

INFRASTRUCTURE COST ESTIMATES for CFI APPLICATIONS

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Sample of document to be completed by Applicant/Department Administrator
Download the current version [here](#)
- A2** Research Equipment Assessment
Sample of document to be completed by Equipment Suppliers
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This document describes the process for obtaining **Infrastructure Cost Estimates** for CFI Applications as facilitated by UBC Infrastructure Development. Please refer to IPO instructions for requirements pertaining to Equipment Cost Estimates.

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01 INTRODUCTION

All Applicants must be aware that only built infrastructure costs and equipment related to research costs are allowable in their CFI application. Along with costs for new equipment, every proposal is likely to require an **Infrastructure Cost Estimate** for upgraded infrastructure servicing for the new equipment and/or new built infrastructure. Even small equipment upgrades to be housed in existing facilities can trigger major infrastructure servicing upgrades, with unforeseen costs. Infrastructure Cost Estimates are separate from, and do not include, research equipment costs.

UBC's Infrastructure Development - Facilities Planning (**FP**) is the first point of contact for CFI Applicants. **All CFI proposals must be reviewed by FP for potential infrastructure upgrades.**

Infrastructure Development - Facilities Planning (**FP**) will work with Applicants to facilitate the initial scope, space list and test fit drawings (where applicable). This is the information from which the Infrastructure Cost Estimate is generated. Infrastructure Development - Project Services (**PS**) will engage the Quantity Surveyor (**QS**) that will be retained to provide the project estimate. A commitment from the Applicant's faculty for the QS fee in the amount of \$15,000 must accompany each application for the cost estimating process to proceed without delay.

Large and complex projects will require a feasibility study to generate sufficient detail for the estimate to be developed. This need will be assessed by Project Services immediately on review of the application and discussion with the Applicant. Additional funding will be required for feasibility work and Applicants should be prepared for this expense. In the past, these additional fees have ranged anywhere from \$20,000 for an engineer's input to higher fees for a full design team, depending on the size and complexity of the project. Any fees spent in preparation of the application are to be included in the budget submitted to CFI and are recoverable on all winning applications.

If the CFI grant is awarded and the Applicant is successful, the CFI proposal moves to the *project implementation* phase. Project Services will provide a charter, an updated cost estimate and schedule for the infrastructure work (project), then manage the delivery of the built infrastructure. If the project entails a large new building, UBC Properties Trust will be called on to develop the updated estimate and schedule, then manage the project's development.

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During *project implementation*, projects with a construction budget value between \$2.5M and \$5M or more will require **Executive approval**, projects with a budget value greater than \$5.0 M will require **UBC Board approval**. **Appropriate time to obtain these approvals will be required.**

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What does the INFRASTRUCTURE COST ESTIMATE include?

- **Soft Costs:** indirect costs associated with the infrastructure changes/upgrades required i.e. consultant and project management fees, building permits and inspections etc.
- **Construction costs:** the materials, labour, general contractor overhead and profit costs directly associated with the construction work, research furniture/millwork costs, modifications to the interior path of travel if required for equipment installation, contingency allowance etc.
- **UBC costs:** costs for work done by UBC departments such as AV, IT and Building Operations

What is not included?

- **Research equipment costs:** any costs related to the purchase, shipping, delivery, handling, assembly, installation or calibration of the research equipment. All equipment must be priced to be delivered and installed into its final location by the supplier, ready for use.
- **Furniture costs:** any costs related to the purchase, shipping, delivery, handling, assembly or installation of loose furniture items such as desks, chairs, tables and workstations etc.

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02 ROLES and RESPONSIBILITIES

CFI Applicant

The Applicant works closely with the Facilities Planner and Project Manager to identify the infrastructure upgrades/changes and related cost impacts.

The Applicant is responsible for:

- obtaining the approved space allocation from the Faculty Administrator,
- informing the Planner and Project Manager of any budget constraints, considerations or expectations that will limit the scope of the infrastructure upgrades,
- downloading and completing the [CFI Spatial Requirements](#) document,
- obtaining an Equipment Specification Sheet for each piece of equipment,
- downloading and distributing the [CFI Equipment Assessment](#) document to the various equipment suppliers and ensuring that they complete and return it in a timely manner,
- providing any general information needed in order to define the scope of the proposal for the purpose of estimating the cost or scheduling of the infrastructure work,
- understanding the constraints of CFI funding and ensuring that the requested scope communicated to the cost estimating team complies with the funding criteria.

Faculty Administration

Department Administrator

The Administrator assists the Applicant with the preliminary work and information gathering needed before the cost estimate process can begin.

The Administrator is responsible for:

- determining the Faculty space allocated to the Applicant for the purpose of the CFI application (for proposals not requiring new building construction),
- informing the Applicant of any budget constraints, considerations or expectations that will limit the scope of the infrastructure upgrades,
- assisting the Applicant with and/or reviewing the completed Research Equipment Spatial Assessment for accuracy,
- providing the commitment for funding in the amount of \$15,000. **Note that this information is required in order to proceed to the Preliminary Scoping phase of the process.**

Dean

The Dean provides the official approving signature on the CFI application.

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Facilities Planner

The Facilities Planner is the primary contact for the CFI Applicant. The Planner will facilitate the initial planning and determine whether or not a feasibility study is necessary.

The Facilities Planner is responsible for:

- communicating with Infrastructure Development – Project Services (PS) and other internal UBC departments (if required), to initiate the cost estimate process,
 - evaluating the magnitude of the proposal and recommending a feasibility study when appropriate,
 - working with the Applicant to define the initial scope, functional program and test fit drawings of small proposals,
 - working with Consultants to define the preliminary scope for large and complex proposals,
 - issuing the Infrastructure Cost Estimate package to the Applicant, for inclusion in the CFI application.
-

Project Manager

The Project Manager coordinates the Consultants necessary to determine the scope of the infrastructure changes and the associated cost, and creates an initial timeline for the work.

The Project Manager is responsible for:

- managing the estimate development phase,
 - selecting, engaging and managing consultants,
 - coordinating input and pricing from internal UBC departments as required,
 - developing a draft schedule (timeline) for undertaking the infrastructure work.
-

Consultants (includes Quantity Surveyor)

Consultants are construction industry professionals (i.e. architect, engineer, quantity surveyor etc., external to UBC), hired to provide their expertise in planning, design and costing.

The Consultants are responsible for:

- gathering detailed information in order to produce preliminary scope drawings and/or related documents describing the infrastructure work for large and complex proposals,
 - preparing the cost estimate.
-

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03 HOW TO GET INFRASTRUCTURE COST ESTIMATES – Narrative

The process consists of four phases:

PHASE I	INITIATION
PHASE II	PRELIMINARY SCOPING
PHASE III	ESTIMATE DEVELOPMENT
PHASE IV	COMPLETED COST ESTIMATE

PHASE I INITIATION

Infrastructure Development - Facilities Planning (FP) is the first point of contact for starting the Infrastructure Cost Estimate process.

Having worked with the Faculty Administrator to complete the preliminary work needed, the Applicant will contact FP and provide:

- the Research Equipment Spatial Assessment,
- general information describing the nature of the proposal,
- any budget constraints, considerations or expectations that will limit the scope of the infrastructure upgrades.

A Planner will be assigned to the application and will contact and coordinate with **Infrastructure Development – Project Services (PS)** on behalf of the Applicant. PS will assign a Project Manager to oversee the development of the estimate.

PHASE II PRELIMINARY SCOPING

Based on the general information provided by the Applicant in terms of size and scope, the Planner will either:

- work with the Applicant (and any internal UBC departments required) to develop a test fit (schematic diagram) to be provided to Project Services for cost estimating purposes or,
- recommend that PS engage consultants to undertake a feasibility study in order to gather sufficient information to develop the cost estimate.

For small infrastructure upgrades, where a test fit is sufficient to obtain a cost estimate, the Applicant will need to confirm and approve the scope before the initial scoping package is forwarded to Project Services.

For large and complex proposals, the Applicant will work with the cost estimate team (including feasibility consultants as necessary) to define and confirm the scope.

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PHASE III ESTIMATE DEVELOPMENT

The Project Manager is responsible for managing the estimate development phase and for developing a draft schedule (timeline) for undertaking the infrastructure work.

Infrastructure Development – Project Services retains the Quantity Surveyor (QS) on behalf of the Applicant.

The QS uses either:

- the scoping package developed by the Planner and the Applicant, or
- the output of the feasibility process,

to inform and create the Infrastructure Cost Estimate. The project manager will engage and manage the consultants needed for any feasibility work.

The output of this Phase will be a package containing:

- preliminary scope drawings and/or related documents describing the infrastructure work required to house and operate the equipment,
- an initial estimate of built infrastructure costs (Infrastructure Cost Estimate),
- an initial schedule

Important Schedule Note: During *project implementation* (a phase that will occur if an application is successful), projects with a construction budget value between \$2.5M and \$5M or more will require **Executive approval**, projects with a budget value greater than \$5M will require **UBC Board approval**. **Appropriate time to obtain these approvals will be required.**

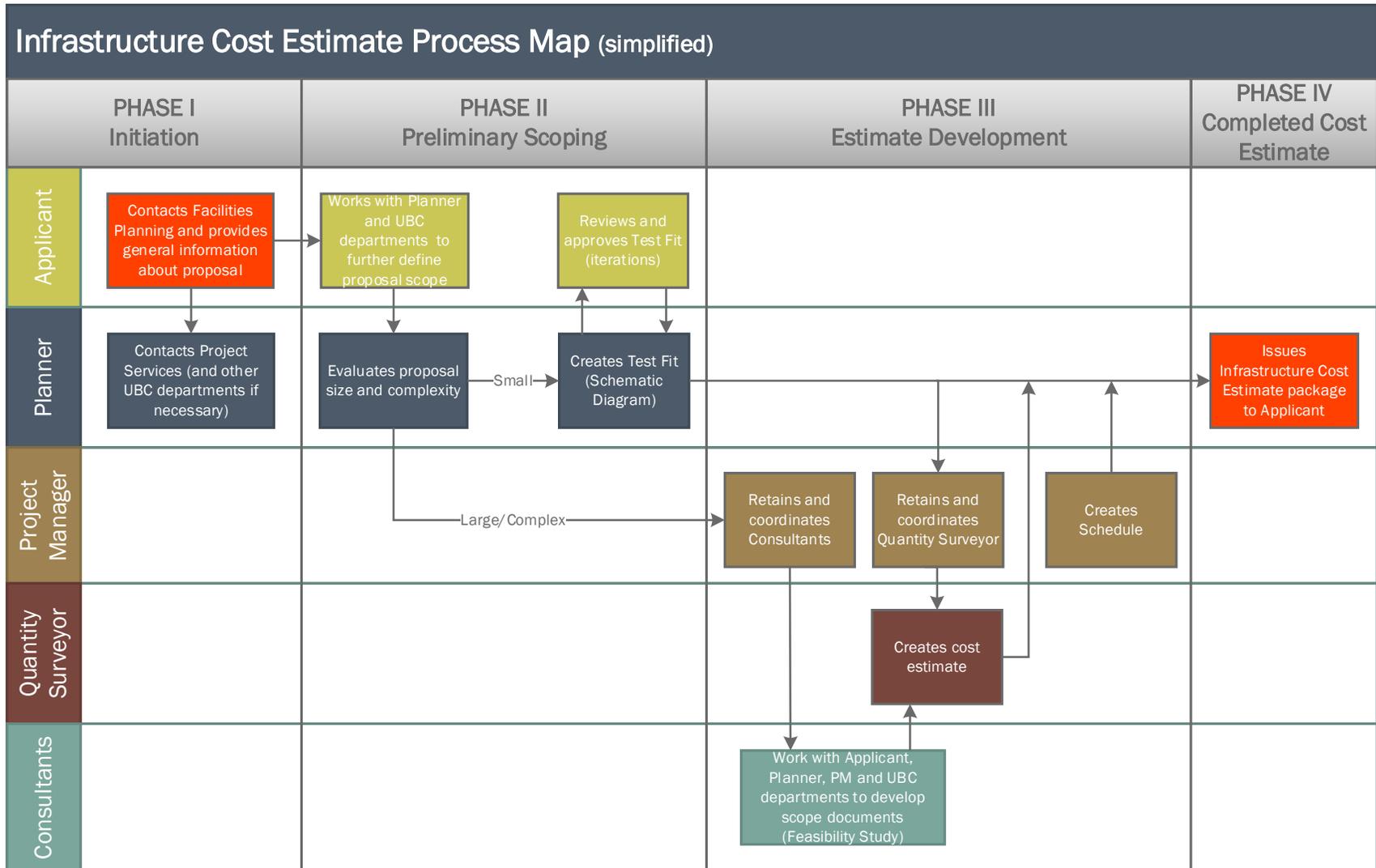
PHASE IV COMPLETED COST ESTIMATE

The completed Infrastructure Cost Estimate package is forwarded to the Applicant. This package is to be submitted with the CFI application.

The Applicant should be aware that the cost estimate may be reduced by UBC's IPO (if required), to ensure that the total value of infrastructure upgrades for all selected proposals remains within the UBC 'cap.'

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APPENDICES

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A1 RESEARCH EQUIPMENT SPATIAL REQUIREMENTS

SAMPLE

A BUILDING INFORMATION		
1	Will the equipment be located in a new or existing facility?	New Existing
2	Building Name	
3	Building Number (if available)	
4	Building Address	

B ROOM INFORMATION	
1	Room Number(s) of main equipment
2	Room Number(s) of service equipment (Transformers, Chillers etc.)
3	Existing Room Standard (Dry Lab, Wet Lab, Office etc.)
4	Required Room Standard (Dry Lab, Wet Lab, Office etc.)
5	Required Biocontainment Level (Biosafety Level)
6	Additional equipment required to support the research (Sinks, Biosafety Cabinets, Fume Hoods etc.)

C ADDITIONAL INFORMATION	
1	Any information about specific requirements not mentioned above or which could be important to understand the scope of the project.

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SAMPLE

	<i>(Equipment type)</i>	<i>(Equipment type)</i>	<i>(Equipment type)</i>	<i>(Equipment type)</i>
4.3 Dedicated server room required	Y / N	Y / N		
4.4 Special reqs (GB data transfer etc.)				
5.0 WATER				
5.1 Water required	Y / N	Y / N		
5.2 Type of Water (domestic, chilled, DI)				
5.3 Water flow rate capacity (gpm or l/s)				
5.4 Water connection size				
5.5 Drainage required	Y / N	Y / N		
5.6 Drainage outflow rate capacity (gpm or l/s)				
5.4 Drain connection size				
5.7 Expected outflow temperature				
6.0 GAS				
6.1 Gas required	Y / N	Y / N		
6.2 Gas cylinder or Gas piped in				
7.0 HVAC				
7.1 Direct ventilation required due to fumes	Y / N	Y / N		
7.2 Heat generated	Y / N	Y / N		
7.3 Temperature/humidity tolerances required	Y / N	Y / N		
7.4 Chiller required (stand alone?)	Y / N	Y / N		
8.0 COMPRESSED AIR				
8.1 Compressed air required	Y / N	Y / N		
8.2 Air flow rate capacity (lb/hr) & Rate pressure (PSI)				
8.3 Compressed air connection size				
9.0 STEAM				
9.1 Steam required	Y / N	Y / N		
9.2 Steam flow rate capacity (lb/hr)				
9.3 Rate pressure (PSI)				

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	<i>(Equipment type)</i>	<i>(Equipment type)</i>	<i>(Equipment type)</i>	<i>(Equipment type)</i>
9.4 Steam connection size				
10.0 CONTAMINANTS				
10.1 Chemical or Gas utilization	Y / N	Y / N		
10.2 Chemical or flammable storage required	Y / N	Y / N		
10.3 Bio safety cabinet required	Y / N	Y / N		
10.4 Fume hood required	Y / N	Y / N		
10.5 Biocontainment level (Biosafety level)				
11.0 SURROUNDING ENVIRONMENT				
11.1 Adjacent noise or vibration concerns	Y / N	Y / N		
11.2 Vibration isolation required	Y / N	Y / N		
11.3 Noise or vibration production	Y / N	Y / N		
11.4 Electromagnetic interference concerns	Y / N	Y / N		
11.5 Magnetic shielding required	Y / N	Y / N		
11.4 Special air locks/clean environment required	Y / N	Y / N		
11.5 Light sensitivities required (blackout, etc)	Y / N	Y / N		
12.0 SEISMIC				
12.1 Seismic bracing required	Y / N	Y / N		
12.2 Seismic bracing supplied by manufacturer	Y / N	Y / N		
12.3 Seismic engineering letters supplied by manufacturer	Y / N	Y / N		
13.0 ADDITIONAL NOTES				

*** Please attach equipment spec sheets**