



LRT, THE P3 WAY

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Canada may be commonly known for its ice hockey, poutine, maple syrup and the colloquial “eh?”, but when it comes to infrastructure, the P3 delivery model is also well entrenched, particularly for LRT.

Canadian taxpayers are not accustomed to user-pay or revenue generating infrastructure, and public transit generally runs at a loss, requiring large subsidies. Yet since the 2000s, billions on offer from federal and provincial programs have helped spur municipal decisions to develop light rail transit (LRT) under complex, long-term contractual agreements between public agencies and the private sector.

Canada currently has two LRT projects procured as a P3 (public-private partnership) in operation, with another five under construction and five under procurement.

Although P3 approaches may vary from jurisdiction to jurisdiction, public transit agencies in Canada have typically used one of three P3 delivery models for LRT projects: DBFOM, DBFM and DBF (listed in decreasing order of risk to the private sector).

DESIGN-BUILD-FINANCE- OPERATE-MAINTAIN (DBFOM)

Canadian DBFOM projects are largely financed by leveraging availability payments from the public owner to secure private debt financing. The DBFOM approach is particularly well-suited to optimizing operational performance. By bundling and transferring the design, build, finance, operation

and maintenance functions to a private sector partner over a long term, the private party has an incentive to implement life-cycle cost management before the project is transferred back to the public sector. Higher expenditures on design and construction can be justified if operation and maintenance costs will be reduced later on. The integration of all project phases also helps minimize costs, since there is an opportunity to start the next phase before the prior phase is finished (commencing construction before the design has been approved).

The Canada Line on Vancouver’s SkyTrain rapid transit system was the inaugural transit infrastructure project in North



Ontario (pictured, opposite) is using the DBFOM method.

DESIGN-BUILD-FINANCE-MAINTAIN (DBFM)

The DBFM approach is similar to DBFOM, except the public owner retains operational responsibilities and related risks vis-à-vis the private sector partner. While some operational elements may be transferred to the private sector partner, such as cleaning, these services are typically limited in scope.

Metrolinx has been utilizing the DBFM model for both the Eglinton Crosstown and Finch West LRT projects in Toronto, leveraging the local transit service's years of experience operating rapid transit. Similarly in Ottawa, LRT operations are outside the scope of P3 contracts and will be managed by the local transit service.

Having an existing public transit service, however, does not always translate in the adoption of the DBFM model for LRT project delivery, particularly when there is political interference. The Hamilton LRT procurement was stalled for four months because of operational concerns. The city reaffirmed its original approach to using the DBFOM delivery model after it agreed to include a requirement during contract negotiations for the future LRT operator to unionize its staff. The project will now go through another election process because of the delay and serves as a good reminder of the importance of mitigating political risks throughout the entire procurement process.

DESIGN-BUILD-FINANCE (DBF)

The DBF model entails an agreement for a private contractor to design, construct and finance the capital cost of a project for a fixed price by a fixed date. The public owner identifies the level of funding it will provide and requires the developer to finance project costs in excess of the public funding over a specified period of time. In return, the developer typically receives periodic or milestone payments from the owner during and for some time following construction, pursuant to the contract's schedule for repayment of project costs.

The procurement decision to use a DBF model for the Evergreen Line, an 11-km (6.8-mile) extension to the SkyTrain system in Vancouver, was based on a thorough analysis of different procurement options.

Although the DBFOM model used for the Canada Line was examined, it was determined not to be appropriate due to the greater economies of scale that could be achieved with the Evergreen Line being operated and maintained as part of the SkyTrain system. Ridership on SkyTrain and the Canada Line has steadily increased since the opening of the Evergreen Line.

CDPQ INFRA

CDPQ Infra is a subsidiary of Caisse de dépôt et placement du Québec and was launched in July 2015. It has since introduced a new alternative delivery model into the Canadian infrastructure market. The CDPQ Infra model is distinguished from a traditional P3 with the transfer of responsibilities and related risks from the project owner to CDPQ Infra, a public institution with investment expertise in public transit and greenfield projects.

CDPQ Infra has selected two private sector teams to develop Montréal's automated *Réseau électrique Métropolitain* under two separate contracts: (1) infrastructure engineering, procurement and construction (EPC), and (2) provision of rolling stock, systems, operation and maintenance (RSSOM). While the EPC contract is not alternative delivery, the RSSOM contract adopts a DBF + OM model, where the private consortium assumes some exposure on operations and maintenance.

LAUNCH OF CANADA INFRASTRUCTURE BANK

PPP Canada was a Crown corporation established by the Conservative government in 2008 that invested more than C\$1.3 billion in 25 infrastructure projects, including the Edmonton Crosstown LRT and Sheppard East Rail Maintenance Facility.

The current Liberal government has now phased out PPP Canada and launched a new C\$35 billion Canada Infrastructure Bank (CIB). The CIB's purpose is to invest in revenue-generating infrastructure projects and attract private sector and institutional investment. Since almost all Canadian P3s have been structured as performance-based availability payment deals, there is a possibility that future LRT projects will leverage project-generated revenues, such as transit fares. The benefit of transferring demand risk is often offset by cost increase of private

America adopting a P3 model. The local government's decision to deliver the Canada Line as a DBFOM was, however, controversial. The project was first described as a pie-in-the-sky system that would never achieve its break-even ridership threshold. Unions criticized P3s as a form of privatization that provided no real benefits to the public.

Shattering negative expectations, the system was completed on budget and put into service three months early, in time for the 2010 Winter Olympics. SNC Lavalin built a longer LRT line than anticipated through the cost-saving cut-and-cover method of construction, rather than boring the whole line, the latter of which was proposed by Bombardier, whose ART linear induction motor technology was used for the SkyTrain Expo and Millennium Lines. The Canada Line's ridership goal was reached three years ahead of projections.

The Kitchener-Waterloo LRT project in

| Project | P3 Type | Current Stage | Owner | Location | Approximate Capex (CAD) |
|-----------------------------------|----------|-----------------------|--------------------|-----------------|-------------------------|
| Canada Line | DBFOM | Operational | Translink | Vancouver, BC | \$2,166M |
| Evergreen Line | DBF | Operational | Translink | Vancouver, BC | \$903M |
| Ottawa LRT 1 – Confederation Line | DBFM | Under Construction | City of Ottawa | Ottawa, ON | \$2,167M |
| Waterloo LRT | DBFOM | Under Construction | Region of Waterloo | Waterloo, ON | \$872M |
| Eglinton Crosstown LRT | DBFM | Under Construction | Metrolinx | Toronto, ON | \$5,319M |
| Valley Line | DBFOM | Under Construction | City of Edmonton | Edmonton, AB | \$1,300M |
| Réseau électrique métropolitain | DBF + OM | Under Construction | CDPQ Infra | Montréal, QC | \$6,500M |
| Finch West LRT | DBFM | Proposal Evaluation | Metrolinx | Toronto, ON | \$1,000M |
| Hurontario LRT | DBFOM | Request for Proposals | Metrolinx | Mississauga, ON | \$1,400M |
| Ottawa LRT 2 – Confederation Line | DBF | Request for Proposals | City of Ottawa | Ottawa, ON | \$2,490M |
| Ottawa LRT 2 – Trillium Line | DBFM | Request for Proposals | City of Ottawa | Ottawa, ON | \$535M |
| Hamilton LRT | DBFOM | Shortlisted Proposers | Metrolinx | Hamilton, ON | \$892M |

financing. The P3 industry will have to wait and see how the CIB's mandate will unfold.

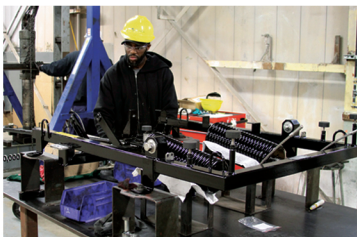
P3s, though, have become the backbone of Canadian LRT development and operations. Project pipelines have grown dramatically through comprehensive, coordinated policies that implement the P3 model, such as PPP Canada's previous mandatory P3 viability screen for projects with capital costs over C\$100 million. The past decade of realizing new LRT projects has created a significant public transit success story, providing an opportunity to focus on life cycle maintenance and line expansion.

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