bridge to Capital Markets</td>
<td>Short Term Bank and Bond with Long Term Amortizer</td>
</tr>
<tr>
<td><strong>Consortium</strong></td>
<td>CINTRA/SNC/ Pension Fund</td>
<td>CINTRA/SNC</td>
</tr>
<tr>
<td><strong>Rating</strong></td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>$3 Billion</td>
<td>None</td>
</tr>
<tr>
<td><strong>Revenue Risk</strong></td>
<td>Traffic Volume</td>
<td>None</td>
</tr>
<tr>
<td><strong>Price Setting</strong></td>
<td>Consortium sets tolls</td>
<td>Government sets tolls</td>
</tr>
<tr>
<td><strong>Contract</strong></td>
<td>Project Agreement</td>
<td>Project Agreement</td>
</tr>
</tbody>
</table>
P3 Market Development Stages

- **Stage 1: Exploratory Projects**
  - Individual, unconnected projects
  - No coordinated program
  - Public P3 – Authorizations
  - Pioneering Projects (1)

- **Stage 2: Developing Programs**
  - Ramp-up in activity
  - P3 Agencies emerge (1)
  - Dominant Models emerge
  - Dominant Sectors emerge

- **Stage 3: Mature Market**
  - Dominant procurement method established
  - Adoption as sustainable policy strategy
  - Addition of new asset classes (1)

- **Stage 4: Consolidation**
  - Holdout jurisdictions join the process
  - Long term participants empty of projects
  - Resistant sectors and jurisdictions added (1)

(1) Bolded in following summary slide
# Canadian P3 History

<table>
<thead>
<tr>
<th>First Wave</th>
<th>Second Wave</th>
<th>Third Wave</th>
<th>Fourth Wave</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exploratory Projects</strong></td>
<td><strong>Developing Programs</strong></td>
<td><strong>Mature Market</strong></td>
<td><strong>Consolidation</strong></td>
</tr>
<tr>
<td>1991   Teranet</td>
<td>2001 Calgary Ride the Wind Transit</td>
<td>2007 North Bay Hospital</td>
<td>2013 Iqaluit Airport (Nunavut)</td>
</tr>
<tr>
<td>1993   Confederation Bridge</td>
<td>2003 Viva Bus</td>
<td>2008 Alberta Schools I</td>
<td>Waterloo LRT</td>
</tr>
<tr>
<td>1995   Charleswood Bridge</td>
<td>2003 Britannia Waste to Energy</td>
<td>2007 Guelph Data Centre</td>
<td>Swift Current Health (Sask)</td>
</tr>
<tr>
<td>1996   NAV Canada Highway 104</td>
<td>2004 Driver Examination Services</td>
<td>2008 Fort St John Hospital</td>
<td>Saskatoon Civic Ops (Sask)</td>
</tr>
<tr>
<td>1997   Nova Scotia Schools</td>
<td>2005 Sierra Yoyo Desan</td>
<td>2009 Montreal Concert Hall</td>
<td>Eglinton LRT</td>
</tr>
<tr>
<td>1998   F-M Highway Moncton Water Treatment Leo Hayes High School</td>
<td>2005 William Osler Hospital Abbotsford Hospital Royal Ottawa Hospital</td>
<td>2010 Quinte Courts</td>
<td>St Lawrence Bridge (Federal)</td>
</tr>
<tr>
<td>1999   407 ETR Enwave District Heating</td>
<td>2005 Edmonton Ring Road Britannia Mine Treatment Trans-Canada Highway (NB) Sea to Sky Highway Canada Line Bennett Bridge</td>
<td>2010 Quinte Courts Waterloo Courts CSEC LTAP HQ RCMP E-Division ON Forensic Centre OPP Modernization Windsor Essex Parkway McGill Hospital Toronto Airport Tunnel Pan-am Games Facilities</td>
<td>2011 OPP Modernization Windsor Essex Parkway McGill Hospital Toronto Airport Tunnel Pan-am Games Facilities</td>
</tr>
</tbody>
</table>
Differences in P3 evolution

- Summary of potential reasons for differences in P3 evolution between jurisdictions
  - Early stages, with majority of development and innovation only at DOTs
  - Focus on deficit reduction and self funding projects
  - Lower political sensitivity to tolls
  - Significant federal government incentives for transportation projects
  - Tax subsidy savings for transportation projects
  - Consensus required at political level
  - Lack of a catalyzing state funded health care system
Case Study: Maryland Purple Line Transit P3

OVERVIEW

- The Purple Line is a 16-mile light rail line that will extend from Bethesda in Montgomery County to New Carrollton in Prince George's County. It will provide a direct connection to the Metrorail Red, Green and Orange Lines; at Bethesda, Silver Spring, College Park, and New Carrollton. The Purple Line will also connect to MARC, Amtrak, and local bus services.
- The Purple Line will be light rail and will operate mainly in dedicated or exclusive lanes.
- Twenty-one stations are planned.
- The Maryland Transit Administration, a division of the state DOT, is leading the project.
- The project will consist of an approximately 5-year construction and 30-year operating period.
- The project will be completed on a DBFOM basis that includes the supply of the vehicles.
- The concessionaire will be owned by Meridiam, Fluor and Star America.
- The debt portion of the financing was raised through the TIFIA program and the issuance of Private Activity Bonds.

PROJECT TIMELINE

- RFI & Industry Forum - Spring 2013
- RFQ released - November 2013
- Shortlist announced - January 2014
- Bids submitted - December 2015
- Preferred Bidder announced - February 2016
- Financial Close - June 2016
- Design and Construction - 2016-2021
Case Study: Eglinton Crosstown LRT

PROJECT OVERVIEW

- The Eglinton Crosstown LRT project is part of Metrolinx’s regional transportation plan. It is the first of several new transit projects planned for the Toronto area and will help to reduce congestion, and improve both the reliability and integration of the transit services available to Toronto residents.

- The Eglinton Crosstown LRT will run across Eglinton Avenue between Mount Dennis and Kennedy Station. The 19-kilometer corridor will include a 10-kilometer underground portion between Keele Street and Laird Drive. It will have 25 stops and stations, linking to numerous bus routes, three subway stations, and various GO Transit lines.

- The Preferred Proponent selected by IO, who procured the project on behalf of Metrolinx, is responsible for the Design, Build, Finance, and Maintenance of the project.

- The maintenance phase will last for a 30-year period following construction.

- Large size of the project required financing with a combination of short term and long term financing achievable within capacity of the Canadian capital markets.

- Complexity involved in transit project requires that risks are appropriately allocated among stakeholders while achieving an investment grade rating and a risk transfer model that is acceptable to the market.

PROJECT TIMELINE

- Request for Qualifications – January 2013
- Short-list of Bidders Selected – December 2013
- Winning Bidder Selected – July 2015
- Construction Begins – March 2016
35 U.S. States and 1 U.S. territory that have enacted statutes that enable the use of various P3 approaches for the private development of infrastructure.
Key Success Factors

- A number of items have led to the success of the P3 model
- Not all of them were intentional and came from improving on initial errors or from private sector feedback
- Success has been at the state level

**PROCUREMENT AGENCY**
- A separate agency to shepherd project – avoids legacy department politics
- Non-political leadership – senior staff drawn from private sector and career Government employees
- Build project teams that focus on expertise
- Use VFM studies and fairness advisor to further emphasize transparency to public and bidders
- Ministry department is the client

**EXISTING TEMPLATE**
- Use existing template to maximize both bidder and global lender interest
- Complete new projects using the same standardized docs and experienced staff
- Collaborative approach (Bidder meetings) to identify risk transfer savings – improve on existing documents and refine to local market
- Release final documents to the public with only major commercial terms excised

**PROJECT SELECTION**
- Start with relatively simple, well supported projects
- Work out the ‘kinks’ before trying more complex projects
- Initially avoid municipal projects where you can’t fully direct process
- Create a transparent pipeline of projects - attracts bidders to set-up locally

**FOCUS ON CONSTRUCTION**
- Public support comes from perceived problems with cost overruns
- Clinical (eg doctors/nurses) left out of structure – project not introduced as a way to reduce or outsource staff
- Collaborative approach between construction and public sector union objectives
Picking the Right Availability Project

- The characteristics of the 'right' project is very similar, whether it's the first project of a multiple project program or the first and only deal a municipality or department will be doing in the near future.

- The key characteristics we have observed are as follows:
  - Size - The optimal size is $250 to $1.5 billion.
  - Easy to define boundary - usually a physical limit which could be a building or a segment of roadway.
  - Build, not sell or outsource - it's beneficial to avoid early projects that attract negative attention from unions and interest groups.
  - Whole Life Benefit - the P3 format works best in projects where the private sector takes both construction and operations risk.
  - Funding is in place - the biggest concern from potential bidders is the risk that the government owner will not achieve financial close.
  - Not completely designed - optimizing design leads to cost savings and the best opportunity for whole life savings.
  - Value for Money!
**Value for Money**

- **Value for Money ("VFM")** analysis compares the cost of traditional procurement and P3 procurement to determine the delivery model with better value proposition.

- The analysis involves comparison of the following factors:
  - Base costs of design, construction, O&M
  - Risk premium, charged by private sector consortium
  - Ancillary costs related to procurement
  - Financing costs
  - Risks retained by the public sponsor

- Although financing costs are higher for P3, VFM to public sponsor results from risk transfer.

<table>
<thead>
<tr>
<th>Traditional Cost</th>
<th>P3 Cost</th>
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<tbody>
<tr>
<td>Base</td>
<td>Base</td>
</tr>
<tr>
<td>Financing</td>
<td>Financing</td>
</tr>
<tr>
<td>Ancillary</td>
<td>Ancillary</td>
</tr>
<tr>
<td>Risk Premium</td>
<td>Risk Premium</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Value for Money</th>
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<tbody>
<tr>
<td>Risks Retained</td>
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<td>Financing</td>
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<tr>
<td>Ancillary</td>
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<td>Risk Premium</td>
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