

TR2018

INFRASTRUCTURE ONTARIO

# TRACK RECORD 2018 REPORT

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**Hanscomb**  
Quantity Surveyors - Since 1957

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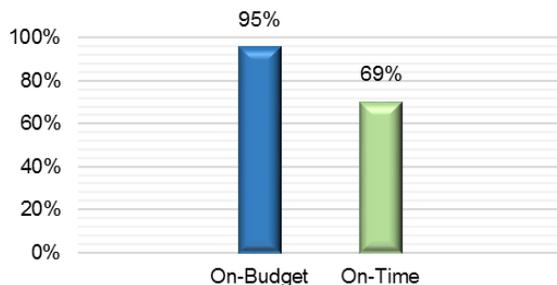
## EXECUTIVE SUMMARY

### Highlights

Infrastructure Ontario has retained Hanscomb to analyze the On-Budget, On-Time performance and Quality Design Standards for the 62 Public-Private Partnership (P3) projects that have reached Substantial Completion by the end of the 2018 calendar year. The report is initiated by Infrastructure Ontario (IO) and represents an unparalleled level of transparency in sharing the results of their large and complex infrastructure projects.

Public perception of Canadian infrastructure mega projects is that they are often over budget and not completed as scheduled. On a national and global scale, many mega projects are reported to have significant cost overruns and delays. According to an April 2017 news release by Ernst & Young [1], Canadian infrastructure mega-projects on average run 39% over budget and 12 months behind schedule. While many of these projects are power and utilities based, the results are consistent with other reports on mega infrastructure projects across the globe. A recent study [2] of 258 major roads, tunnels, bridges, urban transit, and inter-urban rail projects in 20 countries on five continents concluded that 90% of megaprojects experienced a cost overrun with an average cost escalation of 28%.

### % of Number of P3 Projects Delivered On-Budget and On-Time



It is our professional opinion, based on this analysis, that Infrastructure Ontario's On-Budget and On-Time performance exceeds generally accepted industry standards for capital projects.

### On-Budget Performance

Based on Hanscomb's analysis, of the 62 projects that reached Substantial Completion as of December 31, 2018, 59 projects or 95% were completed On-Budget. Being On-Budget means that a project's Final Project Costs (Awarded Contract Amount plus Utilized Post Contract Contingency (PCC)) were delivered at Substantial Completion (SC) for less than or equal to the Awarded Contract Amount plus budgeted PCC set at Financial Close (FC).

Having achieved a percentage rating this high is an indication of the following:

- IO reinforces a high standard of due diligence in estimating at the Pre-RFP stage;
- IO undertakes a solid level of project management for the duration of the project; and
- IO assesses and incorporates an appropriate level of contingency and risk allocation that minimizes unexpected costs during construction.

[1] <http://www.ey.com/ca/en/newsroom/news-releases/2017-average-canadian-infrastructure-project-runs-39-percent-over-budget-and-behind-schedule-by-12-months>

[2] [https://www.researchgate.net/publication/263746967\\_Underestimating\\_Costs\\_in\\_Public\\_Works\\_Projects\\_Error\\_or\\_Lie](https://www.researchgate.net/publication/263746967_Underestimating_Costs_in_Public_Works_Projects_Error_or_Lie)

## EXECUTIVE SUMMARY

### Highlights

#### On-Time Performance

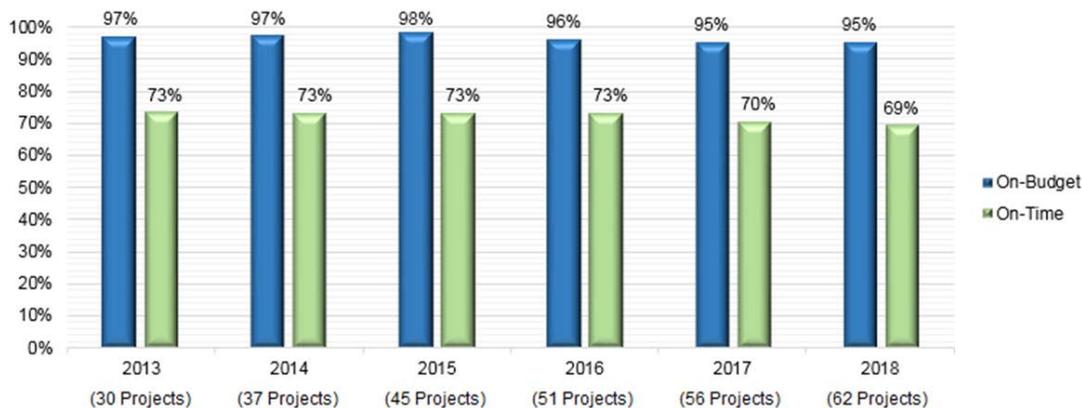
Based on Hanscomb’s analysis, 69% (43 of 62) of P3 projects were completed On-Time meaning that a project was completed before or within one month of the Scheduled Substantial Completion Date which is established at Financial Close. Of the 69% completed On-Time, 16% of the projects were completed early while still maintaining quality standards. It is noted that of the 19 projects that were delayed by more than one month, risk was transferred or shared with the private sector for 15 of the 19 projects (79%) (Refer to Section C for more detail). As the number of civil P3 projects increases relative to social infrastructure projects, it is anticipated that this performance measure will be challenged. Civil infrastructure projects tend to have a higher degree of risk related to schedule performance.

#### Quality Design Standards

All P3 procurements consider a best value approach that balances both design-technical merit and the overall cost. Infrastructure Ontario works closely with each project co-sponsor to develop a set of minimum design-technical requirements in the form of Project Specific Output Specification (PSOS). The PSOS sets a quality benchmark that constitutes the minimum standard that the bidders have to meet and exceed. The conformance to the strict requirements of the PSOS is reviewed and the design-technical aspects of the bid are scored as part of the bid evaluation process. Based on Hanscomb’s analysis, 84% of the time the winning bid had the highest financial score (lowest bid) and one of the top two design-technical scores. This confirms that there is a positive correlation between competitive pricing and quality design under the P3 model.

#### Infrastructure Ontario’s Overall Performance Trend

Infrastructure Ontario has engaged independent third parties who have reported the On-Budget & On-Time performance of the completed P3 projects for the past six years. The On-Budget performance remains consistent with those reported in the 2017 report with a nominal decrease in the On-Time performance compared to previous years. These results exceed generally accepted industry standards for capital projects.



Note: “On-Time” means that a project was completed before or within one month of the Scheduled Substantial Completion Date which is established at Financial Close.

## A. BACKGROUND INFORMATION

### A1 Background of Infrastructure Ontario

Infrastructure Ontario is a Crown agency owned by the Government of Ontario mandated to provide a wide range of services to modernize and maximize the value of public infrastructure and realty. Infrastructure Ontario upholds the Government's commitment to renew public services and protect the public interest, and often does so in co-operation with the private sector.

Infrastructure Ontario is governed by a Board of Directors and led by a Chief Executive Officer, appointed by the Lieutenant Governor in Council. The agency reports to the Minister of Infrastructure (MOI) through the Chair of the Board of Directors.

Infrastructure Ontario applies a high standard of corporate governance to ensure operational efficiency and accountability. The Ontario Infrastructure and Lands Corporation Act 2011, sets out Infrastructure Ontario's authority and responsibilities. A Memorandum of Understanding (MOU) with the Minister clarifies and delineates Infrastructure Ontario's roles and responsibilities, as well as the accountability framework between the Ministry and the Agency.

## A. BACKGROUND INFORMATION

### A2 Background of Third-Party Cost Consultant - Hanscomb

Since 2013, Infrastructure Ontario has engaged an independent third-party consultant to conduct an objective annual review of the results of P3 projects completed by Infrastructure Ontario. This Track Record (TR2018) report marks the sixth annual independent review and demonstrates Infrastructure Ontario's commitment to providing transparency in their process and the performance of their P3 project delivery. This year's report is expanded to include six additional P3 projects completed between April 1, 2017 and December 31, 2018 and reinforces Infrastructure Ontario's recognition as a leader in Public-Private-Partnership infrastructure projects. Unique in providing access to their data for analysis, Infrastructure Ontario takes pride in results to date and continues to seek opportunities to learn from experience and improve their process.

Hanscomb was retained by Infrastructure Ontario through a competitive process to provide a third party independent analysis of Infrastructure Ontario's On-Budget and On-Time performance of their portfolio of completed projects including these six additional P3 projects.

Since 1957, Hanscomb's team of experts has been providing cost planning and control services to clients to help ensure the successful completion of a wide variety of projects and studies throughout North America, the Middle East, and around the world. Our nationwide network of offices and worldwide associates allows for the easy exchange of skills, resources and information ensuring we stay abreast of the latest design and construction practices and trends.

As partners with representation on the Standards Setting Committee and Board of the International Construction Measurement Standards (ICMS), Hanscomb is working with organisations from around the world to develop and implement international standards for benchmarking, measuring and reporting construction project costs. Hanscomb is a member of the Canadian Council of Public-Private-Partnerships.

Staffed with members of the Canadian Institute of Quantity Surveyors (CIQS) and the Royal Institute of Chartered Surveyors (RICS) qualified cost consultants, quantity surveyors, engineers, schedulers, and value specialists, we maintain an integrated in-house costing staff covering all client groups including healthcare, research, education, transportation, all levels and branches of Government, and collaborate with a growing list of leading architects and engineers.

The data and insight that we collect from our broad portfolio of work across the country has been the foundation of a number of cost publications. Chief among them are Hanscomb's *Yardsticks for Costing*, an annual publication that has been running for more than forty years, plus the *Rough Guide to Building Costs* and the *Advanced Rough Guide to Construction* for the Toronto Real Estate Board. As a result of our ongoing research, cost modeling and data analysis, some of our clients include Statistics Canada, Indian and Northern Affairs Canada, and the Municipal Property Assessment Corporation.

For four years running, Hanscomb has attained Platinum Elite status by ReNew Canada for working on the country's largest infrastructure projects. Hanscomb stands alone as the only major independent Quantity Surveying firm to achieve this highest designation and is in the company of other major firms like AECOM, Aon Risk Solutions, Deloitte, Englobe, Ernst & Young, EXP, Golder Associates, Hatch, Morrison Hershfield, Parsons, SNC-Lavalin and WSP. Hanscomb has a role embedded in the country's infrastructure and appreciates the challenges and requirements of this very critical work.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

### B1. P3: SCOPE AND APPROACH

Infrastructure Ontario partners with provincial ministries, Crown agencies/corporations, municipalities and not-for-profit organizations (i.e. hospitals) to deliver the Province's public infrastructure renewal projects. Infrastructure Ontario delivers large and complex public infrastructure projects through the P3 model which uses private sector financing and industry expertise to maximize project success.

P3 is a modern project delivery technique that makes the best use of private-sector resources and expertise to provide On-Budget and On-Time project delivery, while adhering to strict design quality standards. Projects are designed to meet client specifications. Risk transfer is central to ensuring that the private sector delivers projects and that the public interest is protected. Financing and payments are structured to drive performance through construction; and in the case of Design Build Finance and Maintain (DBFM) projects through life cycle and maintenance periods.

TR2018 includes analysis of On-Budget and On-Time performance for the 62 projects that have reached Substantial Completion as of December 31, 2018.

Statistics were generated to compare the On-Budget and On-Time performance of P3 projects, provide an overview of trends based on the data in aggregate and organized by stated parameters, and make observations and provide recommendations for future consideration.

Infrastructure Ontario generally employs three main types of procurement models for P3 delivery.

#### **Build Finance (BF):**

A type of P3 project delivery model for which the private sector is responsible for construction and short-term financing during the construction period. The capital cost of the project is paid for by the public sector by lump sum payments at interim and substantial completion and the public-sector sponsor is responsible for developing an Issued for Tender design and providing ongoing maintenance after completion of construction.

#### **Design Build Finance (DBF):**

A type of P3 project delivery model in which the private sector is generally responsible for design, construction, and short-term financing. The capital cost of the project is paid for by the public-sector owner/authority by lump sum payments at interim and substantial completion. The public-sector sponsor is responsible for providing ongoing maintenance after completion of construction.

#### **Design Build Finance Maintain (DBFM):**

A type of P3 project delivery model in which the private sector is generally responsible for design, construction, maintenance, capital rehabilitation (life cycle) and financing (both short-term and long-term). The capital cost of the project is paid for by the public-sector owner/authority, in part, by construction period payment instalments and/or lump sum payment at interim and substantial completion, and through blended capital and service payment instalments over the fixed maintenance period, usually 30 years.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

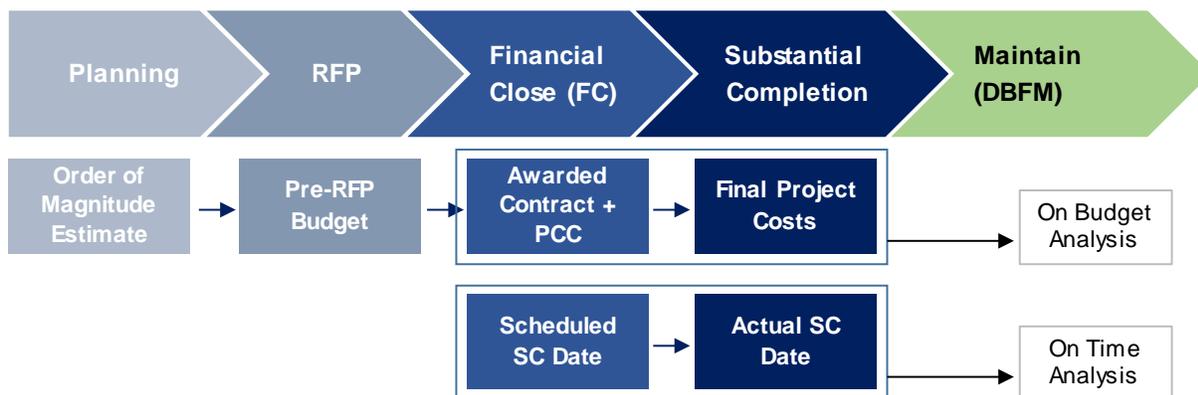
### B1. P3: SCOPE AND APPROACH

#### Design Build Finance Operate Maintain (DBFOM):

A type of P3 project delivery model in which the private sector is generally responsible for design, construction, maintenance, operation, capital rehabilitation (life cycle) and financing (both short-term and long-term). The capital cost of the project is paid for by the public-sector owner/authority, in part, by construction period payment instalments and/or lump sum payment at interim and substantial completion, and through blended capital and service payment instalments over the fixed maintenance period, usually 30 years. Typically associated with major transit infrastructure projects like LRTs, the private sector is responsible to operate the programs and services provided through the completed infrastructure project for an agreed number of years.

### B2. P3: MILESTONES FOR MONITORING COSTS

Under P3 delivery, Infrastructure Ontario is assigned a project by Government following Treasury Board approval with a set budget and delivery timelines. Once a P3 project is assigned to Infrastructure Ontario through a Letter of Direction by MOI, the following process is undertaken with checks at key milestones:



**The key milestones for On-Budget Analysis are as follows:**

#### Initial Budget at Planning:

This represents the approved project budget typically based on an **Order of Magnitude Estimate (Class D)** prepared at a Functional Program/Concept Stage by an Independent Cost Consultant assuming a traditionally delivered project including construction costs, professional fees and other project related costs. Infrastructure Ontario will make adjustments to this baseline to ensure the budget is complete and comprehensive. Adjustments might include adding items (i.e. retail or parking) that might not be funded by a Sponsoring Ministry; including additional contingency; and including P3 costs not generally carried in traditionally delivered projects such as land, financing, life cycle and facilities management costs.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

### B2. P3: MILESTONES FOR MONITORING COSTS

#### **Pre-RFP Budget:**

This represents the final cost check prepared by an Independent Cost Consultant during the planning stages prior to the release of a Request for Proposals (RFP) to proponents bidding the project, to ensure the scope of work to be released to market can be achieved On-Budget as approved by Government.

For Build Finance (BF), this estimate is typically a ***Pre-Tender Estimate (Class A or Class B for certain components)*** similar to traditional delivery based on a set of completed contract documents including drawings and specifications that define the scope of work on which the proponents will bid.

For Design Build Finance (DBF) and Design Build Finance Maintain (DBFM), this estimate is typically a ***Prior to Tender Estimate (Class C)*** based on Schematic Design Documentation and Project Specific Output Specifications that are indicative of the proposed scope of work on which the proponents will bid. This estimate is intended to provide flexibility for proponents to develop independent solutions that meet performance requirements.

#### **Awarded Contract (at Financial Close):**

This represents the budget for the project comprised of the Awarded Contract amount as executed in the Project Agreement with the successful bidder at Financial Close in addition to an updated PCC for unknowns during construction.

#### **Final Project Costs:**

This represents the actual costs for delivering the project at Substantial Completion and is comprised of the Awarded Contract amount from the successful bidder at Financial Close and the final value of non-discretionary changes for unknowns during construction.

#### **The key milestones for On-Time Analysis are as follows:**

##### **Scheduled Substantial Completion (SC) Date:**

This represents the contractually obligated date to reach Substantial Completion as executed in the Project Agreement with the successful bidder at Financial Close.

##### **Actual Substantial Completion (SC) Date:**

This represents the actual date that Substantial Completion was achieved.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

### B3. P3: ANALYSIS OF ON-BUDGET PERFORMANCE

(Awarded Contract + PCC vs Final Project Cost at Substantial Completion)

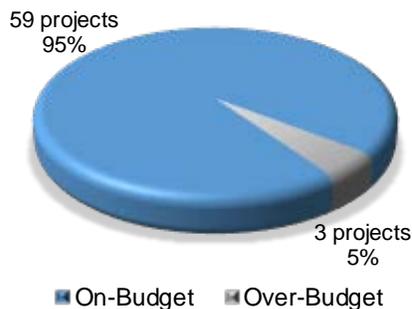
Being On-Budget means that a P3 Project was delivered at Substantial Completion (SC) for less than or equal to the budget set at Financial Close (FC). In other words, a project is On-Budget if:

Final Project Cost (Awarded Contract Amount + utilized PCC) at SC is less than or equal to the Awarded Contract Amount + budgeted PCC at FC.

On-Budget performance is the fundamental measure Infrastructure Ontario utilizes to track financial success. All P3 projects have costs managed directly by Infrastructure Ontario and costs managed by the Client. On-Budget performance considers only the Awarded Contract + the Utilized PCC.

#### P3 On-Budget Performance for 62 Projects

With 95% of projects coming in On-Budget, it appears that the additional due diligence that Infrastructure Ontario applies to its projects at planning prior to RFP release, the rigorous project management practices employed for the duration of the project, and the transfer of risk to the consortium to manage change orders, contribute to favourable outcomes.



The determining factor in this analysis is the utilization of PCC. PCC is budgeted at Award to mitigate risk for potential unknowns during construction. If this contingency is not fully utilized by Substantial Completion, then Infrastructure Ontario has demonstrated the ability to manage changes during construction while achieving the original project scope.

Overall, projects were delivered 2% under budget on \$32.1B of awarded contracts on a portfolio basis<sup>1</sup>. As was reported in the 2017 Track Record report, three projects were completed over the Awarded amount.

The first reported project over was a Healthcare project that was \$9,594 or 0.01% over the Awarded amount. The second reported project was a Transportation project \$826,836 or 0.28% over the Awarded amount. The third reported project is a Healthcare project \$6,583,468 or 11.56% over the Awarded amount. The third project is an outlier and Infrastructure Ontario was required to return to Treasury Board to request additional funding to address significant additional scope added in response to unforeseen base building conditions and malfunctioning building equipment systems selected by the owner. In order to prevent future cost overruns, Infrastructure Ontario has updated the Build Finance Project Agreement Template incorporating lessons learned.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

### B4. P3: ANALYSIS OF TOTAL PROJECT COST (TPC) PERFORMANCE

(Budgeted TPC at Financial Close vs TPC at Substantial Completion)

Total Project Cost is the sum of all costs relevant to a project that extend beyond the Awarded Contract plus the PCC. In other words:

Budget Total Project Cost at FC = Awarded Contract + Budgeted PCC + Soft Cost + Financing + other costs depending on the P3 model (i.e. life cycle costs, facilities management costs, operation costs, etc.)

Total Project Cost at SC = Final Construction Cost + Soft Cost + Financing + other costs depending on P3 model (i.e. life cycle costs, facilities management costs, operation costs, etc.)

The inclusion of Total Project Cost performance as a separate analysis is beneficial for tracking how well P3 projects are performing in terms of overall costs compared to the budgeted Total Project Costs at Financial Close based on the Awarded Contract.

Some clients that work with Infrastructure Ontario offer full disclosure for the costs that they manage independent of Infrastructure Ontario. For this analysis, where Client managed costs were not available, Infrastructure Ontario has made conservative assumptions without full insight into how Clients have managed these costs and any discretionary changes.

Discretionary changes are typically changes to the contract, once ratified, that are Client initiated and beyond the ability of the successful proponent (Project Co.) to have anticipated in their bid. Generally, changes are related to scope as Clients begin to see their projects take shape during construction. While discretionary changes are in the Total Project Cost, they are not captured in the Final Project Cost at Substantial Completion.

Of the 62 projects that have reached Substantial Completion, 52 (84%) are below, or within two percent of the budgeted Total Project Cost at Financial Close. On a Total Project Cost basis, this indicates a high level of overall project cost control and performance. This comparison reflects the Total On-Budget performance as it measures Infrastructure Ontario's ability to ensure that the entire project achieves the original scope while managing changes.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

### B5. P3: NON-DISCRETIONARY CHANGES BY SUBSTANTIAL COMPLETION

The best strategy for managing the risk of unknowns is to do as much planning, coordination and investigation as possible prior to releasing the project for RFP to minimize unknowns after the project is awarded. However, unknowns will invariably occur during construction and Infrastructure Ontario is responsible for working with Project Co and the Client to ensure that the approach and associated costs for implementing the non-discretionary change are fair and reasonable. The Post Contract Contingency is an allowance intended to cover non-discretionary changes typically associated with unknowns when all other options for mitigating costs have been exhausted.

Infrastructure Ontario's process for developing PCC budgets for P3 projects is consistent with industry standards for traditionally delivered projects where an allowance is carried as a percentage of construction. On a traditionally delivered project, this allowance may range from 3-15% on Social Projects depending on complexity and whether the work is for new construction or renovation and +15% for Civil Projects. For P3 projects, IO typically carries 5-10% on construction costs for non-discretionary changes during construction.

Based on our review, the total value of non-discretionary changes as of December 2018 was reported to be \$210.3M or 0.7% of the aggregate project costs with \$850.1M budgeted for PCC. The amount of budgeted PCC in aggregate utilized for non-discretionary changes is 24.7%; down from last years reported 25.4%.

The low utilization of PCC budgets on P3 projects is reflective of the upfront due diligence, project management controls exerted by Infrastructure Ontario, and risk transferred to the bidders.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

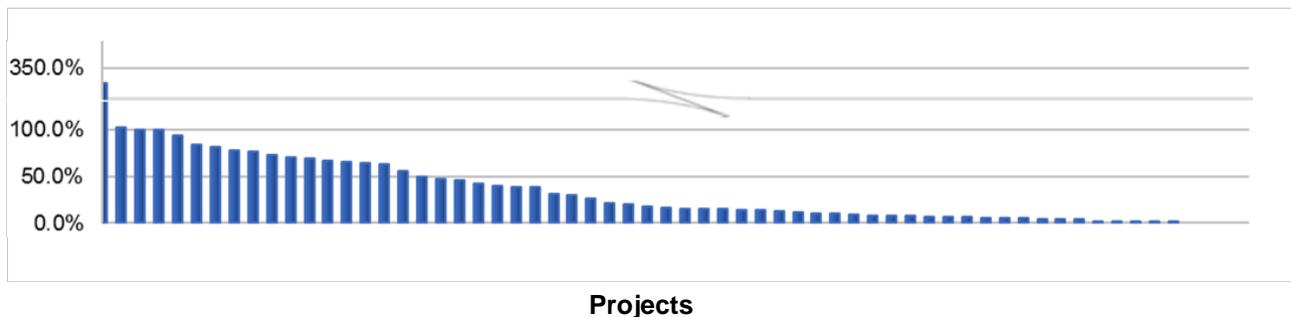
### B6. P3: POST CONTRACT CONTINGENCY UTILIZATION

The purpose of PCC is to include sufficient funding within the project budget for non-discretionary changes resulting from, for example, regulatory interpretations and amendments, and unforeseen site conditions. PCC is also used to manage changes stemming from risks retained by the Province, such as design risk in BF contracts and force majeure.

A change management process employed on all P3 projects ensures that agreements between the parties on the scope, cost and schedule implications of the change is formally and consistently tracked.

PCC is not intended to be used to address Client initiated changes to scope (discretionary changes).

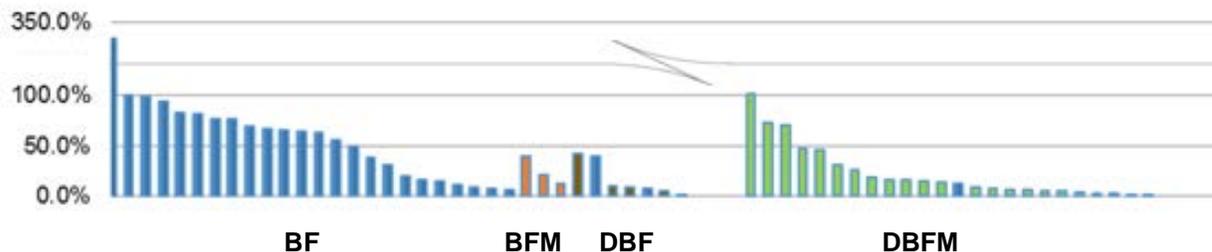
#### Post Contract Contingency Usage by Project



The majority of projects (73% or 45 of 62 projects) utilized less than 50% of the budgeted PCC. Only one project significantly exceeded its PCC allocation by almost 3.5 times. This healthcare project experienced significant delays and changes as a result of unforeseen base building conditions/ inoperative/ malfunctioning building equipment systems selected by the Owner and requirements imposed by Authorities Having Jurisdiction.

An analysis of PCC utilization by procurement model, results in the following:

#### Post Contract Contingency Usage by Procurement Model

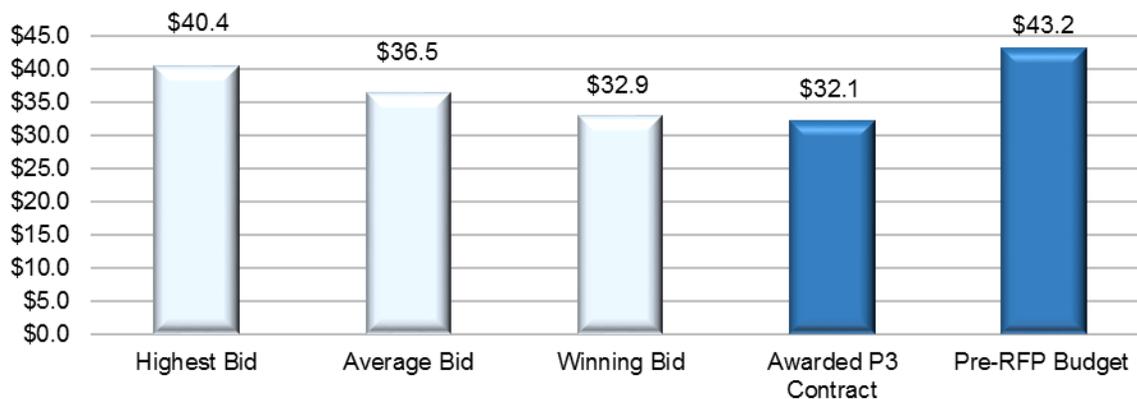


Of the 62 projects, the highest utilization of PCC occurs with BF projects. Typically, BF projects are most like Traditional Delivery and so it is not surprising to see this trend. Reduced PCC utilization is observed when the procurement model used includes a Design component (DBF and DBFM), thereby providing the most protection from changes stemming from design issues by transferring the risk to the Project Co.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

### B7. P3: ANALYSIS OF RESULTS OF COMPETITIVE PROCUREMENT

#### P3 Contract Bid Values (\$ Billion) in Aggregate



The Pre-RFP Budget is the approved budget that is set prior to releasing the project out to tender against which the bids will be compared. Overall, the Bids Received compare to the Pre-RFP Budget amount in aggregate as shown in the table below.

**Table B7.1: Variance in Aggregate of Bids Received against Pre-RFP Budget**

| Highest Bid                | Average Bid                | Winning Bid                 |
|----------------------------|----------------------------|-----------------------------|
| \$2.9 B lower than Pre-RFP | \$6.8 B lower than Pre-RFP | \$10.3 B lower than Pre-RFP |
| 7.1% lower than Pre-RFP    | 20.5% lower than Pre-RFP   | 23.8% lower than Pre-RFP    |

Of the Budgeted Awarded Contracts, DBF, and DBFM projects make up 86% of the value. Budgets prepared for DBF, DBF and DBFOM projects are based on conceptual documentation and are typically prepared at the Class C or D level. When comparing Budget to Tender, industry standards anticipate that projects will tender within 15-20% of the budget for a Class C Estimate and 20-30% for a Class D Estimate.

Overall, the Bids Received compare to the Awarded P3 Contract amount in aggregate as shown in the table below.

**Table B7.2: Variance in Aggregate of Bids Received against Awarded P3 Contract**

| Highest Bid                    | Average Bid                    | Winning Bid                    |
|--------------------------------|--------------------------------|--------------------------------|
| \$8.2 B higher than Awarded P3 | \$4.3 B higher than Awarded P3 | \$0.8 B higher than Awarded P3 |
| 25.6% higher than Awarded P3   | 13.5% higher than Awarded P3   | 2.5% higher than Awarded P3    |

The difference between winning bid and Awarded Contract value is a result of changes that occur between the RFP submission and Financial Close. This is typically a result of finalizing financing costs resulting from rate changes as well as any savings resulting from proposed innovations or value engineering between the Client and Project Co.

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

### B8. P3: ANALYSIS OF P3 BUDGET ACCURACY

(Approved Pre-RFP Budget to Awarded Contract Budget)

P3 budgets are designed to target a cost ideally between the second and third bidder assuming a competitive market to allow flexibility of choice during the evaluation and selection process. The objective is to achieve a P3 budget that is within the approved Government budget such that the Government authority and Infrastructure Ontario have the commercial authority to award the project to a compliant bidder that may or may not have the lowest priced bid and demonstrates the best value for the Province.

The budget process is rigorous in its assessment of risk and due diligence to ensure P3 budgets are developed with sufficient flexibility to absorb changes that occur as part of the design development phase. Only under extenuating circumstances that affect the ability of the project to be delivered On-Budget will budgets be updated prior to Financial Close. Following Financial Close, P3 budgets are updated to reflect actual commitments, most importantly, the P3 contract value.

Cost predictability plays an important factor when developing and updating budgets. Depending on the stage of planning and design, the degree of accuracy of an estimate for budgeting purposes can vary.

The most referenced document in the construction industry when it comes to cost performance is the Guide to Cost Predictability in Construction prepared by the Joint Federal Government / Industry Cost Predictability Taskforce for which Hanscomb was a key participant. This report studied industry outcomes and trends at key milestones establishing the following guidelines provided in the table below.

**Table B8.1: Industry Standards for Cost Predictability for Various Classes of Estimates**

| Guide to Cost Predictability in Construction |  | Industry Standard for Variance |
|--|--|--------------------------------|
| Estimate                                     | Level of Detail                                      |                                |
| Class D                                      | Functional program and broad concept                 | 20% - 30%                      |
| Class C                                      | Schematic design estimate (~33% design), program set | 15% - 20%                      |
| Class B                                      | Working drawings at 50%, 66% or 95% complete         | 10% - 15%                      |
| Class A                                      | Construction documents 100% complete                 | 5% - 10%                       |

Based on the key milestones for P3 delivery, the level of estimate and cost predictability are as follows.

**Table B8.2: Infrastructure Ontario Milestone Estimates and Corresponding Anticipated Variances**

| Infrastructure Ontario Milestone Estimates     |          | Industry Standard for Variance |
|--|----------|--------------------------------|
| Procurement Model                              | Estimate |                                |
| Government Approved Initial Budget at Planning | Class D  | 20% - 30%                      |
| Pre-RFP Estimate DBF and DBFM                  | Class C  | 15% - 20%                      |
| Pre-RFP / Pre-Tender Estimate BF               | Class A  | 5% - 10%                       |

## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

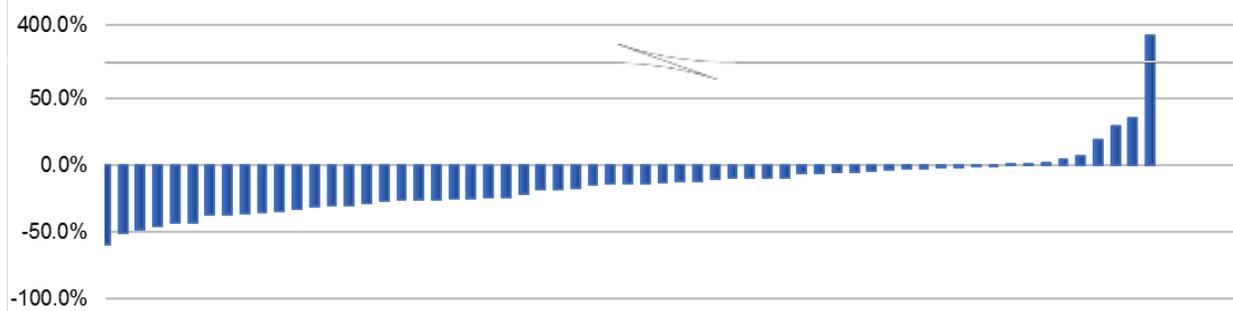
### B8. P3: ANALYSIS OF P3 BUDGET ACCURACY

(Approved Pre-RFP Budget to Awarded Contract Budget)

Infrastructure Ontario Initial Budgets are typically prepared at the Class D level, similar to traditional delivery, when there is little or no design detail available, and the best information comes from benchmarks and the experience of the Project Team at this early concept stage. Industry standards anticipate that projects will tender within 20-30% of the budget. When a project is ready to be released for tender, a Request for Proposal (RFP) is released to the market based on Pre-RFP documentation. Prior to release, a final cost check is prepared to ensure that the scope of work can be achieved for the Budget that has been approved by Government. The estimate for a BF project will have a cost predictability of 5-10% according to industry standards and 15-20% for DBF, DBFM and DBFOM projects. It is important to note that Pre-RFP Budgets are intended to provide a realistic allocation of direct and indirect construction costs and are a determination of fair market value for the delivery of a project. Pre-RFP Budgets are not a prediction of low bid. The average variance for the 62 projects at the Pre-RFP Stage was 26% under the Pre-RFP Budget. The variance is marginally over industry standards of 20% but coming in under budget is always preferable than over budget.

TR2018 analyzed the variance between Pre-RFP Budgets (Pre-Tender) and Awarded Contracts at Financial Close as a measure of Infrastructure Ontario’s ability to develop project budgets reflective of market conditions/performance based on Class A Estimates for BF Projects and Class C Estimates for DBF and DBFM projects. The following are the results of this analysis:

#### Percentage Variance of Pre-RFP Budget versus Awarded Contract Amount (excluding PCC)



## B. MODERN PROJECT DELIVERY – PUBLIC PRIVATE PARTNERSHIPS (P3)

### B8. P3: ANALYSIS OF P3 BUDGET ACCURACY

(Approved Pre-RFP Budget to Awarded Contract Budget)

For this analysis, a project was deemed to have achieved Budget Accuracy if the Awarded Contract excluding PCC at Financial Close was less than or equal to the Pre-RFP Budget. Based on this measure, 85% (52 of the 61 [1] projects) were tendered on-budget for Awarded Contracts excluding PCC at Financial Close.

**Table B8.3: P3 Budget Accuracy**

| Variance BELOW RFP Budget |        |        |       | Variance ABOVE RFP Budget |        |      |
|---------------------------|--------|--------|-------|---------------------------|--------|------|
| >50%                      | 30-50% | 10-30% | 0-10% | 0-10%                     | 10-30% | >30% |
| 10                        | 12     | 15     | 15    | 5                         | 3      | 1    |
| 16.4%                     | 19.7%  | 24.6%  | 24.6% | 8.2%                      | 4.9%   | 1.6% |
| 85.2%                     |        |        |       | 14.8%                     |        |      |

The greatest contributors to the variance from Pre-RFP to Award are the DBFM projects. The variance amongst this procurement model is attributable to long-term financing and life cycle and facilities management costs. These costs are the most difficult to estimate at the concept stage. Financing in particular is susceptible to swings in the economy that are beyond anyone's control. In addition, bids received are based on a solution that may be entirely different than the illustrative design on which budgets are based. This impacts budgeting for construction through to facilities management.

Infrastructure Ontario executes extensive due diligence prior to RFP Release in order to improve the cost predictability of a project. For BF projects that have a well-defined design and specification, additional surveys or investigations may be performed if there is concern for risk of unknowns. For DBF and DBFM projects that do not prescribe the design like the BF project but rather outline the required performance, Infrastructure Ontario may also conduct additional surveys, seek additional professional consultation and review existing benchmarks to improve confidence that the budget and scope are aligned.

The Final Pre-Tender Estimate prepared prior to release of RFP may vary from the Pre-RFP Budget as a result of further scope refinement, updated cost estimates, and revised financing, life cycle and facilities management assumptions. If the Final Pre-Tender Estimate remains below the Pre-RFP Approved Budget, the condition is seen as favourable and there is no risk for approval impediment to the release of the RFP. But, if the Final Pre-Tender Estimate exceeds the Pre-RFP Approved Budget, then either cost reductions must be found or a new formal approval is required prior to the release of the RFP. This is a risk to the viability of the project.

While there are concerns that opportunities may be lost if the full extent of budgets is not realized, it can be as concerning to have projects consistently come in over budget. For this reason, Infrastructure Ontario continues to evaluate the results of their projects to better inform future budgets.

[1] One transportation project has been excluded from this analysis as IO's involvement was not established at Pre-RFP Budget approval.

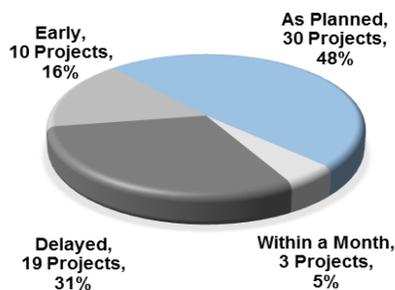
## C. P3: SCHEDULE ANALYSIS OF ON-TIME PERFORMANCE

On-Time performance was measured based on four criteria, consistent with the previous Track Record reports which looked at the variance between the planned Substantial Completion date at the time of Financial Close and the actual Substantial Completion date achieved. The measures are as follows:

- Early (more than one month ahead of the scheduled Substantial Completion date)
- As Planned (within the month prior to, or no later than five business days after the scheduled Substantial Completion date)
- Within one Month of scheduled Substantial Completion date
- Delayed (more than one month after the scheduled Substantial Completion date)

Overall, 69% (43 of 62) of P3 projects were completed On-Time or within one month of Substantial Completion, a result similar to the previous year's Track Record Report.

### On-Time Performance for 62 Projects



Of the 62 projects having reached SC as of December 31, 2018, Infrastructure Ontario has delivered 40 projects (65%) within five business days compared to last year's 64%.

A further three were completed within one month of their scheduled date, and by many within the construction industry would still be considered On-Time.

When On-Time is considered within five business days of the scheduled Substantial Completion date, this imposes a strict performance measure for projects averaging a three-year construction period. For projects that average three years in duration, this is a less than one percent variance from the schedule.

Based on our findings, this is a strong track record on a portfolio of 62 major projects. Our review found that in 15 of the 19 projects that experienced schedule delays (more than thirty business days over schedule), risk was transferred or shared with the private sector. Please refer to the table on page 18 for details related to delays.

## C. P3: SCHEDULE ANALYSIS OF ON-TIME PERFORMANCE

There have been 19 projects that have experienced delays greater than thirty business days. Eight of the delayed projects were BF, three were DBF and the other eight were DBFM projects. The factors causing the delays have been assessed along with the party that bore the associated risks.

### Delayed Projects and Primary Cause

| Project Name   | Year Completed | Procurement Method | Delay in Days | Primary Cause   | Owner Risk | Shared Risk | Project Co Risk |
|----------------|----------------|--------------------|---------------|---|------------|-------------|-----------------|
| Healthcare     | 2009           | BF                 | 32            | Strike  |            | ✓           |                 |
| Social         | 2009           | BF                 | 52            | Schedule Management/Winter Conditions   |            |             | ✓               |
| Healthcare     | 2009           | BF                 | 70            | Design Errors by Province   | ✓          |             |                 |
| Healthcare     | 2011           | BF                 | 183           | Resourcing/Technical Deficiencies   |            |             | ✓               |
| Healthcare     | 2012           | DBFM               | 31            | Unknown Site Conditions   | ✓          |             |                 |
| Healthcare     | 2012           | BF                 | 427           | Schedule Management/Scope Change  |            | ✓           |                 |
| Justice        | 2013           | DBFM               | 60            | Provincial Trade Strike: Elevators / Project Co. Management   |            | ✓           |                 |
| Social         | 2013           | DBFM               | 74            | Site Conditions   |            | ✓           |                 |
| Healthcare     | 2013           | BF                 | 174           | Schedule Management/Errors & Omissions  |            | ✓           |                 |
| Justice        | 2014           | DBFM               | 70            | Provincial Trade Strike: Elevators  |            | ✓           |                 |
| Justice        | 2014           | DBFM               | 158           | Provincial Trade Strike: Elevators/Terrazzo/Roofer  |            | ✓           |                 |
| Social         | 2015           | BF                 | 84            | Structural steel fabricators were late in the delivery and installation of major structural elements. This created a cascading impact on schedule, resulting in unanticipated winter (cold weather) work. |            | ✓           |                 |
| Healthcare     | 2015           | BF                 | 204           | Unforeseen base building conditions/ Inoperative/ malfunctioning building equipment systems selected by owner.  | ✓          |             |                 |
| Transportation | 2015           | DBFM               | 283           | During independent testing, there was a quality control issue with the highway girders and therefore, they were rejected and corrective action was taken by PCo to replace all associated girders.        |            |             | ✓               |
| Transportation | 2015           | DBFM               | 925           | 75% of the sites were delivered early or On-Time. Pre-construction works (cleaning and decommissioning) resulted in late handover of site(s) for construction   | ✓          |             |                 |
| Social         | 2015           | DBF                | 351           | Schedule management/ Resourcing   |            |             | ✓               |
| Transportation | 2016           | DBFM               | 174           | Schedule Management/ Permit Delays/ Resourcing  |            |             | ✓               |
| Education      | 2016           | DBF                | 175           | Schedule management/ Resourcing   |            |             | ✓               |
| Healthcare     | 2017           | DBF                | 297           | Schedule Management/ Resourcing   |            |             | ✓               |

Of the 19 delayed projects, Project Co. retained full or shared responsibility for the delay on 15 projects.

## D. P3: ANALYSIS OF WINNING BID AND BEST DESIGN-TECHNICAL SCORE

For P3 projects, proponent teams are pre-qualified in a Request for Qualification (RFQ) process. The submissions are reviewed to pre-qualify project teams that have the necessary construction capability, experience and financial capacity to undertake projects of such size and complexity. From this process, typically three (for DBF and DBFM projects) and five (for BF projects) proponent teams are shortlisted and invited to respond to a Request for Proposal (RFP) that sets out the conditions and specifications required to undertake the project. Once the submissions are received from the proponents, Infrastructure Ontario evaluates the bids based on Financial and Design-Technical criteria. Infrastructure Ontario believes that both Design-Technical merit and price are important to successful P3 projects.

Infrastructure Ontario's process requires a minimum design-technical threshold of a high standard. As such, all P3 procurements take into account a best value approach that balances both design-technical merit and pricing.

All bids must meet these high design-technical standards prior to being evaluated on price to ensure that the Government or other public-sector client ultimately receives a high-quality, cost-efficient project. Following evaluations after being required to correct non-conformances in their proposal, the highest-ranking bidder is identified as the "Preferred Proponent." Infrastructure Ontario and the client then proceed to further refine the Project Agreement and to negotiate a final contract with this proponent. The chart on the following page shows the results of the ranking for all DBF and DBFM projects.

While delivering On-Budget is critical to Infrastructure Ontario's success, so is maintaining quality. Infrastructure Ontario has taken steps to upgrade quality control to ensure that the projects delivered are of the highest quality. Infrastructure Ontario has introduced a requirement that developers, designers, and contractors certify that the design and construction of a project is in accordance with all applicable Ontario laws and regulations and adheres to the conditions of the contract.

In particular, designers and Project Co. are now required to certify that a project is designed to meet the project output specifications and must certify the project has been constructed in accordance with their design. Designers therefore must monitor construction in order to provide this certification and be involved in all design modifications to remedy deficiencies and address non-conforming work.

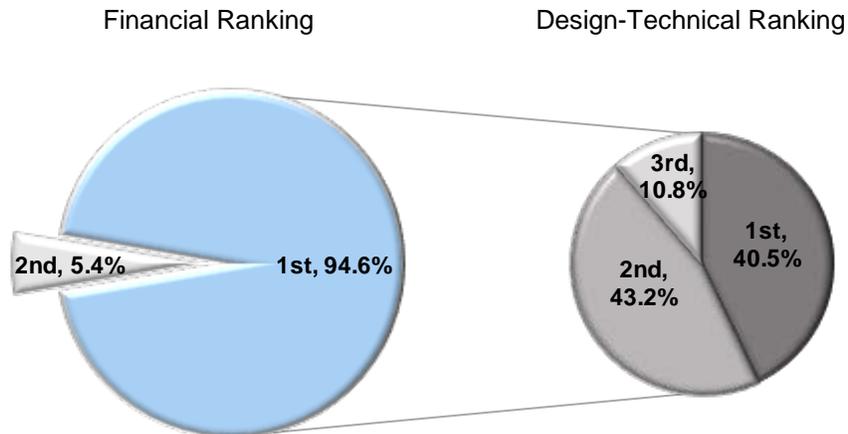
This analysis is intended to confirm if there is a positive correlation between financial score and design-technical score in the evaluation process for DBF and DBFM projects. Only DBF and DBFM projects were considered for this analysis because these projects are structured to encourage different design solutions that can be scored on various components. For BF projects, the design is fixed leaving cost and schedule as the main parameters for evaluation.

The winning bidder in 94.6% of the projects was the Proponent with the lowest financial bid. Amongst these, 95% that had the lowest bid, 40.5% placed 1<sup>st</sup> and 43.2% placed 2<sup>nd</sup> for a total of 83.7% in the top two for design-technical score.

### D. P3: ANALYSIS OF WINNING BID AND BEST DESIGN-TECHNICAL SCORE

Based on these results, 84% of the time the winning bid had the highest financial score and one of the top two design-technical scores. This confirms that there is a positive correlation between competitive pricing and quality design under P3.

#### Analysis of Winning Bid and Best Design-Technical Score for DF and DBFM Projects



For the two projects (one DBF and one DBFM) where the lowest bid was not the successful proponent, the contract was awarded to the bidder receiving the highest design-technical rank and second lowest bid amount, still resulting in the best value. Infrastructure Ontario should continue to maintain this approach to both design-technical and financial elements that help drive high quality and innovative design and contribute to competitive pricing.

## E. OBSERVATIONS AND RECOMMENDATIONS

Overall, the process Infrastructure Ontario is implementing for P3 projects is working and resulting in excellent On-Budget performance from Award to Substantial Completion.

P3 projects completed by December 31, 2018 were delivered well above industry standard benchmarks with 95% of the 62 projects coming in On-Budget. This requirement of zero tolerance for going over budget is a strict measure. With 95% of projects coming in On-Budget, it would seem that the additional due diligence that Infrastructure Ontario applies to its projects at planning prior to RFP release, the rigorous project management practices employed for the duration of the project, and the transfer of risk to the consortium to manage change orders contribute to these favourable outcomes.

In terms of meeting schedule, Infrastructure Ontario's On-Time performance is consistent with last year's results across the P3 portfolio. When the definition of On-Time performance is within one month of Substantial Completion date, performance is 69%. It is noted that Project Co. retained full or shared responsibility for the delay on 15 of the 19 delayed projects, which limits the Governments' exposure to financial risks as a result of the delay to the project delivery schedule.

On-Time performance is strong and could benefit from continued monitoring of projects and lessons learned. As Infrastructure Ontario's portfolio ventures into the delivery of more civil P3 projects, complexity will increase and new strategies may be required to manage these types of projects.

## APPENDICES

### APPENDIX A: GLOSSARY OF TERMS & ACRONYMS

- **Ancillaries:** Costs that include but are not limited to fees relating to architects, engineers, project managers, programmers, cost consultants, other consultants, building permits, development charges, commissioning, testing and inspection, moving, taxes, etc. For P3 projects, some ancillary costs will be managed and paid by the Client/Authority and some will be assumed by Project Co. and billed to the Client/Authority on a pass-through basis.
- **Awarded Contract:** This represents the budget for the project comprised of the Actual Awarded Contract amount as executed in the Project Agreement with the successful bidder at Financial Close.
- **Build Finance (BF):** A type of P3 project delivery model for which the private sector is responsible for construction and short-term financing during the construction period. The Capital Cost of the project is paid for by the public sector in a lump sum at the completion of construction and the public-sector sponsor is responsible for developing detailed design and providing ongoing maintenance after completion of construction.
- **Build Finance Maintain (BFM):** A type of P3 project delivery model in which the private sector is generally responsible for construction, maintenance, capital rehabilitation (life cycle costs) and financing (both short-term and long-term). The Capital Cost of the project is paid for by the public sector, in part, by partial lump sum payment at completion of construction and through blended capital and service payment installments over the fixed maintenance period, usually 25 to 30 years. The public-sector owner/authority is responsible for developing the detailed design of the facility. This model was used to transition early projects and is no longer used by Infrastructure Ontario.
- **Capital Costs:** Include construction, financing and other project costs associated with implementation of the project. Capital Costs do not include costs associated with operations, or life cycle activities.
- **Design Build Finance (DBF):** A type of P3 project delivery model in which the private sector is generally responsible for design, construction, and short-term financing. The Capital Cost of the project is paid for by the public-sector owner/authority by lump sum payment at completion of construction. The public-sector sponsor is responsible for providing ongoing maintenance after completion of construction.
- **Design Build Finance Maintain (DBFM):** A type of P3 project delivery model in which the private sector is generally responsible for design, construction, maintenance, capital rehabilitation (life cycle) and financing (both short-term and long-term). The capital cost of the project is paid for by the public-sector owner/authority, in part, by construction period payment instalments and/or lump sum payment at interim and substantial completion, and through blended capital and service payment instalments over the fixed maintenance period, usually 30 years.

## APPENDICES

### APPENDIX A: GLOSSARY OF TERMS & ACRONYMS

- **Design Build Finance Operate Maintain (DBFOM):** A type of P3 project delivery model in which the private sector is generally responsible for design, construction, maintenance, capital rehabilitation (life cycle) and financing (both short-term and long-term). The capital cost of the project is paid for by the public-sector owner/authority, in part, by construction period payment instalments and/or lump sum payment at interim and substantial completion, and through blended capital and service payment instalments over the fixed maintenance period, usually 30 years. Typically associated with major transit infrastructure projects like LRTs, the private sector is responsible to operate the programs and services provided through the completed infrastructure project for an agreed number of years.
- **Discretionary Changes:** Changes or variations to the Project Agreement that are initiated by the public-sector owner/authority. This type of change typically amends the scope of the project.
- **Final Pre-Tender Estimate:** The estimate of total project costs developed by an external cost consultant reflecting the project scope based on a well-defined scope of work and Contract Documents.
- **Final Project Costs:** This represents the actual costs for delivering the project at substantial completion and is comprised of the Awarded Contract amount from the successful bidder at Financial Close and the final value of non-discretionary changes for unknowns during construction.
- **Financial Close:** The time at which the Project Agreement is executed with the successful bidder.
- **Non-Discretionary Changes:** Changes or variations to the Project Agreement that arise when a change is required that is not a risk transferred to the private sector but borne by the public-sector owner/authority under the Project Agreement. These changes are generally unforeseen and do not relate to functional scope changes of a project.
- **On-Budget Performance:** When Awarded Contract and utilized Post Contract Contingency for non-discretionary changes are less than or equal to the Awarded Contract plus the budgeted PCC.
- **On-Time Performance:** When the actual Substantial Completion Date occurs within five business days of the Scheduled Substantial Completion Date at the time of Financial Close.
- **Post Contract Contingency (PCC):** The budgeted allowance established at Financial Close to fund Non-Discretionary Changes during construction.
- **Pre-RFP Approved Budget:** The approved total budget allocated in the annual Letter of Direction prior to the project's actual RFP release.

## APPENDICES

### APPENDIX A: GLOSSARY OF TERMS & ACRONYMS

- **Private Public Partnerships (P3):** P3 is an innovative way of financing and procuring large, complex infrastructure projects. It makes the best use of private-sector resources and expertise to provide on-budget and on-time project delivery. Under P3, provincial ministries and/or project owners establish the scope and purpose of a project while design and construction work is financed and carried out by the private sector. In some cases, the private sector will also be responsible for the maintenance and/or operation of the asset for a specified term.
- **Project Agreement (PA):** A contract between public-sector owner/authority and private sector consortium (Project Co) that sets out the requirements and obligations of both parties to complete the project.
- **Project Co:** The private sector partnership group or consortium that depending on the P3 model will work together with its Lenders to execute the PA and is responsible for completing the project.
- **Request for Proposals (RFP):** The second step of the two-stage P3 procurement process in which the public-sector owner/authority solicits competitive bids for the completion of the defined project scope from prequalified bidders passing the RFQ stage.
- **Request for Qualifications (RFQ):** The first step of the two-stage P3 procurement process in which the public-sector owner/authority solicits qualifications from private sector consortia for a potential project, resulting in the prequalification or “short-listing” of a selected number of consortia.
- **Scheduled Substantial Completion Date:** The date provided by the successful proponent and as specified in the PA indicating when construction of the Project is scheduled to be completed.
- **Substantial Completion:** The time when construction is completed in accordance with the Project Agreement and certified by the Independent Certifier for DBF and DBFM projects or the Consultant for BF projects, and the time when maintenance of the facility begins either by Project Co for DBFM projects or the public-sector owner/authority for BF and DBF projects.
- **Total Project Costs:** The sum of Awarded Contract plus the PCC or Utilized PCC as well as Transaction Costs associated with advisors (legal, financial, fairness and process), land costs, early works, discretionary changes and other costs relating to the project managed by the public owner such as consulting fees, furniture, furnishing and equipment.

## APPENDICES

### APPENDIX B: PROJECT LISTS

| PROJECT NAME:               |   | Type/Sector | Delivery Model |
|-----------------------------|---|-------------|----------------|
| PUBLIC PRIVATE PARTNERSHIPS |   | Type/Sector | Delivery Model |
| 1                           | Kingston General Hospital   | Healthcare  | BF             |
| 2                           | OPP Modernization Project   | Justice     | DBFM           |
| 3                           | Sunnybrook Health Sciences Ctr                                    | Healthcare  | BF             |
| 4                           | Hamilton Health Sciences - Henderson Site                         | Healthcare  | BF             |
| 5                           | Lakeridge Health, Oshawa  | Healthcare  | BF             |
| 6                           | Bluewater Health, Sarnia  | Healthcare  | BF             |
| 7                           | Sault Area Hospital   | Healthcare  | BFM            |
| 8                           | Trillium Health Centre - Mississauga, CCU /Catheter Lab           | Healthcare  | BF             |
| 9                           | The Ottawa Hospital - Ottawa Regional Cancer Centre               | Healthcare  | BF             |
| 10                          | Rouge Valley Health System  | Healthcare  | BF             |
| 11                          | LHSC/SJHC - M2P2  | Healthcare  | BF             |
| 12                          | Runnymede Healthcare Centre                                       | Healthcare  | BF             |
| 13                          | Hamilton Health Sciences - General Site Redevelopment             | Healthcare  | BF             |
| 14                          | North Bay Regional Health Centre                                  | Healthcare  | BFM            |
| 15                          | Roy McMurtry Youth Centre   | Social      | BF             |
| 16                          | Durham Consolidated Courthouse                                    | Justice     | DBFM           |
| 17                          | Guelph Data Centre (aka MGS New Data Centre)                      | Social      | DBFM           |
| 18                          | St. Joseph's Health Care, London - Grosvenor Restructuring (M2P1) | Healthcare  | BF             |
| 19                          | Quinte HealthCare   | Healthcare  | BF             |
| 20                          | Forensic Services & Coroner's Complex                             | Social      | DBFM           |
| 21                          | Waterloo Regional Consolidated Courthouse                         | Justice     | DBFM           |
| 22                          | Niagara Health System   | Healthcare  | DBFM           |
| 23                          | Toronto Rehab Inst - Redevelopment                                | Healthcare  | BF             |
| 24                          | Toronto South Detention Centre                                    | Justice     | DBFM           |
| 25                          | Centre for Addiction & Mental Health                              | Healthcare  | DBFM           |
| 26                          | Windsor Regional Hospital   | Healthcare  | BF             |
| 27                          | Woodstock General Hospital  | Healthcare  | BFM            |
| 28                          | Trillium Health Partners (Former Credit Valley)                   | Healthcare  | BF             |
| 29                          | L'Hopital Regional de Sudbury                                     | Healthcare  | BF             |
| 30                          | Bridgepoint Hospital  | Healthcare  | DBFM           |
| 31                          | Royal Victoria Regional Health Centre                             | Healthcare  | BF             |

## APPENDICES

### APPENDIX B: PROJECT LISTS

| PROJECT NAME:<br>PUBLIC PRIVATE PARTNERSHIPS |  | Type/Sector    | Delivery Model |
|--|--|----------------|----------------|
| 32   | Thunder Bay Consolidated Courthouse                              | Justice        | DBFM           |
| 33   | St. Joseph's Health Care - West 5th Campus                       | Healthcare     | DBFM           |
| 34   | Quinte Consolidated Courthouse                                   | Justice        | DBFM           |
| 35   | Waypoint Centre for Mental Health Care                           | Healthcare     | DBFM           |
| 36   | South West Detention Centre                                      | Justice        | DBFM           |
| 37   | St. Thomas Consolidated Courthouse                               | Justice        | DBFM           |
| 38   | Regional Mental Health Care - London/St. Thomas                  | Healthcare     | DBFM           |
| 39   | Pan American Games: Markham Pool/Etobicoke Olympium/Field Hockey | Social         | BF             |
| 40   | Pan American Games: Aquatics Centre / CSIO / Fieldhouse          | Social         | DBF            |
| 41   | Pan American Games: Athletes Village                             | Social         | DBF            |
| 42   | Markham Stouffville Hospital                                     | Healthcare     | BF             |
| 43   | SJHC/LHSC - M2P3 (BP6), (UC4, VC4, UC5)                          | Healthcare     | BF             |
| 44   | Union Pearson Express Line                                       | Transit        | DBF            |
| 45   | Humber College   | Education      | DBF            |
| 46   | McMaster Children's Health Centre                                | Healthcare     | DBF            |
| 47   | The Rt. Hon. Herb Gray Pkwy                                      | Transportation | DBFM           |
| 48   | Women's College Hospital   | Healthcare     | DBFM           |
| 49   | Halton Health Care Services - New Oakville Hospital              | Healthcare     | DBFM           |
| 50   | MTO Service Centres  | Transportation | DBFM           |
| 51   | Humber River Regional Hospital                                   | Healthcare     | DBFM           |
| 52   | Pan Am Games: Tracks, York Stadium, Velodrome, Hamilton Stadium  | Social         | DBF            |
| 53   | William Osler Health System - Peel Memorial Phase 1              | Healthcare     | DBFM           |
| 54   | Kingston Providence Care   | Healthcare     | DBFM           |
| 55   | Highway 407 East Phase 1   | Transportation | DBFM           |
| 56   | Sheridan College   | Education      | DBF            |
| 57   | MaRS - Public Health Ontario (PHO)                               | Healthcare     | BF             |
| 58   | ErinOak Kids- Brampton, Mississauga & Oakville Sites             | Social         | DBF            |
| 59   | St Thomas Elgin General Hospital                                 | Healthcare     | BF             |
| 60   | Halton Health Care Services - Milton District Hospital           | Healthcare     | DBFM           |
| 61   | Seneca College   | Education      | DBF            |
| 62   | Joseph Brant Memorial Hospital                                   | Healthcare     | DBF            |

1. *Montfort Hospital was excluded from the analysis as it was initiated prior to the establishment of IO, and did not include private sector financing, a key consideration in P3 project delivery.*

## APPENDICES

### APPENDIX C: DATA VERIFICATION & VALIDATION

#### **Public Private Partnerships**

Hanscomb initially met with the Infrastructure Ontario P3 team to receive an overview of the content and format of the documentation to be provided for analysis. Infrastructure Ontario walked us through the process for reporting data and what information would be extracted for our report. We reviewed with Infrastructure Ontario the assumptions for the various categories of costs to ensure that the sources being used were consistent with the objective of this analysis. Challenges with historical data, sectors and the various procurement models were discussed in preparation for our data validation. The information provided for use in this report was reconciled with sources confirmed during meetings between Hanscomb and Infrastructure Ontario.

A master file of consolidated data for all 62 P3 projects was the key document provided and utilized. Where gaps were identified, requests were made of Infrastructure Ontario for supplemental data. Where inconsistencies were found, they were highlighted and a correction or rationale was requested of Infrastructure Ontario. This process of review and revision went through numerous iterations and multiple meetings and teleconferences were held to gather additional details / clarifications.

This data was compared and cross referenced against the master consolidated list. The progression of data from Awarded Contract Costs at Budget, Award and Substantial Completion to Total Project Costs at Budget, Award and Substantial Completion was reviewed for reasonableness.

If Total Project Costs < Awarded Contract Costs requests were made for review and revision as necessary.

Requests were also made for information on the main drivers for discretionary / non-discretionary changes for select projects to analyze the utilization of Post Contract Contingency on the P3 projects.

## APPENDICES

### APPENDIX D: DATA SOURCE

| PUBLIC PRIVATE PARTNERSHIPS (P3)    |   |
|-------------------------------------|---|
| P3 Contract at Pre-tender [Pre-RFP] | Pre-RFP Release Presentation to IO Executive Group<br>Track Record 2017 Results<br>Letter of Direction<br>Approval to proceed to preferred proponent negotiations (PPN) |
| Awarded P3 Contract                 | Data compiled and provided by IO from Financial Models  |
| Budgeted Post Contract Contingency  | Track Record 2017 Results<br>Approval to proceed to preferred proponent negotiations (PPN)  |
| Non-Discretionary Changes           | Construction Reports for the six new projects<br>Data compiled and provided by IO for 62 projects   |
| Discretionary Changes               | Construction Reports for the six new projects<br>Data compiled and provided by IO for 62 projects   |
| Winning Bid                         | Data compiled and provided by IO for 62 projects  |
| Average Bid                         | Data compiled and provided by IO for 62 projects  |
| Highest Bid                         | Data compiled and provided by IO for 62 projects  |
| Technical Score                     | Data compiled and provided by IO for 62 projects  |
| Financial Score                     | Data compiled and provided by IO for 62 projects  |
| Substantial Completion Date         | Substantial Completion Certificates for six new projects<br>Press Releases  |

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