



March 18, 2010

Mr. Bruce McLennan, Chair
Yukon Utilities Board
Box 31728
Whitehorse, YT Y1A 6L3

Dear Mr. McLennan:

Re: Utilities Consumer's Group (UCG) Requests for Further Information

In a Notice of Motion dated March 15, 2010 UCG made an application for further information from Yukon Energy. UCG asserts that "appropriate responses" were not provided in a number of interrogatory responses filed March 8, 2010, and requests that the Yukon Utilities Board issue a Board Order to YEC requiring YEC to provide more complete answers to its Information Request. In a letter dated March 17, 2010, the Yukon Utilities Board sought YEC comments on this request by 5:00 p.m. Thursday, March 18, 2010. In Yukon Energy's view, it has been fully responsive to the questions as they were posed; however, to be of assistance given UCG's further explanation of its IRs, and where relevant to do so, YEC has attempted to clarify or expand on its responses.

UCG-YEC-1-1

UCG Position: UCG notes that YEC's response to part (a) references a footnote, although no footnote is provided, and requests YEC be directed to provide the footnote. In response to part (b), UCG notes that YEC did not respond to the question asked, and that the intent of this subpart was to understand the negotiations that were undertaken under the Federal Green Infrastructure Fund (GIF) Guidelines, and whether the reality of a proper regulatory review period was incorporated into the agreed upon deadlines. UCG notes the intent of the question was to learn more about how those terms and conditions were determined, who was involved in negotiating these terms and conditions, and the timing of these negotiations and requests YEC provide details regarding how the timeframes incorporated into the agreement were determined.

YEC Response: For clarification, it is noted that the blank footnote reference in the response to Part (a) is simply a typographical error. There is nothing further to provide.

The answer provided to part (b) noted that YEC is obligated to meet the timeline under the GIF funding agreement. The follow-up from UCG now requests information on "negotiation" of the agreement. To address the further information requested, in the context of the original question, no efforts have been taken by Yukon Energy to extend the GIF funding agreement timelines for the \$71 million of federal funds. There was no negotiation with the Federal Government related to these timelines, as it was understood by Yukon Energy that in order to obtain the funding under GIF, Yukon Energy was required to complete the Legacy Project by March 31, 2012. As set out in YEC's YESAB Mayo B Project Proposal Submission filed in February 2009, YEC also understood that this could be achieved within a proper regulatory review period.

UCG-YEC-1-3

UCG Position: UCG notes that YEC failed to fully respond to part (c) of this information request. UCG notes that YEC was asked to provide details of the specific review conducted of Mayo B during the Resource Plan hearing and that the intent of the question was to get YEC's interpretation of how the project was specifically subject to review in 2006. UCG asserts that YEC only made note of the project in its proposed Resource Plan and requests that YEC provide specifics of how the Mayo B project was subject to review by the Board and other parties in 2006.

YEC Response: It is unclear what further response can be provided to (c). The response provided to UCG-YEC-1-3(a),(b) and (c) outlines the project as discussed specifically in the context of the 20-Year Resource Plan and the related review process noting what was in YEC's Resource Plan and that the Board's report agreed with YEC's long-term planning approach without specifically referencing the Mayo B project.

To clarify further, when discussing longer-term planning for projects to be committed after 2008 (the last year for projects included in the Chapter 4 near term plan), the Resource Plan hearing reviewed potential load scenarios, and the need to plan for such scenarios arising, and did not specifically review the merits of any one project in this regard such as Mayo B. As noted in the response to UCG-YEC-1-3(b), the Board recommended that YEC continue to monitor potential load additions and make a filing with the Board when new facilities are required to meet increased loads. YEC has followed the Board's recommendation in this regard.

As noted in the response, Mayo B was therefore discussed in the 20-Year Resource Plan as one potential small hydro project [among a suite of options in the range of 5-10 MW] that may be developed to meet the 25 MW industrial load forecast scenario). While Chapter 4 of the Resource Plan addressed in detail projects related to meeting near term capacity requirements (to be met by 2009), Chapter 5 of the Resource Plan (and Appendix B wherein Mayo B was specifically outlined) discussed and addressed longer term planning scenarios and options available to meet these scenarios. Chapter 5 was not a review per se of any individual project; it was a review of a plan for proceeding with longer-term supply options, including how to ensure supplies could be brought on line when required. Mayo B was included in that filing as one option among a suite of possible options for addressing a particular longer term industrial load scenario that YEC would

need to plan to address. In particular, Mayo B was noted as meeting some key preferred characteristics that would guide ongoing actions – such as being an enhancement to an existing project rather than entailing the complexities of a new “Greenfield” project.

UCG-YEC-1-5 (b)

UCG Position: UCG notes that YEC failed to fully respond to this information request, asserting that YEC was asked to provide details of the electricity customer base served by the Mayo-Dawson grid. UCG requests specifics related to the current customer base and their load in order to better understand the proposed operations and the justifications that YEC makes for the Mayo B project.

YEC Response: YEC reiterates that Mayo B is not being proposed to supply specifically the electricity customer base served by only the current Mayo Dawson grid. By the time the project is projected to be in service, the MD and WAF grids will be integrated by the CSTP, so there is no basis to analyze either individual grid on a standalone basis. However, to expand on YEC’s response, for 2009, the Mayo Dawson forecast grid loads were set out in Table 2.3 of YEC’s 2008/09 GRA which indicated 1108 residential customers, 378 general service customers, and 3 wholesale delivery locations (Stewart Crossing and Keno). At that time there was no industrial customer on the Mayo-Dawson system. This customer base is to be increased in 2010 with the planned connection of the Alexco mine and mill load. By early 2011, after completion of CSTP Stage 2, the Mayo Dawson grid will become connected to the WAF grid.

UCG-YEC-1-5 (e)

UCG Position: UCG notes that YEC failed to fully respond to this information request, asserting that YEC was asked to provide a comparison of the cost per MW of the proposed Mayo B project with the cost of installing new site-specific diesel generation. UCG notes that YEC is, in part, “justifying the Mayo B project insofar as it displaces other forms of generation (diesel)”. UCG argues the requested information is required so that UCG may “undertake meaningful analysis of the alternatives to the proposed project”.

YEC Response: Yukon Energy reaffirms its response to this question - it is simply not meaningful, for the purpose of assessing ratepayer cost per kW.h of useful energy, to compare capital cost per MW of a hydro generation unit (which brings with it both capacity and energy) with the capital cost per MW of a diesel generation unit (which is only focused on capacity – the energy costs must also consider fuel). The meaningful cost comparison at a minimum requires the present value LCOE per kW.h assessed over the economic life of the hydro generation option, as provided in the Application. Yukon Energy’s present value assessment in the Application only considered savings in diesel generation incremental operating costs (fuel and incremental O&M) and did not consider savings in diesel generation capital costs (due to deferral of such facilities over the life of Mayo B).

However, to expand on YEC's response, YEC notes that the projected ratebase cost per MW for Mayo B is \$3.61 million/MW in 2012\$ (\$36.5 million divided by 10.1 MW as the estimated installed capacity) and for new site-specific diesel generation no updates have been completed since the 2008/09 GRA cited by UCG (which estimated costs at \$1.035 million/MW in 2009\$).

UCG-YEC-1-5 (f)

UCG Position: UCG argues that YEC failed to fully respond this information request, asserting that YEC was asked to explain how the Federal government's contribution to the proposed Mayo B project would be less than \$53.3 million, noting that "UCG is looking for information specific to the proposed Mayo B project on what would cause the proposed Federal funding amount to be lower for Mayo B". UCG notes that YEC references CW-YEC-1-2 which addresses the total commitment of \$71 million, but does not specifically address the commitment to Mayo B funding.

YEC Response: The response to CW-YEC-1-2 provides the circumstances in which the full level of funding (up to \$71 million) would not be available. Under section 3.1(a) of the Agreement Canada will not pay more than 50% of the total Eligible Costs during the three Fiscal Years starting in 2009-2010 and ending in 2011-2012, i.e., if such costs are less than \$142 million, or fail to be in accordance with the Fiscal Year breakdown in Schedule B2, as amended in accordance with the Agreement, Canada could not pay the full \$71 million.

Except as noted in the response, YEC is not able to identify any reasonable way in which the federal funding would be less than \$53.3 million. YEC also notes that the most up to date estimates for Mayo B demonstrate that eligible costs will be beyond what is necessary to qualify for the \$53.3 million.

UCG-YEC-1-5 (i)

UCG Position: UCG argues that YEC failed to fully respond to this information request asserting that YEC was asked to provide details by cost component of costs incurred to date for the proposed Mayo B project for each historical year and estimated for subsequent years. UCG notes that YEC refers to a breakdown of overall budget and discussion of project cash flow projects, and UCG asserts that that it would like to see how much has been spent to date in each of the project components that YEC has identified in its budget.

YEC Response: To expand on YEC's response, costs incurred to date for Mayo B are \$1.880 million to the end of 2008 and a cumulative total (including 2008) of \$7.441 million to year-end 2009. In the cost category breakdown in CW-YEC-1-5(a) these are entirely in the category of pre-construction and other permitting/regulatory planning costs.

UCG-YEC-1-5 (k)

UCG Position: UCG argues that YEC failed to fully respond to this information request asserting that YEC was asked to provide details of how YEC determined that the proposed project would

only qualify for \$53.3 million of the \$71 million available from the Federal government. UCG notes that YEC indicated that it was all based on the estimated Eligible Costs as filed in the application for Federal funding, and submits that without providing a copy of the application for Federal funding and the cost allocation contained therein, YEC has failed to respond to the request.

YEC Response: YEC's answer is responsive. YEC has provided a copy of the Federal Funding Agreement. The \$53.3 million amount of funding available for Mayo B is governed by the Federal Agreement (see Schedule B2 of that Agreement available in Attachment E of the Mayo B Application, which reflects fully the information that Canada relied upon to determine the \$71 million funding amount and the allocation of this funding between Mayo B and CSTP Stage 2 components of the Legacy Project).

UCG-YEC-1-6 (a)

UCG Position: UCG argues that YEC failed to respond fully to this information request noting that in part (a), YEC was asked to provide a copy of the third party review of the \$120 million cost estimate for the proposed Mayo B project and YEC declined to provide this document due to the fact that YEC viewed this document as no longer relevant. UCG asserts that "YEC relied on this study, to some degree to justify moving forward with the project", "intervenor do not have the resources available to hire independent project evaluators" and the study is relevant, "even if as a guide to how the project may have changed since the study was done." UCG infers that the refinements in the project "were probably as a result of this study" and "without knowing the expert opinion of the project in January 2009, UCG is being denied access to available expertise from which to build its argument in the upcoming hearing".

YEC Response: Yukon Energy reiterates its position that this review is of no relevance to the currently proposed project, other than as one small element of its historical evolution. The review was conducted in January 2009, at a very early stage in cost estimating for the Project to assist KGS, and not for any external party reviews. This brief external third party review by itself was, at the time, the subject of assessment, review and adaptation by KGS in its ongoing advice to YEC – such that the third party document by itself only leads to a need for further explanation focused on what was being discussed at the start of 2009 rather than what is being proposed today in the Application. Since the review was undertaken, the scope of the project has been materially further refined (for example, the project now entails a penstock instead of a canal).

However, to expand on its response, the requested report is provided as an attachment to this correspondence. The report consists of a one page letter dated February 3, 2009 and a one page table attached at that time (totaling to \$115.690 million) which was amended in a February 5, 2009 table based on further discussion with the project engineers (totaling to \$113.016 million). Consistent with ensuring maximum value for future competitively tendered unit price subcontracts that are expected to be let for the Mayo B project, unit pricing has been redacted from the attached report.

The independent review on its face indicated overall costs at approximately 5% lower than KGS' estimates. However, the key reason for the review was to cross-check specific individual line items rather than the simple focus on one overall number. In this context, KGS' views upon review of the IPE report was that project costs could in fact be 4-5% higher than previously estimated by KGS. Specifically, upon review of the individual line items KGS was concerned that the IPE review indicated higher cost estimates on the key items KGS wanted independent review of (i.e., canal bulk excavation and camp man days – IPE increased man days by 50%), this indicated to KGS the potential to revise these particular items in their own estimate upwards. The IPE report did indicate lower cost estimates on other items (powerhouse mechanical and electrical and low pressure penstock, which also lowered related contingencies); however, KGS was comfortable with its estimates on these items and therefore no revision was made by KGS to its estimates. It was noted that being within 5% of this type of estimate indicates that the estimates are on track and not that they need to be materially revised.

UCG-YEC-1-6 (c), (d) and (e)

UCG Position: UCG asserts that YEC failed to fully respond to this request noting that YEC was asked to provide additional information on capital projects completed over the last 15 years, currently underway or currently proposed valued at over \$1 million, so that UCG can examine YEC's management record on major capital projects in order to provide opinions on the proposed \$120 million project. UCG argues that the track record of how the costs of previous major projects were managed is an important issue to address in this proceeding. Acknowledging YEC's position that the information could not be assembled for the March 8, 2010 filing deadline, UCG submits that it would be sufficient to have the information available by the end of March.

YEC Response: YEC can only reiterate the position already provided. In the context of a regulatory matter such as this proceeding, this information request is excessively broad and extensive and accordingly inappropriate. It also has marginal, if any, relevance to the issues to be reviewed and addressed pursuant to the Minister's Terms of Reference. All of the capital projects referenced have also been, or will at some future date be, subject to GRA review by the YUB. In any event, the information requested is not easily available. Even if it exists in the format requested (which is not clear), it simply could not be assembled by YEC in the timeframe established for this proceeding.

UCG-YEC-1-10

UCG Position: UCG asserts YEC failed to respond to part (a) and (b) of this request, noting that YEC was asked to provide its knowledge of the sources of revenue to the Yukon Development Corporation and how YDC's contribution to the financing of the proposed Mayo B project meets conditions within the Yukon Development Corporation Act. UCG submits that since YDC is a significant financial partner for the proposed project, information regarding its contributions is within the scope of this proceeding. UCG cites the Minister's December 18, 2009 letter of direction, noting the YUB is to review "risks facing Mayo B and their potential impacts on rates for customers" including "project financing capability" and submits that this includes the financing

that has been proposed from YDC. The information request seeks to find out as much about YDC's sources of revenue and contribution restrictions as is known by YEC and its officers so that informed submissions can be made to the Board in this regard.

YEC Response: YEC reaffirms that the answer as provided is responsive. YDC is the shareholder of YEC and is not subject to review by the YUB. The issue of seeking information from YDC has been raised on a number of occasions in the past and the YUB has consistently ruled it has no jurisdiction over shareholders of regulated utilities such as YDC.

UCG-YEC-1-18, 22 and 23

UCG Position: UCG argues that YEC failed to respond to these request.

- In respect of UCG-YEC-1-18, UCG notes that YEC was asked to provide copies of meeting notes and other materials related to the consultations with stakeholders. UCG submits that "all notes and discussion documents from all consultations related to the proposed Mayo B project will lead to a better understanding of exactly what information has been put in front of stakeholders, the specific issues raised by the stakeholders, when these consultations were conducted and who was involved" and "additional information will assist the Board to respond to the Minister's request and all intervenors to focus on issues that require additional review." UCG submits that the legislation that governs a public body such as YEC is the Access to Information and Protection of Privacy Act and there does not appear to be any legal reason why the requested information could not be provided.
- For UCG-YEC-1-22, UCG argues that YEC failed to respond to the information requested, noting that YEC was asked to explain how the consultations on the proposed project aided the decision making process for any electricity ratepayer outside of the Mayo area. UCG asserts that YEC's response noted the benefits to ratepayers rather than how information was provided to ratepayers outside the Mayo area to allow them to make a determination on the value to them of all components of the proposed project. UCG submits that YEC's "claims of 'public involvement' fall short of being adequate for a project of this magnitude. The requested information is needed to verify or refute this assumption".
- For UCG-YEC-1-23, UCG argues that YEC failed to respond to this request, noting that YEC was asked to provide copies of all notes and presentation materials related to meetings with the NND Lands and Resource Department, the NND Project Agreement Working Team, and with the broader community to inform them of the proposed Mayo B project. UCG asserts that YEC "claims (without reasons) that presentation materials related to stakeholder meetings is confidential and not available for release". UCG submits that the legislation that governs a public body such as YEC is the Access to Information and Protection of Privacy Act and there

does not appear to be any legal reason why the requested information could not be provided.

YEC Response: Yukon Energy considers the answers provided to be fully responsive. As noted, consultation with all stakeholders has been extensive and occurred in various locations in Yukon, not just Mayo. Given the number of people involved and the significant number of meetings held the request is simply too broad and inappropriate for a regulatory proceeding such as this proceeding. In the timeframe available the information could not be meaningfully assembled. Records of all consultation up to the YESAB filing are provided in the links noted in UCG-YEC-1-23, and this information formed the basis for YESAB's determination that YEC had adequately consulted (available at:

<http://www.yesab.tzo.com/wfm/servlet/PDFServlet?doc=subdocument&id=nullfu65idr4ch&key=nullg6xq07ob9p1905028924>

and

<http://www.yesab.tzo.com/wfm/servlet/PDFServlet?doc=subdocument&id=nullfy0o2iua8z&key=nullg6xq07ob9p1905028924>

In relation to UCG-YEC-1-22, it is noted that information referenced in response to UCG-YEC-1-23 includes a consultation materials relevant to the consultation process undertaken outside of Mayo. Specifically, it is noted that activities involving other governments are summarized in Section 4.4.3 of Chapter 4 of the Project Proposal to YESAB and activities involving other publics are summarized in Section 4.4.4. Specifically, Chapter 4 of the Project Proposal provides as follows with regard to the consultation undertaken outside of Mayo:

- Electronic, paper and other media communication were used to inform stakeholders and interested publics about the project. The details and contents of each of these forms of communication are provided in Appendix 4B.
- Newsletters were also produced to provide information on the project (November 2008 and February 2009), and these materials were posted on Yukon Energy's website.
- An open house was also held in Whitehorse On January 21, 2009, for interested publics. The event was attended by 20 individuals interested in hearing about the Mayo B Project, the need for the project, and potential project effects. The event was advertised in the Whitehorse Star on January 16, 2009 and January 19, 2009, as well as in public service announcements on the radio (CKRW and CHON-FM). Letters of invitation were sent to stakeholders in Whitehorse, including individuals with leases in the Mayo area with Whitehorse addresses (see Appendix 4F for the list of Whitehorse Open House Invitees). (See section 4.4.4.1 of the Project Proposal filed with YESAB).

Subsequent to filing the Project Proposal, the Mayo B project was also subject to review by the YUB and stakeholders during the recent 2008/2009 Yukon Energy GRA.

For clarity, with respect to consultations with NND, the reference in YEC's answers to the issue of confidentiality is related to consultations involving the proposed NND Project Agreement and related issues. NND and YEC expressly agreed that the negotiations that have been ongoing are confidential, and therefore YEC is not in a position to provide the information requested. The TWG has been formed under this negotiation process, and reports to the main table negotiators.

YEC has provided more than adequate information on consultation and if UCG or any party wishes to ask specific questions YEC will answer those questions. Further, Yukon Energy is concerned that UCG's rationale for requiring this information exceeds the scope of the current process. This process (and the Board's mandate) is not to review the adequacy of the consultation that has been undertaken (that review is being undertaken by YESAB). This review is to be focused on "the potential benefits, costs, risks and customer impacts that influence whether Mayo B should proceed as proposed by YEC. Further consultation materials will not facilitate that review.

UCG-YEC-1-24

UCG Position: UCG argues that YEC failed to respond to parts (a) and (b) of this information request, noting that YEC was asked to provide copies of all Contribution Letters of Agreement with FNNND and copies of all notes and presentation materials related to the meetings of the Technical Working Group. UCG asserts that "YEC claims (without reasons) that the agreements are not available for public release and that all notes and presentation materials related to meetings of the Technical Working Group, other than those made public through the YESAB process, are confidential to NND and YEC". UCG submits that the legislation that governs a public body such as YEC is the Access to Information and Protection of Privacy Act and there does not appear to be any legal reason why the requested information could not be provided.

YEC Response: As noted above, all matters involving the negotiation of the Project Agreement with NND, including matters related to the Technical Working Group established pursuant to Project Agreement negotiations, are confidential.

UCG-YEC-1-27

UCG Position: UCG argues that YEC failed to respond to part (a) of this information request. UCG asserts that YEC was asked to "provide details of the likelihood that the growth in electricity demand in the Mayo area will be anything but minimal" and argues that YEC did not provide any information related to the Mayo area but chose instead to refer to the proposed integrated grid only. UCG submits that the requested information is needed to develop arguments related to the "public need for Mayo B under various reasonable electric load forecasts", "implications of Mayo B to the system reliability, customer rates and economic growth in the Yukon" and alternatives to

Mayo B that might be advisable "given reasonable load assumptions and risk assessments" as directed by the Minister.

YEC Response: Yukon Energy's response noted that the referenced quote in the Application was not specific to the Mayo area. To respond to the specific information requested, focusing on the request for information on individual delivery locations on the integrated system (as opposed to overall integrated system loads that must be served in a coordinated fashion), YEC notes that the Mayo area sales (excluding all other integrated system loads, such as Dawson and the Alexco mine site) are entirely retail sales, and total approximately 6.3 GW.h non industrial firm power sales in Mayo, Elsa and Keno area (this excludes 0.6 GW.h of secondary sales). The firm sales are forecast to grow at the standard 1.85% used for all retail sales (on the order of 0.1 GW.h per year).

Yours truly,



Hector Campbell
Director Resource Planning & Regulatory Affairs

KGS Group
865 Waverly Street
Winnipeg, Manitoba
R3T 5P4

Feb 3 2009

Re: Yukon Energy-Mayo B Hydroelectric Project – Estimate Review

Attention: Mr Shaun Beatty, Senior Structural Engineer

Dear Shaun

I have reviewed your estimate for the Mayo B Hydro-electric project and have included a comparison on the attached spreadsheet. I have compared your project against other detailed estimates I have completed over the past several years.

The rates include Contractor Direct Costs, Indirect Costs and Profit. I have assumed that the Contractor Indirect costs were in the order of 30% of Contractor Direct costs and that the profit was in the order of 20% of Contractor Total costs.

There were several large variances which I will comment on in this letter;

- The Mobe-Demobe costs are included in my unit rates.
- I assumed the Canal Excavation was 80% Rock and 20% Overburden. If the excavation is all overburden then your rate was OK.
- I assumed the canal lining was rock and not concrete.
- I assumed the Steel Penstock has a 20mm wall thickness.
- I was significantly less on the Balance of Plant. My budget was based on previous estimates of similar size.
- I increased the contingency on the civil works to account for quantity risk.
- You must have made a mistake on your contingency on balance of plant.
- I increased the camp man-days which would include all labour, subcontractor labour, engineering site visitors, camp staff etc.

If you have any questions please do not hesitate to contact me.

Sincerely



Paul Hewitt M.Sc.P.Eng
Principal
International Project Estimating Limited



Yukon Energy-Mayo B Hydroelectric Project - Estimate Review

Item	Description	KCS Group			International Project Estimating			Variance	Notes
		Quantity	Units	Cost	Quantity	Units	Unit Cost		
1	1 Mob and Demob			2,000,000			0		
2	2 Access Road - powerhouse to canal outlet			150,000			240,000		-2,000,000 included in unit rates
3	3 Access Road - surfacing of canal berm			75,000			195,000		90,000 assumes access road includes rock cuts
4	4 Care of water at Wareham intake/tunnel			300,000			300,000		120,000 granular base 300mm thick x 7 m wide
5	5 Existing tunnel expansion			300,000			300,000		0
6	6 Tunnel infill concrete			1,600,000			1,240,000		0
7	7 New Vertical Shaft (concrete)			250,000			150,000		-360,000
8	8 Penstock low pressure (steel)			460,000			798,000		-100,000 assume nominal formwork or rebar required
9	9 Penstock to canal outlet structure			5,520,000			4,600,000		338,000 assume no concrete lining required
10	10 Clearing			880,000			600,000		-920,000
11	11 Canal excavation			675,000			1,035,000		-280,000
12	12 Canal lining			9,000,000			16,200,000		360,000 assume clear & grub
13	13 Canal-to-penstock inlet structure			2,100,000			2,800,000		7,200,000 assume 80% rock + 20% overburden
14	14 Steel penstock canal to powerhouse			880,000			600,000		700,000 assume this is a rock lining and not concrete lining
15	15 Steel penstock foundation & backfill			11,340,000			13,770,000		-280,000
16	16 Penstock biturcation			1,360,000			1,360,000		2,430,000 assume 20 mm thick
17	17 WZW Turbine Generator			500,000			500,000		0
18	18 Powerhouse bedrock excavation			15,000,000			16,000,000		1,000,000
19	19 Powerhouse Civil (concrete)			120,000			120,000		0
20	20 Tailrace excavation			4,400,000			3,000,000		-1,400,000
21	21 Powerhouse Electrical			1,040,000			1,040,000		0
22	22 Mechanical - balance of plant			3,250,000			1,000,000		-2,250,000
23	23 Mayo B substation (two 10 MVA transformers)			2,500,000			750,000		-1,750,000
24	24 Mayo Hydro substation upgrade (not KCS scope)			1,100,000			1,100,000		0
25	25 Transmission Line - 69 kV plus communications			0			0		0
26	26 Transmission Line - 13.8 kV station power & transformer			900,000			864,000		-36,000
27	27 Environmental mitigation measures			51,000			51,000		0
28	28 Land acquisition			1,000,000			1,000,000		0
29	29 Major spares			250,000			250,000		0
30	30 Unidentified Unknowns			67,251,000			70,113,000		2,862,000
31	31 Subtotal of Direct Costs			6,700,100			14,022,600		7,322,500 Includes contingency on dvt quantities
32	32 Contingencies on turbine-generator			73,951,100			84,135,600		10,184,500
33	33 Total Direct Costs			2,250,000			2,400,000		150,000
34	34 Planning to date (pre-eng & site investigations)			14,737,775			525,000		-14,212,775
35	35 Detailed Engineering, tender prep & support			90,938,875			87,060,600		-3,878,275
36	36 Construction Management & administration			1,500,000			1,500,000		0
37	37 Environ and Licensing (excludes Mayo Lake)			7,275,110			5,964,848		-310,262
38	38 Interest during construction			3,637,555			3,482,424		-155,131
39	39 Owner Administration			7,275,110			6,964,848		-310,262
40	40 YEC staff - training & commissioning			454,694			435,303		-19,391
41	41 Diesel costs during Mayo outages for construction			50,000			50,000		0
42	42 Camp and housing			300			0		0
43	43 Total Project Costs			500,000			500,000		0
44	44 Total cost in \$/kw			20,000 man day			175		1,250,000
45	45 Total Project Costs			4,000,000			5,250,000		-3,578,452
46	46 Total cost in \$/kw			119,268,899			115,690,447		-358

Yukon Energy-Mayo 8 Hydroelectric Project - Estimate Review

Yukon Energy Letter
Re: Utilities Consumer's Group (UCG)
Requests for Further Information
Attachment 1

Item	Description	Quantity	Units	Unit Cost	Cost	Quantity	Units	Unit Cost	Cost	Variance	Notes
1	Mobile and Demob				2,000,000				0	-2,000,000	Included in unit rates
2	Access Road - powerhouse to canal outlet				150,000				175,000	25,000	assumes no rock cuts
3	Access Road - surfacing of canal berm				75,000				195,000	120,000	granular base 300mm thick x 7 m wide
4	Care of water at new tailrace				300,000				300,000	0	
5	Excising tunnel expansion				300,000				300,000	0	
6	Tunnel infill concrete				1,600,000				1,240,000	-360,000	
7	New Vertical Shaft (30" dia.)				250,000				150,000	-100,000	assume nominal formwork or rebar required
8	Penstock low pressure (12" dia.)				460,000				798,000	338,000	assume no concrete lining required
9	Penstock to canal outlet structure				5,520,000				4,600,000	-920,000	
10	Clearing				880,000				600,000	-280,000	
11	Canal excavation				675,000				1,095,000	360,000	assume clear & grub
12	Canal lining				9,000,000				10,800,000	1,800,000	assume 100% overburden
13	Canal to penstock inlet structure				2,100,000				3,500,000	1,400,000	assume granular plug geomembrane
14	Steel penstock: canal to pwh (12" dia.)				880,000				600,000	-280,000	
15	Steel penstock foundation & backfill				11,340,000				11,340,000	0	assume 10-13 mm last section 20 mm thick
16	Penstock bitraction				1,360,000				1,350,000	-10,000	
17	WZW Turbine Generator				500,000				500,000	0	
18	Powerhouse bedrock excavation				15,000,000				16,000,000	1,000,000	
19	Powerhouse Civil (concrete)				120,000				120,000	0	
20	Tailrace excavation				4,400,000				3,000,000	-1,400,000	
21	Powerhouse Electrical				1,040,000				1,040,000	0	
22	Mechanical - balance of plant				3,250,000				1,000,000	-2,250,000	assume done in wet
23	Mayo 8 substation (two 10 MVA transformers)				2,500,000				750,000	-1,750,000	
24	Mayo Hydro substation upgrade (not KGS scope)				1,100,000				1,100,000	0	
25	Transmission Line - 69 KV plus communications				0				0	0	
26	Transmission Line - 13.8 KV station power & transformer				900,000				854,000	-46,000	
27	Environmental mitigation measures				51,000				51,000	0	
28	Land acquisition				1,000,000				1,000,000	0	
29	Major spares				250,000				250,000	0	
30	Unidentified Unknowns				67,251,000				62,918,000	-4,333,000	
31	Subtotal of Direct Costs				6,700,100				6,291,800	-408,300	excludes contingency on civil quantities
32	Contingencies on turbine-generator				73,951,100				69,209,800	-4,741,300	
33	Contingencies on balance of plant & civil work				2,250,000				2,400,000	150,000	
34	Total Direct Costs				14,757,775				13,302,450	-1,435,325	
35	Planning to date (pre-eng & site investigations)				90,938,875				84,912,250	-6,026,625	
36	Detailed Engineering, tender prep & support				1,500,000				1,500,000	0	
37	Construction Management & administration				7,275,110				6,792,980	-482,130	
38	Environ and Licensing (excludes Mayo Lake)				3,637,555				3,396,490	-241,065	
39	Interest during construction				3,637,555				3,396,490	-241,065	
40	Owner Administration				7,275,110				6,792,980	-482,130	
41	YEC staff - training & commissioning				454,694				424,561	-30,133	
42	Diesel costs during Mayo outages for construction				50,000				50,000	0	
43	Construction camp infrastructure				300				0	-300	
44	Camp and housing				500,000				500,000	0	
45	Total Project Costs				4,000,000				5,250,000	1,250,000	
46	Total cost in \$/kw				119,268,899				113,015,751	-6,253,148	
47					11,927				11,302	-625	