

An Introduction to Procurement Models



**First Nations
Infrastructure Institute**
Institut des infrastructures
des Premières Nations

November 2024

About this document

This paper provides an overview of procurement models that can be used to procure external parties to design, build, construct, operate, and maintain First Nations infrastructure. It includes a brief background on procurement and an analysis of the advantages and disadvantages of procurement models. The document serves as background information for developing an infrastructure asset's business case using the FNII business case model.

What is procurement?

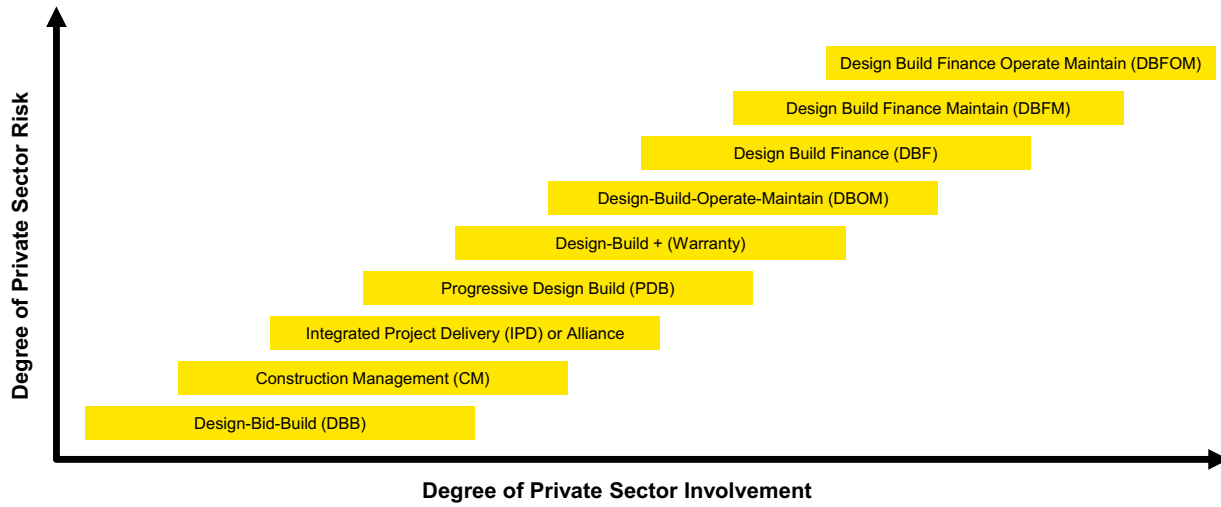
- First Nations often reach out to external experts to handle tasks that require specialized skills, experience, or equipment. For instance, if a First Nation doesn't have an engineer on their team, they might bring one in to take on the design of a new road. The process of engaging external contractors or experts is referred to as 'procurement'
- There are various methods of procurement, ranging from direct hiring without a competitive process to engaging in a competitive process such as a Request for Proposals (RFP)
- Different services can be packaged together in various ways. On an infrastructure project a Nation has the option to separately procure each phase – design, construction, and maintenance – or to combine them into one comprehensive procurement package that covers the entire project lifecycle.
- Different procurement models have varying degrees of private sector involvement and risk transfer

Why is procurement important?

- Procurement is frequently linked to large-scale, costly infrastructure projects that not only require substantial initial investment to construct but also incur significant ongoing expenses for operation and maintenance.
- In addition to cost, these infrastructure projects are typically important to other community objectives such as health (clean drinking water), safety (safe roads), education (good school building), etc.
- The process of designing and constructing infrastructure can progress smoothly or encounter complications due to factors such as subpar design quality, conflicts between builders and designers, inexperience of the construction contractor, or other unforeseen circumstances
- Poor procurement can compromise health, safety, or the fiscal stability of a Nation
- A well-executed procurement process can effectively manage project risks

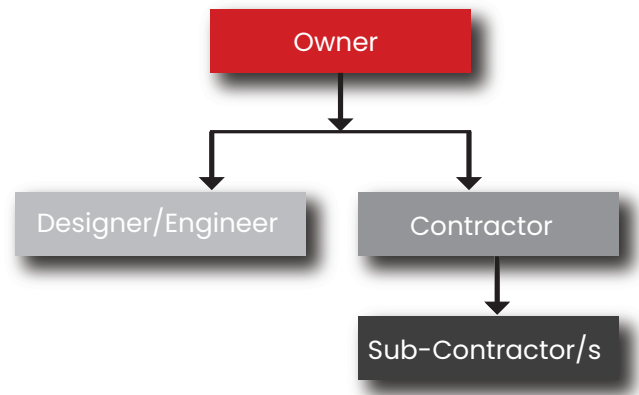
Procurement Models

The figure below shows a list of procurement models and their varying degrees of risk transfer to the private sector. As the private sector becomes more involved (e.g., DBFOM), the amount of risk that they assume increases. The following pages provide a summary of each of the procurement models shown in the figure below.



Design-Bid-Build

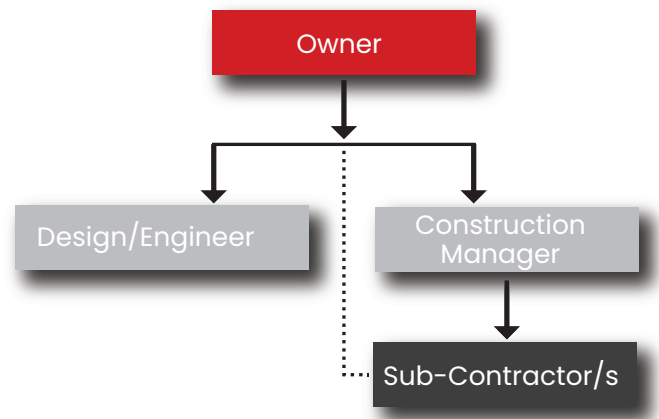
- DBB is the most common method of infrastructure procurement, globally and in First Nations
- The Owner is responsible for an asset's design, which is often contracted to a private design firm
- The Owner then uses the design to separately procure a contractor to construct the asset
- Following the completion of construction, the asset is handed over to the Owner for operations and maintenance



Advantages	Disadvantages
<ul style="list-style-type: none"> • Widely understood by all parties due to frequency the delivery method is used • Control over decisions, design and all project details are held by the Owner • Opportunity to have design and construction input from separate parties can improve quality • Sometimes easier to manage projects in a linear process 	<ul style="list-style-type: none"> • Lowest priced bid method can result in a design that is not constructible or that has missing elements. As such, there is an increased probability of costly change orders through construction • Owner is responsible for the cost of any change orders or errors in specifications and carries significant project risk • Accurate cost estimates during design phase requires knowledge of the latest construction techniques • No contractor input opportunity prior to construction • No incentive for designer or constructor to consider future lifecycle and maintenance costs • Longer duration compared to other delivery methods as each phase must be performed in a linear fashion

Construction Management

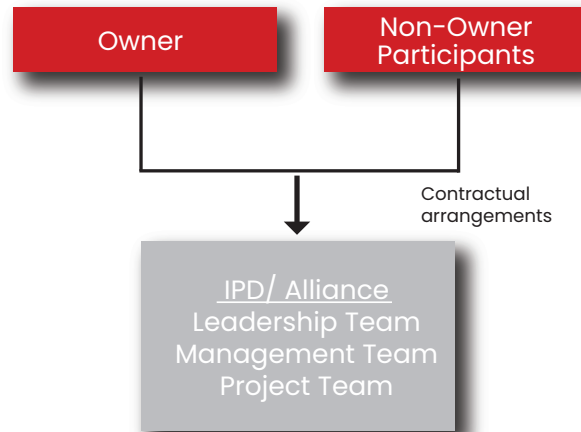
- In a CM the Owner engages a construction manager, through a competitive process, to act as a consultant during preliminary design and works
- The CM provides input into the final design, overall constructability, schedule and cost estimate
- The Owner can transition to the construction phase with the CM as the general contractor
 - At-Risk: CM is principal to contracts
 - Agency: Owner is principal to contracts



Advantages	Disadvantages
<ul style="list-style-type: none"> • Potential to fast-track early components of construction prior to the completion of design • Selection based on the Construction Manager's qualifications, which can be beneficial for technically complex projects • Constructability input earlier in design mitigates the risk of scope changes later on in the project • Earlier understanding and pricing of construction risks stemming from contractors review of design through the development 	<ul style="list-style-type: none"> • Potential for less competition due to a lack of qualified Construction Managers • Owner bears design risk • No early confirmation on price as the costs of construction is not known at the time of initial contract signing • Potential for lack of focus on lifecycle cost and considerations • Success of the project can be highly dependent on participant cooperation

Integrated Project Delivery / Alliance

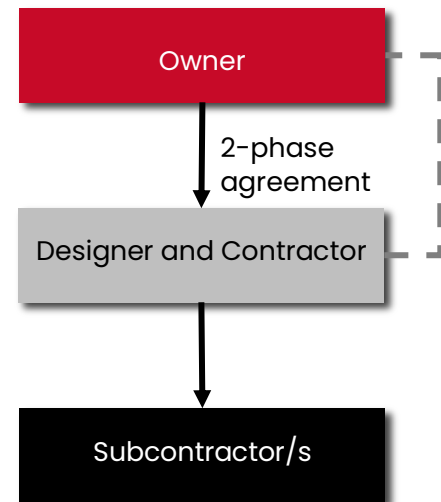
- Owner collaborates with private sector parties (Non-Owner Participants or NOPs) to deliver project
- Structure promotes a positive culture based on 'no fault, no blame' and unanimous decision making
- Owner works with NOP to develop a 'Target Outcome Cost' (TOC)
- NOPs are reimbursed direct project costs and paid corporate overheads & profit in an open-book arrangement
- Risk or reward regime (pain share/gain share) to drive desired behaviours
- All project risk management and outcomes are collectively shared by participants
- Owner ultimately bears cost risk and quality risk



Advantages	Disadvantages
<ul style="list-style-type: none"> • Can deliver highly complex projects with uncertain risks • Flexibility to modify design and enables incorporation of ongoing changes • Provides incentives to all parties to complete project on-time and budget • Promotes innovation • Cost of adversarial conduct, claims and disputes reduced 	<ul style="list-style-type: none"> • Requires change in mindset as parties need to embrace a collaborative relationship • Requires ongoing involvement of senior staff with Owner to resolve issues

Progressive Design Build (PDB)

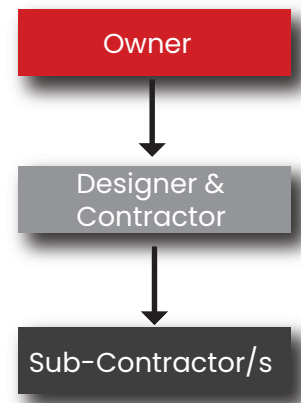
- A PDB is a DB agreement with the addition of a n initial phase intended to de-risk the project
- PDBs use a qualifications-based or best value selection approach to select a design-builder. The design-builder and owner then “progress” toward a design and contract price with the selected team.
- The design-builder is retained by the owner early in the life of the project. The project is then delivered in two (2) phases. The initial phase includes budget level design development, preconstruction services and the negotiation of a firm contract price (either lump sum or guaranteed maximum price) for the subsequent phase of work. The second phase includes the final design, construction, and commissioning of the asset.



Advantages	Disadvantages
<ul style="list-style-type: none"> • Single point of contact for accountability of design and construction • Cost efficiencies and opportunities for innovation due to contractor and designer being involved early and working together throughout • Greater transfer of risk (specifically interface risk between the design and construction) to the design-builder • Collaborative initial phase builds relationship with design builder 	<ul style="list-style-type: none"> • Significantly more Authority resources are required for the design development, preconstruction and negotiation stages. • Limited incentive for the design-builder to consider future lifecycle and maintenance costs, although this can be included to an extent through evaluation criteria and methodology • Large dependence on Owner developing an appropriate output specification for the project. If this is not completed, the asset may not be fit for purpose • Qualifications based RFP may reduce price competition between bidders

Design-Build (Warranty)

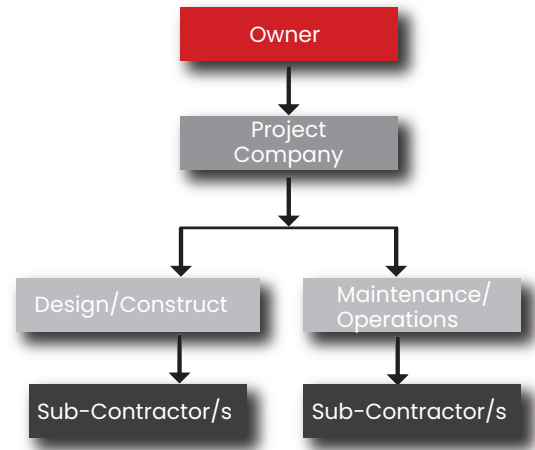
- In a DB, the Owner receives a single bid for the integrated design and construction of an asset
- The Owner prepares a design brief outlining the specifications and requirements for the asset
- The Owner enters into a single contract with a contractor, who is required to complete a detailed design and construct the asset
- Following the completion of construction, the asset is commissioned and handed over to the Owner for operations and maintenance. There is also an Option to add warranty to a design-build: Following construction, the bidder warrants the Infrastructure will be free of defects and for a set period of years (the “Warranty Term”)



Advantages	Disadvantages
<ul style="list-style-type: none"> • Single point of contact for accountability of design and construction • Cost efficiencies and opportunities for innovation due to contractor and designer being involved early and working together throughout • Greater transfer of risk (specifically interface risk between the design and construction) to the design builder • Earlier price certainty 	<ul style="list-style-type: none"> • Less Owner control of and involvement in design • Fewer checks and balances between design and construction stages, potentially leading to an asset that does not meet (or fully meet) the Owner’s requirements • Limited incentive for the design-builder to consider future lifecycle and maintenance costs, although this can be included to an extent through evaluation criteria and methodology • Possibly reduced interaction between designer and end user, as designs are largely completed in isolation of the Owner in a competitive bidding scenario • Potentially pay a premium for contingencies for risks/ unknowns due to need to price early (compared to DBB) • Large dependence on Owner developing an appropriate output specification for the project. If this is not completed, the asset may not be fit for purpose

Design-Build-Operate-Maintain

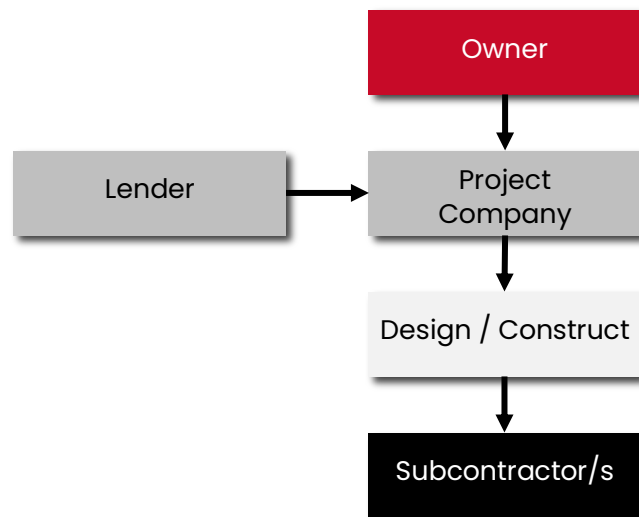
- DBM and DBOM are similar to DB, with:
 - Inclusion of maintenance for DBM
 - Inclusion of maintenance and operations for DBOM
- The Owner contracts with a “Project Company” that is responsible for:
 - Design and construction of the asset
 - Operations and maintenance services for a specified period of time
- While different companies and subcontractors may be used to complete the tasks, responsibility lies with the Project Co



Advantages	Disadvantages
<ul style="list-style-type: none"> ▪ Integrates design, construction, operations and/or maintenance which allows for the consideration of operating, maintenance and lifecycle issues during design and construction ▪ Allocates most major risks to the private sector ▪ Can allow for faster project completion as it benefits from the same advantages of the DB procurement model ▪ Higher whole of life cost certainty • Incentive for the contractor to optimize balance of capital costs and operating costs to minimize the overall cost of the asset to the owner 	<ul style="list-style-type: none"> ▪ Difficult to estimate operating and maintenance costs at early stages as design is incomplete leading to higher contingencies, resulting in higher project costs ▪ Owner loses control over design details and some aspects of operations and maintenance ▪ Can be decreased flexibility, depending on asset type and Owner requirements • Risk that delivery procurement model reduces the number of project bidders

Design Build Finance

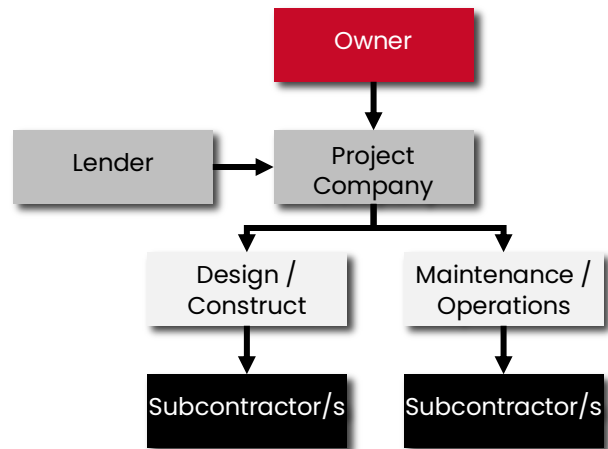
- Under the Design-Build-Finance (“DBF”) model, the public sector transfers the responsibilities and associated risks for the design, construction and financing of an asset to the private sector.
- Upon the satisfactory completion of construction, the public sector makes a single payment, which may be subject to a holdback provision.
- Under the DBF option payments are linked to satisfactory completion of construction.
- The public sector assumes operation and maintenance responsibilities following construction completion.
- High financial incentive for on time completion.



Advantages	Disadvantages
<ul style="list-style-type: none"> • Single point of contact for accountability of design and construction • Cost efficiencies and opportunities for innovation due to contractor and designer being involved early and working together throughout • Greater transfer of risk (specifically interface risk between the design and construction) to the design-builder • Earlier price certainty • Schedule certainty increases with private sector financing penalties on project company 	<ul style="list-style-type: none"> • Less Owner control of and involvement in design • Fewer checks and balances between design and construction stages, potentially leading to an asset that does not fully meet the Owner’s requirements • Limited incentive for the design-builder to consider future lifecycle and maintenance costs • Possibly reduced interaction between designer and end user, as designs are largely completed in isolation of the Owner in a competitive bidding scenario • Potentially pay a premium for contingencies for risks / unknowns due to need to price early • Dependence on Owner developing an appropriate output specification for the project. If this is not completed, the asset may not be fit for purpose • Potential for increased costs with private financing rates

Design Build Finance Operate (Maintain)

- The DBFM and DBFOM models are an integrated approach that combines a Design Build Finance contract with long-term maintenance (and operations) under a single contract.
- A long-term private sector partner is procured through a competitive tendering process to design, build, finance and maintain the infrastructure in a manner that meets the requirements and specifications of the public sector. While the term of the maintenance arrangement can vary, typically the arrangements are longer term.
- Stakeholder input and operational readiness and integration is achieved during the development of the Project Specific Output Specifications (“PSOS”), the Request For Proposal (“RFP”) process and the user group consultation process following Financial Close.
- Maintenance under a DBFM model would be conducted under a planned maintenance schedule agreed in the contract.



Advantages	Disadvantages
<ul style="list-style-type: none"> • Integrates design, construction, operations and/or maintenance which allows for the consideration of operating, maintenance and lifecycle issues during design and construction • Allocates most major risks to the private sector • Higher whole of life cost certainty • Incentive for the contractor to optimize balance of capital costs and operating costs to minimize the overall cost of the asset to the owner • Schedule certainty increases with private sector financing penalties on project company • 	<ul style="list-style-type: none"> • Difficult to estimate operating and maintenance costs at early stages as design is incomplete leading to higher contingencies, resulting in higher project costs • Owner loses control over design details and some aspects of operations and maintenance • Can be decreased flexibility, depending on asset type and Owner requirements • Risk that delivery procurement model reduces the number of project bidders • Potential for increased costs with private financing rates

Procurement Objectives

The table below outlines some evaluation criteria that could be used to evaluate which procurement model works best for a particular infrastructure project.

Evaluation Criteria	Description
1 Maximize competition	<ul style="list-style-type: none"> To what extent does each procurement model drive competition and market interest between proponents to maximize value through high innovation and quality, low price and through the size of a project
2 Cost certainty	<ul style="list-style-type: none"> To what extent does each procurement model facilitate cost certainty from the perspective of the Owner following contract award, through minimizing cost over-runs in various stages of a project
3 Flexibility to change	<ul style="list-style-type: none"> To what extent does each procurement model ensure transparency and facilitate an ability for the Owner to make scope or other changes during or at critical points in time for a project
4 Risk transfer	<ul style="list-style-type: none"> To what extent does each procurement model facilitate effective allocation of risks between parties and transfers risks to the party that is best able to manage the risk, particularly those unique to the Owner or a project
5 Contractor incentive (innovation and efficiency)	<ul style="list-style-type: none"> To what extent does each procurement model provide incentives for the for the private sector to introduce new ideas and approaches where there is likely to be significant additional value gained