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October 31, 2016

British Columbia Utilities Commission
Sixth Floor
900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Ms. Laurel Ross, Acting Commission Secretary and Director

Dear Ms. Ross:

Re: FortisBC Inc. (FBC)
Project No. 3698883

Application for the a Certificate of Public Convenience and Necessity for Replacement of the Corra Linn Dam Spillway Gates (the Application)

Response to the British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2

On June 29, 2016, FBC filed the Application referenced above. In accordance with Commission Order G-107-16 setting out the Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to BCUC IR No. 2.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Parties



FortisBC Inc. (FBC or the Company) Application for a Certificate of Public Convenience and Necessity (CPCN) for Replacement of the Corra Linn Dam Spillway Gates (the Application)	Submission Date: October 31, 2016
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1 **A. BENEFITS DERIVED FROM THE CORRA LINN DAM**

2 **9.0 Reference: CANAL PLANT AGREEMENT**

3 **Exhibit B-3 BCUC IR 1.2.2; FortisBC Inc. (FBC) 2012-2013 Revenue**
4 **Requirements and Review of ISP, 2012 Long Term Resource Plan,**
5 **Exhibit B-1-2, p. 45**

6 **BC Hydro Power Purchase Agreement**

7 In its 2012 Long Term Resource Plan, FortisBC stated that under the Canal Plant
8 Agreement, British Columbia Hydro and Power Authority (BC Hydro) determines the
9 output of the Entitlement Parties' plants and takes all the power actually generated by
10 the plants into its system. In exchange, the Entitlement Parties are contractually entitled
11 to their respective "entitlements" of capacity and energy from BC Hydro.

12 In response to the British Columbia Utilities Commission (BCUC) Information Request
13 (IR) 1.2.2, FortisBC states that it anticipates that the value of the avoided power
14 purchase expense would increase annually and assuming a constant 3 percent nominal
15 rate increase, this replacement cost could reach over \$33 million in the final year of the
16 BC Hydro Power Purchase Agreement (PPA), which expires on September 30, 2033.

17 9.1 Does the Canal Plant Agreement have an expiry date? If yes, when does it
18 expire and does FortisBC expect to be able to renew it under similarly beneficial
19 terms? If not, please explain.

20
21 **Response:**

22 The Canal Plant Agreement (CPA) does not have a fixed termination date, and it will continue in
23 effect until one of the parties to the agreement provides five years' notice any time after
24 December 31, 2030. Therefore, the earliest that the CPA could terminate is January 1, 2036.
25 FBC expects the current CPA will remain in effect beyond 2036.

26 However, FBC's obligations under the Canadian Dam Association Dam Safety Guideline
27 (CDSG) and the British Columbia Dam Safety Regulation (BCDSR), are independent of the
28 CPA. The need for the Project, as discussed in Section 3.2 of Application, is driven by
29 requirements to meet the BCDSR and the CDSG and to minimize the risks to public and
30 employee safety. This obligation does not change if the CPA expires.

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1 9.2 Do the water rights associated with the Corra Linn facilities expire? If yes, when
2 do they expire?

3

4 **Response:**

5 No; contingent on FBC's continued beneficial use of the water in the generating plant, the water
6 rights associated with the Corra Linn facility will not expire.

7

8

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10 9.2.1 If the water rights expire, does FortisBC have any reason to believe
11 they would not be renewed under the existing conditions? If there is any
12 reason for renewal concern, please provide detail and explain.

13

14 **Response:**

15 Please refer to the response to BCUC IR 2.9.2.

16

17

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19 9.3 Does FortisBC expect to derive similar benefits from the Corra Linn facilities after
20 the BC Hydro PPA expires in 2033? Please explain.

21

22 **Response:**

23 FBC expects the significant financial benefits of the Corra Linn generating units to remain
24 following the expiry of the BC Hydro PPA in 2033. For greater clarity, the benefits of the Corra
25 Linn generating units are not related to the BC Hydro PPA; rather, the BC Hydro PPA is the
26 current firm resource from which FBC would purchase replacement energy and capacity if the
27 Corra Linn facility was no longer available to operate.

28 However, FBC's obligations under the CDSG and the BCDSR are not dependent on or related
29 to the benefits of the Corra Linn generating units. Furthermore, the need for the Project, as
30 discussed in Section 3.2 of Application, is not impacted by the cost to replace the lost
31 entitlements of the generating units.

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1 9.3.1 What benefits would the Corra Linn facilities provide if FortisBC were
2 unable negotiate a new PPA with BC Hydro?

3
4 **Response:**

5 Please refer to the response to BCUC IR 2.9.3.

6

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1 **B. CONTRACTING METHOD**

2 **10.0 Reference: CONTRACTOR SELECTION AND AWARD**

3 **Exhibit B-3, BCUC IR 2.3, 2.3.3 and 2.1**

4 **Early Contractor Involvement**

5 In response to BCUC IR 2.3, FortisBC states that Under the Early Contractor
6 Involvement (ECI) model:

- 7 • it will engage a third party Owner's Engineer to provide engineering services
8 such as review of the engineering design and work packages, construction
9 support and to assist FortisBC in evaluating, validating and confirming that the
10 negotiated contractor's Project costs are reasonable;
- 11 • that because of the collaborative development of cost and the equitable
12 allocation of risks, savings are shared and effectively FortisBC and the contractor
13 participate in any gains/losses eliminating the need for a penalty/incentive
14 mechanism;
- 15 • at the end of the Open Book Phase the parties agree on a lump sum fixed price
16 and a Project Implementation Plan for the Design Build Phase. The fixed price
17 agreed to means the contractor effectively holds all of the Project's construction
18 risks assigned to the contractor;
- 19 • approximately 70% of the estimated total contractor cost would be for
20 subcontracted works and materials procurement and would be competitively
21 tendered. The selection of successful tenders will be made jointly by FortisBC
22 and the contractor;
- 23 • construction is done under a single bonded lump sum contract, which produces a
24 more manageable contract, increases certainty of the Project costs and reduces
25 risk for both parties.

26 10.1 When does FortisBC intend to engage an Owner's Engineer? Will the Owner's
27 Engineer be evaluating and providing input into the contracting method
28 selection?

29 **Response:**

31 No, the Owner's Engineer will not be evaluating and providing input into the contracting model,
32 however, the Company has engaged an experienced management consultant as described in
33 the response to BCUC IR 2.10.2. The timing for the engagement of an Owner's Engineer will
34 depend on the contracting model selected.

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10.2 Please confirm that FortisBC will select a contractor in July 2017 for the detailed design (Open Book Phase). What, if any, engagement with contractors, other than HMI, does FortisBC plan prior to selecting a contractor?

Response:

Should FBC determine that the ECI model is the most appropriate contracting model for the Project then the award of the Open Book Phase is expected in Q1 2017, subject to prior Commission approval of the Project.

FBC provides below a summary of the intended process that it will follow to determine the appropriate contracting model and the method for contractor selection.

The Company plans to confirm the preferred contracting model by the end of November 2016, in order to allow it to achieve the proposed Project schedule. To assist in this determination, FBC has engaged an experienced management consultant firm, Bramcon Project Consultants Ltd. (Bramcon), a firm that has extensive and wide ranging knowledge in the application and suitability of the various project delivery methods in British Columbia. The principal of Bramcon is Mr. Bryan McConachy, who is both a Professional Engineer and a Project Management Professional and was elected a Fellow of the Project Management Institute. Mr. McConachy has, for many years, delivered a course on Project Delivery Options as part of the Continuing Professional Development Program sponsored by the Association of Professional Engineers and Geoscientists of BC. Bramcon was retained by BC Hydro in 2009 to develop their two-stage ECI process successfully utilized on their spillway gate program and continued working with BC Hydro and their selected ECI contractor (HMI) during the execution of BC Hydro's first project using an ECI model. Additionally, Bramcon recently completed a lessons-learned workshop for BC Hydro for their most recent ECI project, and is current on the capabilities of HMI as an ECI contractor.

To determine the preferred contracting model, Bramcon will assist FBC with evaluating the suitability of the ECI model for the Project by assessing, among other things, the potential risks and their likely allocation, the complexities of the Project, constructability and likelihood for scope changes associated with the Project.

The ECI model is well-suited for one of a kind projects such as the Corra Linn Project where the site conditions pose unique challenges (in this case, the type of lifting required and access to the Project site) that are best addressed by a knowledgeable contractor at the early stages.



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1 The main advantages of the ECI model are: (i) the scope of work is resolved and risks are
2 identified collaboratively early in the project, during the Open Book Phase; (ii) materials and
3 subcontractors are competitively tendered; (iii) risks are identified, quantified and allocated,
4 meaning that the Design Build contract price negotiated by the two parties is a risk adjusted
5 lump sum bonded price.

6 However, should the evaluation by Bramcon and FBC not support the implementation of an ECI
7 contracting model for the Project then the Company will consider alternative project delivery
8 methods. This would involve engaging an Owner's Engineer to support the completion of the
9 necessary contracting documentation.

10 Assuming that FBC decides to proceed with the ECI model, the next step will be for FBC to
11 select an ECI contractor. The selected contractor is critical to the success of the ECI model. As
12 noted in the response to BCUC IR 1.2.3, FBC is contemplating engaging HMI in this role. In
13 Section 6.2 of the Application, FBC explained why HMI was selected to assist in developing the
14 construction cost estimate for the Project, as follows: (i) HMI is a recognized industry leader in
15 spillway gate rehabilitation projects in Canada; (ii) HMI has recently completed projects of
16 similar scope as the Corra Linn Project within BC and is currently engaged by BC Hydro until
17 2026 for their spillway gate rehabilitation program; (iii) HMI has extensive knowledge of the ECI
18 model through its ongoing engagement with BC Hydro since 2010; (iv) HMI has the required in
19 house capability for engineering (design and inspection), fabrication, installation and
20 commissioning. In addition to making HMI well-suited to develop the construction cost estimate,
21 these attributes also make HMI the most suitable ECI contractor for the Project.

22 While the Company is contemplating engaging HMI as the ECI contractor, FBC will engage
23 Bramcon to advise on the suitability of HMI as the ECI contractor. The consultant will consider
24 and advise FBC on: (i) HMI's corporate capabilities in the design and construction of spillway
25 gates and components; (ii) HMI's success on recent rehabilitation projects in BC; (iii) HMI's
26 experience with the ECI process; (iv) HMI's financial capacity to provide a bond for the Total
27 Construction Cost; and (v) HMI's ability to provide all the required types and levels of insurance
28 required by FBC. Bramcon's recommendation and FBC's decision are expected by end of
29 November 2016.

30 In the event that FBC engages HMI as the ECI contractor, this would allow the Company to
31 leverage its established 18 month working relationship with HMI, to capitalize on the existing
32 momentum of the Project, and to fully utilize the engineering that has already been completed
33 by HMI. However, if recommendations do not support the continued engagement of HMI, then
34 the Company would select an ECI contractor through a Request for Proposal (RFP) process
35 which would require proponents to state, among other things, their proposed mark-ups, terms
36 and conditions exceptions and engineering and design rates.

37 As noted in the response to BCUC IR 1.2.3, there are two distinct phases in the ECI contracting
38 model: the Open Book Phase and the Design Build Phase.

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1 Once the ECI contractor has been selected (either HMI is recommended by Bramcon and
2 selected by FBC, or HMI is not selected and the ECI contractor is selected through an RFP),
3 and before the Open Book Phase is entered into, the next step in the process is to negotiate a
4 number of key commercial terms of the Design Build contract with the ECI contractor. The
5 process of negotiating these key commercial terms of the Design Build Contract prior to entering
6 into the Open Book Phase ensures that the parties are able to agree upon fair and competitive
7 terms. The key terms negotiated include the percentage magnitude of profit and overheads to
8 be applied to the direct costs established at the end of the Open Book Phase. This percentage
9 will be negotiated between FBC and the ECI Contractor, and its reasonableness will be
10 demonstrated by comparing to benchmarks including those established by Bramcon as a result
11 of its experience on previous ECI projects. Further FBC will evaluate any exceptions the ECI
12 Contractor may take to the terms and conditions of FBC's standard services agreement and
13 Design Build contracts. Also, the parties will agree on the methodology to undertake competitive
14 tendering of the construction work and will define the limitations and expectations for work to be
15 self-performed by the ECI Contractor. In the unlikely event that FBC and the ECI Contractor
16 could not agree on these conditions, FBC will either issue an RFP for the ECI contractor if one
17 had not already been issued or would select the next best proponent from a previous RFP
18 process. The process would permit an ECI contractor to be in place by the end of March 2017.

19 The Open Book Phase of the ECI process will commence following approval of the Project and
20 completion of the process outlined above. The Open Book Phase will be designed to ensure
21 cost competitiveness and fair market value, based on the following:

- 22 • An independent Owner's Engineer will be engaged to analyze, review and advise on the
23 appropriateness and competitiveness of cost not tendered or work to be self-performed
24 by the ECI Contractor.
- 25 • Approximately 70% of supplier and sub-contract packages will be competitively priced;
26 and
- 27 • Risks will be fully identified, priced, and allocated to the party best able to manage them.

28 Under the Open Book Phase, the Project scope, deliverables, costs and risks will be jointly
29 developed in a collaborative and transparent manner between the ECI contractor and owner
30 with input from the Owner's Engineer. As described in the response to BCUC IR 1.2.3, the ECI
31 Contractor is engaged under a service agreement to complete sufficient technical specifications,
32 in conjunction with the owner, to enable the tendering of material in order to obtain a competitive
33 market price. The engineering drawings will be completed to sufficient detail to enable the ECI
34 contractor to derive prices for the trade labour contracts (with the detailed designs and drawings
35 only being completed during the Design Build Phase). The other key component of this stage is
36 the transparent identification of project risks developed collaboratively between the contractor
37 and the owner.



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1 By the end of the Open Book Phase, the parties will have agreed to the Project scope,
2 deliverables, costs, risks, and all terms which will form the lump sum fixed price for the Design
3 Build contract. Finalization of the Open Book Phase is expected at the end of Q3 2017.

4 In the unlikely event the parties are unable to reach agreement at the end of the Open Book
5 Phase, the following will occur:

6 1. The services agreement will include terms that the ECI contractor must complete the
7 design at a fixed lump sum price within an agreed to timeframe following written notice
8 by FBC that the Design Build Phase agreement cannot be achieved.

9 2. The services agreement will include the deliverables (such as final design drawings,
10 design memorandum, specifications) to be provided by the ECI contractor.

11 3. FBC will then use the completed design document to prepare a Request For Quotation
12 (RFQ) and request tender. The ECI contractor would not be eligible to submit a tender
13 response. There will be a corresponding schedule impact of several months, as well as
14 carrying and other cost impacts arising from this delay. FBC is unable to quantify these
15 cost impacts further because the duration of the delay and any Project impacts are not
16 known at this time.

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19 10.3 Please compare and contrast the level to which detailed scope documents
20 (technical specifications, drawings and work procedures) prepared during the
21 Open Book Phase of the ECI process to the design phase in a traditional design
22 tender process.

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24 **Response:**

25 As described in the response to BCUC IR 2.10.2, for the ECI model, sufficient scope
26 development and design is done in the Open Book Phase to procure equipment and price the
27 construction. The balance of the detailed design is only undertaken during the Design Build
28 Phase. In the traditional design tender process, where an owner's engineer is responsible for
29 the design, the design is typically completed prior to tendering the project.

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33 10.3.1 Does the finalization of the technical specifications, drawings and work
34 procedures during the Open Book Phase include documentation for all
35 subcontracted works and materials procurement? If not, please explain

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1 to what level these scope documents will be completed during this
2 phase.

3
4 **Response:**

5 Typically, the finalization of the technical specifications, drawings and work procedures during
6 the Open Book Phase includes technical specifications for major equipment and materials
7 procurement only so as to obtain competitive pricing in the final Design Build contract price.
8 Smaller equipment and materials can be priced from contractor records of recent projects and
9 verified by the owner's team. Typically the drawings are completed to sufficient detail during the
10 Open Book Phase to enable subcontractors to provide bids for subcontracted works. And, as
11 stated in the response to BCUC IR 2.10.2, the engineering drawings will be completed to
12 sufficient detail to enable the ECI contractor to derive prices for the trade labour contracts (with
13 the detailed designs and drawings only being completed during the Design Build Phase).
14 Please also refer to the responses to BCUC IRs 2.10.2 and 2.10.3.

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18 10.4 Please confirm or otherwise explain that under the ECI model with a lump sum
19 fixed price construction contract, if a subcontract is bid below the cost estimate
20 prepared in the Open Book Phase that the savings would be to the benefit of the
21 contractor.

22
23 **Response:**

24 FBC does not expect the bids for subcontracted works to vary from the cost estimate that will be
25 developed as part of the Open Book Phase and which will make up the Design Build Phase
26 contract price. This is because subcontractors are identified and selected during the Open Book
27 Phase through a competitive bidding process. FBC expects the ECI contractor would award the
28 subcontracts to those subcontractors identified and selected during the Open Book Phase
29 unless the contractor can provide some credible reason for a change. The risk of subsequent
30 increase or decrease in sub-contractor price is held by the ECI contractor.

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1 10.5 Please describe the process under which the joint selection of tenders would be
2 made. Under what circumstances would FortisBC be able to rule out the lowest
3 cost bid?

4
5 **Response:**

6 As noted in the response to BCUC IR 1.2.3, “bids received are then jointly evaluated by the two
7 parties considering amongst other things cost, delivery and technical parameters, with the
8 owner having final acceptance.” That is, there are established criteria used to select a bidder
9 and should, for example, a bidder offer a low price but a long delivery that would negatively
10 impact the project schedule, the lowest cost bid is not necessarily chosen.

11 Please also refer to the response to BCUC IR 2.10.2.

12
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15 10.6 Please describe in detail the mechanism for both parties participating in gains /
16 losses. How does this mechanism work given that the “construction is done
17 under a single bonded lump sum contract?” To which costs does the mechanism
18 apply?

19
20 **Response:**

21 During the Open Book Phase, FBC and the ECI contractor jointly finalize the cost estimate and
22 the risk register for the Project. The parties then allocate the project risks between themselves
23 where the risks assigned to the contractor are included in the price for the single bonded lump
24 sum contract. Whether there are gains or losses will depend on which risks actually develop.
25 FBC would like to clarify that once the single bonded lump sum contract is finalized, risk
26 sharing and any resulting costs should a risk materialize would be as agreed to as part of this
27 contract. There are no further provisions for gains / losses based on project performance.
28 Please also refer to the response to BCUC IR 2.10.2.

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33 In response to BCUC IR 2.3.3, FortisBC states that in the event that the ECI model is
34 selected, the contractor’s profit will be transparent to FBC and will be based on a
35 mutually agreed upon negotiated percentage.

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1 10.7 Under the ECI model, what is the base from which the contractors profit is
2 calculated?
3

4 **Response:**

5 Please refer to the response to BCUC IR 2.10.2.
6
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9 10.8 Would FortisBC be willing to file a letter with the Commission from the Owner's
10 Engineer stating that the Owner's Engineer has reviewed: a) the contractor's
11 Project costs and finds them to be to be fair market value; b) the scope/work
12 package documents associated with the contractor's Project costs and finds
13 them to be consistent with industry best practice in general and consistent with
14 the objective of minimizing the overall project cost; and c) the design,
15 specifications and scope/work package documents and finds them to be
16 consistent with industry best practice in general and consistent with the objective
17 of minimizing the overall cost from change orders? If not, why not? If appropriate,
18 please provide alternate wording.
19

20 **Response:**

21 FBC has no concerns with submitting the proposed letter as requested.
22
23

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25
26 In response BCUC IR 2.1, FortisBC states it has recently performed spillway gate
27 rehabilitations at two facilities owned by third parties.

28 10.9 What was the combined rough magnitude of the spillway gate rehabilitation
29 project budgets?
30

31 **Response:**

32 The combined actual project costs for both third party projects totaled approximately \$9 million.
33 As noted in the response to BCUC IR 1.2.1, the scope of work for these projects was different
34 from what is proposed for the Corra Linn Spillway Gate Replacement Project.
35

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1 **11.0 Reference: CONTRACTOR SELECTION AND AWARD**

2 **Exhibit B-3, BCUC IR 2.3, 2.7**

3 **Tendered contract**

4 In response to BCUC IR 2.3, FortisBC states that a contract has not been established
5 with HMI and their involvement to date has been limited to assistance in the preparation
6 of the Class 3 cost estimate for the project.

7 11.1 Please confirm whether FortisBC will retain the option of tendering the main
8 construction contract through the Open Book Phase of the ECI process. If not
9 confirmed, please explain why not.

10

11 **Response:**

12 FBC confirms that the option of tendering the main construction contract is retained throughout
13 the Open Book Phase of the ECI process. Please refer to the response to BCUC IR 2.10.2.

14

15

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17 11.1.1 What would be the schedule and cost impacts, if any, in the event
18 FortisBC were to tender the main construction contract at the end of the
19 Open Book Phase?

20

21 **Response:**

22 Please refer to the response to BCUC IR 2.10.2.

23

24

25

26 11.1.2 If HMI is selected under ECI contract model, does HMI have any
27 specialized equipment or processes that could limit the ability of
28 competing firms bidding on the project from competitively under a
29 tender scenario? If yes, please describe how this is being managed to
30 keep a competitive tender process a viable option.

31

32 **Response:**

33 Please refer to the response to BCUC IR 2.10.2 for a description of the intended approach to
34 determining the contracting model and method for selecting a contractor. HMI does not have

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1 any specialized equipment or processes that would limit competing firms from bidding.

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In response to BCUC IR 2.3 and 2.7 respectively, FortisBC states:

6

- that under the ECI model, risk quantification is transparent and the risk is built into the contract contingency; and if the risk does not manifest, then the associated contingency cost is not incurred and is not charged to FortisBC. This is unlike a fixed price contracting method, where the contractor will typically build risk costs into the contract price and the company will pay for those costs regardless of whether the risk costs manifest or not; and

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- the costs estimated in the Application qualify as an AACE Class 3 estimate and is not expected to change based on the contracting model chosen.

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11.2 Why is price expected to be the same for the ECI and Design Tender processes, if a tendered contractor “will typically build risk costs into the contract price and the company will pay for those costs regardless of whether the risk costs manifest or not?”

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Response:

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As described in the response to BCUC IR 1.2.7, the cost estimate is not expected to change.

21

The contractor’s price associated with the two contracting models described above is expected to be different depending on the delivery method selected. Under an ECI model FBC will hold part of the contingency as explained in the response to BCUC IR 1.2.3 and in the response to BCUC IR 2.10.6, but under a Design Tender process, the owner typically assigns the risks and requires that the contractor make a provision in their tender offer.

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1 **C. COST ESTIMATE AND CONTINGENCY**

2 **12.0 Reference: CAPITAL COST ESTIMATE**

3 **Exhibit B-3, BCUC IR 2.7**

4 **AACE Class 3 estimate**

5 In response to BCUC IR 2.7, FortisBC states the costs estimated in the Application
6 qualify as an AACE Class 3 estimate and is not expected to change based on the
7 contracting model chosen.

8 12.1 Given that the level of project definition expressed as % of complete definition for
9 a AACE Class 3 estimate is 10-40%, what level of project definition is the cost
10 estimate provided in the Application based on?
11

12 **Response:**

13 FBC estimates the level of Project definition to be approximately 10-15%.

14
15

16
17 12.2 What is the confidence level of the cost estimate, i.e., what is the probability that
18 the actual cost will be equal to or lower than the estimate provided?
19

20 **Response:**

21 As stated in the response to BCUC IR 1.3.1 and in Section 6.3.1.2 of the Application, FBC
22 explained why a confidence interval could not be assigned in terms of probability:

23 ...the Monte Carlo method was not used to derive the contingency because
24 limited reliable historical database information was available and hence a
25 probabilistic cost estimate was not developed.

26 FBC confirms that it completed a Class 3 estimate but because the Monte Carlo method was
27 not used, a confidence level cannot be assigned.

28