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February 29, 2016

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

Dear Mr. McLennan:

Re: Diesel Contingency Fund (“DCF”) Annual Report

Pursuant to Yukon Utilities Board (“YUB” or the “Board”) direction provided in Order 2015-01 and 2015-06, this correspondence provides Yukon Energy Corporation’s (“Yukon Energy” or “YEC”) first Annual Report summarizing DCF activities up to December 31, 2015 based on preliminary actuals, and includes the following information:

- **Attachment 1** - DCF Calculations and Balance Updates.
- **Attachment 2** - Updated Rider E Rate Schedule (at \$0.56 c/kWh rebate effective April 1, 2016 and until March 31, 2017).
- **Attachment 3** - Update on Forecast Water Conditions for 2016.
- **Attachment 4** - Proposed Approach for Inclusion of LNG in Ongoing DCF Determinations.

A summary of the background for this annual report as well as a summary of each of the above documents follows.

Background for DCF Annual Report

Yukon Energy’s application to revise the Diesel Contingency Fund¹ resulted in Order 2015-01 which approved the DCF subject to the direction set out in the Reasons for Decision. The direction to commence quarterly reports regarding the balance in the DCF account effective March 31, 2015 was delayed due to subsequent issues related to the April 7, 2015 Compliance

¹ An Application by Yukon Energy Corporation to Revise the Diesel Contingency Fund & Related Amendments to Rate Schedule 42 Pertaining to the Energy Reconciliation Adjustment filed January 31, 2014. The related Compliance Filing was provided April 7, 2015 following Board Order 2015-01.

Filing. Subsequent to the April 2015 Compliance Filing, Order 2015-06 (August 18, 2015) approved the following:

- The Revised DCF Term Sheet: the approved DCF Term Sheet (included as Attachment 1 in YEC's April 7, 2015 Compliance Filing) outlines the requirement for annual reporting as follows:

“An annual report is required to be filed with the Board detailing additions and deletions to the Fund and a forecast of water conditions for the next year. The annual report to the Board is also to include a proposed rate rider to refund/collect any amount that exceeds the approved cap. The Board will direct YEC on the additions and deletions to the Fund, and on any proposed rate rider.”
- The DCF amounts provided in Table A1 of Appendix A in YEC's April 7, 2015 Compliance Filing (DCF amounts for 2012 and 2013 were approved as final and DCF amounts for 2014 were approved as preliminary);
- A DCF Rider rate schedule (Rider E) as shown in response to YUB-YEC-1-006, Table 1; this Rider E applied to consumption effective September 1, 2015 and until or on March 31, 2016, with a rebate of 0.68 cents/kWh for all firm kWh retail and major industrial sales in Yukon of YEC and YECL.

Q3 2015 - Quarterly DCF Filing

The first quarterly report was provided on November 25, 2015, for the period ending September 30, 2015. The quarterly calculations included in this filing were intended to be used as placeholders based on forecast loads for the year at the time of calculation, with ultimate final calculations performed only on the annual final calendar year values.

The Q3 2015 quarterly report excluded LNG generation noting YEC's LNG facilities at the Whitehorse thermal plant were available for service in July 2015 – but deficiency correction and various commissioning activities continued into Q4 2015. Due to these ongoing commissioning activities YEC was not able at that time to set out proposals for inclusion of LNG in ongoing DCF determinations. YEC noted that it would provide a proposed approach for including LNG in ongoing DCF determinations in the December 31, 2015 year-end DCF filing. It was also noted that because the year-end DCF filing will determine final DCF amounts for 2015, the delay in dealing with LNG would not prejudice these final 2015 determinations.

DCF Calculations and Balance as of December 31, 2015

Attachment 1, Table 1 in this filing provides DCF calculations and balance as of December 31, 2015, and Attachment 1, Table 2 provides a DCF Continuity Schedule for the years 2012 to 2015. Quarterly calculations for 2015 are provided in Table 4 of Attachment 1.

In summary, these attachments indicate as follows regarding the annual DCF calculations and balance for 2015:

- Based on actual annual load for 2015 and the approved DCF Term Sheet, the "expected" (i.e., based on long term average water conditions) thermal requirement for 2015 is 10.011 GW.h;
 - LNG is assumed to have been able to displace 15% of the 2015 expected long-term average thermal requirements (1.502 GW.h).²
 - Diesel generation was required for the balance (8.509 GW.h).
- Actual annual thermal generation requirement for 2015 (net of LNG and diesel charged to capital and RFID) was 2.822 GW.h, including 2.229 GW.h diesel and 0.593 GW.h LNG.
- The resulting overall gap between expected and actual thermal generation for 2015 equals 7.189 GW.h, composed of 0.909 GW.h of LNG generation and 6.280 GW.h of diesel generation.
- The resulting payment required from YEC into the DCF for 2015 is \$1.974 million.
- Based on the above, and the DCF balance at the end of the previous year (2014) net of the forecast impact of the current Rider E rebate applicable until March 31, 2016, the forecast DCF balance at 2015 year-end that affects determination of a new Rider E is \$10.152 million.³

Attachment 4 provides further review and detail regarding the proposed approach for inclusion of LNG in DCF determinations.

Updated Rider E

In Order 2015-06, the Board directed that YEC refund DCF contributions in excess of the \$8.0 million cap (equal to \$1.627 million as at the end of 2014) through a rate rider applicable to all firm sales throughout the Yukon (Rider E), estimated at 0.68 cents/kWh, effective September 1, 2015, and continuing until March 31, 2016.

² See Attachment 4 of this filing for review of the assumptions adopted for LNG impacts on the 2015 DCF year-end filing.

³ See Attachment 1, Table 2. The DCF balance at December 31, 2015 net of collections is \$10.895 million. Forecast collections in 2016 for January through March equal \$0.743 million. The forecast DCF balance as at March 31, 2016 is therefore \$10.152 million.

The DCF calculations and balance update for 2015 (Attachment 1, Tables 1 and 2) forecast DCF contributions at \$2.152 million in excess of the \$8.0 million cap as of March 31, 2016. Based on this forecast, a new Rider E refund to ratepayers of 0.56 cents/kW.h is estimated to be required for implementation from April 1, 2016 to March 31, 2017. For further detail regarding the Rider E calculation see Attachment 1, Table 3.

The updated Rider E Rate Schedule (based on Table 3) is provided as Attachment 2.

Update on Forecast Water Conditions for 2016

An update on forecast water conditions for 2016 is provided as Attachment 3. The forecast notes that all reservoirs are forecast to be at or near full supply by October 2016 and this will allow for full hydro generating capability for the winter of 2016/17.

The official March 1 snow surveys have not yet been performed. Unofficial early snow surveys and anecdotal information indicate snow pack will be below average and in some areas significantly below. An updated forecast will be included in the next quarterly filing following release of snowpack data.

Offsetting expected low snow pack levels, the forecast notes a planned prolonged Aishihik GS shut down from June to October related to required maintenance in 2016 as well as constraints expected this summer in June and July on downstream Mayo River flows. Both of these factors are expected to contribute to reservoirs being at or near full supply by October 2016.

If you have any questions regarding the above please contact the undersigned.

Yours truly,



Ed Mollard, CGA
Chief Financial Officer
Yukon Energy Corporation

ATTACHMENT 1: DCF CALCULATIONS AND BALANCE UPDATES – 2015

Table 1: DCF Calculations for 2012-2015

Line No		2012 Actuals	2013 Actuals	2014 Actuals	2015 Preliminary Actuals	Notes
L1	Fuel Cost per kW.h, Diesel	28.71	28.71	28.71	28.71 cents/kW.h	2012/13 GRA Compliance Filing Average Fuel cost
	Fuel Cost per kW.h, LNG				18.83 cents/kW.h	Average LNG Fuel cost in 2015 of \$20.92/GJ and 40% efficiency (see Attachment 4).
Calculation of Diesel Cost to Charge (Refund) DCF						
<i>Assumptions</i>						
L2	YEC Grid load	424,541	419,173	396,498	410,316 MW.h	Actual net of secondary sales (with losses)
L3	Fish Lake	3,388	3,687	10,247	9,180 MW.h	Fish Lake generation
L4=L2+L3	Total Grid load	427,929	422,860	406,745	419,495 MW.h	
<i>Assumed Actual Generation Sources</i>						
L5=L3	YECL Fish Lake	3,388	3,687	10,247	9,180 MW.h	Fish Lake generation
L6	YEC Hydro	421,039	416,987	394,595	404,797 MW.h	Residual as total generation less diesel and wind
L7	YEC Thermal	3,057	1,910	1,566	4,868 MW.h	Diesel and LNG
	Diesel	3,057	1,910	1,566	3,574	
	LNG				1,295	
L7a	YEC Diesel/LNG charged to capital	373	872	951	2,047	Includes charged to RFID
	Diesel	373	872	951	1,345	
	LNG				702	
L7b=L7-L7a	YEC Net Diesel/LNG	2,683	1,037	615	2,822	
	Diesel	2,683	1,037	615	2,229	
	LNG	-	-	-	593	
L8	YEC Wind	445	277	337	650 MW.h	Wind generation
L9=L5+L6+L7+L8	Total Grid load	427,929	422,860	406,745	419,495 MW.h	
<i>Expected Generation Sources</i>						
L10	YECL Fish Lake (expected)	4,380	4,380	8,730	8,730 MW.h	Unit #2 at 4,380 GW.h - no Unit #1 generation in 2012 and 2013.
L11	YEC Wind (expected)	239	239	239	239 MW.h	
L12=L9-L10-L11	YEC Grid load net of expected Fish Lake and Wind	423,310	418,241	397,776	410,526 MW.h	
L13a	YEC Grid Load amount per Column A of Approved DCF Term Sheet Table	420,000	415,000	395,000	410,000 GW.h	Table 1.1, Approved DCF Term Sheet (Order 2015-06)
L13b	Expected Base Thermal Generation at YEC Grid Load amount in row L13a	14,100	11,800	4,400	9,800 MW.h	Derived from Table 1.1, Approved DCF Term Sheet (Order 2015-06)
L14a	Incremental Expected Thermal Generation as percent of load above L13a (%)	46%	46%	32%	40% %	Table 1.1, Approved DCF Term Sheet (Order 2015-06)
L14b=(L12-L13a)xL14a	Expected Incremental Thermal Generation above amount in L13b	1,522	1,491	888	211 MW.h	Derived from Table 1.1, Approved DCF Term Sheet (Order 2015-06)
L15=L13b+L14b	Total Expected YEC Thermal Generation	15,622	13,291	5,288	10,011 MW.h	
L16=L15	Expected YEC Thermal Generation in Rates	15,622	13,291	5,288	10,011 MW.h	100% of long-term average
	Diesel	15,622	13,291	5,288	8,509 MW.h	
	LNG				1,502 MW.h	At 15% LNG displacement of expected diesel (per Attachment 4).
L17=L7b	YEC Thermal Generation	2,683	1,037	615	2,822 MW.h	Net of capital diesel (L7b)
	Diesel	2,683	1,037	615	2,229 MW.h	
	LNG				593 MW.h	
L18=L17-L16	YEC Thermal Generation to be Included in DCF	-	-	-	-	
	Diesel	-	-	-	-	
	LNG				909 MW.h	
L19=L1xL18	Incremental YEC Diesel Generation Cost to Charge (Refund) DCF (\$000s)	(\$3,715)	(\$3,518)	(\$1,342)	(\$1,974)	

Table 2: DCF Continuity Schedule

Line	Activity	2012 (\$000s)	2013 (\$000s)	2014 (\$000s)	2015 Preliminary (\$000s)
A	DCF Opening Balance¹	\$902	\$4,628	\$8,198	\$9,627
B	Incremental Diesel Generation Cost to Charge/(Refund) ² to DCF	(\$3,715)	(\$3,518)	(\$1,342)	(\$1,974)
C=B	Total DCF operation for YEC				
	YEC pays to DCF Fund	\$3,715	\$3,518	\$1,342	\$1,974
	YEC withdraws from DCF Fund	\$0	\$0	\$0	\$0
D=A+C	DCF Balance after Total DCF Operation	\$4,617	\$8,146	\$9,540	\$11,601
E	Interest on DCF Balance³	\$11	\$52	\$87	\$53
F=D+E	DCF Balance after Interest charge	\$4,628	\$8,198	\$9,627	\$11,653
G	DCF Rebate/(Collections) April - December	\$0	\$0	\$0	(\$759)
H=F+G	DCF Ending Balance	\$4,628	\$8,198	\$9,627	\$10,895
I	DCF Rebate/(Collections) January - March (forecast)	\$0	\$0	\$0	(\$743)
J=H+I	Forecast DCF Balance, After Collections to March 31st	\$4,628	\$8,198	\$9,627	\$10,152
K	DCF Cap Approved by Board⁴	+/-8000	+/-8000	+/-8000	+/-8000
L=J-K	DCF Rebate/(Collections) Required	\$0	\$198	\$1,627	\$2,152

Notes:

1. 2012 DCF Opening Balance is 2011 actual ending balance of DCF.

2. Based on calculations in Table 1. 2015 DCF charge estimate is based on preliminary actuals.

3. Per the March 11, 1996 letter recording the settlements [provided as Exhibit B-16 in the 2008/2009 GRA] the DCF fund is to attract interest based upon the short/intermediate term bond rates in which the Companies may invest the fund and any negative balances would only attract interest at the lowest short-term borrowing rate available to the Companies through a line of credit.

4. Approved DCF Cap based on YUB Order 2015-01.

Table 3: Rider E Calculations

Line	Activity	Rider Estimate
A	DCF Rebate/(Collections) Required (\$000s)	\$2,152
B	Retail Sales for the previous 12 months (MW.h) ¹	384,071
C=A/B	DCF Rider (cents/kW.h)	0.56

Notes:

1. The total retail sales include YEC and AEY retail and industrial sales based on 2015 preliminary actuals.

ATTACHMENT 2: UPDATED RIDER E RATE SCHEDULE

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Effective: 2016 04 01
Supercedes: 2015 09 01

RIDER E

DIESEL CONTINGENCY FUND RIDER

AVAILABLE: To all retail and major industrial electric services throughout the Yukon Territory.

APPLICABLE: To all retail and major industrial classes of service [not applicable to secondary sales].

RATE: Service will be rendered at the applicable rates with the following surcharge/(refund):

A refund of -0.56 ¢ per kW.h will be applied to all firm kWh consumed.

NOTE: Rider E will be applied to all firm kWh consumed for the period from April 1, 2016 to March 31, 2017.

Rider E does not apply to Rate Schedule 32 Secondary Energy.

ATTACHMENT 3: UPDATE ON FORECAST WATER CONDITIONS FOR 2016



Yukon Energy Corporation
Box 5920
Whitehorse, Yukon Y1A
6S7

Memo

To: Ed Mollard
From: Ronald Gee
Date: February 25, 2016
Re: 2016 Water Availability Forecast

The present sales forecast for 2016 on the Yukon Energy grid is approximately 380.712 GWh's.

At the time of writing this memo, the official March 1 snow surveys have not been performed and the results not released. Unofficial early snow surveys and anecdotal information indicate snow pack will be below average and in some areas significantly below.

The current level of Aishihik Lake is 914.53m. The spring low in May is expected to be approximately 914.2m or 0.96m below full supply level. With the expected low snow pack, it normally would be difficult to refill the lake by fall. However, maintenance work at the Aishihik Generating Station will result in the plant being offline from June to October this year. With a combination of the prolonged plant shutdown, normal or above summer precipitation levels and water saving measures that are already occurring, water levels on Aishihik are expected to be near full supply level by October 2016.

Marsh Lake reservoir is presently 654.88m. The spring low in May is expected to be near low supply level. The level of Marsh Lake is expected to be at full supply level by October 2016 if summer temperatures and precipitation are at or above normal. Winter drawdown of Marsh Lake will begin in November and continue through to May 2017. Energy and capacity at Whitehorse Rapids will be constrained by the decreasing flow in the Yukon River as the winter progresses. This decrease in generating capability is the normal operating situation for Whitehorse Rapids. Scheduled hydro maintenance is not expected to impact the winter generating capability of Whitehorse Rapids Generating Station. A major shut down and repair program for the Unit #4 hydro plant is scheduled to begin in April/May 2017 but will have minimal impact as it coincides with the low water period.

Mayo Lake is currently 664.83m. The spring low in May is expected to be approximately 663.85m or 1.99 m below full supply level. With Aishihik GS down from June to October, hydro generation will be increased from Mayo GS. The increased requirement to generate from Mayo GS this summer will make it difficult to refill by October 2016, however, the forecast is to be near full supply by fall due to two factors: 1) At the time of the spring low, 0.6m of reservoir will be left unused in Mayo Lake; and 2) In stream work on the lower Mayo River this June/July require reduced flows. This will allow an additional period to save water but will likely require thermal generation in order to meet energy requirements.

In summary, all reservoirs are forecast to be at or near full supply by October 2016 and this will allow for full hydro generating capability for the winter of 2016/17. The challenges to meeting this forecast will be the expected low snow pack levels and having to meet generation with a prolonged Aishihik GS shut down for maintenance in 2016.

ATTACHMENT 4: PROPOSED APPROACH FOR INCLUSION OF LNG IN ONGOING DCF DETERMINATIONS

During 2015, LNG fuel and generation facilities (8.75 MW) became available for service in July, although deficiency corrections and various commissioning activities continued in Q4 2015. Accordingly, it is necessary to address the proposed approach for including LNG in ongoing annual DCF determinations.

Overview of LNG Factors Affecting Annual DCF Determinations

Annual DCF determinations need to take into account the following three factors related to YEC's LNG facilities:

1. Capability of LNG in any year to supply the expected or long-term average (LTA) thermal generation requirement (assuming that LNG, as a lower cost fuel than diesel, will be fully utilized up to this capability - and diesel generation will then be assumed to be required for the balance of the LTA thermal generation requirement);
2. Actual LNG use in the year (net of capital or RFID generation); and
3. The LNG fuel cost per kW.h to be assumed for DCF cost assessments (equivalent to the 28.7 c/kW.h diesel generation fuel cost used for the DCF based on the last approved GRA fuel price and average diesel generation efficiency).

Determinations as proposed for 2015 are reviewed below, taking into account the small portion of LTA thermal generation available for LNG impact after mid-year as well as the Board's 2014 review of the YEC's Part 3 Application for the Whitehorse Diesel-Natural Gas Conversion Project (LNG Part 3 Application).

The overall costs and treatment of LNG for 2016 and subsequent years will be reviewed again at the time of the 2016 DCF annual filing or the next GRA filing, whichever comes first.

The LNG fuel price per kW.h approved for use in the 2015 DCF year-end filing will be proposed to the Board for adoption in ongoing Rider F determinations prior to the next GRA (such that any cost changes in these delivered fuel costs will accrue to the account of ratepayers in the same way as changes in diesel fuel delivered fuel prices).

Proposed LNG treatment for the Annual 2015 DCF Filing Determinations

Each of the above three factors is reviewed below as regards proposed LNG treatment in the annual 2015 DCF filing determinations:

1. **Capability to supply LTA thermal generation:** The key reality affecting LNG capability in 2015 is that LNG generation was available only during the last six months of the year, and even then continued to have some constraints until Q4 of 2015.

Absent the limited availability of the LNG generation, the overall LTA thermal requirement for 2015 actual loads was only about 10.0 GW.h (per Attachment 1, Table 1). Based on YEC's LNG Part 3 Application, the LNG units over a full year were expected to displace all LTA diesel generation at LTA thermal requirements of up to at least 17 GW.h/year.⁴

Taking into account that LNG capability was available only after mid-year, with some added constraints during that period, it is assumed that in 2015 LNG could only displace 15% of the LTA thermal generation requirement (or about 1.502 GW.h). This assumption is consistent with evidence provided in the Part 3 Hearing and with YEC's assessments of the limited portion of LTA thermal generation accounted for by grid loads after mid-year.⁵

2. **Actual LNG use in the year:** Attachment 1, Table 1 shows the actual LNG generation in 2015, net of capital and RFID generation. Due to commissioning activities, a material portion of actual generation was assigned to capital.
3. **LNG fuel cost per kW.h:** The average cost for delivered LNG fuel in 2015 was \$20.92/GJ. Assuming 40% energy conversion efficiency as per the LNG Part 3 Application, the equivalent cost of 18.83 cents/kW.h has been used for the 2015 DCF determinations.

Actual delivered LNG costs to date reflect deliveries from the FortisBC LNG facility at Tilbury in Delta BC, using a combination of Tandem and Tridem haul units with smaller LNG payloads than were assumed in the LNG Part 3 Application.

Yukon Energy is continuing to focus on measures to optimize the transportation supply chain in order to reduce the total delivered cost of LNG to Whitehorse. This includes continuing to pursue licencing and development of larger configurations LNG haul units that would materially reduce the per unit costs for delivery, as well as opportunities to secure LNG from potential new or enhanced LNG facilities that are much closer to Whitehorse.

⁴ This forecast related only to LTA thermal generation related to water conditions and loads. It did not address unplanned or other potential interruption back-up diesel generation requirements that may occur from time to time.

⁵ See LNG Part 3 Application at page 7, footnote 7 and response to YUB-YEC-1-12(b) where it was noted that January to June 30 accounted for over 82% (14 of the then forecast 17 GW.h) of the LTA thermal generation then forecast for 2015. Based on available information, an assumption of 15% is considered to reflect a reasonable upper limit on actual LNG capability to displace LTA thermal generation requirement in 2015.