UCG-AEY-1

Reference: May 11, 2016 Application

Request:

(a) Please provide details of all customer and stakeholder consultations conducted by ATCO Electric Yukon during development of this application prior to submitting it to the YUB.

(b) Please provide specific details on how AEY's customers were informed of proposals being considered for inclusion in the application and how input from customers was used to develop details of the application.

(c) Please provide all documentation related to issues discussed during these consultations and a list of all parties involved in the consultations.

(d) Please confirm how and when the leadership / owners of AEY approved the General Rate Application as provided to the YUB. Please identify the dates on which these approvals were provided.

Response:

(a-c) Development of this application required significant consultation to determine all cost and revenues on an actual and forecast basis with respect to the areas discussed below.

- Sales and revenue.
- Determination of customer counts and electricity usage as determined by discussion with customers, consultants, suppliers, communities and local developers. ATCO Electric Yukon is in communication with municipal and territorial governments, First Nations, communities, builders, manufacturers, suppliers, property managers, etc.
- Purchase power in consultation with Yukon Energy to forecast costs related to securing wholesale electricity and to review system projects requirements.
- Fuel costs forecasts based on projections for each diesel community
- Operations and maintenance forecasts.

(i) Labour costs consultation including employees, labour associations, human resource groups, ATCO Electric, training and safety, pension and benefits managers.

(ii) A forecast for Non-labour areas is developed to determine ongoing operational and administrative activities. Areas of consultation include affiliate companies, insurance companies, accountants, auditors and numerous material and service providers.

- Capital additions for electrical system upgrades and additions as well as for property and other equipment are determined based on forecasts to meet customer needs. The diversity of projects involves a wide variety of stakeholders.

AEY's customers were not informed prior to filing the GRA.

(d) Approval to file this GRA was received on April 15, 2016 with the Application being filed on May 11, 2016.

UCG-AEY-2

Reference: May 11, 2016 Application page 1-2

AEY states "*ATCO Electric Yukon also owns and operates the Fish Lake Hydro plant on the outskirts of Whitehorse. Built in 1950, the Fish Lake plant continues to provide green hydroelectric power*".

Request:

(a) Please provide a breakdown by year of all the costs (capital and operating) that have been incurred for the Fish Lake plant for the last 10 years including a description of what work was completed and when amounts were added to rate base.

(b) Please provide a breakdown by year for the last 10 years of the cost per kWh to generate electricity at Fish Lake.

Response:

(a) Capital and operating costs are provided in UCG-AEY-2(a) Attachment 1. Additions to rate base are assumed mid-year for regulatory purposes.

Details of capital costs for 2013-2017 are included in Schedule 9.2 of the Application.

(b) Please refer to UCG-AEY-2(a) Attachment 1.

ATCO Electric Yukon
Fish Lake System Expenditures
($000s)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Capital Expenditures	-	-	463	354	1,069	1,730	2,092	2,915	2,703	103
O&M Expenditures	95	136	141	154	131	171	259	258	292	323

ATCO Electric Yukon
Fish Lake System - Cost per kWh

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
O&M Expenditures ($000s)	95	136	141	154	131	171	259	258	292	323
Depreciation	23	19	42	62	39	75	165	175	193	239
Net Carrying Costs	86	107	102	142	138	222	366	497	592	627
	203	262	285	358	308	468	789	931	1,077	1,189
Fish Lake Output (kWh)	8,215,920	9,025,200	6,551,160	8,093,640	3,387,720	3,638,040	3,387,960	3,686,760	10,247,065	9,179,674
Cost per kWh ($)	**$ 0.0247**	**$ 0.0290**	**$ 0.0435**	**$ 0.0443**	**$ 0.0909**	**$ 0.1288**	**$ 0.2329**	**$ 0.2525**	**$ 0.1051**	**$ 0.1295**

UCG-AEY-3

Reference: May 11, 2016 Application page 1-3

AEY states "As explained in Section 13, ATCO Electric Yukon is requesting an increase of 4.42% over the current Rider R of 7.20%. The resulting 11.62% interim refundable Rider R would apply to electrical consumption on or after July 1, 2016. This interim rider has been calculated by taking 50.0% of the 2016 shortfall revenue requirement and collecting this over the July 2016 to December 2016. This rider will be applied to all ATCO Electric Yukon and Yukon Energy retail customer bills, excluding Secondary Energy Rate 32, in order to recover the difference between the forecast revenues on existing rates and riders and the forecast 2016 revenue requirement as applied for in this Application. This request is consistent with the approach approved by the Board for ATCO Electric Yukon's 2013-2015 GRA where a 6.50% interim refundable rider was approved in Board Order 2013-05. By implementing the rider on July 1, 2016, ATCO Electric Yukon will recover approximately 50.0% of the forecast total shortfall in 2016".

Request:

(a) Please provide details of all expected recoveries through Rider R by month for the period July 2016 through December 2017 including all recoveries by Yukon Energy Corporation.

(b) Please provide details of how much of AEY's 2016 revenue shortfall will be recovered from AEY customers and details of how much will be recovered from customers of Yukon Energy Corporation.

(c) Please explain why customers of Yukon Energy Corporation are required to pay a higher Rider R in order to allow AEY to recover additional revenues.

Response:

(a-b) Please refer to the table below for the monthly expected Rider R revenues ($000s) for July-December 2016:

Company	Rider R	Board Order	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Total 2016
AEY	7.2%	2014-09	$236	$239	$251	$274	$326	$356	$1,682
YEC			$52	$51	$60	$45	$45	$49	$303
A) Subtotal at previous Rider R			$288	$290	$312	$319	$371	$405	$1,985
AEY	4.42%		$145	$147	$154	$168	$200	$218	$1,032
YEC			$32	$31	$37	$28	$28	$30	$186
B) Subtotal at Rider R increase			$177	$178	$191	$196	$228	$249	$1,218
TOTAL (A+B)	**11.62%**	**2016-02**	**$464**	**$468**	**$503**	**$515**	**$599**	**$653**	**$3,203**

AEY was not provided with 2017 monthly revenue information for Yukon Energy. On an annual basis, assuming the Rider R rate of 11.62% continues into 2017, the expected Rider R revenues ($000s) for 2017 would be:

Company	2017 Retail Revenue [1]	Rider R Rate	Expected Rider R Revenue
AEY	$47,638	11.62%	$5,536
YEC	$6,598	11.62%	$767
Total	$54,236		$6,302

[1] Retail revenue on existing rates, AEY 16-17 GRA Application, Schedule 2.1 L.56-58

(c) As shown in response to (a&b) above, YEC's customers are not required to pay a higher Rider R than AEY's customers. All customers are paying the same approved Rider R rate of 11.62%.

UCG-AEY-4

Reference: May 11, 2016 Application, page 1-4

With respect to a proposed deferral account, AEY states: "*ATCO Electric Yukon seeks the ability to flow-through (dollar for dollar) costs related to Board Orders or legislative provisions resulting in changes to the rules or parameters that ATCO Electric Yukon operates under, or that bear on the nature and extent of ATCO Electric Yukon's obligations as a regulated utility and which impact its 2016-2017 revenues or revenue requirement*".

Request:

Please confirm AEY's understanding that a deferral account simply keeps track of related costs for review and potential disposition / recovery at a later date.

Response:

Confirmed.

UCG-AEY-5

Reference: May 11, 2016 Application, page 1-5

AEY states "*For the 2016 test period, in-scope (subject to a collective agreement) and out-of-scope (not subject to a collective agreement) labour has been escalated by 3.25%. This escalation is based on ATCO Electric Yukon's existing collective agreement that expires on December 31, 2016. Consistent with past practice, ATCO Electric Yukon has applied the same inflation increases to both the in-scope and out-of-scope labour costs*".

Request:

(a) Please provide a breakdown of the in-scope and out-of-scope labour costs for 2014 (actual), 2015 (actual) and 2016 (actual / forecast) which includes details of staff positions included within each classification.

(b) Please provide details of labour costs in the Yukon as a whole for 2014, 2015 and 2016 including any available breakdown of costs affected by a collective agreement.

(c) What labour escalation rates are currently used for 2016 by FortisBC Utilities, BC Hydro, Manitoba Hydro, NWT Power Corporation, SaskPower, ENMAX, Nova Scotia Power, New Brunswick Power and Qulliq Energy Corporation? Please provide copies of the reference material related to these rates.

Response:

(a) Given the small number of personnel employed by AEY, whose positions are well-known to the community, providing the requested information would constitute the disclosure of personal information in contravention of the *Personal Information Protection and Electronic Documents Act*. Accordingly, AEY is not in a position to provide the requested information by job classification. Below is a summary of labour costs by in-scope and out-of-scope.

	2014	2015	2016
In-Scope	4,832	4,981	5,549
Out-of-Scope	1,560	1,467	1,557

(b) AEY does not have this information readily available.

(c) AEY has not relied on the labour escalation rates used by any of the mentioned utilities in the determination of its own labour escalation rates for the 2016 and 2017 test years. As such AEY does not have this information readily available.

UCG-AEY-6

Reference: May 11, 2016 Application, page 1-5

AEY states "*For the 2017 test period, in-scope and out-of-scope labour has been escalated by 3.0%. This escalation rate is consistent with the inflationary increases being applied for and approved in Alberta for 2017*".

Request:

(a) Please provide copies of the referenced Alberta approvals.

(b) Please provide details of the labour cost escalation rates in the Yukon for 2017 and the source documents for these forecasts.

(c) What labour escalation rates are currently used for 2017 by FortisBC Utilities, BC Hydro, Manitoba Hydro, NWT Power Corporation, SaskPower, ENMAX, Nova Scotia Power, New Brunswick Power and Qulliq Energy Corporation? Please provide copies of the reference material related to these rates.

Response:

(a) The AUC has recently approved a 3% labour inflationary increase in 2016 and/or 2017 in the following Decisions.

- Decision 3539-D01-2015 (Epcor Transmission 2015-2017 Tariff)
- Decision 3577-D01-2016 (ATCO Pipelines 2015-2016 GTA)
- Decision 20407-D01-2016 (Epcor 2014 True-Up and 2016-2017 Forecast Capital Tracker)
- Decision 20555-D01-2016 (ATCO Electric Distribution 2014 True-Up and 2016-2017 Forecast Capital Tracker)

(b) AEY has maintained the forecast 2016 inflationary increases for 2017.

(c) AEY has not relied on the labour escalation rates used by any of the mentioned utilities in the determination of its own labour escalation rates for the 2016 and 2017 test years. As such, AEY does not have this information readily available.

UCG-AEY-7

Reference: May 11, 2016 Application, page 1-5

AEY states *"For non-labour costs, an inflation rate of 2.2% has been applied for 2016 based on the Yukon Economic Outlook issued by the Yukon Economic Development in October 2015. For 2017, no public forecast of Yukon inflation is available, therefore the 2.2% inflation rates has also been used for 2017"*.

Request:

(a) Please provide details of the actual monthly inflation rate for the Yukon for 2016 to date and forecast and copies of the related source documents.

(b) Please confirm that Yukon Economic Outlook released in May 2016 indicates that following deflation in 2015, the Whitehorse CPI is expected to grow by 2.0 per cent in 2016 and just under 2.0 per cent in 2017.

(c) What non-labour escalation rates are currently used for 2016 and 2017 by FortisBC Utilities, BC Hydro, Manitoba Hydro, NWT Power Corporation, SaskPower, ENMAX, Nova Scotia Power, New Brunswick Power and Qulliq Energy Corporation? Please provide copies of the reference material related to these rates.

Response:

(a) 2016 monthly CPI information is not available for the Yukon as a whole, but Whitehorse CPI is available. AEY has provided the 2016 monthly inflation for Whitehorse in UCG-AEY-7(a) Attachment 1. Monthly inflation is calculated as the percentage change between current month CPI and the average CPI over the preceding 12 months. The source documents for the monthly CPI calculation are provided in UCG-AEY-7(a) Attachment 2.

(b) Confirmed.

(c) AEY has not relied on the non-labour escalation rates used by any of the mentioned utilities in the determination of its own non-labour escalation rates for the 2016 and 2017 test years. As such, AEY does not have this information readily available.

ATCO Electric Yukon
2016 Monthly Inflation Calculation
Whitehorse, Yukon

	2015											
	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
CPI	121.8	122.1	123.0	123.5	124.4	125.1	125.4	126.0	125.6	124.5	124.0	124.1

	2016					
	January	**February**	**March**	**April**	**May**	**June**
CPI	124.1	123.7	124.2	124.4	125.2	126.6
Avg CPI - Prev 12 Months	124.1	124.3	124.5	124.6	124.6	124.7
Monthly Inflation	0.0%	-0.5%	-0.2%	-0.1%	0.5%	1.5%

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Table 326-0020[2, 9]
Consumer Price Index
monthly (2002=100)

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Geography = Whitehorse, Yukon [6001009][13]
Products and product groups[15] = All-items

2015											
January	February	March	April	May	June	July	August	September	October	November	December
121.8	122.1	123.0	123.5	124.4	125.1	125.4	126.0	125.6	124.5	124.0	124.1

Back to original table

Footnotes:

2. The Consumer Price Index (CPI) is not a cost-of-living index. The objective behind a cost-of-living index is to measure changes in expenditures necessary for consumers to maintain a constant standard of living. The idea is that consumers would normally switch between products as the price relationship of goods changes. If, for example, consumers get the same satisfaction from drinking tea as they do from coffee, then it is possible to substitute tea for coffee if the price of tea falls relative to the price of coffee. The cheaper of the interchangeable products may be chosen. We could compute a cost-of-living index for an individual i we had complete information about that person's taste and spending habits. To do this for a large number of people, let alone the total population of Canada, is impossible. For this reason, regularly published price indexes are based on the fixed-basket concept rather than the cost-of-living concept.

9. This table replaces CANSIM table 326-0001 which terminated with the release of April 2007 data.

11. With the introduction of the 1992 basket in January 1995, emphasis was shifted from city data to provincial data. City all-items series were continued since many users had come to rely on this service, but the method of calculation was changed. Shelter indexes are calculated for each city. This recognizes the importance of shelter in the basket, the significant and persistent differences in price movements between cities, and the availability of local data. For the other seven major components, the movement of the provincial counterpart is used except in the cases of Montréal, Toronto, and Vancouver, where a sub-provincial counterpart is used. The major components are aggregated using the city's expenditure pattern to arrive at each city's all-items index.

12. Formerly Ottawa (Ottawa-Gatineau, Ontario part), represents Ottawa only.

13. The relatively small size of the housing market in these two cities makes it difficult to construct reliable price indexes for new houses. To compensate, the price movements of rental accommodation are used to approximate the price movements of new houses. The rent information itself is collected using different pricing frequencies and collection methods than in the rest of the country. Because of these problems, the indexes for rented accommodation, and owned accommodation are not published for these two cities. Further, the all-items indexes published for these two cities are not strictly comparable with the same indexes for the provinces or the other 16 cities.

14. Data for Iqaluit are on a December 2002=100 base (200212=100) and the Standard Geographical Classification (SGC) 2001. Previous to April 1, 1999, the town of Iqaluit formed part of the Northwest Territories. On April 1, 1999, the town of Iqaluit formed part of the newly-created territory of Nunavut.

15. The goods and services that make up the Consumer Price Index (CPI) are organized according to a hierarchical structure with the "all-items CPI" as the top level. Eight major components of goods and services make up the "all-items CPI". They are: "food", "shelter", "household operations, furnishings and equipment", "clothing and footwear", "transportation", "health and personal care", "recreation, education and reading", and "alcoholic beverages and tobacco products". These eight components are broken down into a varying number of sub-groups which are in turn broken down into other sub-groups. Indents are used to identify the components that make up each level of aggregation. For example, the eight major components appear with one indent relative to the "all-items CPI" to show that they are combined to obtain the "all-items CPI". NOTE: Some items are recombined outside the main structure of the CPI to obtain special aggregates such as "all-items excluding food and energy", "energy", "goods", "services", or "fresh fruit and vegetables". They are listed after the components of the main structure of the CPI following the last major component entitled "alcoholic beverages and tobacco products".

17. Food includes non-alcoholic beverages.

18. Part of the increase first recorded in the shelter index for Yellowknife for December 2004 inadvertently reflected rent increases that actually occurred earlier. As a result, the change in the shelter index was overstated in December 2004, and was understated in the previous two years. The shelter index series for Yellowknife has been corrected from December 2002. In addition, the Yellowknife All-items Consumer Price Index (CPI) and some Yellowknife special aggregate index series have also changed. Data for Canada and all other provinces and territories were not affected.

21.

About two thirds (4.7%) of the 7.4% decrease registered between September and October 2004 in the "Digital computing equipment and devices" index series represents a revision to source data.

22. From April 2006, Statistics Canada changed its implementation of the price index formula used for traveller accommodation. As a result, data from April 2006 are not strictly comparable to earlier time periods.

23. The Bank of Canada's core index excludes eight of the Consumer Price Index's most volatile components (fruit, fruit preparations and nuts; vegetables and vegetable preparations; mortgage interest cost; natural gas; fuel oil and other fuels; gasoline; inter-city transportation; and tobacco products and smokers' supplies) as well as the effects of changes in indirect taxes on the remaining components. For additional information on the core index, please consult the Bank of Canada website: http://www.bankofcanada.ca/rates/indicators/key-variables/inflation-control-target/. Starting with the October 2006 Consumer Price Index, Statistics Canada produces and disseminates the core index as defined by the Bank of Canada.

24. Excluded from the All-items Consumer Price Index (CPI) are the following eight of the most volatile components identified by the Bank of Canada: fruit, fruit preparations and nuts; vegetables and vegetable preparations; mortgage interest cost; natural gas; fuel oil and other fuels; gasoline; inter-city transportation; and tobacco products and smokers' supplies. This series is used to obtain core inflation which also excludes the effect of changes in indirect taxes.

25. The special aggregate "energy" includes: "electricity", "natural gas", "fuel oil and other fuels", "gasoline", and "fuel, parts and accessories for recreational vehicles".

26. The 1986 basket content was divided into seven major components. With the introduction of the 1992 basket, the "housing" component from the 1986 basket definition was split into two components: "shelter" and "household operations, furnishings and equipment". This brought the number of major components to a total of eight. Also, the definition of "shelter" was changed. The traveller accommodation category, which was part of the 1986 definition of "shelter", was moved to "recreation" with the introduction of the 1992 basket. To provide some continuity certain aggregates were reconstructed using their 1986 basket definitions.

27. Goods are physical or tangible commodities usually classified according to their life span into non-durable goods, semi-durable goods and durable goods. Non-durable goods are those goods that can be used up entirely in less than a year, assuming normal usage. For example, fresh food products, disposable cameras and gasoline are non-durable goods. Semi-durable goods are those goods that may last less than 12 months or greater than 12 months depending on the purpose to which they are put. For example, clothing, footwear and household textiles are semi-durable goods. Durable goods are those goods which may be used repeatedly or continuously over more than a year, assuming normal usage. For example, cars, audio and video equipment and furniture are durable goods.

28. A service in the Consumer Price Index (CPI) is characterized by valuable work performed by an individual or organization on behalf of a consumer, for example, car tune-ups, haircuts and city public transportation. Transactions classified as a service may include the cost of goods by their nature. Examples include food in restaurant food services and materials in clothing repair services.

29. Revision of the methodology of the home insurance component of the Consumer Price Index (CPI) beginning with the February 2008 CPI - http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D39_T9_V1-eng.pdf.

30. Revision of the methodology of the Internet access services component of the Consumer Price Index (CPI) beginning with the March 2008 CPI - http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D40_T9_V1-eng.pdf.

31. In previous years, Statistics Canada updated, by province, the model year of passenger vehicles used in the calculation of the passenger vehicle insurance premiums index over a three month period. Since 2008, this quality adjustment exercise is reflected in the month of May for all provinces.

32. Revision of the methodology of the rent component of the Consumer Price Index (CPI) beginning with the July 2009 CPI - http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D41_T9_V1-eng.pdf.

33. Revision of the methodology of the prescribed medicines component of the Consumer Price Index (CPI), beginning with the September 2012 CPI - http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D50_T9_V1-eng.htm.

34. The timing for the introduction of new model year vehicles into the purchase of passenger vehicles index of the Consumer Price Index (CPI) has changed in 2012. Please consult http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D51_T9_V1-eng.htm.

Source: Statistics Canada. *Table 326-0020 - Consumer Price Index, monthly (2002=100 unless otherwise noted),* CANSIM (database). (accessed:)

Back to search

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Table 326-0020[2, 9]
Consumer Price Index
monthly (2002=100)

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The data below is a part of CANSIM table 326-0020. Use the Add/Remove data tab to customize your table.

Selected items [Add/Remove data]

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28. A service in the Consumer Price Index (CPI) is characterized by valuable work performed by an individual or organization on behalf of a consumer, for example, car tune-ups, haircuts and city public transportation. Transactions classified as a service may include the cost of goods by their nature. Examples include food in restaurant food services and materials in clothing repair services.

29. Revision of the methodology of the home insurance component of the Consumer Price Index (CPI) beginning with the February 2008 CPI - http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D39_T9_V1-eng.pdf.

30. Revision of the methodology of the Internet access services component of the Consumer Price Index (CPI) beginning with the March 2008 CPI - http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D40_T9_V1-eng.pdf.

31. In previous years, Statistics Canada updated, by province, the model year of passenger vehicles used in the calculation of the passenger vehicle insurance premiums index over a three month period. Since 2008, this quality adjustment exercise is reflected in the month of May for all provinces.

32. Revision of the methodology of the rent component of the Consumer Price Index (CPI) beginning with the July 2009 CPI - http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D41_T9_V1-eng.pdf.

33. Revision of the methodology of the prescribed medicines component of the Consumer Price Index (CPI), beginning with the September 2012 CPI - http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D50_T9_V1-eng.htm.

34. The timing for the introduction of new model year vehicles into the purchase of passenger vehicles index of the Consumer Price Index (CPI) has changed in 2012. Please consult http://www23.statcan.gc.ca/imdb-bmdi/document/2301_D51_T9_V1-eng.htm.

Source: Statistics Canada. *Table 326-0020 - Consumer Price Index, monthly (2002=100 unless otherwise noted),* CANSIM (database). (accessed:)

Back to search

Date modified: 2016-07-22

UCG-AEY-8

Reference: May 11, 2016 Application, page 1-5

AEY states "*A vacancy rate of 4.0% (approximately 3 FTEs) has been applied to all labour expenses for the 2016-2017 test periods. This is based on a five year historical average which ATCO Electric Yukon believes to be reasonable and is consistent with the methodology approved in Board Order 2009-2 and 2014-06*".

Request:

Please provide details of the calculation of the 5 year vacancy rate for ATCO Electric Yukon including details of the positions that were vacant at any time.

Response:

Please refer to AEY's response to YUB-YECL-27(c).

UCG-AEY-9

Reference: May 11, 2016 Application, page 1-6

AEY identifies 2 new positions being added in 2016 - Engineering Technologist and Supervisor, Business Support Services.

Request:

(a) Have these two positions already been filled? If yes, when did they start working?

(b) Please explain how the job responsibilities identified for the new positions are currently being fulfilled and why a new position is required to take on these responsibilities.

(c) Please provide details of the total additional costs included in the 2016 and 2017 revenue requirements for these 2 new positions.

(d) Please provide details on the alternatives that were considered versus hiring new staff.

Response:

(a) The Supervisor, Business Support Supervisor was hired March 2016. The Engineering Technologist position has not yet been filled.

(b) Please refer to AEY's responses to YUB-YECL-3(a), YUB-YECL-32(a) and YUB-YECL-32(b).

(c) The total O&M costs included in the 2016 and 2017 revenue requirement are $92,000 and $94,000 respectively.

(d) AEY does not consider this allocation of 1.25 FTE as new staff, more a realignment of FTEs to match work needs. AEY has managed to allocate and optimize its human capital resources within the approved complement to the end of 2017.

UCG-AEY-10

Reference: May 11, 2016 Application, page 2-1

AEY states: "*ATCO Electric Yukon forecasts its total primary non-industrial sales in 2016 to decrease 1.5% and increase 1.9% in 2017. The forecast is based on ATCO Electric Yukon's detailed analysis of historical data by community and customer class and takes into account information gathered through ATCO Electric Yukon staff's work in the community as well as consultation with the City of Whitehorse, Yukon Government officials and local developers*".

Request:

(a) Please confirm whether the electricity sales by customer class shown at the top of page 2-1 are weather normalized.

(b) Has the YUB approved a forecast wholesale sales level for 2016 and 2017 for Yukon Energy Corporation?

(c) Please provide details on when AEY's current sales forecasts for 2016-2017 were determined for this rates application.

(d) Please identify the impact that demand side management had on sales levels in 2013, 2014 and 2015. Explain how this impact has been incorporated into the sales forecast for 2016 and 2017 and provide a revised version of Schedule 2.1 showing the actual and forecast sales for 2013 – 2017 with DSM impacts isolated.

Response:

(a) Not confirmed. Please refer to AEY's response to YUB-YECL-4(a) that shows Table 1 restated to include weather normalized actuals for 2015.

(b) No.

(c) AEY's current sales forecast for 2016 and 2017 was completed in April 2016.

(d) Please refer to AEY's response to YUB-YECL-6.

UCG-AEY-11

Reference: May 11, 2016 Application, page 2-1

Table 1 summarizes ATCO Electric Yukon's energy sales forecast for 2016 and 2017 by customer class, along with the corresponding actuals for 2013, 2014 and 2015 and 2015 updated weather-normalized actuals.

Request:

Please provide an updated table with the 2016 Forecast reflecting 6 months of actuals and the impact this would have on the 2017 forecast.

Response:

Please refer below for an updated Table 1 which incorporates 6 months of actuals into the 2016 forecast, as well as the subsequent impact on the 2017 forecast. As shown in the below table, the incorporation of six months of actuals results in a lower 2016 forecast compared to that filed in the Application.

Table 1
ATCO Electric Yukon Sales by Customer Class
(MWh)

	Actual			Test Period	
	2013	**2014**	**2015**	**2016**	**2017**
Residential	148,780	147,253	148,605	146,017	152,060
Commercial	159,322	154,709	155,346	151,779	153,454
Street Lights	3,719	3,765	3,886	3,939	4,001
Private Lights	551	544	519	494	475
Total Retail Primary	**312,372**	**306,272**	**308,356**	**302,229** [1]	**309,990**
Secondary Sales	3,959	5,415	7,030	9,429	9,429
Wholesale Sales	356	495	430	427	427
Total Company	**316,687**	**312,182**	**315,816**	**312,085**	**319,846**

Note:
1) 2016 Forecast includes 6 months of actuals for January to June.

UCG-AEY-12

Reference: May 11, 2016 Application, page 2-3

AEY states "*Slower population growth has also contributed to minimal customer gains in both residential and commercial sectors for ATCO Electric Yukon. Additionally, ATCO Electric Yukon's Demand Side Management (DSM) program, as well as Yukon Government energy initiatives, such as the Commercial Energy Incentive Program and Micro-generation were introduced in the Yukon over the last few years and have all contributed to lower electricity sales in 2013, 2014, and 2015*".

Request:

(a) Please provide details of the referenced population growth analysis undertaken by AEY and copies of the reference documents.

(b) Please provide specific detail on the impact that DSM and other energy efficient initiatives have had on electricity sales for 2013, 2014 and 2015 including how AEY has determined the impact of these initiatives.

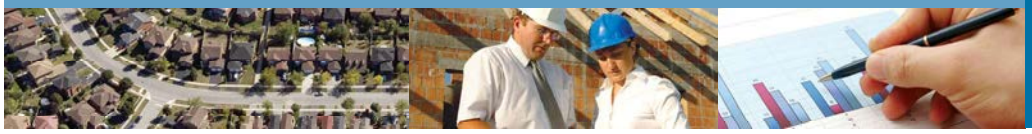
Response:

(a) AEY referenced a number of sources of information to determine an economic outlook for the Yukon. ATCO Electric Yukon relied on documents sourced from CMHC, the Yukon Bureau of Statistics, and Yukon Economic Development. Please refer to UCG-AEY-12(a) Attachment 1 for copies of the documents.

(b) Please refer to YUB-YECL-6.

HOUSING MARKET INFORMATION

NORTHERN HOUSING REPORT



CANADA MORTGAGE AND HOUSING CORPORATION

Date Released: 2015

As a component of its product suite, CMHC Market Analysis produces an annual Northern Housing Report. This report focuses on the new home construction market, existing home market, and rental markets in Whitehorse, Yellowknife, and Iqaluit.

Whitehorse

Economy

After experiencing robust growth from 2004 through 2012, Yukon real Gross Domestic Product (GDP) decreased by 0.7 per cent in 2013, and continued to decline in 2014, contracting by 1.2 per cent. As depressed mineral and commodity prices slow down resource extraction industries across Canada, the heavily resource-based Yukon economy is also feeling the pinch. With two consecutive years of negative real GDP growth, the Yukon economy remains in recession and the short-term outlook remains weak. The Conference Board of Canada is projecting Yukon's 2015 real GDP to contract by almost three per cent in 2015.

As mineral prices remain at levels near the recent lows in 2014, a number of major mining producers have stopped production until prices improve. Industry consultations have revealed that Yukon Zinc, operator of the Wolverine mine, have shut down as a result of low mineral prices. Similarly, the Bellekeno mine, owned and operated by Alexco Resource Corp., has been in temporary shutdown since September 2014. Victoria Gold, another major producer in the region, has also revealed they will not be conducting any exploration this year.

Fortunately, the news is not all bad for Yukoners as the large transfer payments received from the Canadian Government will help support the largest budget on record in Yukon's history for 2015-2016, at $1.4 billion dollars. With a Capital Budget of $312.8 million dollars, the Yukon government plans to invest heavily in major public infrastructure projects, in an effort to boost employment in the region. Some of the more costly projects include $60.7 million for upgrading highways, resource roads, bridges, and airports, $13.5 million for maintenance and upgrading of

Highlights

Whitehorse

- Residential construction in 2015 will decrease from the previous year, with 95 single-detached starts and 90 multi-family starts expected.
- Existing home sales to decline in 2015.
- Average vacancy rate is forecast to increase to 3.7 per cent.

Yellowknife

- Total housing starts will increase to 105 units this year.
- Residential transactions will decline to 425 units in 2015.
- Rental apartment vacancies will decline as weaker economic conditions delay movement into homeownership

Iqaluit

- At 6.2 per cent, Nunavut recorded the second strongest rate of economic growth in 2014 across all provinces and territories.
- Excluding social housing units, the vacancy rate rose to three per cent in 2014 from 2.1 per cent in 2013.
- The average two-bedroom rent for non-social housing units rose to $2,478 in 2014.

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Access CMHC's Market Analysis Centre publications quickly and conveniently on the Order Desk at **www.cmhc.ca/housingmarketinformation.**
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government buildings, and $11.0 million in spending on technology infrastructure.

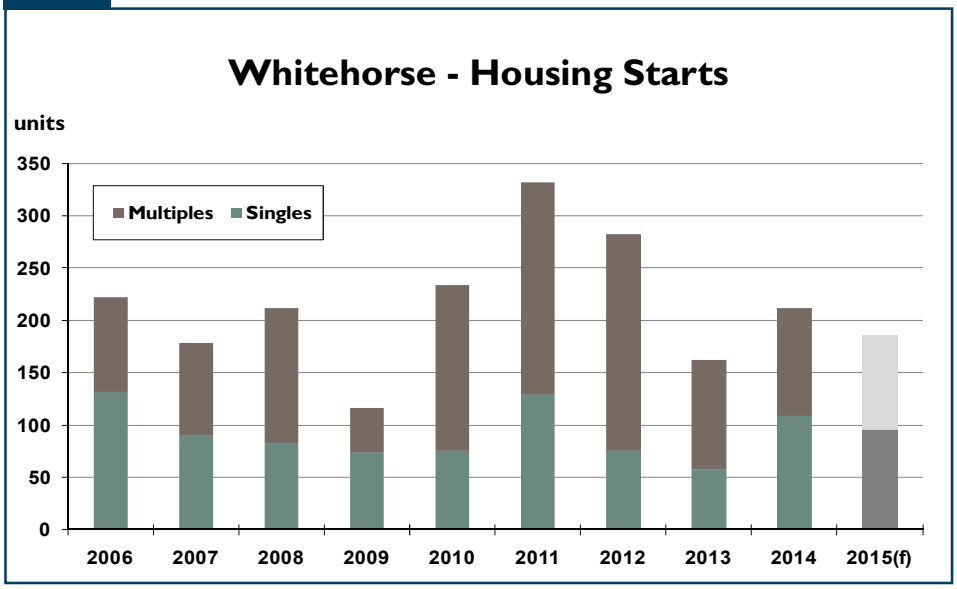
At April 2015, Yukon's labour force grew modestly by 200 people from April 2014, reaching a level of 20,800, while the number of employed decreased by 200, to a level of 19,600. Over the same period, the unemployment rate increased sharply, from 3.9 per cent in April 2014 to 6.3 per cent at April 2015. This figure still stands below the national average with the unemployment rate for Canada as a whole standing at 6.8% at April 2015. Relative to April 2014, approximately 300 jobs were lost across the goods and services-producing sectors at April 2015, representing decreases of 7.4 and 0.6 per cent, respectively.

Despite the weak economic outlook for the Yukon region, net migration rebounded in 2014. During the recession in 2013, 296 people left the province, which marked the first year of negative net migration dating back to 2006. In 2014 however, net migration was positive and showed a sizeable gain of 205 people moving to the province. With the increase in net migration, the estimated population of Yukon posted a record high of 37,183 at December 2014, an increase of 1.9 per cent relative to one year prior. With 77 per cent of the Yukon population residing in Whitehorse, the city's population also saw growth in 2014. At December 2014, the Whitehorse population increased by 2.3 per cent from the previous year, to a level of 28,455.

New Home Market

Housing starts in Whitehorse totalled 212 in 2014, a strong increase of 31 per cent from the 162 posted in 2013. Single-detached starts totalled 109 in 2014, up from 57 in 2013. Multi-family starts, which include semi-detached, row, and apartment units, remained relatively unchanged in 2014 from the previous year, declining by two per cent to 103 units.

Figure 1



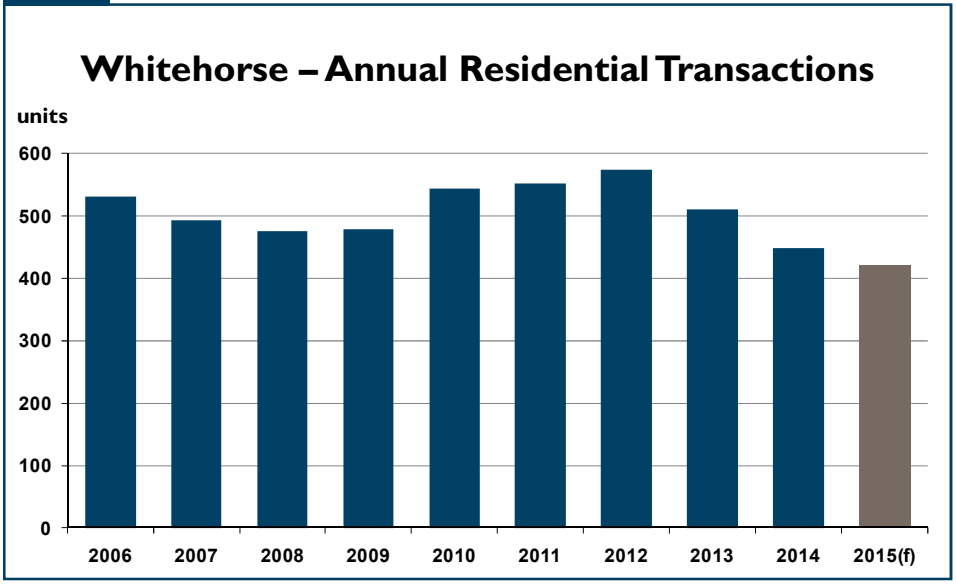
Source: CMHC, CMHC Forecast (f)

With the implementation of the City of Whitehorse's Official Community Plan (OCP), new development has been supported by the release of land from the City. The Whistle Bend neighbourhood remains the largest new neighbourhood in Whitehorse and will host 3,900 housing units and accommodate approximately 8,000 residents once complete. Phases 1 and 2 are nearing completion, and Phases 3 to 7 are currently in the design phase, and are planned to house approximately 4,900 residents with a variety of housing types. Detailed design of Phase 3 will be presented to the public in June, with construction expected to begin in 2016.

In the first quarter of 2015, eight single-detached units were started within the City of Whitehorse compared to 22 units in the first quarter of 2014. The robust start in 2014 was due to the release of several lots, and marked the largest number of single-detached starts in any first quarter since 2006. With fewer available lots in 2015 and continued weakness in the economy, single-detached starts will moderate this year. CMHC forecasts 95 single-detached starts in 2015, down from 109 in 2014.

As compared to the robust years of 2011 and 2012, which saw multi-family starts of just over 200 units in each year, multi-family starts have remained subdued since 2013. In 2014, there were 103 multi-family units started, which amounts to two fewer units than 2013. As the price differential between single-detached and multi-family dwellings has been decreasing in recent years, multi-family dwellings have faced stronger competition from single-detached units, thereby tempering demand for this type of housing. With increased competition from single-detached homes, in addition to buyers' market conditions, multi-family starts are expected to moderate to 90 units in 2015.

Figure 2



Source: Yukon Bureau of Statistics, CMHC Forecast (f)

Real Estate Transactions

According to the Yukon Bureau of Statistics' quarterly Real Estate Survey, residential real estate transactions in Whitehorse, excluding those 'not-at-arm's-length', declined for a second consecutive year, down 12 per cent in 2014 to 449 units. While much of this decline can be attributed to a slump in condo sales, which fell 24 per cent since 2013, lower sales of mobile and single-detached homes, also contributed to the overall decline. Transactions for semi-detached homes were the only bright spot in 2014, with sales increasing by 15 per cent from 2013.

The outlook for resale market transactions is expected to continue to moderate in 2015. MLS® sales in the first quarter declined 22 per cent to 49 transactions in 2015, down from 63 in 2014. As depressed commodity prices continue to dampen the appetite for investments in resource extraction industries in the region, overall job growth is expected to stagnate due to weaker job creation in the resource sector. With lower full-time job growth weakening demand, CMHC forecasts that resale transactions will continue to decline modestly by 6.5 per cent in 2015, to 420 units.

In the first quarter of 2015, the average price for all types of housing fell by 13 per cent from the first quarter of 2014, to $322,034. Average condominium sale prices declined nearly 13 per cent to $277,306 in the first quarter of 2015, as compared to one year prior. To the end of March, single-detached home prices averaged $384,497, down 9.8 per cent from the same period in 2014. Year-over-year price declines in the first quarter of 2015 were more modest among mobile and semi-detached homes, decreasing 5.6 and 4.3 per cent respectively.

With the recent slowdown in sales and marked price declines in condominiums and single-detached homes weighing down resale prices, conditions are expected to continue favouring buyers in 2015. After the first three months of 2015, sales of single-family homes have accounted for more than half of the total sales, while multi-family sales have made up almost one quarter. The combined sales of mobile and semi-detached homes comprise the remaining quarter. Industry consultations suggest such a distribution of sales might arise from a preference of many Yukon home buyers toward single-detached homes as opposed to their multi-family counterparts. Regardless of purchaser preferences, demand for both housing types remains subdued which has put downward pressure on home prices in the region.

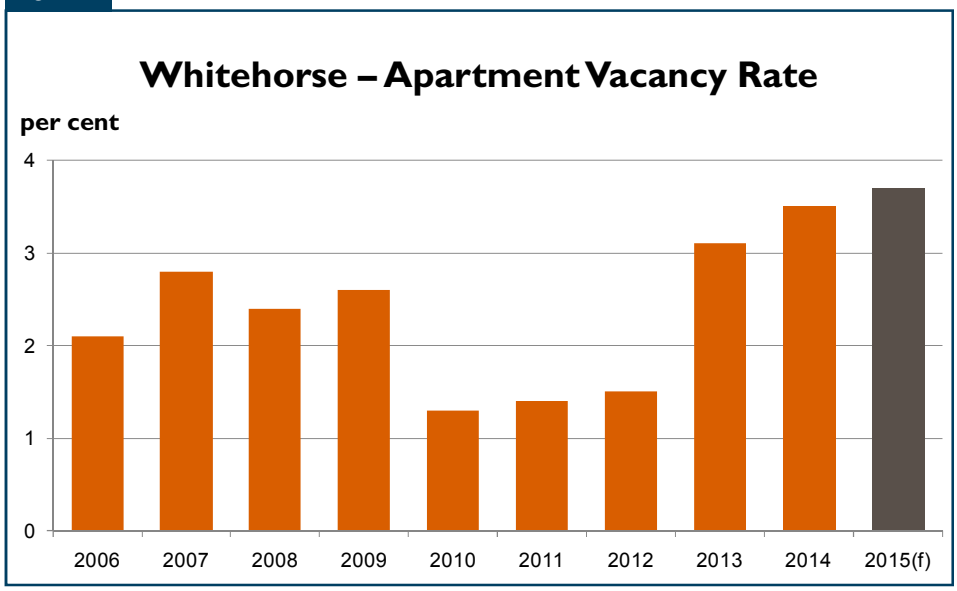
To the end of March, the average MLS® price declined 10 per cent from the year prior. Part of this decline can be attributed to the large decline in multi-family home prices, which led the charge downward, falling by 22 per cent. As the economic outlook and demand remain weak, it is expected that the average resale price of homes in Whitehorse will decline by 4.8 per cent, to an average of $345,000 in 2015.

Rental Market

In the fourth quarter of 2014, the average apartment vacancy rate in Whitehorse increased to 3.5 per cent, up from 3.1 per cent in the previous year. This amounts to 35 vacant units out of a total rental universe of 990 units. As the supply of multi-family dwellings has been increasing over recent years, it is expected that some of these units will make their way onto the secondary market, providing additional rental options for Yukoners. Furthermore, as average home prices in Whitehorse decline, and as mortgage rates remain low over the near term, renters may view home-ownership as an increasingly attractive alternative to renting. CMHC is forecasting the vacancy rate to increase to 3.7 per cent by December 2015.

Despite the increasing vacancy rate over the past few years, the average rental price for a two-bedroom unit in Whitehorse has also increased, rising to $991 in the fourth quarter of 2014, from $955 a year earlier. CMHC expects the average two-bedroom rental rate to continue increasing, though at a more moderate pace as the rise in vacancy rates soften upward pressure on rents. As a result, the average two-bedroom rental rate will increase to $1,000 in 2015.

Figure 3



Source: Yukon Bureau of Statistics Q4 Yukon Rent Survey, CMHC Forecast (f)

Whitehorse Forecast Summary June 2015

	2012	2013	2014	Yr/Yr Change	2015(F)	Yr/Yr Change
New Home Market						
Total Starts (units)	282	162	212	30.9%	185	-12.7%
Single-Detached Starts	75	57	109	91.2%	95	-12.8%
Multi-Family Starts	207	105	103	-1.9%	90	-12.6%
Real Estate Transactions*						
Residential sales	574	510	449	-12.0%	420	-6.5%
Average price ($)	358,978	357,084	362,246	1.4%	345,000	-4.8%
Rental Market(Q4 data)**						
Apartment Vacancy Rate (%)***	1.5%	3.1%	3.5%		3.7%	
Average Two-Bedroom Apartment Rent ($)***	906	955	991		1,000	

*MLS®+Private(source: YBS, CMHC Forecast)
** Source: YBS, CMHC Forecast
*** YBS has made changes to their survey. As of 2014, the vacancy rate and rent prices are for October, not Q4.

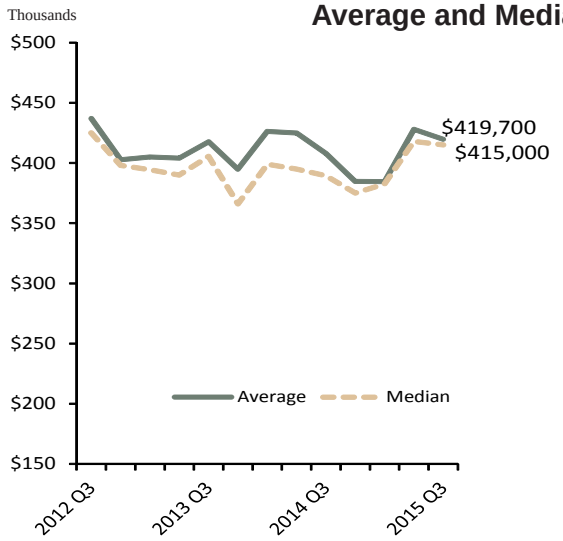
Yukon Bureau of Statistics

Yukon Monthly Statistical Review
December 2015

Highlights:

- Comparing 2015 to 2014, Yukon's labour force (20,700) remained the same; employment (19,400) decreased by 400; unemployment (1,300) increased by 400; and the unemployment rate (6.3%) increased by 2.0 percentage points.
- The 2015 construction value of Yukon building permits decreased by $12.7 million, or 9.7%, compared to 2014. The value of residential permits was down $10.5 million; industrial permits decreased $5.0 million; commercial permits went down $4.6 million; and government/institutional permits increased $7.5 million.
- The average house price in the third quarter of 2015 was $419,700, a decrease of $8,300, or 1.9%, compared to the previous quarter ($428,000).

New publication this month:
Yukon Real Estate Survey, Third Quarter 2015



- A total of 79 single houses were sold in Whitehorse in the third quarter of 2015 compared to 74 in the previous quarter. The average price was $419,700, a decrease of $8,300, or 1.9%, compared to the previous quarter ($428,000).
- The *median* house price in the third quarter was $415,000, meaning that the prices of half the houses sold were above this figure and the remaining half, below.

To read full report:
http://www.eco.gov.yk.ca/stats/pdf/real_estate_q315.pdf

What Else is New:

New from the Yukon Bureau of Statistics:

- Yukon Employment, December 2015: http://www.eco.gov.yk.ca/stats/pdf/employment_dec15.pdf
- Yukon Fuel Survey, December 2015: http://www.eco.gov.yk.ca/stats/pdf/fuel_dec15.pdf

New from Statistics Canada:

- Low Income Lines, 2013-2014: Update: http://www.statcan.gc.ca/pub/75f0002m/75f0002m2015002-eng.pdf
- A Profile of the Labour Market Experiences of Adults with Disabilities among Canadians aged 15 years and older, 2012: http://www.statcan.gc.ca/pub/89-654-x/89-654-x2015005-eng.pdf

Yukon Bureau of Statistics Elsewhere

Yukon community information
www.sewp.gov.yk.ca

For manipulatable data by Yukon community and subject, visit our Socio-Economic Web Portal.

Find out about our electronic distribution lists ybsinfo @gov.yk.ca.

Follow us on Twitter @Yukon-Stats.

1. Population

1.1 Population by Age and Sex*, June '15

	Total	Males	Females
0-4	2,111	1,121	990
5-9	2,003	1,064	939
10-14	1,925	1,003	922
15-19	1,970	1,001	969
20-24	2,364	1,216	1,148
25-29	2,983	1,460	1,523
30-34	3,173	1,583	1,590
35-39	2,738	1,353	1,385
40-44	2,700	1,305	1,395
45-49	2,519	1,286	1,233
50-54	3,162	1,564	1,598
55-59	3,072	1,625	1,447
60-64	2,570	1,366	1,204
65-69	1,785	965	820
70-74	1,063	621	442
75+	1,205	588	617
Total	37,343	19,121	18,222

*Please see table endnotes on page 12.
Source: Yukon Bureau of Statistics.

1.2 Population by Community*

	Jun 2014	Mar 2015	Jun 2015
Beaver Creek	115	122	121
Burwash Landing	112	107	107
Carcross	467	491	504
Carmacks	563	554	557
Dawson City	2,059	2,038	2,067
Destruction Bay	42	46	50
Faro	383	371	375
Haines Junction	908	899	895
Mayo	492	480	477
Old Crow	264	253	258
Pelly Crossing	397	385	378
Ross River	400	402	411
Tagish	271	260	262
Teslin	470	476	480
Watson Lake	1,534	1,469	1,469
Whitehorse Area[1]	28,713	28,763	28,872
Other*	61	62	60
Yukon	**37,251**	**37,178**	**37,343**

[1]Marsh Lake is included in Whitehorse.
*Please see table endnotes on page 12.
Source: Yukon Bureau of Statistics.

Did you know?

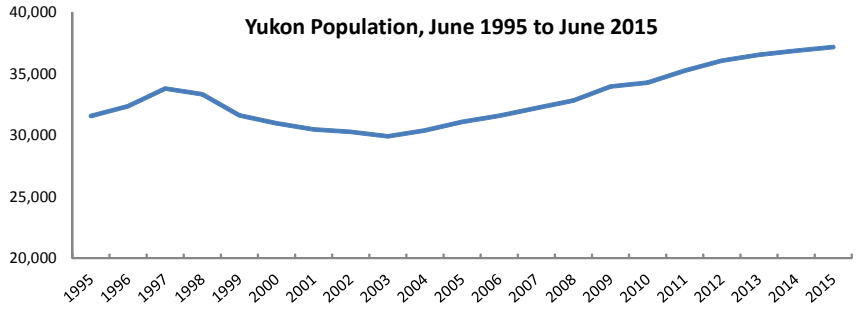
The proportion of Yukon's population in the 65+ years age group increased 3.9 percentage points in the last 10 years. In 2015, the population aged 65+ years constituted 10.9% of Yukon's total population, compared to 7.0% of the total population in 2005.

Population Report, June 2015:
http://www.eco.gov.yk.ca/stats/pdf/populationJun_2015.pdf

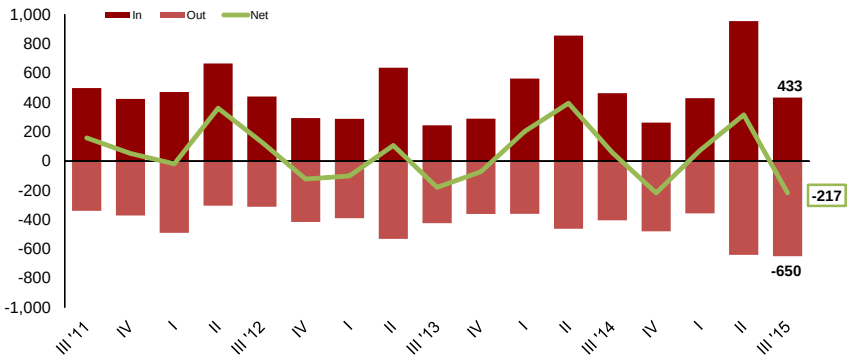
1.3 Vital Statistics

		Births	Deaths	Marriages
Year-to-date[(p)]		13	2	-5
change		6.7%	2.1%	-9.4%
2015				
June	(p)	36	21	21
May		23	13	7
April		33	14	4
March		46	15	7
February		35	22	4
January		34	12	5
2014 total		**386**	**202**	**178**
December		28	24	12
November		28	14	11
October		37	15	12
September		32	18	14
August		29	20	35
July		38	16	41
June		34	7	31

Source: Yukon Bureau of Statistics.



1.4 Migration Estimates*



*Please see table endnotes on page 12. *Source*: Statistics Canada. Tables 051-0017, 051-0037, CANSIM.

In the third quarter of 2015, Yukon experienced a **net loss** of 217 people; 310 were lost through interprovincial migration and 93 were gained through international migration.

Of the interprovincial migrants, **net losses** were seen to:

- British Columbia (-117);
- Ontario (-71);
- Alberta (-71);
- Quebec (-36).
- Northwest Territories (-28);
- Manitoba (-6);
- Newfoundland (-6); and
- Nova Scotia (-4).

Conversely, **net gains** were seen from:

- New Brunswick (11);
- Saskatchewan (9); and
- Nunavut (9).

2. Employment

2.1 Labour Force Statistics* (seasonally adjusted)

	Labour Force	Employed	Unemployed	Unemployment Rate	Participation Rate	Employment Rate
2015 annual	**20,700**	**19,400**	**1,300**	**6.3%**	**73.7%**	**69.0%**
December	20,600	19,500	1,100	5.3%	73.0%	69.1%
November	21,200	20,300	900	4.2%	74.9%	71.7%
October	20,900	20,000	1,000	4.8%	73.9%	70.7%
September	20,800	19,700	1,100	5.3%	73.5%	69.6%
August	20,300	18,900	1,400	6.9%	71.7%	66.8%
July	20,500	19,000	1,600	7.8%	72.7%	67.4%
June	20,600	19,000	1,700	8.3%	73.3%	67.6%
May	20,900	19,500	1,400	6.7%	74.6%	69.6%
April	20,800	19,600	1,300	6.3%	74.6%	70.3%
March	20,800	19,700	1,100	5.3%	74.6%	70.6%
February	20,800	19,600	1,200	5.8%	74.6%	70.3%
January	20,900	19,800	1,200	5.7%	74.9%	71.0%
2014 annual	**20,700**	**19,800**	**900**	**4.3%**	**74.7%**	**71.5%**
December	20,500	19,600	1,000	4.9%	73.5%	70.3%

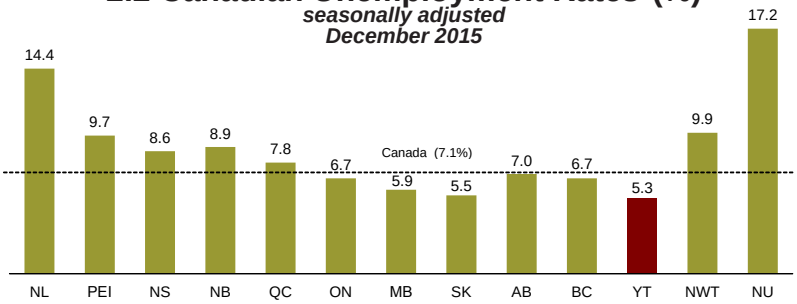
*Please see table endnotes on page 12. *Source*: Statistics Canada. Tables 282-0100 (monthly) and 282-0123 (annual), CANSIM.

Yukon Employment, December 2015: http://www.eco.gov.yk.ca/stats/pdf/employment_dec15.pdf

Yukon Employment Annual Review, 2014: http://www.eco.gov.yk.ca/stats/pdf/employment_2014.pdf

Yukon Employment Historical Data, 2005 to 2014: http://www.eco.gov.yk.ca/stats/pdf/Historical_LFS_2014_r.pdf

2.2 Canadian Unemployment Rates*(%)



*Please see table endnotes on page 12.
Source: Statistics Canada. Tables 282-0087 and 282-0100, CANSIM.

Did you know?

In 2015, Yukon's labour force remained the same as 2014, the number of employed decreased by 400 and the number of unemployed increased by 400. This caused the unemployment rate in 2015 to increase by 2.0 percentage points compared to 2014.

2.3 Employment, by Sector and Industry* (unadjusted)

	Total Employed	Public Employees	Private Employees	Self-Employed	Goods-producing Employees	Services-producing Employees
2015 annual	**19,400**	**7,900**	**8,700**	**2,800**	**2,800**	**16,600**
December	19,000	7,500	8,400	3,000	2,900	16,100
November	20,000	7,900	9,000	3,200	3,200	16,800
October	20,200	7,900	8,900	3,400	3,300	16,900
September	20,500	8,000	9,400	3,100	3,100	17,400
August	19,800	7,900	9,200	2,700	2,700	17,100
July	19,600	8,100	9,000	2,500	2,600	17,100
June	19,100	8,000	8,800	2,400	2,500	16,600
May	19,200	7,900	8,600	2,600	2,700	16,500
April	19,000	8,100	8,400	2,500	2,500	16,500
March	18,900	8,100	8,100	2,800	2,500	16,400
February	19,100	7,900	8,600	2,500	2,500	16,500
January	19,300	7,800	9,100	2,500	2,600	16,600
2014 annual	**19,800**	**7,800**	**9,200**	**2,800**	**2,900**	**17,000**
December	19,200	7,800	9,000	2,400	2,800	16,500

*Please see table endnotes on page 12. *Source*: Statistics Canada. Custom data table.

Comparing December 2015 to November 2015, employment in the services-producing sector decreased by 700 to 16,100. In the goods-producing sector, employment decreased by 300 to 2,900.

In December 2015, of the 19,400 employed Yukoners, 7,500, or 39.7%, were in the public sector. Of the 11,500 workers in the private sector, 3,000, or 26.1%, were self-employed.

Note: Public employees are those who work for: a government at the federal, provincial, territorial, municipal, First Nations or other Aboriginal government level; a government service or agency; a Crown corporation; or for a government funded establishment such as schools (including colleges/universities), hospitals and public libraries.

2. Employment (cont'd)

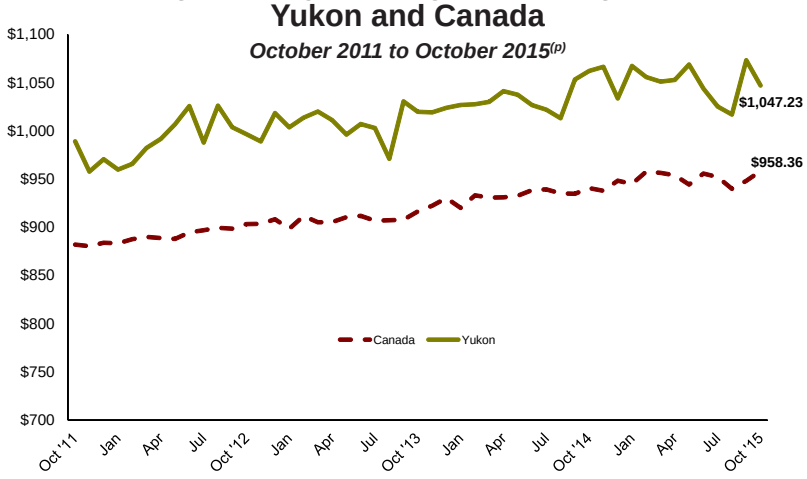
2.4 Average Weekly Earnings‡, Including Overtime*

		Yukon Average‡	Goods-producing	Construction	Services-producing	Trade	Transp. & Ware-housing	Admin. support, waste mgmt, & remediation	Health Care & Social Assist.	Accomm. & Food Services	Other services (except public admin.)	Public Admin.
Year-to-date(p)		$16.18	-$73.23	x	$26.07	-$1.11	$45.35	$31.91	$23.40	$5.61	..	$28.31
change		1.6%	-5.7%	...	2.6%	-0.2%	4.6%	4.2%	2.5%	1.2%	..	2.2%
							($)					
2015												
October	(p)	**1,047.23**	**1,292.72**	1,247.07	**1,022.52**	679.22	1,024.85	793.36	911.59	459.28	806.09	1,282.60
September	(r)	**1,073.31**	**1,296.19**	1,213.59	**1,050.20**	668.28	1,044.17	768.72	1,019.04	495.75	769.53	1,359.45
August		**1,017.03**	**1,256.87**	1,191.53	**990.39**	683.17	1,030.89	810.26	1,006.17	479.05	732.57	1,244.30
July		**1,025.37**	**1,230.88**	1,104.70	**1,002.45**	688.83	1,033.88	722.49	903.85	452.77	768.63	1,346.62
June		**1,043.88**	**1,228.12**	1,120.26	**1,025.49**	663.87	1,015.63	718.05	1,026.63	431.90	743.94	1,335.49
May		**1,068.86**	**1,253.87**	1,196.78	**1,051.37**	694.92	1,108.03	825.71	926.78	460.47	740.14	1,306.06
April		**1,052.88**	**1,114.31**	1,010.63	**1,047.90**	702.17	990.59	942.03	903.88	415.42	766.80	1,370.93
March		**1,051.20**	**1,165.53**	1,110.83	**1,042.03**	694.86	1,031.87	871.97	982.28	456.52	735.32	1,316.38
February		**1,055.92**	**1,260.91**	1,108.87	**1,039.79**	659.27	1,007.53	802.04	1,013.57	473.07	676.53	1,292.91
January		**1,067.36**	**1,067.35**	952.69	**1,067.36**	675.80	1,020.66	686.92	1,045.92	456.53	701.23	1,389.96
2014 annual		**1,036.48**	**1,288.08**	x	**1,010.68**	679.75	990.58	770.73	956.93	454.51	F	1,295.54
December		**1,033.72**	**1,253.46**	x	**1,010.92**	674.30	1,011.05	791.61	952.25	460.96	720.84	1,268.18
November		**1,066.57**	**1,283.78**	x	**1,043.39**	664.92	1,086.26	830.07	1,026.12	457.45	738.75	1,314.59
October		**1,062.23**	**1,420.29**	x	**1,021.08**	631.70	1,028.63	858.20	924.59	472.94	745.30	1,364.83

*Please see table endnotes on page 12. ‡ Excludes self-employed. *Source*: Statistics Canada. Table 281-0026 (monthly), 281-0027 (annual), CANSIM.

2.5 Average Weekly Earnings, Including Overtime*, Yukon and Canada

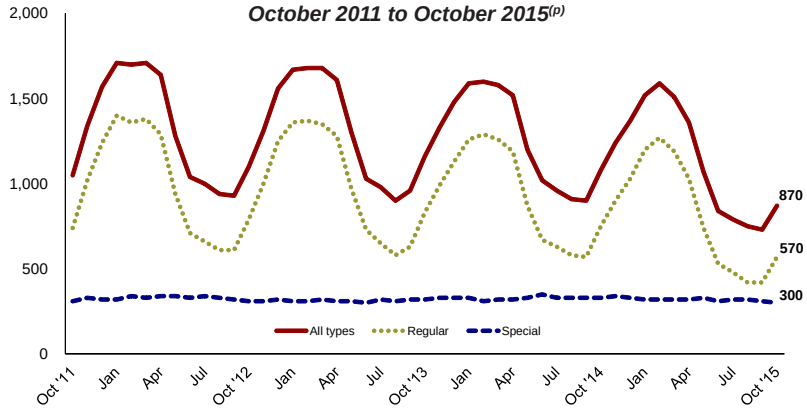
October 2011 to October 2015(p)



*Please see table endnotes on page 12. *Source*: Statistics Canada. Table 281-0026, CANSIM.

2.6 Employment Insurance Beneficiaries, by Type of Benefit*

October 2011 to October 2015(p)



*Please see table endnotes on page 12. *Source*: Statistics Canada. Table 276-0020, CANSIM.

Survey of Employment, Payroll & Hours, 2014:
http://www.eco.gov.yk.ca/stats/pdf/seph_2014.pdf

Did you know?

According to Statistics Canada's data based on income tax returns for 2013, the median income for males in Yukon was $47,020; for Canada, it was $39,290; a difference of $7,730, or 19.7%. The median income for females in Yukon was $39,820; for Canada, it was $26,400; a difference of $13,420, or 50.8%. Source: CANSIM table 111-0004.

2.7 Employment Insurance Beneficiaries, by Community*

	Oct 2014	Sep(p) 2015	Oct(p) 2015
Beaver Creek	0	0	0
Burwash Landing	10	0	0
Carmacks	20	10	20
Dawson	100	60	100
Faro	10	10	20
Haines Junction	40	20	20
Marsh Lake	10	10	10
Mayo	30	10	20
Mt. Lorne	0	10	0
Old Crow	10	10	10
Pelly Crossing	30	20	20
Ross River	10	20	20
Tagish	10	10	10
Watson Lake	50	40	50
Whitehorse	700	510	550
Yukon Total	1,080	730	870

*Community is defined by Census subdivision.
Please see table endnotes on page 12.
Source: Statistics Canada, Custom data table.

3. Consumer Prices

3.1 Consumer Price Index, Whitehorse (2002 = 100)*

	Index			% Change	
	Nov 2014	Oct 2015	Nov 2015	Oct '15 to Nov '15	Nov '14 to Nov '15
All-Items	**123.9**	**124.5**	**124.0**	**-0.4**	**0.1**
Food	131.4	133.1	133.0	-0.1	1.2
Shelter	146.1	142.8	143.0	0.1	-2.1
Household Operations, Furnishings & Equipment	105.5	106.8	105.2	-1.5	-0.3
Clothing & Footwear	95.5	99.0	98.7	-0.3	3.4
Transportation	128.3	128.2	127.4	-0.6	-0.7
Health & Personal Care	120.5	120.1	122.8	2.2	1.9
Recreation, Education & Reading	92.3	96.3	94.4	-2.0	2.3
Alcoholic Beverages & Tobacco Products	149.3	153.8	153.8	0.0	3.0
Special Aggregates					
Energy	162.7	146.1	143.2	-2.0	-12.0
All-items excluding energy	120.1	122.4	122.1	-0.2	1.7

*Please see table endnotes on page 12. *Source*: Statistics Canada. Table 326-0020, CANSIM.

Comparing November 2015 to November 2014, the **year-over-year** change in the consumer price index for Whitehorse was an increase of 0.1% (figures for Yukon are not available); 1.3 percentage points lower than that for Canada (1.4%).

Major contributors to the year-over-year **increase** were the prices of:
- Traveller accommodation;
- Purchase and leasing of passenger vehicles; and
- Homeowners' home and mortgage insurance.

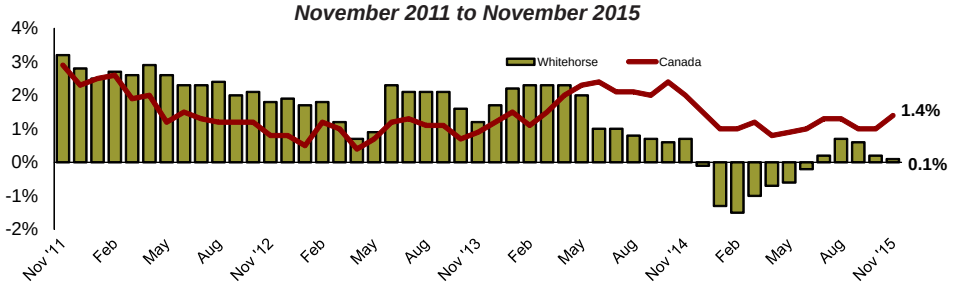
Some of these year-over-year increases were offset by **decreases** in the prices of:
- Fuel oil and other fuels;
- Gasoline; and
- Internet access services.

On a **month-to-month** basis, from October 2015 to November 2015, the consumer price index for Whitehorse (figures for Yukon are not available) decreased 0.4%.

Major contributors to the month-to-month **decrease** were the prices of:
- Gasoline;
- Traveller accommodation; and
- Recreational equipment and services (excluding recreational vehicles).

Some of these decreases were offset by month-to-month **increases** in the prices of:
- Personal care supplies and equipment;
- Inter-city transportation; and
- Fresh vegetables.

3.2 Year-over-Year Change to the Consumer Price Index*
Whitehorse and Canada
November 2011 to November 2015



*Please see table endnotes on page 12. *Source*: Statistics Canada. Table 326-0020, CANSIM.

Annual Average Change in the Consumer Price Index

	Whitehorse	Canada
2014	1.3%	2.0%
2013	1.7%	0.9%
2012	2.3%	1.5%
2011	3.0%	2.9%
2010	0.8%	1.8%

Consumer Price Index, 2014: http://www.eco.gov.yk.ca/stats/pdf/2014CPIAnnual.pdf

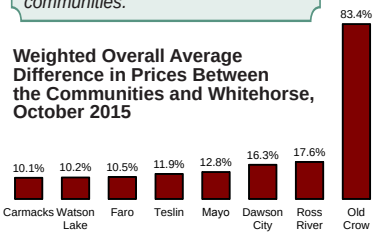
3.3 Community Spatial Price Index, October 2015 (Whitehorse = 100)

	Carmacks	Dawson City	Faro	Mayo	Old Crow	Ross River	Teslin	Watson Lake
Total Survey Items	**110.1**	**116.3**	**110.5**	**112.8**	**183.4**	**117.6**	**111.9**	**110.2**
Meat/Fish/Seafood	110.8	105.3	95.7	117.0	135.0	125.8	103.8	108.3
Dairy/Eggs	103.2	106.7	103.5	108.4	154.2	106.7	113.0	99.5
Fruit/Veg.	113.8	118.8	113.5	123.0	187.3	145.7	110.7	112.7
Bread/Cereal	113.9	128.5	103.7	111.2	159.1	118.9	117.1	104.7
Other Foods	114.1	124.9	134.0	117.2	244.5	134.4	126.2	120.4
Household Operations	108.8	119.6	116.9	115.2	224.9	131.3	120.6	144.5
Health & Personal Care	115.0	131.3	114.7	118.3	171.3	116.9	124.4	128.5
Gasoline	111.4	118.5	107.9	107.7	…	105.7	105.6	95.5
Cigarettes	108.7	104.0	99.2	108.6	142.5	109.2	103.2	104.6
Home Heating Fuel	101.9	107.5	102.1	111.3	…	103.3	103.3	109.0

Source: Yukon Bureau of Statistics.

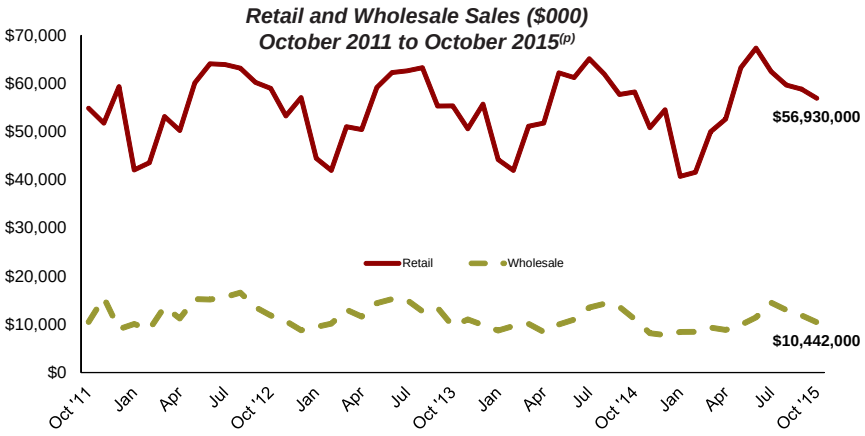
The Community Spatial Price Index is produced biannually by the Yukon Bureau of Statistics and compares prices of regularly purchased items in Whitehorse to prices in other Yukon communities.

Weighted Overall Average Difference in Prices Between the Communities and Whitehorse, October 2015



4. Trade

4.1 Retail and Wholesale Sales



Source: Statistics Canada. Tables 080-0020 and 081-0011, CANSIM.

Yukon's preliminary **retail sales** in October 2015 decreased by $1.3 million, or 2.2%, compared to October 2014. Year-to-date (January to October), Yukon's retail sales decreased by $2.1 million, or 0.4%, compared to the same time period in 2014. Canada's year-to-date retail sales increased 2.1%.

Yukon's preliminary **wholesale sales** in October 2015 decreased by $643,000, or 5.8%, compared to October 2014. Year-to-date (January to October), Yukon's wholesale sales decreased by $4.2 million, or 3.8%, compared to the same time period in 2014. Canada's year-to-date wholesale sales increased by 3.9%.

4.2 Retail Sales, by Industry Classification*

		Total*	Furniture & home furnishings stores	Food & beverage stores	Health & personal care stores	Gasoline stations
Year-to-date(p) change		-$2,064 -0.4%	-$1,286 -11.1%	-$22,148 -13.3%	$4,465 16.9%	-$2,256 -2.5%
		($000)				
2015						
October	(p)	56,930	1,279	14,503	3,192	9,377
September	(r)	58,828	1,207	14,560	3,122	9,572
August		59,675	1,178	16,102	3,108	10,601
July		62,469	1,045	17,102	3,227	10,795
June		67,347	836	16,446	3,376	10,675
May		63,288	1,116	15,498	3,255	8,939
April		52,621	938	13,568	2,813	8,186
March		49,995	1,052	13,193	2,992	7,590
February		41,588	650	11,562	3,047	6,670
January		40,740	1,046	12,422	2,748	7,034
2014 total		**660,914**	**13,478**	**198,011**	**32,044**	**107,414**
December		54,529	792	15,650	3,086	7,787
November		50,840	1,053	15,257	2,543	7,932
October		58,232	1,086	16,450	2,778	8,912

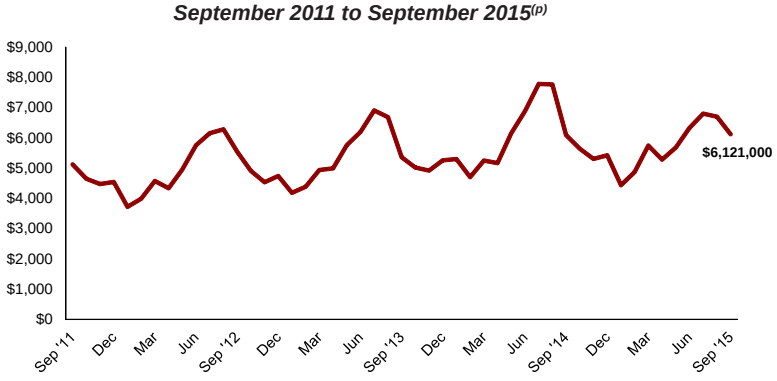
*Please see table endnotes on page 12.
Source: Statistics Canada. Table 080-0020, CANSIM.

Yukon Retail Sales, 2014: http://www.eco.gov.yk.ca/stats/pdf/retail2014.pdf

4.3 Food Services and Drinking Places

Did you know?

Year-to-date (January to September), Yukon's total Food Services and Drinking Places' receipts decreased by $3.1 million, or 5.7%, compared to the same time period in 2014; Canada-wide receipts increased 4.3%.



Source: Statistics Canada. Table 355-0006, CANSIM.

5. Rental Units

These figures are derived from the Yukon Rent Survey which, as of 2014, is now conducted on a semi-annual basis in April and October. Prior to 2014, the survey was conducted on a quarterly basis and only included buildings with 3 or more rental units (4 or more rental units prior to 2012). Although the methodology of the 2014 survey includes all types of buildings with rental units (displayed in table 5.1), the Yukon Bureau of Statistics continues to generate data for buildings with 3 or more rental units for historical comparisons (displayed in 5.2 and 5.3).

5.1 Median Rent, Total Units and Vacancy Rates*; for Units in All Types of Buildings with Rental Units, Yukon, April 2015

	All Types	Single Detached House	Townhouse/ Row house	Duplex[1]	Triplex and Fourplex	Condominium	Apartment Building[2]	Store-top (Commercial)[3]	Mobile Home
Median Rent									
All Sizes	$950	$1,300	$1,300	$1,123	$1,000	$1,450	$900	$900	$1,000
Bachelor	$720	…	…	$850	$775	x	$720	$750	$513†
1 Bedroom	$900	$850	$750	$919	$900	$1,150	$900	$1,000	x
2 Bedrooms	$1,000	$1,200	$850	$1,123	$1,200	$1,398	$900	$1,000	$950
3-4 Bedrooms	$1,450	$1,412	$1,400	$1,400	$1,500	$1,500	$1,375	$1,750	$1,225
5+ Bedrooms	$1,738	$1,800†	…	$1,675	…	…	…	…	…
Total Units									
All Sizes[4]	2,367	298	112	606	203	90	890	102	65
Bachelor	193	…	…	10	23	2	122	31	4
1 Bedroom	636	18	8	155	67	6	344	37	2
2 Bedrooms	932	84	30	227	76	46	413	28	29
3-4 Bedrooms	595	191	73	208	38	37	11	7	30
5+ Bedrooms	11	5	…	6	…	…	…	…	…
Vacancy Rate									
All Sizes	3.7%	0.0%	0.0%	8.3%	2.5%	1.1%	2.7%	2.9%	6.2%
Bachelor	2.6%	…	…	10.0%	8.7%	0.0%	0.8%	0.0%	0.0%
1 Bedroom	4.4%	0.0%	0.0%	7.1%	1.5%	0.0%	3.8%	8.1%	0.0%
2 Bedrooms	3.2%	0.0%	0.0%	6.6%	2.6%	2.2%	2.4%	0.0%	3.4%
3-4 Bedrooms	3.7%	0.0%	0.0%	9.1%	0.0%	0.0%	0.0%	0.0%	10.0%
5+ Bedrooms	27.3%	0.0%	…	50.0%	…	…	…	…	…

† Use caution when analyzing data due to high variance or a small number of rental units within the category.
[1] Duplex includes single detached houses with a rental suite. [2] Buildings with five or more rental units.
[3] Store-top units are residential units in buildings which primarily contain commercial space.
[4] Numbers may not add up to the total due to rounding and vacancy rates may have been affected by small number of units.

*Please see table endnotes on page 12. *Source*: Yukon Bureau of Statistics.

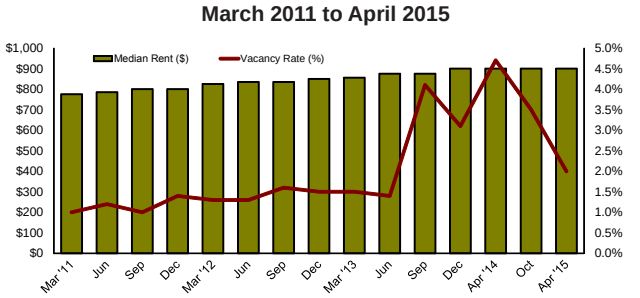
5.2 Median Rent and Vacancy Rates* for Units in Buildings with 3 or More Rental Units, Yukon Communities, 2014-2015

	Whitehorse		Dawson City		Watson Lake	
	Median Rent	Vacancy Rate	Median Rent	Vacancy Rate	Median Rent	Vacancy Rate
2015						
April	$900	2.0%	$700	0.0%	$775	21.2%
2014 average	**$900**	**4.1%**	**$650**	**27.8%**	**$775**	**13.9%**
October	$900	3.5%	$650	16.7%	$775	2.6%
April	$900	4.7%	$650	38.9%	$775	24.4%

*Please see table endnotes on page 12.

Source: Yukon Bureau of Statistics.

5.3 Median Rent and Vacancy Rates for Units in Buildings with 3 or More Rental Units, Whitehorse, 2011-2015



*Please see table endnotes on page 12.
Source: Yukon Bureau of Statistics.

Yukon Rent Survey, April 2015: http://www.eco.gov.yk.ca/stats/pdf/rent_Apr15.pdf

6. Real Estate

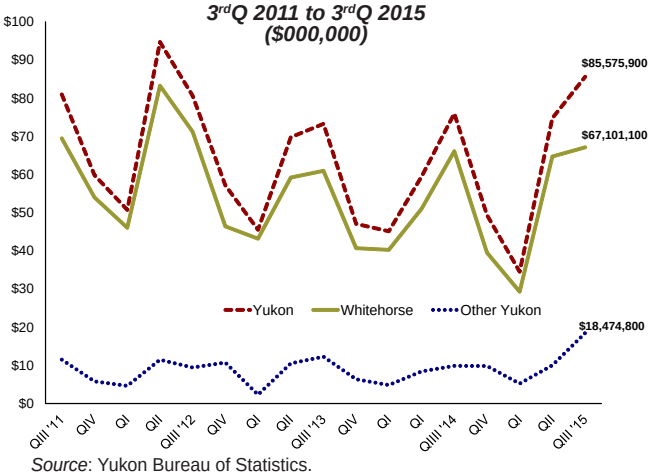
6.1 Number and Value of Real Estate Transactions*, Whitehorse

	Total‡		Single Houses		Mobile Homes		Condos		Duplexes	
	(no.)	($000)	(no.)	($000)	(no.)	($000)	(no.)	($000)	(no.)	($000)
Year-to-date	90	3,709.8	-19	-8,457.2	10	2,348.9	34	10,374.2	-1	-297.4
change	23.9%	2.4%	-9.1%	-9.7%	66.7%	74.0%	35.1%	35.0%	-3.7%	-3.6%
2015										
Q3	205	67,101.1	79	33,156.0	11	2,398.3	50	15,906.5	15	4,659.4
Q2	170	64,718.5	74	31,671.2	10	2,296.0	45	14,111.1	7	2,118.5
Q1	91	29,311.0	36	13,841.9	4	830.6	36	9,983.0	4	1,107.2
2014 total	**253**	**105,652.9**	**122**	**48,772.4**	**10**	**2,222.8**	**80**	**24,262.5**	**14**	**4,320.9**
Q4	116	39,541.3	43	16,542.9	5	1,305.4	50	15,515.3	4	1,174.0
Q3	137	66,111.7	79	32,229.5	5	917.4	30	8,747.1	10	3,146.9

*Please see table endnotes on page 12. ‡Total includes family lots, multiple-residential, commercial, and industrial sales. *Source*: Yukon Bureau of Statistics.

6.2 Value of Real Estate Transactions

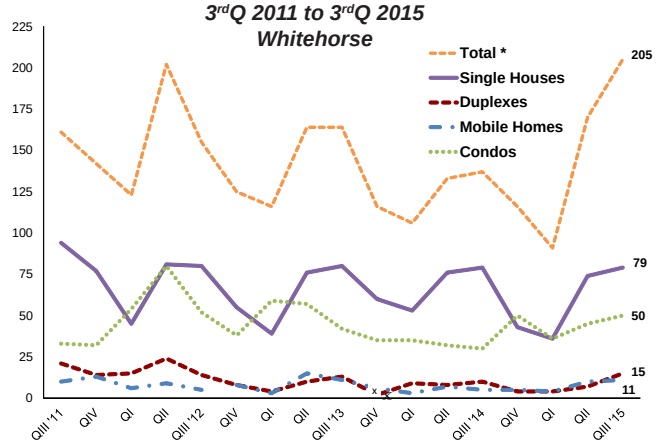
3rdQ 2011 to 3rdQ 2015 ($000,000)



Source: Yukon Bureau of Statistics.

6.3 Number of Residential Transactions

3rdQ 2011 to 3rdQ 2015 Whitehorse



*Please see table endnotes on page 12. *Source*: Yukon Bureau of Statistics.

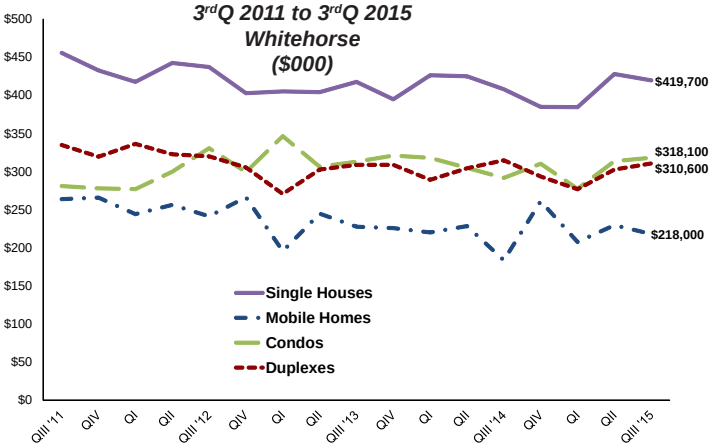
Did you know?

In the third quarter of 2015, the average sale price of single detached houses in Whitehorse was $419,700. This was a decrease of $8,300, or 1.9%, compared to the previous quarter ($428,000). However, compared to one year ago (the third quarter in 2014), the average sale price increased $11,700, or 2.9%.

In the third quarter of 2015, real estate transactions in Yukon totalled $85.6 million: $67.1 million in Whitehorse and $18.5 million in the rest of Yukon.
Comparing the third quarter of 2015 to that of 2014, the total value of Yukon's real estate transactions increased by $9.6 million, or 12.6%.

6.4 Average Residential Sale Prices

3rdQ 2011 to 3rdQ 2015 Whitehorse ($000)

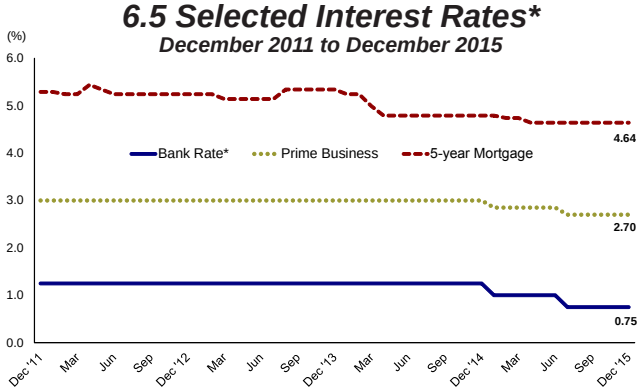


Source: Yukon Bureau of Statistics.

Yukon Real Estate Survey, Third Quarter 2015:
http://www.eco.gov.yk.ca/stats/pdf/real_estate_q315.pdf

6.5 Selected Interest Rates*

December 2011 to December 2015



*Please see table endnotes on page 12.
Source: Statistics Canada. Table 176-0043, CANSIM.

7. Construction

7.1 Yukon Building Permits, Number and Construction Value*

	Total		Residential		Industrial		Government/ Institutional		Commercial	
Year-to-date change	-173 -10.1%	-12,717.7 -9.7%	-189 -13.3%	-10,508.8 -22.5%	3 21.4%	-5,035.3 -86.8%	23 37.7%	7,455.7 16.1%	-10 -4.5%	-4,629.2 -14.7%
	(no.)	($000)	(no.)	($000)	(no.)	($000)	(no.)	($000)	(no.)	($000)
2015 total	**1,548**	**117,743.4**	**1,236**	**36,123.1**	**17**	**769.0**	**84**	**53,899.8**	**211**	**26,951.5**
December	92	2,481.1	65	963.5	0	0.0	4	65.1	23	1,452.5
November (r)	116	10,529.4	90	1,811.9	4	690.0	3	4,428.5	19	3,599.0
October	152	12,204.7	124	4,316.3	0	0.0	6	368.2	22	7,520.2
September	176	9,143.0	148	5,227.6	0	0.0	13	2,224.0	15	1,691.5
August	193	8,459.8	156	2,834.8	11	79.0	14	4,956.8	12	589.1
July	214	35,315.3	167	3,829.7	0	0.0	14	28,059.3	33	3,426.3
June	202	13,520.3	170	5,520.0	1	0.0	6	4,172.8	25	3,827.5
May	150	12,034.7	125	4,303.6	0	0.0	3	5,109.8	22	2,621.4
April	98	4,640.0	85	4,455.3	0	0.0	6	121.4	7	63.3
March	75	1,943.6	58	1,750.1	1	0.0	5	35.5	11	158.0
February	45	2,506.5	27	366.0	0	0.0	6	371.9	12	1,768.6
January	35	4,964.8	21	744.5	0	0.0	4	3,986.4	10	234.0
2014 total	**1,721**	**130,461.1**	**1,425**	**46,632.0**	**14**	**5,804.3**	**61**	**46,444.0**	**221**	**31,580.7**
December	79	8,697.2	63	2,236.9	0	0.0	4	5,288.7	12	1,171.5

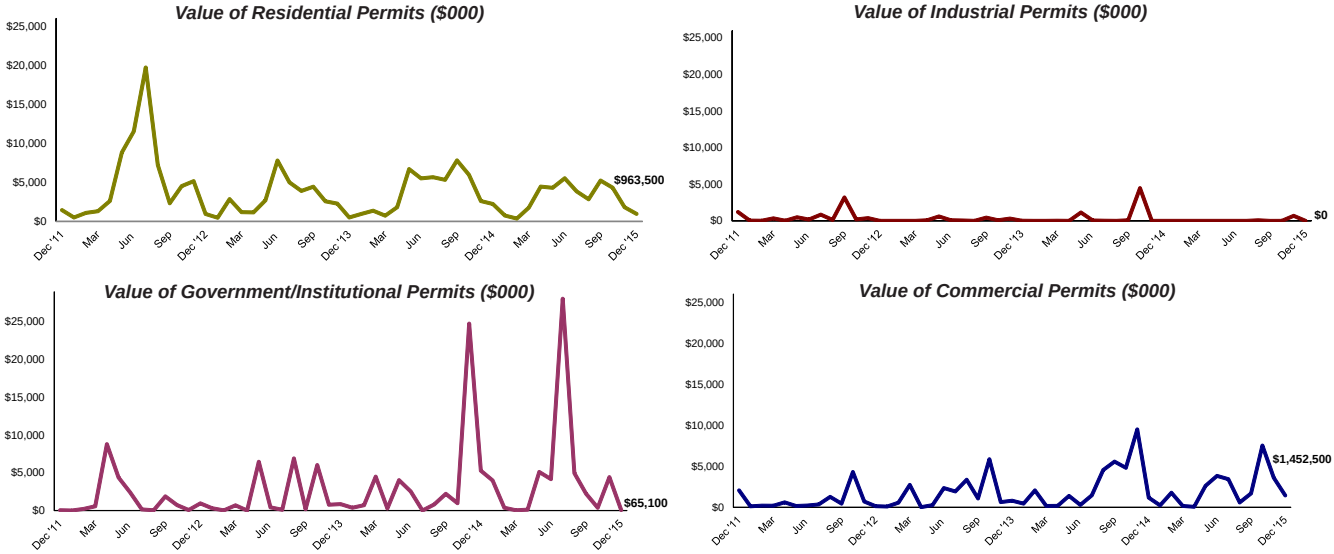
In addition to new dwelling units, residential permits issued include renovations, garages, and additions. The total does not include permits issued for plumbing or stoves.

*Please see table endnotes on page 12. *Sources*: Yukon Community Services and City of Whitehorse.

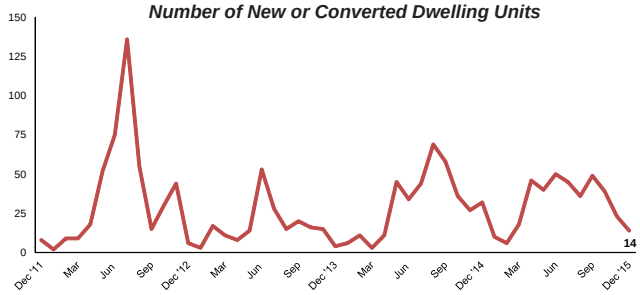
In 2015, a total of 1,548 building permits were issued in Yukon, at a construction value of $117.7 million. The construction value of permits decreased by $12.7 million, or 9.7%, compared to the total value of permits issued in 2014. Of the total construction value of building permits issued in 2015:

- 30.7% was in residential;
- 0.7% was in industrial;
- 45.8% was in government/institutional; and
- 22.9% was in commercial.

7.2 Construction Value of Building Permits*, Yukon, December 2011 to December 2015



7.3 Residential Permits (New or Converted Dwellings Units)*, Yukon, December 2011-2015



Did you know?

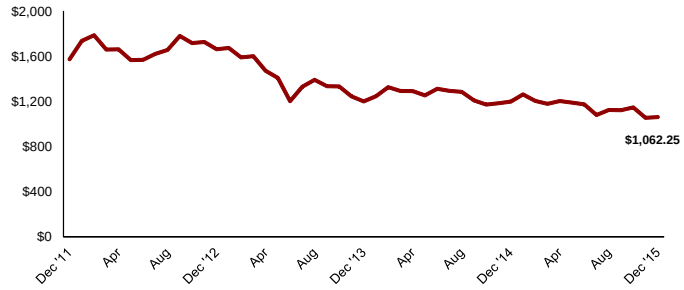
In 2015, the number of residential building permits for new or converted dwelling units in Yukon was 376. The number of permits remained the same as in 2014; however, increased by 172, or 84.3%, compared to 2013 .

Source: Yukon Community Services and City of Whitehorse.
*Please see table endnotes on page 12.

8. Resources

8.1 London Metal Commodity Prices*, December 2011 to December 2015

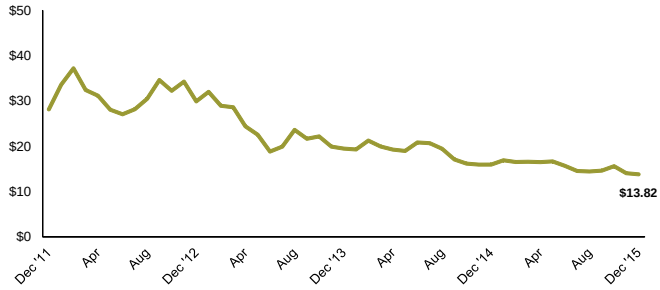
Gold (US$/troy oz.)



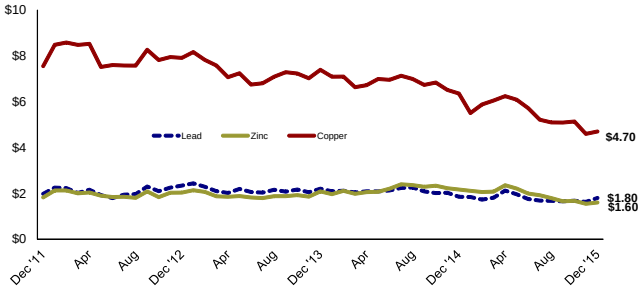
From December 2014 to December 2015, the price of:

- Gold decreased by $137.00, or 11.4%, to $1,062.25 (US) per troy ounce;
- Silver decreased by $2.15, or 13.5%, to $13.82 (US) per troy ounce;
- Lead decreased by $0.05, or 2.8%, to $1.80 (US) per Kg;
- Zinc decreased by $0.57, or 26.2%, to $1.60 (US) per Kg; and
- Copper decreased by $1.66, or 26.1%, to $4.70 (US) per Kg.

Silver (US$/troy oz.)



Lead, Zinc & Copper (US$/kg)



*Please see table endnotes on page 12.

Source: London Bullion Market Association and London Metal Exchange.

Energy Facts, 2013: http://www.eco.gov.yk.ca/stats/pdf/energy_2013.pdf

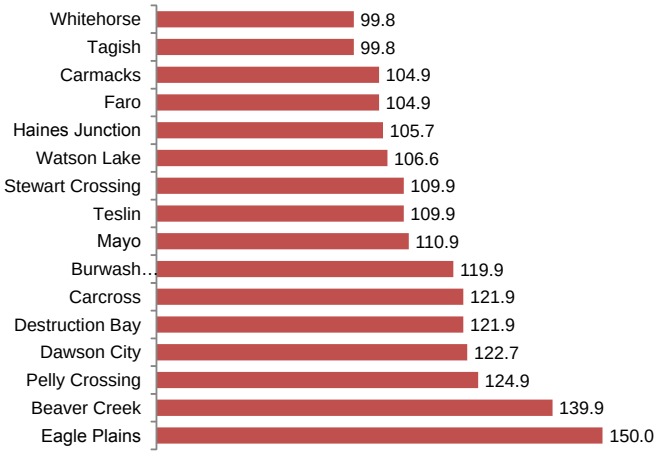
8.2 Electricity Generated

		Total	Hydro	Internal Combustion	Wind	Steam
Year-to-date change		20,423 6.0%	17,646 5.5%	1,915 10.8%	… …	… …
			(MWh)			
2015						
October		37,225	34,931	2,042	58	194
September		32,616	30,410	2,025	58	123
August	(r)	31,030	29,158	1,765	95	12
July		30,099	28,512	1,507	80	..
June	(r)	32,186	29,994	1,785	97	310
May		30,257	28,485	1,739	33	…
April		36,197	34,335	1,735	127	…
March		41,570	39,603	1,904	63	…
February		43,286	40,743	2,507	36	…
January		45,789	43,109	2,680	..	…
2014 total		**427,969**	**404,937**	**22,601**	**…**	**…**
December		49,527	47,077	2,450	..	…
November		38,610	36,226	2,377	7	…
October		36,866	34,928	1,882	56	…

Source: Statistics Canada. Table 127-0002, CANSIM.

8.3 Regular Self-Serve Gasoline

Average December 22nd 2015 Prices (cents per litre)



Source: Yukon Bureau of Statistics.

Yukon Fuel Survey, December 2015:
http://www.eco.gov.yk.ca/stats/pdf/fuel_dec15.pdf

Did you know?

In 2015, the lowest annual average for regular self-serve motor fuel price in Yukon was in Whitehorse at 112.3¢; the highest annual average was in Eagle Plains at 153.0¢ - a difference of 40.7¢ or 36.2%.

9. Transportation

9.1 Aircraft Movements*, Yukon Communities

	Total	Beaver Creek	Burwash Landing	Dawson City	Faro	Mayo	Old Crow	Teslin	Watson Lake	Whitehorse
Year-to-date	…	-98	526	698	-21	689	-102	3	204	…
change	…	-32.7%	35.9%	11.7%	-2.6%	30.7%	-8.0%	1.3%	5.7%	…
					(no. of movements)					
2015										
November	..	4	14	271	29	19	77	0	79	..
October	2,606	19	63	253	56	56	88	8	290	1,773
September	4,379	37	285	754	281	343	169	39	505	1,966
August	4,809	47	458	853	85	421	89	45	648	2,163
July	5,555	28	524	871	101	577	142	26	849	2,437
June	6,484	50	265	1,450	121	1,039	201	29	371	2,958
May	5,398	12	109	906	35	384	74	49	454	3,375
April	3,044	0	132	428	11	27	81	11	188	2,166
March	2,730	3	117	465	25	14	117	9	136	1,844
February	2,046	1	15	252	14	31	84	6	168	1,475
January	1,337	1	11	136	19	20	48	9	99	994
2014 total	**39,089**	**303**	**1,485**	**6,077**	**820**	**2,251**	**1,405**	**230**	**3,681**	**22,837**
December	1,715	3	18	136	22	9	133	2	98	1,294
November	2,217	1	59	375	26	26	69	4	126	1,531

*Please see table endnotes on page 12. *Sources*: Yukon Highways and Public Works - Aviation Branch, and Statistics Canada. Table 401-0007, CANSIM.

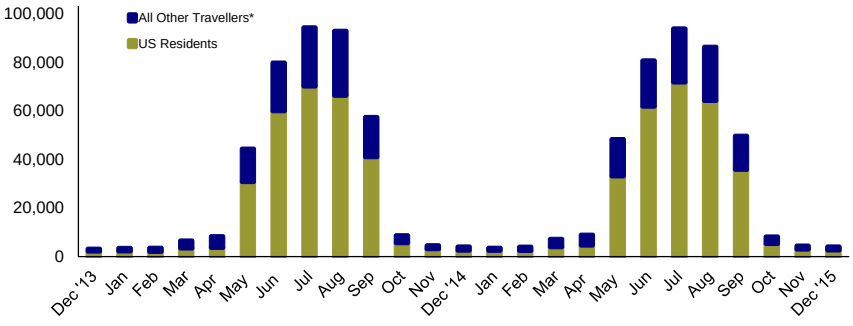
9.2 Travellers Entering Yukon by Land through Canada Border Services Ports of Entry*

	Total	Yukon Residents	Other Canadians	US Residents	Other Foreign Travellers
Year-to-date	-8,764	-6,483	-2,700	188	231
change	-2.1%	-14.2%	-8.9%	0.1%	0.6%
2015 total	**399,340**	**39,047**	**27,780**	**292,557**	**39,956**
December	4,020	1,201	98	2,707	14
November	4,439	1,068	214	3,115	42
October	8,132	2,221	341	5,381	189
September	49,709	3,721	3,577	35,974	6,437
August	86,388	6,455	6,720	64,362	8,851
July	93,941	5,208	7,497	71,930	9,306
June	80,747	5,146	5,474	62,023	8,104
May	48,331	5,965	2,739	33,215	6,412
April	8,898	3,462	518	4,722	196
March	7,228	2,595	304	4,065	264
February	3,949	1,138	224	2,501	86
January	3,558	867	74	2,562	55
2014 total	**408,104**	**45,530**	**30,480**	**292,369**	**39,725**
December	4,050	1,187	153	2,671	39

*Please see table endnotes on page 12. *Source*: Yukon Bureau of Statistics.

Of the 399,340 travellers who entered Yukon by land through Canada Border Services (CBS) ports of entry in 2015:

- 70.4% entered through Fraser (Skagway, AK to Carcross);
- 17.2% through Beaver Creek;
- 9.0% through Pleasant Camp (Haines, AK to Haines Junction); and
- 3.4% through Little Gold (Chicken, AK to Dawson City).



In 2015, travellers who entered Yukon by land through CBS ports of entry crossed by the following means of transportation:

- 174,750 by automobile (43.8%);
- 138,284 by bus (34.6%);
- 74,025 by train (18.5%);
- 10,279 by truck (2.6%); and
- 2,002 by cycle or as pedestrians (0.5%).

Endnotes

1. Population

1.1 & 1.2 Population counts are as of the last day of given month. Due to rounding, the sum of columns may not equal total given.
1.2 *Other* includes communities such as Champagne, Elsa, Johnson's Crossing, Keno City, Stewart Crossing & Swift River.
1.4 Migration estimates are based on both international and interprovincial movement into and out of Yukon, as well as returning emigrants, temporary emigrants and non-permanent residents.

2. Employment

2.1 Yukon figures are rounded to the nearest hundred; because of this, figures may not sum to totals. Monthly figures from the Labour Force Survey are three-month moving averages based on 92% coverage and are seasonally adjusted, which refers to the technique of adjusting raw figures to remove seasonal movements; however, annual figures are unadjusted.
2.2 Yukon, Northwest Territories and Nunavut are not included in the Canadian unemployment rate.
2.3 *Public Employees* are those who work for: a government at the federal, provincial, territorial, municipal, First Nations or other Aboriginal government level; a government service or agency; a Crown corporation; or a funded establishment such as schools (including colleges/universities), hospitals and public libraries. Yukon figures are rounded to the nearest hundred; because of this, figures may not sum to totals. All monthly Yukon figures from the Labour Force Survey are three-month moving averages based on 92% coverage.
2.4 & 2.5 Unclassified businesses' employees are excluded, as well as those enterprises primarily involved in agriculture, fishing and trapping, private household services, religious organizations, and military personnel of defence services.
2.6 *All types* includes people receiving regular, work-sharing, fishing, and special benefits. *Regular* benefits include people receiving regular income support benefits, whether or not they are participating in one of three employment benefit programs, namely Skills Development Program, Job Creation Partnerships Program, and Self-employment Program. *Special* benefits includes people receiving sickness, maternity, parental, and compassionate care benefits.
2.7 A value of "0" represents one of the following: 1) value is actually zero; 2) value may be rounded to zero; or 3) value is more than zero but is suppressed for confidentiality reasons. Communities are displayed by census subdivisions (2011 Census boundaries). For some communities, census subdivision boundaries may not align with municipal boundaries.

3. Consumer Prices

3.1 & 3.2 The Consumer Price Index (CPI) measures price changes over time but should not be used to compare costs between provinces and cities.

4. Trade

4.2 *Total* includes additional North American Industry Classifications (NAICS) data which are not displayed, including: Motor Vehicles and Parts Dealers; Clothing and Clothing Accessory Stores; Sporting Goods, Hobby, Book and Music Stores; General Merchandise Stores; and Miscellaneous Store Retailers.

5. Rental Units

5.1, 5.2 & 5.3 These figures are derived from the Yukon Rent Survey which, as of 2014, is now conducted on a semi-annual basis in April and October. Prior to 2014, the survey was conducted on a quarterly basis and only included buildings with 3 or more rental units (4 or more rental units prior to 2012). Although the methodology of the 2014 survey includes buildings with 1 or more rental units (displayed in 5.1), the Yukon Bureau of Statistics continues to generate data for buildings with 3 or more rental units for historical comparisons (displayed in 5.2 and 5.3).

6. Real Estate

6.1 *Total* includes family lots and multiple-residential sales, which are generally too low to release due to confidentiality requirements, and non-residential sales (commercial and industrial properties). For further explanation, contact Yukon Bureau of Statistics.
6.3 *Total* includes family lots and multiple-residential sales, but excludes non-residential sales (commercial and industrial properties).
6.5 *Bank Rate* figures are from the last Wednesday of the month.

7. Construction

7.1 Rounded data may not sum to totals.
7.1, 7.2 & 7.3 Yukon totals, beginning with January 2013, are calculated by the Yukon Bureau of Statistics, based on building permit data received from Yukon Community Services and City of Whitehorse. Yukon data prior to January 2013 is exclusively from Yukon Community Services.
7.3 Does not include new or converted dwelling units in commercial or industrial properties.

8. Resources

8.1 All prices are in US dollars. Prices of gold and silver are a.m. fix prices at month-end. Prices of lead, zinc and copper are London Metal Exchange "cash seller" prices at month-end.

9. Transportation

9.1 As of September 2012, all aircraft movement figures, with the exception of Whitehorse, are now received from Yukon Highways and Public Works, Aviation Branch. As such, data published since September 2012 cannot be compared to figures in earlier issues of the Yukon Monthly Statistical Review.
9.2 This table only includes persons entering Yukon by land at Canada Border Services Agency ports of entry. Travellers entering Yukon through all other roadways are excluded, as are persons entering by air and water. Although there is no permanent Canada Border Services land port of entry in Dawson City, special annual international events between Yukon and Alaska, namely Yukon Quest and Trek Over the Top, require participants to cross the border by land. For border crossing purposes, participants in Yukon Quest are counted as pedestrians while participants in Trek Over the Top are counted as crossings by automobile. *Please note:* Fraser and Pleasant Camp border crossings are included in totals even though there is the possibility that these persons may never physically enter Yukon.

Symbols & Abbreviations

..	not available	QI	January 1 to March 31
...	not appropriate/applicable	QII	April 1 to June 30
x	suppressed for confidentiality	QIII	July 1 to September 30
F	too unreliable to be published	QIV	October 1 to December 31
(p)	preliminary	(US)	US dollars
(r)	revised	(MWh)	megawatt-hour

Next release: February 11th, 2016

Yukon
Executive Council Office
Bureau of Statistics

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Yukon Economic Outlook

October 2015

Yukon
Economic Development

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CONTENTS

Economic Forecasting and Risk 2

Highlights for 2014 3

Forecast for 2015 3

Forecast for 2016 4

Global, U.S. and Canadian Outlook 4

Recent Performance and Short-term Outlook 7

Part A: Economic Indicators 7

- Gross Domestic Product (GDP) 7
- Population 8
- Labour Market 9
- Consumer Price Index 11

Part B: Economic Sectors 12

- Mining 12
- Oil & Gas 15
- Tourism 17
- Construction 19
- Retail Trade 20

Key Economic Indicators 22

Data Sources for Key Economic Indicators Table 23

Endnotes 24

ECONOMIC FORECASTING AND RISK

This forecast examines near-term expectations for Yukon's economy, focusing on the anticipated performance of key economic indicators and sectors.

Like all forecasts, the results are dependent on the information available at the time the forecast is completed and the key assumptions incorporated in the forecast. Careful consideration was taken when developing the key assumptions for the current forecast, such as the level and timing of mining development activity, estimates of annual mineral production and the amount of construction spending. Even with best efforts to include appropriate assumptions there is a degree of risk and uncertainty associated with the assumptions and ultimately the forecast results. Key examples of potential risks to the forecast are noted below:

- Global Economic Performance – The performance of Yukon's economy is tied to the performance of other key economies, such as the U.S. and China, and to the global economy as a whole. Demand for Yukon goods and services, including minerals and local tourism activities, can depend very much on what is happening outside of the territory.

- Metal Prices – Metal prices are a key determinant of mining activity (exploration, development and production) and are determined on the global market. Projections from a variety of forecasters were considered in preparing this forecast.

- Energy Prices – Energy prices are also determined on the world market. For Yukon, the price of oil can influence economic activity particularly in how it can impact mining sector activity (fuel for project operations and equipment) as well as impact tourism activities (fuel for travelers' vehicles). The price of fuel also influences the cost of Yukon construction and also the cost of goods in Yukon as the majority of goods purchased locally are transported from outside the territory.

- Exchange Rates – The value of the Canadian dollar versus other currencies can impact spending decisions by tourists and also investment decisions by resource-based companies, such as those that export minerals. A strengthening or weakening dollar may affect this forecast.

- Interest Rates – A potential threat to economic growth in Yukon, and in Canada as a whole, is a significant increase in interest rates. The cost of borrowing in Canada has been very low for a prolonged period, with the Bank of Canada's daily overnight target for the bank rate not exceeding 1.0 per cent since January 19, 2009. This forecast assumes that interest rates will remain relatively low for the foreseeable future.

Circumstances that impact the assumptions of a forecast can change quickly, and forecasts can become dated. Yukon is a prime example of a small economy that can be rapidly influenced by outside events. Information in this forecast is current to October 9, 2015.

HIGHLIGHTS FOR 2014

- Preliminary estimates from Statistics Canada indicate that Yukon's real Gross Domestic Product (GDP) contracted for a second consecutive year, down by 1.2 per cent in 2014 to $2.183 billion.
    - The primary contributor to the contraction was an annual decline in mineral production, the result of weak mineral prices and an ongoing slowdown in the global mining industry.
- Yukon's June 2014 population of 37,251 was 1.7 per cent higher than the June 2013 figure of 36,634, marking the 11th consecutive year of growth.
- Another strong year for Yukon's labour force:
    - Total employment averaged 19,800, up 500 from 2013.
    - The labour force averaged 20,700, up 300 from 2013.
    - The unemployment rate averaged 4.3 per cent, down from 5.4 per cent in 2013.
- Retail sales increased to $660.9 million, up 1.3 per cent from 2013.
- Border crossings fell by 2.4 per cent, to 341,707.
    - Total visitation, as measured by the Department of Tourism's Yukon Visitor Tracking Program, was estimated at 443,300, down 2.2 per cent from 453,200 in 2013.
- At $130.5 million, the value of building permits in 2014 was up from $78.9 million in 2013.
    - Permit value increased in all areas, with significant increases noted in government/institutional permits and commercial permits.
- Modest increase in the Consumer Price Index (CPI) was experienced in Whitehorse, up 1.3 per cent in 2014.

FORECAST FOR 2015

- Real GDP is expected to contract for the third consecutive year, decreasing by about six per cent.
    - A significant decline in mineral production is the biggest contributor to the contraction.
- Modest population growth is expected, with gains of 0.6 per cent in 2015.
- A weaker economy to negatively impact the performance of Yukon's labour market.
    - Employment is expected to decline in 2015, contributing to an increase in the unemployment rate to 6.7 per cent.
- Retail sales are expected to fall to $644 million, down from about $661 million in 2014.
- Border crossings are expected to grow about 1.5 per cent to 347,000.
- A record Government of Yukon capital budget is expected to contribute to gains in total value of building permits, increasing to $135 million.
- Overall price deflation in 2015, with the Whitehorse CPI down by 0.6 per cent.

FORECAST FOR 2016

- The forecast for real GDP in 2016 is for a return to growth (3.5 per cent).
  - Growth in 2016 is primarily related to an expected increase in mineral production at the Minto mine with the beginning of stripping of the Minto North pit.
- Population growth of 1.0 per cent to bring the annual population figure to over 37,800.
- Employment is expected to decline slightly to 19,300, while the labour force is expected to increase slightly to 20,900. The unemployment rate in 2016 is expected to rise to 7.5 per cent.
- Retail sales are expected to return to the 2014 level, growing to $662 million.
- Continued growth in border crossings, increasing to over 352,000.
- Building permit value is expected to be similar to the 2015 level.
- Following deflation in 2015, the Whitehorse CPI is expected to grow by 2.2 per cent in 2016.

GLOBAL, U.S. AND CANADIAN OUTLOOK

The October 2015 *World Economic Outlook* prepared by the International Monetary Fund (IMF) notes that preliminary data for the first half of 2015 has global growth at 2.9 per cent, about 0.3 percentage points weaker than IMF's April forecast.[1]

The IMF is now forecasting global growth of 3.1 per cent for 2015 as a whole, slightly lower than in 2014, and below the IMF's July 2015 forecast of 3.3 per cent. Looking to 2016, the IMF is projecting stronger global growth of 3.6 per cent, down from a forecast of 3.8 per cent in July 2015.

The October Outlook notes that growth prospects across countries and regions remain uneven. Relative to last year, the recovery in advanced economies is expected to pick up slightly, while activity in emerging market and developing economies is projected to slow for the fifth year in a row, primarily reflecting weaker prospects for some large emerging market economies and oil-exporting countries.[2]

While overall, growth rates for emerging market and developing economies are expected to continue to exceed those of advanced economies in the near-term, there is more downside risk associated with expectations for emerging markets, and the gap in growth rates between advanced economies such as the United States and the euro area continues to close.

Emerging market and developing economies registered growth of 4.6 per cent in 2014 and are forecast to grow by 4.0 per cent and 4.5 per cent in 2015 and 2016, respectively. China and India will continue to lead the way for emerging market countries. Following estimated growth of 7.3 per cent in 2014, China's economy is expected to grow 6.8 per cent and 6.3 per cent over the next two years. Following growth of 7.3 per cent in 2014, India is forecast to post gains of 7.3 per cent in 2015 before growth of 7.5 per cent in 2016.

Following estimated growth of 1.8 per cent in 2014, advanced economies are forecast to grow by 2.0 per cent in 2015 and 2.2 per cent in 2016. U.S. growth is expected to remain the primary driver of growth in advanced economies with U.S. growth rates in both 2015 and 2016 exceeding the overall growth rates of advanced economies.

As was the case in 2014, record snowfalls and unseasonably cold weather hampered U.S. economic activity early in 2015. Estimates have real GDP for the United States contracting by an annualized rate of 0.6 per cent in the first quarter of 2015.[3] While down, the estimated decline was lower than what many forecasters were expecting. Also like 2014, weak first quarter performance was followed by strong gains with estimated GDP growth of 3.7 per cent in the second quarter of 2015.[4] Performance is expected to remain strong in the remainder of 2015, with higher wages and an improving labour market expected to contribute to higher consumer spending. The IMF is forecasting that growth of 2.4 per cent in 2014 will be followed up by gains of 2.6 per cent in 2015 and 2.8 per cent in 2016.

The persistence of low resource prices, particularly for oil, greatly impacted Canada's economic performance in the first half of 2015. Following a 0.2 per cent decline in real GDP in the first quarter of 2015, the first contraction since 2011, a further 0.1 per cent contraction was noted in the second quarter.

Low oil prices and weak mineral prices are expected to continue to weigh on Canadian exports and business investment. Following growth of 2.4 per cent in 2014, the latest IMF outlook is calling for growth of 1.0 per cent and 1.7 per cent in 2015 and 2016, respectively. The current IMF forecasts for 2015 and 2016 represent significant downgrades from the July forecasts of 1.5 per cent for 2015 and 2.1 per cent for 2016.

The Bank of Canada is also forecasting weak economic growth for Canada in 2015 with stronger gains in 2016. The July 2015 *Monetary Policy Report* noted real GDP growth forecasts of just over one per cent for 2015 and about two and half per cent for 2016.[5] The July report noted that the Canadian economy stalled in the first quarter of 2015, due to falling and weaker oil prices. The Bank of Canada has indicated that it views the oil price shock as front-loaded and that it expected Canadian growth prospects to improve over the remainder of 2015.

As noted, weaker resource prices negatively impacted Canada's economic performance in the first half of 2015. Resource extraction activities continue to be a significant contributor to Canada's economy, and growth prospects for the country are inherently linked to the performance of commodity prices. The weakness in mineral prices that began in 2014 has continued into 2015 with key commodities such as gold, silver and copper reaching lows not seen in five to six years. Concerns about global demand, especially declining demand from China, as well as increases in supply that followed the most recent mining investment boom, continue to contribute to uncertainty about a recovery in mineral prices.

After increasing in the spring from their January trough, oil prices have declined sharply, reflecting resilient supply, the prospects of higher output following the nuclear deal with the Islamic Republic of Iran, and weaker global demand.[6] Oil and natural gas prices are expected to remain weak in the near-term. Part of the downward pressure on oil prices has been coming from high U.S. commercial crude oil inventories which have been increasing in recent years and at near record levels during parts of 2015. Uncertain Chinese growth also hangs over the outlook for oil prices in the near-term. TD Economics' August 2015 Commodity Price Report

notes an expectation of increasing oil prices in the second half of 2015, but notes that prices are unlikely to get back above the US$60 per barrel mark until 2016.[7]

After posting the highest annual average since 2010 in 2014, natural gas prices are expected to fall well below levels recorded last year. Higher inventories are putting downward pressure on natural gas prices in 2015. The August Commodity Price Report from TD Economics has natural gas prices averaging below US$3.00 in 2015, down over 30 per cent from 2014. Prices are expected to increase to over US$3.00 in 2016, but remain below the level noted in 2014.[8]

Future growth prospects for Canada are also tied to interest rates. After being pegged at 1.0 per cent since September 2010, the Bank of Canada surprised most analysts in January 2015 when it lowered the overnight rate to 0.75 per cent, and then lowered it further to 0.5 per cent in July 2015. Canadian interest rates are expected to remain low throughout 2015 and into 2016. The Bank of Canada maintained the overnight rate at its September rate announcement citing ongoing adjustments in Canada's resource sector and increasing uncertainty about growth prospects for China and other emerging-market economies.[9] The next interest rate announcement for the Bank of Canada is scheduled for October 21, 2015.

Outlook for Global, U.S. and Canadian Economies

According to the IMF's World Economic Outlook (October 2015):

- Global Growth: 3.1 per cent (2015) and 3.6 per cent (2016);
- U.S. Growth: 2.6 per cent (2015) and 2.8 per cent (2016); and
- Canadian Growth: 1.0 per cent (2015) and 1.7 per cent (2016).

RECENT PERFORMANCE AND SHORT-TERM OUTLOOK

PART A: ECONOMIC INDICATORS

GROSS DOMESTIC PRODUCT (GDP)

Preliminary data released by Statistics Canada in April 2015 estimates that Yukon's real GDP declined by 1.2 per cent in 2014, representing the second consecutive year of contraction.

Among the provinces and territories, only Yukon and Newfoundland and Labrador (-2.9 per cent) are estimated to have experienced a contraction in real GDP in 2014. Prior to 2013, Yukon's real GDP had posted nine straight years of growth.

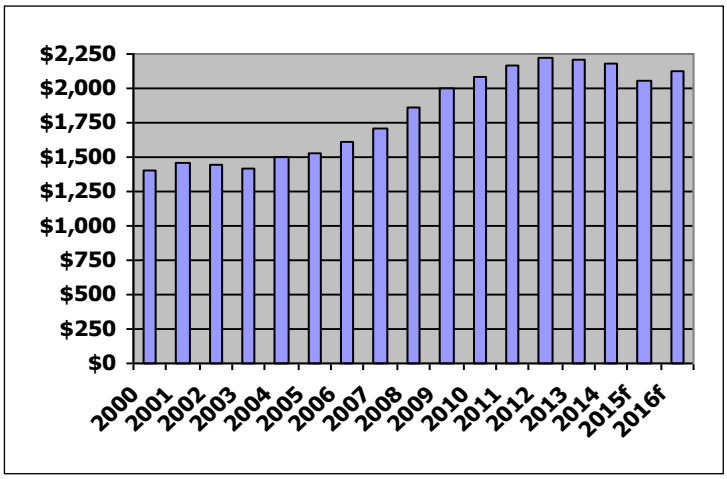


Figure 1 – Real GDP by Industry (2007$ millions)
Source: Department of Economic Development; Statistics Canada

Figure 3 illustrates the notable increase in the contribution of mining related activities over the last decade. While remaining a significant contributor to Yukon's economy, at 18 per cent of total real GDP in 2014 (preliminary data), GDP from mining, quarrying and oil & gas extraction was down from an estimated contribution of over 19 per cent in 2013. Lower mineral production was the primary contributor to the decline in the contribution of mining activities in 2014.

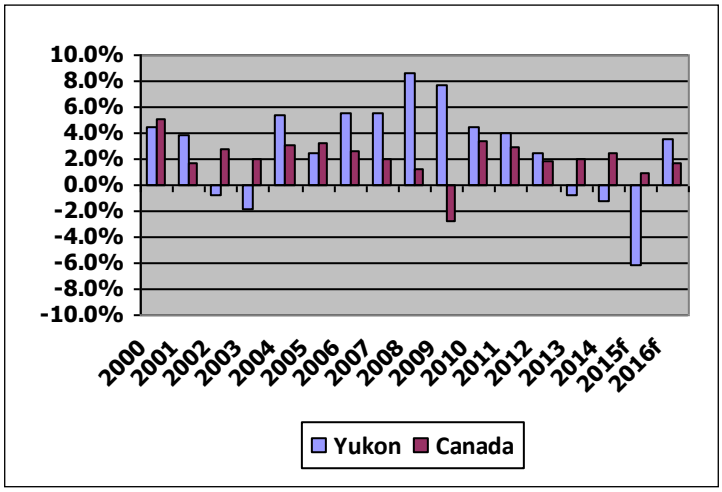


Figure 2 – Real GDP by Expenditure – Annual Growth Rate
Source: Department of Economic Development; Statistics Canada; International Monetary Fund

The current outlook is for a further contraction of Yukon's real GDP in 2015. Weakness related to the mining sector will once again weigh on Yukon's economy, with a substantial decline in mineral production expected in 2015. Suspension of production from the Wolverine mine in January 2015 and the strong likelihood that Bellekeno mine production will not resume this year are impacting the 2015 mineral production forecast. The loss of production from the Wolverine mine is ultimately the largest contributor to the downgrade in the production forecast in 2015. While there is some upside risk to the 2015 forecast related to

capital spending and the performance of the tourism sector, expectations are for Yukon's real GDP to fall by about six per cent to $2.05 billion in 2015.

A return to growth is expected in 2016, with growth stemming predominantly from expectations of increased mineral production. With the inclusion of production from its Minto North pit, Minto production is expected to see considerable gains next year.

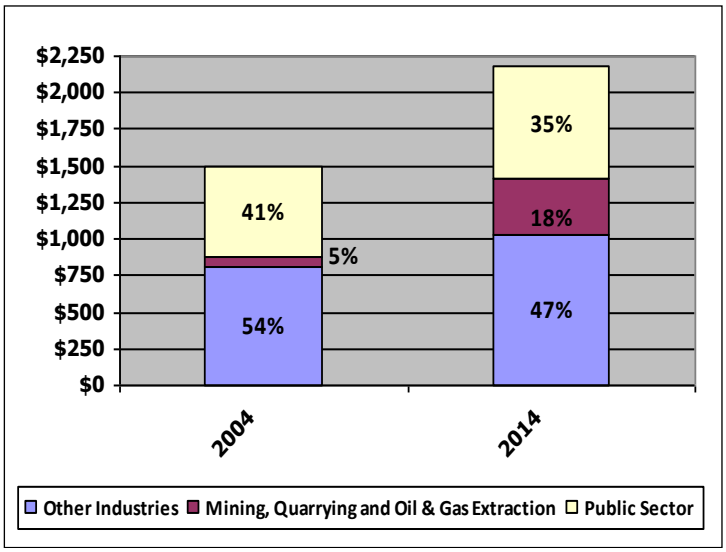


Figure 3 – Real *GDP* by Industry
Source: Department of Economic Development; Statistics Canada

Overall, Yukon's real GDP is forecast to grow 3.5 per cent in 2016. Ultimately, the performance of Yukon's economy is linked to the performance of the global mineral industry, and the performance of mineral prices. If mineral prices remain depressed, Yukon's mining sector could be negatively impacted, which would weigh on Yukon growth prospects for 2016 and beyond.

Outlook for GDP

- Preliminary estimates from Statistics Canada note a decline in Yukon's real GDP of 1.2 per cent in 2014.
- A stronger contraction in real GDP is anticipated in 2015 with a forecasted decline of about six per cent.
- While subject to downward risk related to the performance of mineral prices, growth in mineral production is expected to contribute to real GDP gains in 2016, with growth of 3.5 per cent.

POPULATION

Population is estimated to have grown for the 11th consecutive year in 2014. Average annual population in 2014 was 37,224, the highest annual population ever recorded[10], and up 1.5 per cent from 2013.

Yukon's population as of June 2014 was estimated at 37,251, a record high, and an increase of over 600, or 1.7 per cent, compared to June 2013 (36,634).

The City of Whitehorse – at 28,713 – accounted for over 77 per cent of Yukon's total population in June 2014. Whitehorse population gains have accounted for the majority of overall population growth over the current period of growth, with its role as Yukon's primary goods and services hub a major factor for this recent growth.

Modest population gains are expected in the near-term. The current forecast is for population gains of 0.6 per cent in 2015 and 1.0 per cent in 2016. Continued weakness in the local mining sector, and the Yukon economy in general does present some downside risk to the outlook for continued population gains.

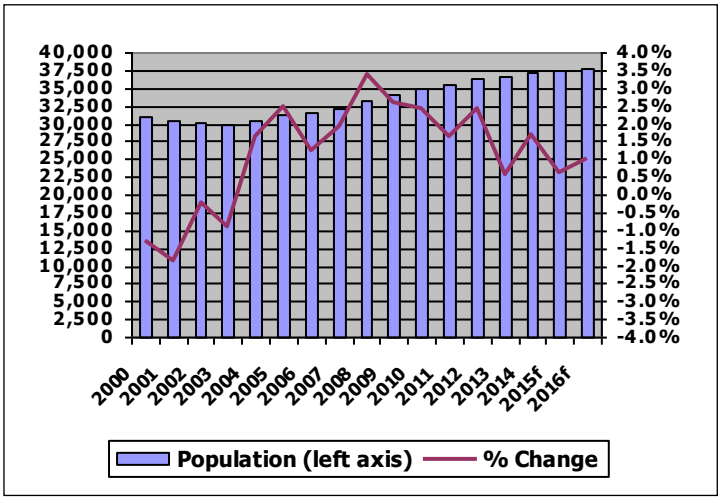


Figure 4 – Yukon Population (June)[1]

Source: Department of Economic Development; Yukon Bureau of Statistics

Outlook for Population

- Following growth of 1.7 per cent in 2014, modest gains are expected in the near-term with growth of 0.6 per cent in 2015 and 1.0 per cent in 2016.

LABOUR MARKET

Yukon's labour market has performed well in recent years, with the size of the labour force and the number of people employed reaching record highs. Gains in employment in Yukon have also translated into relatively low levels of unemployment in recent years with Yukon's unemployment rate amongst the lowest in the country.

Yukon's annual unemployment rate has trended downward over the last 10 years. For the period 2004 to 2014, Yukon's unemployment rate averaged below six per cent, lower than the national average of seven per cent reported for the same period.

Yukon's weaker economic performance in the last couple of years has not been reflected in the performance of key labour market indicators. Monthly data from Statistics Canada's Labour Force Survey for 2014 reported that total employment averaged 19,800 in 2014, up 500 from 19,300 in 2013. Average annual employment in 2014 represented a record high for employment.

Yukon's labour force averaged 20,700 in 2014, up from 20,400 in 2013. While falling short of the record 20,800 reported in 2012, the average annual figure for the labour force in 2014 remained well above the historic average and was indicative of a healthy local labour market.

With employment growth outpacing the growth in labour force, Yukon's average unemployment rate fell to 4.3 per cent in 2014, down from 5.4 per cent in 2013. The 2014 unemployment rate was among the lowest in the country and represents the lowest annual unemployment rate ever recorded for Yukon.

A weaker economic environment has impacted the year-to-date performance of Yukon's labour market. In the first nine months of 2015 employment has averaged 19,422, down 2.6 per cent from 19,944 in the same period of 2014. Yukon's total labour force has also declined year-to-date, averaging 20,711 to September 2015, down 0.6 per cent from the same period of 2014. Weaker employment in the first nine months of 2015 has contributed to a notable increase in Yukon's unemployment rate, increasing from an average of 4.3 per cent in 2014 to 6.4 per cent in 2015.

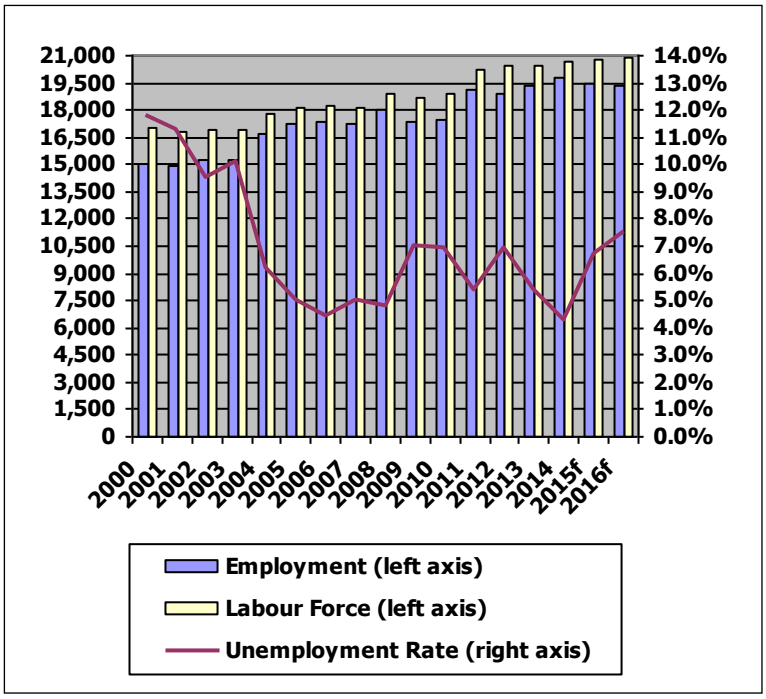


Figure 5 – Key Labour Market Statistics
Source: Department of Economic Development; Statistics Canada

For the entirety of 2015 employment is expected to decline 2.0 per cent to 19,400 with the labour force forecast to note a slight uptick to 20,800. The current forecast now has Yukon's unemployment rate increasing to 6.7 per cent in 2015, up from 4.3 per cent in 2014.

Even with Yukon's GDP expected to grow in 2016, Yukon's labour market is expected to continue to underperform. With much of the GDP growth related to an increase in mineral production from an already operating mine, there is an expectation of little impact on Yukon's labour market. Employment is expected to see a further decline of 0.4 per cent in 2016 and average 19,300, with the average labour force increasing slightly to 20,900. A further increase in the unemployment rate is expected, increasing to 7.5 per cent in 2016.

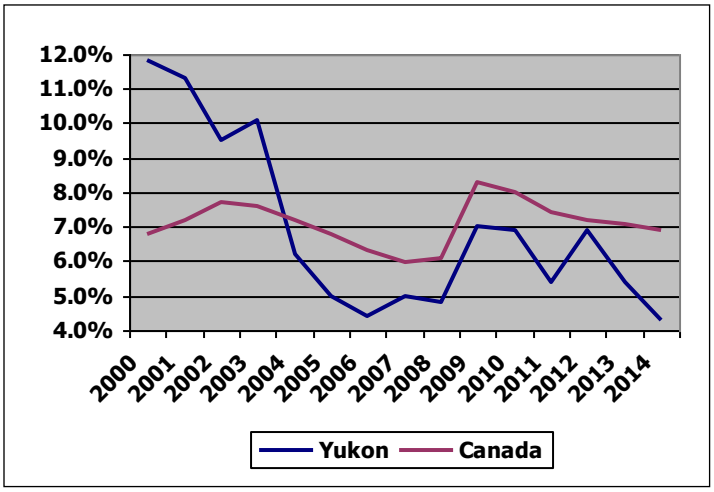


Figure 6 – Unemployment Rate – Yukon vs. Canada
Source: Department of Economic Development; Statistics Canada

Outlook for the Labour Market

- Weaker economic performance is likely to be reflected in near-term performance of the labour market.
  - Annual average employment is expected to decline in both 2015 and 2016.
  - Annual average labour force expected to increase modestly in both 2015 and 2016.
  - Yukon's unemployment rate in 2015 and 2016 is expected to increase, with the average unemployment rate exceeding seven per cent in 2016 for the first time since 2012.

CONSUMER PRICE INDEX

Inflation in Whitehorse, as measured by the change in Whitehorse Consumer Price Index (CPI)[11], has been low in recent years. For the period 2000 to 2014, the annual change in Whitehorse CPI averaged about 1.8 per cent, below the 2.0 per cent in Canada for the same timeframe.

Growth of Whitehorse's CPI in 2014 of 1.3 per cent, was the lowest annual growth rate recorded since 2010, and below the national growth rate of 2.0 per cent for 2014. Lower oil prices created drag on gasoline prices in 2014, with Whitehorse gasoline prices down 0.7 per cent from 2013. Lower gasoline prices also dampened growth of the Transportation component of the Whitehorse CPI, with growth of only 0.9 per cent in 2014.

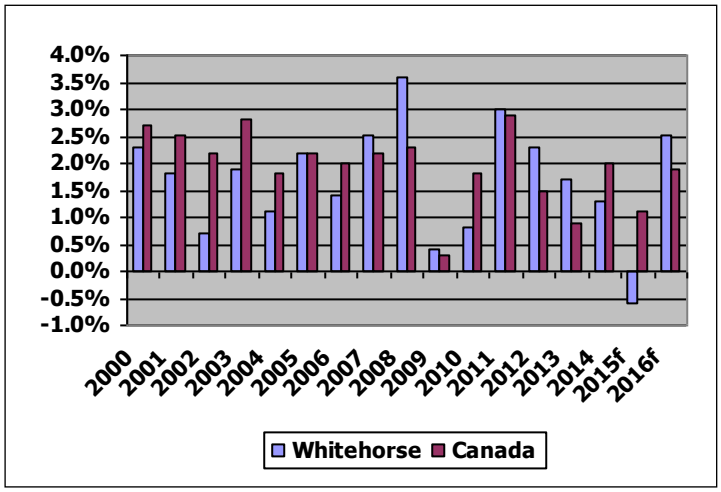


Figure 7 – Change in Consumer Price Index: Whitehorse vs. Canada
Source: Department of Economic Development; Statistics Canada; Bank of Canada[1]

Among other major components of CPI, Recreation and Education and Reading (-2.6 per cent) and Clothing and Footwear (-0.4 per cent) were noted as recording year-over-year declines in 2014.

Notable price increases in 2014 were noted in Food (3.2 per cent), Alcoholic Beverages and Tobacco Products (2.7 per cent) and Shelter (2.6 per cent). Growth of 1.3 per cent in Health and Personal Care matched the overall rate of growth in Yukon's CPI, while estimated growth of 0.7 per cent for Household Operations, Furnishings and Equipment fell below the overall change in the Whitehorse CPI.

Average consumer prices are down on a year-to-date basis with average Whitehorse CPI in the first eight months of 2015 down 0.6 per cent versus the same period of 2014. By comparison, the average Whitehorse CPI in the first eight months of 2014 was 1.7 per cent higher than in the same period of 2013. Lower fuel prices in 2015 are responsible for much of the year-to-date deflation in the overall price level.

Based on the year-to-date deflation and a less than robust outlook for oil prices, average Whitehorse CPI in 2015 is now expected to fall 0.6 per cent. An improved outlook for the local economy and for oil prices should see a return to growth for the Whitehorse CPI in 2016, increasing by 2.2 per cent.

Outlook for CPI

- Following estimated Whitehorse CPI growth of 1.3 per cent for 2014, the Whitehorse CPI is expected to fall by 0.6 per cent in 2015 before growing by 2.2 per cent in 2016.

PART B: ECONOMIC SECTORS

MINING

While mining related activities remain a prominent contributor to Yukon's economy, estimated at 18 per cent of annual preliminary real GDP in 2014 (Figure 3), lower mineral prices and a slowdown in the global mining industry are negatively impacting the performance of Yukon's mining sector.

While Yukon's world-class geology does position the territory favorably for further mineral development, weak mineral prices and an underperforming global mining industry are expected to continue to weigh on Yukon's mining sector in the near-term, creating uncertainty for exploration, development and production prospects.

MINERAL EXPLORATION

Following record expenditures in 2011, mineral exploration and deposit appraisal expenditures[12] declined in both 2012 and 2013. Natural Resources Canada's (NRCAN) latest *Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures* estimates that exploration spending grew slightly to $107 million in 2014 with exploration activities related to the Selwyn project accounting for much of the total.

Estimates from the Department of Energy, Mines & Resources (EMR) have exploration expenditures of about $80 million in 2014, up from EMR's estimate of $45 million in 2013. EMR exploration spending estimates are generally lower than NRCAN estimates as the NRCAN spending numbers include such expenditures as related road development and environmental baseline work. The EMR number is more representative of spending on pure exploration work

such as drilling and geochemical. Differences between EMR and NRCAN exploration spending numbers can also occur because the NRCAN numbers are based on a survey completed early in the year while EMR numbers are based on announced company budgets.

Weaker mineral prices and uncertainty related to global demand for mineral resources continue to negatively impact exploration work in the territory. Efforts by mining companies to lower costs and difficulties of junior mining companies to raise capital to finance exploration activities have persisted into 2015 and are likely to continue into 2016. With much of the exploration work undertaken in the territory completed by junior mining companies, the inability of juniors to overcome the financial market's risk aversion is weighing on exploration activities in the territory.

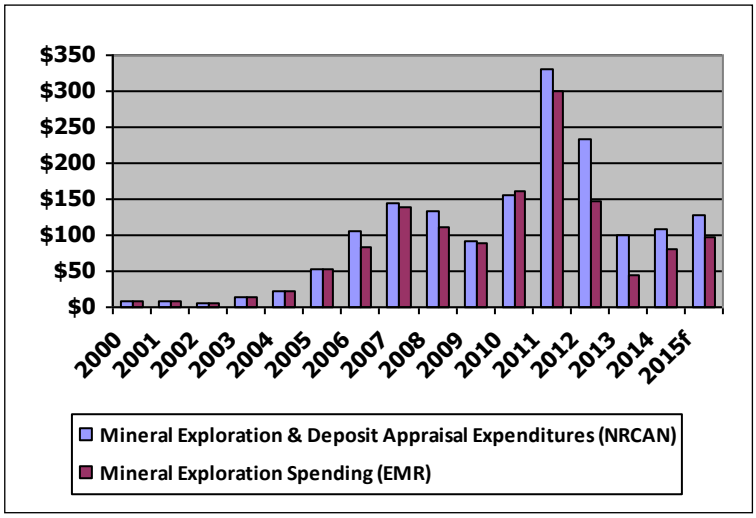


Figure 8 – Mineral Exploration Expenditures ($ millions)
Source: Department of Economic Development; Natural Resources Canada

Even in a difficult investment climate, both NRCAN and EMR are estimating growth in exploration spending in 2015. Results of NRCAN's latest spending survey were released in February 2015 and have exploration expenditures in 2015 growing to over $126 million. EMR is also expecting exploration spending to grow in 2015, with expenditures expected to be near $100 million. For both estimates, spending related to exploration activity on the Selwyn project comprises a substantial portion of the total.

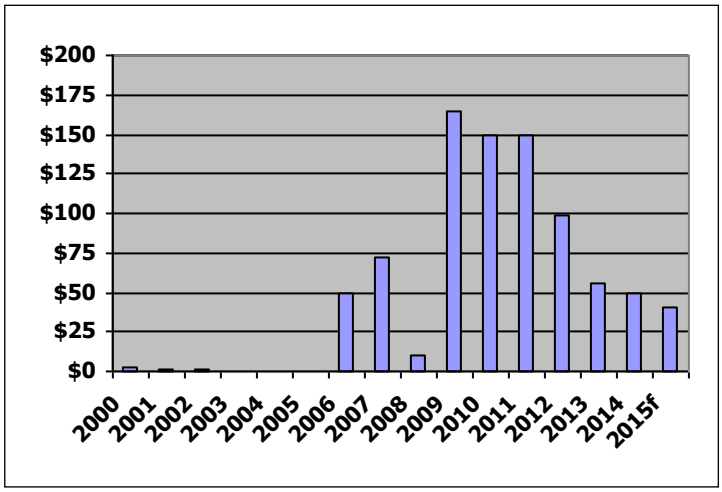


Figure 9 – Mineral Development Expenditures ($ millions)
Source: Department of Economic Development; Department of Energy, Mines & Resources

MINING DEVELOPMENT

Development of the Minto, Bellekeno and Wolverine mines in recent years fuelled a period of high development spending. Development activities related to the Bellekeno and Wolverine mines in particular contributed to high levels of spending from 2010 to 2012.

More recently, development activities have been negatively impacted by lower demand for a number of prominent metals and questions about future demand. Development spending in 2014 was estimated at about $50 million, down from $56 million in 2013. About 60 per cent of the 2014 spending estimate was

associated with expenditures related to the Selwyn project including work on the access road and in-fill drilling. Spending by Capstone Mining Corporation related to the continued expansion of underground mining at the Minto mine accounts for much of the remaining expenditures in 2014.

EMR's development expenditure forecast for 2015 has spending at about $40 million, down from 2014. Spending by Alexco Resources Corporation for development of underground infrastructure at the Flame & Moth deposit, upgrading the mill and other facilities, and re-commissioning the Bellekeno mine is estimated to account for the vast majority of this spending. The remainder of the spending estimate is associated with spending by Capstone Mining Corporation, on pre-stripping at Minto North, which was revised downward by about $10 million in early September due to the delay in accessing the Minto North pit.[13]

MINERAL PRODUCTION

After reaching a recent high of nearly $500 million in 2012, the annual value of mineral production has fallen in the past two years, impacted by the closure of the Bellekeno mine in September 2013 and lower than expected production from the other producing mines. The January announcement of the suspension of operations of the Wolverine mine resulted in a major downward revision for mineral production in 2015. The loss of Wolverine production along with the continued suspension of production at the Bellekeno mine has production in 2015 coming in well below recent annual levels.

The notable decline in mineral production, along with weak mineral prices is anticipated to contribute to a substantial drop in the value of mineral production in 2015. As illustrated in Figure 10, after approaching $500 million just a few years ago, the value of mineral production in 2015 is expected to be about $200 million.

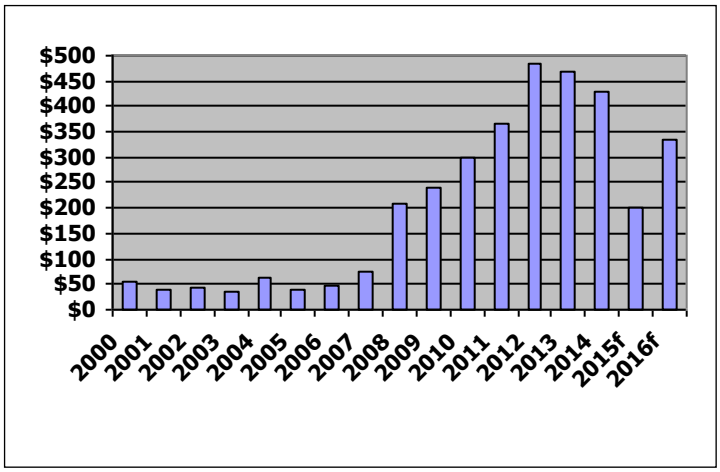


Figure 10 – Value of Mineral Production ($ millions)
Source: Department of Economic Development; Natural Resources Canada

One positive for mineral production in 2015 is that placer gold production is anticipated to continue to be strong. Over the past three years, the value of placer production has averaged near $70 million, making it a significant contributor to Yukon's total value of mining. With lower production from non-placer gold operations expected in 2015, placer gold's relative contribution to Yukon's total mineral value will increase significantly. Placer gold production in 2015 is expected to be similar to the 60,490 crude ounces that were produced in 2014. Over the past five years, 2010 to 2014, placer gold production has averaged over 54,300 crude ounces.

Questions about future demand for minerals and metals, and future price performance, have created considerable uncertainty for Yukon's mining sector, and expectations for 2016 will be accompanied by a high degree of downside risk. Mineral production is anticipated to increase significantly in 2016 with production from the Minto North pit expected to come on stream next year. Minto's silver and gold production is expected to double in 2016 and its copper production

is expected to grow by more than 70 per cent. While remaining below recent annual highs, the value of mineral production in 2016 is expected to grow by almost 70 per cent to well over $300 million.

Outlook for Mining

- While remaining below recent record highs, exploration spending is forecast to increase for a second consecutive year in 2015.
- Development expenditures in 2015 are expected to be about $40 million, down from approximately $50 million in 2014.
- The suspension of operations at the Wolverine mine will contribute to a substantial decline in the value of mineral production in 2015. Increased Minto production is expected to contribute to gains in the value of mineral production in 2016.

OIL & GAS

Yukon is home to significant hydrocarbon resources, both onshore and offshore. Yukon's onshore sedimentary basins contain an estimated 14.77 trillion cubic feet (Tcf) of conventional natural gas and 663 million barrels (MMbbls) of conventional oil. Offshore conventional resources in the Beaufort Sea include an additional estimated 40 Tcf of natural gas and 4,500 MMbbls of oil. Yukon also has the potential to host significant unconventional oil and gas, though formal assessments have yet to be completed.

Recent interest in Yukon's hydrocarbon potential has been in the Kotaneelee field in Southeast Yukon and in the Eagle Plain Basin in Northern Yukon. EFL Overseas Inc. (EFLO) has a 54 per cent working interest in the Kotaneelee field and has indicated plans to develop the existing conventional gas resource which they estimate may have five to 10 production years remaining.[14] The Yukon Environmental and Socio-economic Assessment Board (YESAB) process concluded with the Yukon government issuing a decision document in February 2015 which provided direction that EFLO's planned work over of the existing wells could proceed.

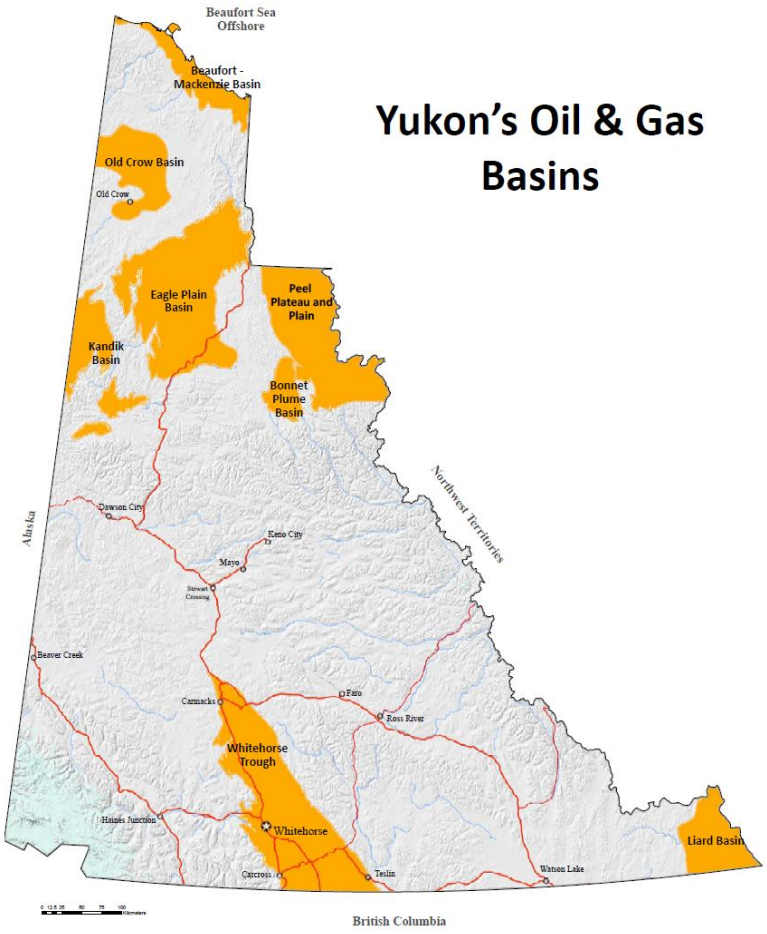
Interest continues in possible oil and gas development in the Eagle Plain Basin in North Yukon. Supported by investment from China National Offshore Oil Corporation (CNOOC), Northern Cross (Yukon) Limited estimates spending of more than $100 million since their current exploration program began in late 2011.[15] Based on the project proposal submitted to YESAB in 2014, Northern Cross proposes to drill and conduct extended flow tests on up to 20 exploratory oil and gas wells in the area that it completed a 3D seismic program in early 2014. Wells are planned to be drilled and tested from December to mid-April and from May to October, over a period of eight years.[16] These wells would be in addition to the four wells drilled in 2012 and 2013. Currently Northern Cross' Eagle Plains Multi-well Exploration Program remains under review by YESAB.

Yukon Energy Corporation's (YEC) new liquefied natural gas (LNG) facility in Whitehorse was deemed operational in mid-July 2015. This facility includes LNG burning power plants and fuel

storage and will be able to provide back-up power, replacing two diesel generators near the Whitehorse Rapids Dam. Plans are to source natural gas from southern Canada.

Development of Yukon's natural gas resources depends very much on natural gas prices. While fluctuating from year-to-year, natural gas prices have been below the highs recorded in the last decade when annual average prices approached US$9.00 MMBTU[17]. Following an annual increase of almost 18 per cent in 2014, natural gas prices are down significantly in 2015; averaging US$2.79 MMBTU to October 5th, 39 per cent lower than the average for the same period of 2014.[18] A number of forecasters are calling for natural gas prices to increase in 2016, but with prices remaining below 2013 and 2014 prices, and well below the highs of the last decade.

The weakness in oil prices from late 2014 has carried over into 2015. Year-to-date (to October 9, 2015) oil prices have averaged just under US$51 per barrel, down from an average of US$99 per barrel in the same period in 2014.[19] Increased supply and weaker demand have contributed to weaker oil prices, and while prices are forecast to be stronger in 2016, oil prices are expected to remain well below recent highs.



Future development of Yukon's hydrocarbon resources will also be shaped in part by decisions related to the production process of hydraulic fracturing. In an effort to engage with Yukoners and generate discussion on what has become a high profile, public topic, the Select Committee Regarding the Risks and Benefits of Hydraulic Fracturing was formed.

The final report of the Select Committee was released on January 19, 2015 and included 21 recommendations. The recommendations focus on the need for continued public dialogue, continued First Nation engagement, detailed assessment of the economic, human health and social impacts, more baseline data and scientific research around water, greenhouse gases, air emissions, wildlife and induced seismicity and assurance that regulatory processes will protect the safety of people and the environment.

The Government of Yukon has stated that it agrees with all 21 recommendations, and that addressing the recommendations would serve to provide a better understanding of potential risks and benefits associated with the development of shale oil and gas resources, and in

particular, the use of hydraulic fracturing. Work to address the various recommendations of the report is ongoing.

Outlook for Oil & Gas

- While there is interest in Yukon oil and gas resources, the outlook for development remains uncertain.
- Future development will depend on a number of factors including the performance of oil and natural gas prices and decisions made related to the use of hydraulic fracturing in the territory.

TOURISM

Tourism related activities contribute to the diversity of Yukon's economy and support employment across a wide variety of local goods and services providers. Retailers, grocery stores, accommodations providers, restaurants, as well as providers of sports and recreational activities and providers of arts and culture all benefit annually from visitors to the territory.

The 2013 *Yukon Business Survey* notes that Yukon businesses attributed almost $250 million of their gross revenue in 2012 to tourism and that based on these revenues the total GDP attributable to tourism was estimated at about $114 million, accounting for over four per cent of Yukon's total GDP in 2012.[20] In terms of employment Statistics Canada's *Provincial-Territorial Human Resource Module of the Tourism Satellite Account, 2012* notes that the percentage of jobs[21] in Yukon in 2012 is estimated at 11.3 per cent, placing Yukon only behind British Columbia (12.2 per cent) and the Northwest Territories (12.1 per cent).[22] Tourism activities are important to Yukon's economy, often serving as a stabilizing force for Yukon's economy during times when the mining sector may be struggling.

Estimates from Yukon's Visitor Tracking Program[23] indicate that approximately 443,300 people visited Yukon in 2014, down 2.2 per cent from the record high 453,200 in 2013. The decline occurred over the peak summer months (May to September), which were down 11,000 people, or 2.9 per cent, compared to the previous year. Offsetting some of this decrease was an increase in the shoulder season (January to April, and October to December), which was up approximately 1,100 people, or 1.4 per cent over 2013.[24]

In terms of international border crossings, since posting a 20-year low in 2009 crossings have been well over 300,000 annually, averaging over 330,000 for the period 2010 to 2014. International border crossings are often used as a measure of the performance of Yukon's tourism sector.

After growing in consecutive years, and recording a record 350,095 in 2013, Yukon border crossings fell 2.4 per cent in 2014 to 341,707.

Border crossings from the U.S., Yukon's largest tourism market, were down by 3.8 per cent in 2014. While down, U.S resident crossings totalled 222,084, accounting for 65.0 per cent of all crossings in 2014. Canadian (excluding Yukon resident) border crossings were also down in 2014, falling 0.8 per cent to 33,132. Gains in border crossings by international visitors

countered some of the decline in 2014, with growth of 9.1 per cent to 43,865. Notable gains were reported in visitation from Asia/Pacific and Europe with growth of 9.8 per cent and 8.7 per cent, respectively.

By mode of transportation, border crossings were down for both private vehicle and motor-coach. The largest component of border crossings, people in private vehicles, saw 190,558 crossings in 2014, a 4.9 per cent decline from 200,434 in 2013. Border crossings by motor-coach also reported a substantial decline in 2014 with crossings of 136,762 down 5.7 per cent from 145,076 in 2013.

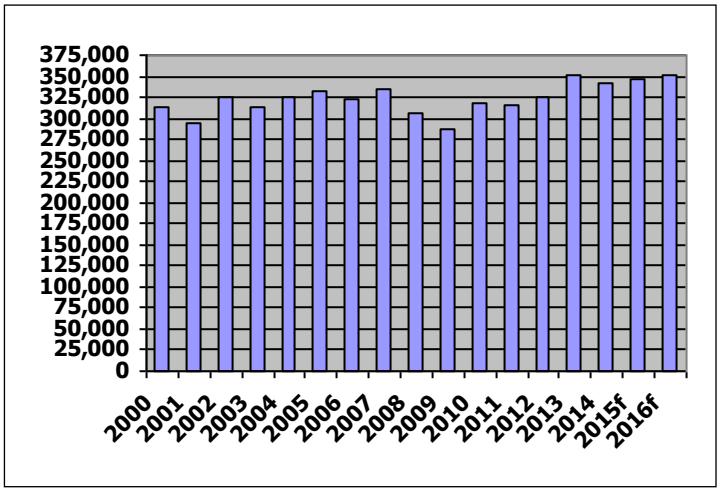


Figure 11 – Border Crossings (Includes International Air Travel)
Source: Department of Economic Development; Department of Tourism & Culture

A significant increase was reported in border crossings by air, with 14,387 people, representing an almost 214 per cent increase over the 4,585 crossings noted in 2013. The substantial increase in the air border crossings is largely the result of the move by Holland America to fly passengers from Fairbanks, Alaska to Dawson City rather than the previous practice of using motor-coach travel. Of the increase in air crossings, over 91 per cent were in Dawson City.

The persistence of a weaker Canadian dollar and lower oil prices are also resulting in favorable conditions for visitation in 2015. The Department of Tourism & Culture has indicated that anecdotal information from local tourism operators indicates that 2015 has been a good year for tourism. Year-to-date (January to July), total visitation is up 1.4 per cent to 258,500. Border crossings are up 1.5 per cent to over 202,000, with large gains being seen in crossings by Americans, up 4.2 per cent year-to-date, and by overseas visitors, up 10.7 per cent. The growth in border crossings by Americans and overseas visitors is tempered by a decline in border crossings by Canadians (down 5.8 per cent) and Yukoners (down 15.2 per cent). This is likely attributable to the weaker Canadian dollar, which is discouraging Canadians from travelling to the United States. Further, 91,309 passengers have arrived at Erik Nielsen Whitehorse International Airport year-to-date, an increase of 5.5 per cent over 2014, and a new record-high.

Current expectations are for a return to growth in 2015, with border crossings growing 1.5 per cent to 347,000. Similar growth is expected in 2016, with border crossings expected to reach 352,000.

Outlook for Tourism

- After falling in 2014, current expectations are for border crossings to increase by 1.5 per cent in 2015.
- Further growth in 2016 would take the number of visitors to a record 352,000.

CONSTRUCTION

After declining in 2012 and 2013, the value of building permits increased by 65 per cent to $130.5 million in 2014.

Residential permits totalled $46.6 million, up 35 per cent, while non-residential permits increased over 90 per cent to $83.8 million. All areas of non-residential building permits increased in 2014, with the main driver of growth being an increase in the value of institutional building permits, which more than doubled to over $46 million. Much of the increase in institutional permits was related to activities associated with the F.H. Collins School replacement.

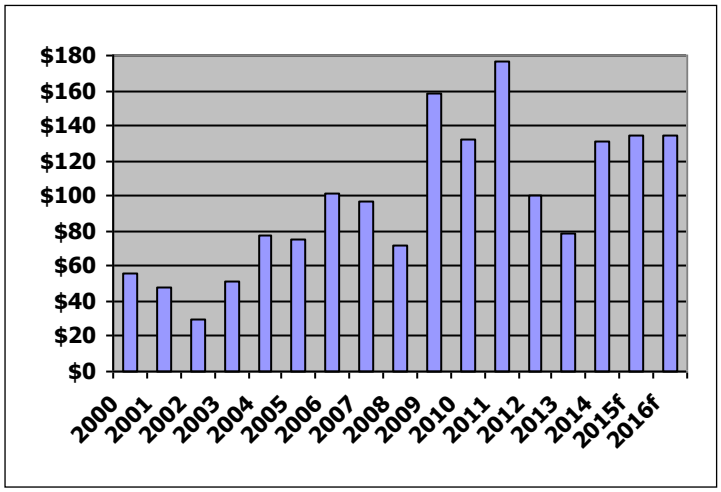


Figure 12 – Value of Yukon Building Permits ($ millions)
Source: Department of Economic Development; Yukon Bureau of Statistics

The 2015-2016 territorial budget was the largest in Yukon's history and included the largest ever capital budget. Spending identified in the budget will help support near-term construction activities. Estimates compiled by the Department of Highways & Public Works have total capital spending[25] at over $300 million in 2015-16, with a variety of projects anticipated to contribute to construction activities. Among the largest contributors to spending in 2015-16 are projects such as:

- More than $90 million associated with Health and Social Services including construction of a new continuing care facility in Whitehorse, replacement of the McDonald Lodge continuing care facility in Dawson, construction of a new drug and alcohol detox centre to replace the Sarah Steele building, the replacement of the Whitehorse Salvation Army building, the St. Elias group home and work at the Whitehorse hospital related to the new Magnetic Resonance Imaging (MRI) scanner and expansion of the emergency department;
- More than $85 million related to Community Operations and Infrastructure including the City of Whitehorse's building consolidation project, continued construction of a recreation centre in Dawson City,

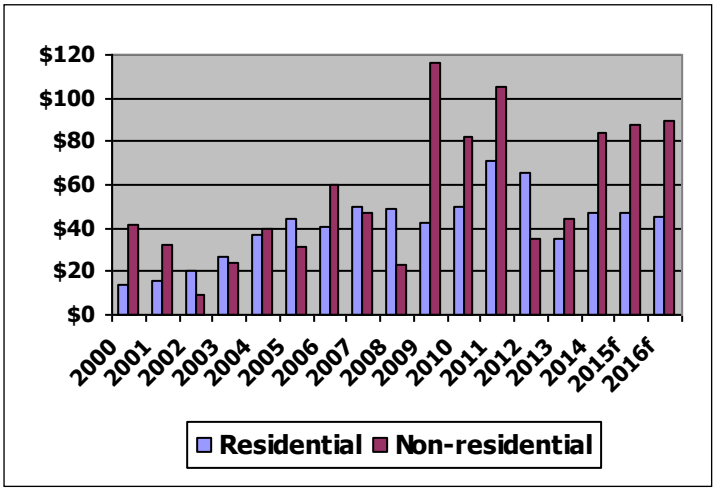


Figure 13 – Value of Yukon Building Permits – Residential vs. Non-residential ($ millions)
Source: Department of Economic Development; Yukon Bureau of Statistics

replacement of the Carcross Fire Hall and water and sewer upgrades in various communities;

- More than $55 million related to Highway Maintenance and Upgrades around the territory;
- More than $20 million related to Education with much of the spending associated with the replacement of the F.H. Collins School in Whitehorse; and
- Almost $20 million related to Housing, including social housing, and residential land development including development of seniors' housing in Whitehorse and continued development of the Whistlebend sub-division.

Looking beyond this year there are a number of projects and activities that have been identified which could impact Yukon's economy, with over $200 million in total project spending currently identified for Yukon in 2016-2017. Prominent projects in this spending figure include continued construction of the new continuing care facility in Whitehorse, further work related to phases 3, 4 and 5 of the Whistlebend sub-division, work related to the City of Whitehorse's building consolidation project and the Whitehorse Corridor redevelopment. While not included in the 2016-17 cost estimate the recently announced planning initiative between the Department of Energy, Mines & Resources and the City of Whitehorse to examine possible development of land located at Fifth Avenue and Rogers Street in Whitehorse could contribute to future construction spending. The planning process is slated to be completed by December 2015 with a mix of market and affordable housing and commercial development envisioned for the property.

Because of questions regarding timing of permits, and what future construction activities may require permits, forecasting the value of building permits is difficult. As well, the performance of mineral prices and the subsequent impact on the local mining sector continue to be key determinants of the nature and level of construction activity in Yukon. Given the current uncertainty in the global mining sector and what it could mean for local mining activities, the risk to the building permit outlook is elevated. In terms of the value of building permits, modest gains in the value of residential and non-residential building permits are anticipated for 2015 with total permit value in 2016 remaining at the 2015 level.

Outlook for Construction

- The value of building permits is expected to grow to about $135 million in 2015 and remain at that level in 2016.
    - Construction activities in the realm of health and social services are expected to drive the value of institutional building permits and overall building permits in the near-term.

RETAIL TRADE

Benefitting from a period of economic growth, growing household incomes and gains in population and employment, retail sales for Yukon have generally performed well in recent years.

Retail sales of $660.9 million in 2014 were up from $652.3 million in 2013. While increasing in 2014, retail sales were below the recent annual record of almost $670 million recorded in 2012.

Food and Beverage Stores, the largest segment of the Yukon retail sales at about 30 per cent of total sales, grew 1.6 per cent to $198.0 million in 2014. The value of sales related to Gasoline stations, the second largest component of retail sales, grew slightly (0.9 per cent) to $107.4 million in 2014 as lower gasoline prices dampened sales.

Sales from Health and Personal Care Stores were also up in 2014, with the estimated value of $32.0 million up 3.2 per cent from $31.1 million in 2013.

Countering some of the increase was lower sales from Furniture and Home Furnishings Stores, reported as being down 13.0 per cent to $13.5 million.

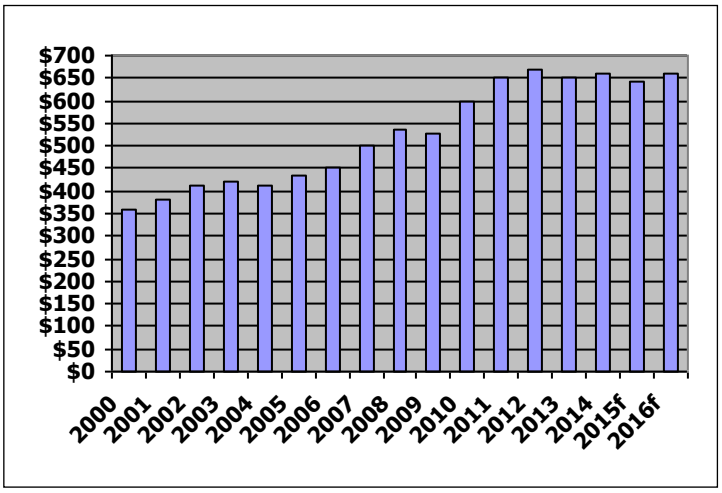


Figure 14 – Value of Retail Sales ($ millions)
Source: Department of Economic Development; Yukon Bureau of Statistics

Due to issues around confidentiality, retail sales data for other retail classifications are suppressed.[26] Total sales from these suppressed classifications totaled almost $310 million.

In the first seven months of 2015, the value of retail sales increased slightly to $378.6 million, up from $377.6 million in the same period of 2014. Overall in 2015, weaker economic performance is expected to negatively impact retail sales with the value of retail sales forecast to fall to $644 million. Retail sales are anticipated to grow in 2016, but at $662 million the value of retail sales is only expected to return to the level of sales that was achieved in 2014 and falls below the value recorded in 2012.

Outlook for Retail Trade

- The value of retail sales are expected to fall in 2015, declining 2.6 per cent to $644 million.
- Retail sales are forecast to grow to just over $660 million in 2016.
- A weaker economy and continued weakness in the mining sector increases the uncertainty for the near-term performance of retail sales.

KEY ECONOMIC INDICATORS

Indicator	*2014*	*2015f*	*2016f*
Population, Prices, Rates			
Population (June)	37,251	37,475	37,850
Population Growth Rate	1.7%	0.6%	1.0%
CPI Growth Rate^	1.3%	-0.6%	2.2%
Overnight Rate	1.00%	0.65%	0.50%
Canada/U.S. Exchange Rate	$0.906	$0.783	$0.769
Employment†			
Labour Force	20,700	20,800	20,900
Employment	19,800	19,400	19,300
Unemployed	900	1,400	1,600
Unemployment Rate	4.3%	6.7%	7.5%
Economic Output			
Real GDP By Industry (billions of chained 2007 $)	$2.183 (p)	$2.05	$2.12
Real GDP Growth Rate	-1.2%	-6.1%	3.5%
Commodity Prices~			
Gold ($US/oz)	$1,266	$1,170	$1,180
Silver ($US/oz)	$19.08	$16.00	$16.20
Zinc ($US/lb)	$0.98	$0.93	$1.02
Copper ($US/lb)	$3.11	$2.58	$2.70
Oil - WTI ($US/bbl)	$93.26	$49.00	$57.00
Natural Gas – Henry Hub ($US/MMBTU)	$4.39	$3.00	$3.65
Mining			
Value of Mineral Production	$428.8 million (p)	$200 million	$335 million
Exploration Expenditures	$107.1 million (r)	$126.4 million (p)	--
Development Expenditures	$50 million (e)	$40 million (e)	--
Construction			
Permitted Building Construction	$130.5 million	$135 million	$135 million
Trade			
Value of Retail Sales	$660.9 million	$644 million	$662 million
Tourism			
Non-resident Border Crossings+	341,707	347,000	352,000

f = forecast, e = estimate, p = preliminary, r = revised, -- = not available
^ CPI increase for Whitehorse only
† annual averages – totals may not total due to rounding
~ annual averages
+ as reported by the Department of Tourism & Culture

DATA SOURCES FOR KEY ECONOMIC INDICATORS TABLE

Indicator	*Source*
Population	Yukon Bureau of Statistics, Yukon Population Estimates, Yukon Department of Economic Development
Inflation (Consumer Price Index)	Statistics Canada, Consumer Price Index, Yukon Department of Economic Development
Overnight Rate	Bank of Canada (average daily rate), BMO Capital Markets
Canada/U.S. Exchange Rate	BMO Capital Markets
Labour Force Indicators	Statistics Canada, Yukon Labour Force Survey, Yukon Department of Economic Development
Economic Output (Real GDP)	Statistics Canada, Provincial Economic Accounts, Yukon Department of Economic Development
Commodity Prices	BMO Capital Markets
Value of Mineral Production	Natural Resources Canada Minerals and Mining Statistics Division, Yukon Department of Economic Development
Mineral Exploration Expenditures	Natural Resources Canada Minerals and Mining Statistics Division, Yukon Department of Economic Development
Mine Development Expenditures	Yukon Department of Energy, Mines & Resources, Yukon Department of Economic Development
Tourism Visitation	Yukon Department of Tourism & Culture, Yukon Department of Economic Development
Permitted Building Construction	Yukon Bureau of Statistics, Yukon Department of Economic Development
Retail Trade	Statistics Canada, Yukon Department of Economic Development

ENDNOTES

[1] World Economic Outlook Update. (October 2015). International Monetary Fund. http://www.imf.org/external/pubs/ft/weo/2015/02/pdf/text.pdf
[2] World Economic Outlook Update. (October 2015). International Monetary Fund. http://www.imf.org/external/pubs/ft/weo/2015/02/pdf/text.pdf
[3] http://bea.gov/newsreleases/national/GDP/GDPnewsrelease.htm
[4] http://bea.gov/newsreleases/national/GDP/GDPnewsrelease.htm
[5] Monetary Policy Report Summary (July, 2015). Bank of Canada. http://www.bankofcanada.ca/wp-content/uploads/2015/07/mpr-2015-07-15.pdf
[6] World Economic Outlook Update. (October 2015). International Monetary Fund. http://www.imf.org/external/pubs/ft/weo/2015/02/pdf/text.pdf
[7] Commodity Price Report – Commodity Prices Tumble in July. (August 10, 2015). TD Economics. http://www.valuewalk.com/2015/09/oil-prices-inventories-and-the-slowing-u-s-production/
[8] Commodity Price Report – Commodity Prices Tumble in July. (August 10, 2015). TD Economics. http://www.valuewalk.com/2015/09/oil-prices-inventories-and-the-slowing-u-s-production/
[9] Bank of Canada maintains overnight rate at ½ per cent. (September 9, 2015). http://www.bankofcanada.ca/2015/09/fad-press-release-2015-09-09/
[10] Accurate population estimates are not available for the time of the Klondike Gold Rush.
[11] Consumer Price Index data is only available in Yukon for Whitehorse.
[12] Exploration and deposit appraisal expenditures include on-mine-site and off-mine-site activities; field work, overhead costs, engineering, economic and pre- or production feasibility studies, environment, and land access costs. Expenditures also include only the search for and appraisal of deposits and do not include work for extensions for known reserves.
[13] Capstone Mining Announces Spending Cuts in Response to Market Conditions. http://capstonemining.com/news/news-details/2015/Capstone-Mining-Announces-Spending-Cuts-in-Response-to-Market-Conditions/default.aspx
[14] Presentation to Yukon Select Committee on Hydraulic Fracturing (January 31, 2014). EFLO ENERGY Inc. http://efloenergy.com/_resources/presentations/EFLO-Select_Committee_on_Hydraulic_Fracturing31Jan14.pdf
[15] Northern Cross (Yukon) Limited Open House Presentations (June 16-18, 2014). http://www.northerncrossyukon.ca/upload/news_item/11/02/community-open-house-presentations-june-2014.pdf
[16] Eagle Plains Multi-well Exploration Program. Project Proposal Summary YESAB Registry. http://www.yesabregistry.ca/wfm/lamps/yesab/lowspeed/projectsummary.jsp;time=1434126836032
[17] MMBTU refers to a million British thermal unit (Btu)
[18] EIA. U.S. Energy Information Administration. http://www.eia.gov/dnav/ng/hist/rngwhhdm.htm
[19] Crude oil prices from metalprices.com historical database.
[20] Yukon Business Survey 2013. Yukon Bureau of Statistics. http://www.eco.gov.yk.ca/stats/pdf/2013_Business_Survey_Report_R.pdf
[21] The Provincial-Territorial Human Resource Model for Tourism aggregates data for five tourism industry groups: transportation, accommodation, food and beverage services, recreation and entertainment, and travel services.
[22] Provincial-Territorial Human Resource Module of the Tourism Satellite Account, 2012. Statistics Canada. http://www.statcan.gc.ca/pub/13-604-m/13-604-m2014074-eng.pdf
[23] The Yukon Visitor Tracking Program is a volumetric model that estimates the number of people that visit Yukon on a monthly basis. The model includes visitors entering Yukon via highway, train and air, and excludes Yukon residents.
[24] Yukon Tourism Indicators Year-End Report 2014. Department of Tourism and Culture. http://www.tc.gov.yk.ca/pdf/2014_TourismIndicators_YearEndReport.pdf
[25] While capital expenditures make up a large portion of the capital spending figures there is some non-capital spending included in the total. The spending estimates referenced also include both public and private spending but do not include spending related to mineral exploration or mineral development.
[26] Data for 2014 was suppressed for Building Material and Garden Equipment; Motor Vehicle and Parts Dealers; Electronics and Appliance Stores; Sporting Goods; Hobby Book and Music Stores; General Merchandise Stores; and Miscellaneous Store Retailers.

UCG-AEY-13

Reference: May 11, 2016 Application, page 2-4

AEY states "The overall impact of the economic and population growth slowdown is expected to impact ATCO Electric Yukon's customer growth and sales over the test period".

Request:

Please provide details of the analysis conducted by AEY that proves this to be a valid assumption.

Response:

AEY reviewed a number of sources of information to determine an economic outlook for the Yukon. The documents reviewed showed a slowing of the economy, flat population growth, an increased housing vacancy rate, decline in construction permits, contraction in GDP and a forecast decline in employment. These factors point to an impact on customer growth and sales for the test period. Please refer to UCG-AEY-12(a) Attachment 1 for the source information used to determine the economic outlook.

UCG-AEY-14

Reference: May 11, 2016 Application, page 2-5

AEY has updated the time frames used for determining weather-normalized use per customer and has applied the growth rates experienced over 2013 to 2015 to derive the forecast use per customer for the 2016 and 2017 test years.

Request:

(a) Please provide evidence and statistical analysis that the 3 year average methodology is a superior forecasting tool when compared to the 20 year average methodology.

(b) Please confirm that the proposed 3 year average methodology will be more volatile than the current longer term methodology.

(c) Please provide the 2016 and 2017 sales forecast by class using the existing longer term methodology.

Response:

(a) AEY reviewed the R Square from the regression analyses that were performed on each community. Changing the "Normal" HDD horizon from a 20 year average to a 3 year average resulted in the R Square slightly increasing for some communities and slightly decreasing for other communities. However, the impact was minimal for all communities, and in all cases the R Square still remained statistically significant.

Additionally, AEY also reviewed the T-Stat from the regression analyses and is able to confirm that the values for all communities are above the threshold of 2.0.

Please also refer to AEY's response to YUB-YECL-7.

(b) AEY is uncertain whether a three year average methodology would be more or less volatile. Notwithstanding, AEY submits that 3 years is more representative of recent trends in UPC. Please refer to AEY's response to YUB-YECL-7(b).

(c) Please refer to Table 1 for the 2016 and 2017 sales forecast by class restated below based on the longer term methodology. For the working papers in Excel, with formulae intact, please refer to CW-YECL-25(b) Attachment 1 and CW-YECL-25(b) Attachment 2.

Table 1
ATCO Electric Yukon Sales by Customer Class
(MWh)

	Actual			Test Period	
	2013	2014	2015	2016	2017
Residential	148,780	147,253	148,605	148,074	153,155
Commercial	159,322	154,709	155,346	152,415	153,778
Street Lights	3,719	3,765	3,886	3,944	4,008
Private Lights	551	544	519	493	472
Total Retail Primary	**312,372**	**306,272**	**308,356**	**304,926** [1]	**311,413**
Secondary Sales	3,959	5,415	7,030	9,429	9,429
Wholesale Sales	356	495	430	427	427
Total Company	**316,687**	**312,182**	**315,816**	**313,592**	**319,289**

Note:

1) 2016 Forecast includes 3 months of actuals for January, February & March.

UCG-AEY-15

Reference: May 11, 2016 Application, page 2-7

AEY states that the wholesale sales to Yukon Energy Corporation are forecast to remain constant at 2015 levels for 2016 and 2017.

Request:

(a) Please provide details of the wholesale sales forecast provided by Yukon Energy Corporation.

(b) Given AEY's assumption that slower population growth, DSM and other initiatives have contributed to lower electricity sales in 2013, 2014 and 2015, please explain why these factors will have no impact on the forecast of wholesale sales volumes.

Response:

(a) The wholesale forecast is determined primarily by considering historical information for the two wholesale accounts. Also, AEY staff contacted YEC staff to confirm assumptions used in the forecast were reasonable.

(b) AEY has not seen a trend of lower electricity sales for the wholesale sites and is not aware of DSM initiatives at these sites.

UCG-AEY-16

Reference: May 11, 2016 Application, Schedule 2-1

AEY indicates net customer impacts of its application of 2.0% in 2016 and 5.1% in 2017.

Request:

(a) Please provide detailed calculations of the total bill (including all riders, rate relief, and taxes) for a residential customer living in Whitehorse using 1000 kWh, 1200 kWh and 1400 kWh per month in January 2013, January 2014, January 2015, January 2016, and January 2017 assuming that the 2016 and 2017 rate adjustments proposed by AEY are approved. Please provide details of the bill calculations and indicate overall percentage changes in the total bill for each year.

(b) For the Secondary Sales section of Schedule 2-1, please expand the table to include data for the last 10 years and add a row identifying the costs of providing Secondary Power and a calculation of net revenues.

(c) Please provide details of AEY's understanding of mitigation efforts in other jurisdictions if rate adjustments result in bill impacts in excess of a specific threshold.

(d) Please provide details of AEY's position regarding mitigation efforts that should be imposed if rate adjustments in the Yukon result in bill impacts in excess of 10%.

Response:

(a) Please refer to UCG-AEY-16(a) Attachment 1 for the detailed calculations of the total bill for the requested consumption and time periods.

(b) Please refer to the table below for the historical secondary sales. AEY does not track costs of providing secondary power, therefore cannot provide a calculation of net revenues.

AEY Secondary Sales						
Year	MWh	Margin ($000s)		Year	MWh	Margin ($000s)
2006	21,555	237		2011	552	6
2007	23,566	259		2012	1,993	22
2008	18,053	199		2013	3,959	44
2009	16,843	185		2014	5,415	60
2010	10,153	112		2015	7,030	77

(c) AEY is aware of three rate impact mitigation methods that other utilities have used:

1. Government Subsidy

   An example of this mitigation method occurred in the Northwest Territories Power Corporation's (NTPC) 2012-14 GRA where the Government of the Northwest Territories (GNWT) provided subsidization to NTPC to assist in transitioning rates to recover the full 2013-14 revenue requirement by the end of a 4-year transition period.

2. Collecting approved balances over a longer period of time

   This approach has been used by ATCO Electric as well as Northland Utilities whereby the utility will propose a recovery period that achieves a balance between the utility being able to recover approved costs and minimizing rate shock.

3. Cross-subsidization between rate classes

   If achieving a 100% revenue to cost ratio for a particular rate class results in a rate impact greater than an accepted threshold, the utility may propose a revenue to cost ratio of less than 100%, resulting in customer class cross-subsidization.

(d) AEY's position on this has been, and continues to be, that if a bill increase at a point in time (month over month) exceeds 10%, any of the three methods that might be available as described in part (c) can be employed to address rate shock. As detailed in UCG-AEY-16(a) Attachment 1, AEY notes there will be no bill increases in 2016 or 2017 approaching 10% based on information currently available to AEY.

ATCO Electric Yukon (AEY)

Whitehorse Residential Monthly Bill Calculations
for 1000 kW.h Monthly Consumption

	COMPONENT	Rate Effective: / As Of:	01-Jan-13 / 01-Jan-13	01-Jan-14 / 01-Jan-14	01-Jan-15 / 01-Jan-15	01-Nov-15 / 01-Jan-16	01-Jul-16 / 01-Jan-17
	ENERGY:	kW.h	1000	1000	1000	1000	1000
Rates	CUSTOMER CHARGE	$ / month	$ 14.65	$ 14.65	$ 14.65	$ 14.65	$ 14.65
Rates	ENERGY CHARGE (1st Block 0-1000 kWh)	¢ / kW.h	12.14	12.14	12.14	12.14	12.14
Rates	ENERGY CHARGE (2nd Block 1001-2500 kWh)		12.82	12.82	12.82	12.82	12.82
Rates	RIDER F - FUEL ADJUSTMENT RIDER	¢ / kW.h	0.191	0.000	0.000	-0.487	-0.560
Rates	RIDER E - YEC DIESEL CONTINGENCY	¢ / kW.h				-0.680	-0.680
Rates	RIDER J - YEC SHORTFALL 2012	%	6.40%	11.01%	11.01%	11.01%	11.01%
Rates	RIDER R1 - YEC SHORTFALL 2013	%	3.750%	3.620%	0.000%	0.000%	0.000%
Rates	RIDER R - YECL SHORTFALL (13-15)	%		6.5%	7.2%	7.2%	11.6%
Rates	INTERIM ELECTRICAL REBATE (up to 1000 kWh)	¢ / kW.h	-2.661	-2.661	-2.661	-2.661	-2.661
Rates	YUKON RELIEF/INCOME TAX REBATE	%	-0.750%	-0.600%	-0.550%	-0.520%	-0.520%
Rates	GST	%	5.000%	5.000%	5.000%	5.000%	5.000%
Charges	CUSTOMER CHARGE		$ 14.65	$ 14.65	$ 14.65	$ 14.65	$ 14.65
Charges	ENERGY CHARGE 1st Block		$ 121.40	$ 121.40	$ 121.40	$ 121.40	$ 121.40
Charges	ENERGY CHARGE 2nd Block		$ -	$ -	$ -	$ -	$ -
Charges	BASE RATE		$ 136.05	$ 136.05	$ 136.05	$ 136.05	$ 136.05
Charges	RIDER F - FUEL ADJUSTMENT RIDER		$ 1.91	$ -	$ -	$ (4.87)	$ (5.60)
Charges	RIDER E - YEC DIESEL CONTINGENCY		$ -	$ -	$ -	$ (6.80)	$ (6.80)
Charges	RIDER J - YEC SHORTFALL 2012		$ 8.71	$ 14.98	$ 14.98	$ 14.98	$ 14.98
Charges	RIDER R1 - YEC SHORTFALL 2013		$ 5.10	$ 4.93	$ -	$ -	$ -
Charges	RIDER R - YECL SHORTFALL (13-15)		$ -	$ 8.84	$ 9.80	$ 9.80	$ 15.81
Charges	TOTAL (before rate rebate/relief)		$ 151.77	$ 164.80	$ 160.83	$ 149.16	$ 154.44
Charges	TOTAL (before rate rebate/relief - including GST)		**$ 159.36**	**$ 173.04**	**$ 168.87**	**$ 156.62**	**$ 162.16**
Charges	% Change (Before Relief)			8.6%	-2.4%	-7.3%	3.5%
Charges	INTERIM ELECTRICAL REBATE (up to 1000 kWh)		$ (26.61)	$ (26.61)	$ (26.61)	$ (26.61)	$ (26.61)
Charges	YUKON RELIEF/INCOME TAX REBATE		$ (1.02)	$ (0.82)	$ (0.75)	$ (0.71)	$ (0.71)
Charges	TOTAL RELIEF		$ (27.63)	$ (27.43)	$ (27.36)	$ (27.32)	$ (27.32)
Charges	TOTAL (including rate rebate/relief)		$ 124.14	$ 137.37	$ 133.47	$ 121.84	$ 127.12
Charges	TOTAL (including rate rebate/relief - including GST)		**$ 130.35**	**$ 144.24**	**$ 140.14**	**$ 127.93**	**$ 133.48**
Charges	% Change (Including Relief)			10.7%	-2.8%	-8.7%	4.3%

ATCO Electric Yukon (AEY)

Whitehorse Residential Monthly Bill Calculations
for 1200 kW.h Monthly Consumption

	COMPONENT	Rate Effective: / As Of:	01-Jan-13 / 01-Jan-13	01-Jan-14 / 01-Jan-14	01-Jan-15 / 01-Jan-15	01-Nov-15 / 01-Jan-16	01-Jul-16 / 01-Jan-17
	ENERGY:	kW.h	1200	1200	1200	1200	1200
Rates	CUSTOMER CHARGE	$ / month	$ 14.65	$ 14.65	$ 14.65	$ 14.65	$ 14.65
Rates	ENERGY CHARGE (1st Block 0-1000 kWh)	¢ / kW.h	12.14	12.14	12.14	12.14	12.14
Rates	ENERGY CHARGE (2nd Block 1001-2500 kWh)		12.82	12.82	12.82	12.82	12.82
Rates	RIDER F - FUEL ADJUSTMENT RIDER	¢ / kW.h	0.191	0.000	0.000	-0.487	-0.560
Rates	RIDER E - YEC DIESEL CONTINGENCY	¢ / kW.h				-0.680	-0.680
Rates	RIDER J - YEC SHORTFALL 2012	%	6.40%	11.01%	11.01%	11.01%	11.01%
Rates	RIDER R1 - YEC SHORTFALL 2013	%	3.750%	3.620%	0.000%	0.000%	0.000%
Rates	RIDER R - YECL SHORTFALL (13-15)	%		6.5%	7.2%	7.2%	11.6%
Rates	INTERIM ELECTRICAL REBATE (up to 1000 kWh)	¢ / kW.h	-2.661	-2.661	-2.661	-2.661	-2.661
Rates	YUKON RELIEF/INCOME TAX REBATE	%	-0.750%	-0.600%	-0.550%	-0.520%	-0.520%
Rates	GST	%	5.000%	5.000%	5.000%	5.000%	5.000%
Charges	CUSTOMER CHARGE		$ 14.65	$ 14.65	$ 14.65	$ 14.65	$ 14.65
Charges	ENERGY CHARGE 1st Block		$ 121.40	$ 121.40	$ 121.40	$ 121.40	$ 121.40
Charges	ENERGY CHARGE 2nd Block		$ 25.64	$ 25.64	$ 25.64	$ 25.64	$ 25.64
Charges	BASE RATE		$ 161.69	$ 161.69	$ 161.69	$ 161.69	$ 161.69
Charges	RIDER F - FUEL ADJUSTMENT RIDER		$ 2.29	$ -	$ -	$ (5.84)	$ (6.72)
Charges	RIDER E - YEC DIESEL CONTINGENCY		$ -	$ -	$ -	$ (8.16)	$ (8.16)
Charges	RIDER J - YEC SHORTFALL 2012		$ 10.35	$ 17.80	$ 17.80	$ 17.80	$ 17.80
Charges	RIDER R1 - YEC SHORTFALL 2013		$ 6.06	$ 5.85	$ -	$ -	$ -
Charges	RIDER R - YECL SHORTFALL (13-15)		$ -	$ 10.51	$ 11.64	$ 11.64	$ 18.79
Charges	TOTAL (before rate rebate/relief)		$ 180.39	$ 195.85	$ 191.13	$ 177.13	$ 183.40
Charges	TOTAL (before rate rebate/relief - including GST)		**$ 189.41**	**$ 205.64**	**$ 200.69**	**$ 185.99**	**$ 192.57**
Charges	% Change (Before Relief)			8.6%	-2.4%	-7.3%	3.5%
Charges	INTERIM ELECTRICAL REBATE (up to 1000 kWh)		$ (26.61)	$ (26.61)	$ (26.61)	$ (26.61)	$ (26.61)
Charges	YUKON RELIEF/INCOME TAX REBATE		$ (1.21)	$ (0.97)	$ (0.89)	$ (0.84)	$ (0.84)
Charges	TOTAL RELIEF		$ (27.82)	$ (27.58)	$ (27.50)	$ (27.45)	$ (27.45)
Charges	TOTAL (including rate rebate/relief)		$ 152.57	$ 168.27	$ 163.63	$ 149.68	$ 155.95
Charges	TOTAL (including rate rebate/relief - including GST)		**$ 160.20**	**$ 176.68**	**$ 171.81**	**$ 157.16**	**$ 163.75**
Charges	% Change (Including Relief)			10.3%	-2.8%	-8.5%	4.2%

ATCO Electric Yukon (AEY)

Whitehorse Residential Monthly Bill Calculations
for 1400 kW.h Monthly Consumption

	COMPONENT		Rate Effective:	01-Jan-13	01-Jan-14	01-Jan-15	01-Nov-15	01-Jul-16
			As Of:	01-Jan-13	01-Jan-14	01-Jan-15	01-Jan-16	01-Jan-17
	ENERGY:	kW.h		1400	1400	1400	1400	1400
	CUSTOMER CHARGE	$ / month		$ 14.65	$ 14.65	$ 14.65	$ 14.65	$ 14.65
Rates	ENERGY CHARGE (1st Block 0-1000 kWh)	¢ / kW.h		12.14	12.14	12.14	12.14	12.14
Rates	ENERGY CHARGE (2nd Block 1001-2500 kWh)			12.82	12.82	12.82	12.82	12.82
Rates	RIDER F - FUEL ADJUSTMENT RIDER	¢ / kW.h		0.191	0.000	0.000	-0.487	-0.560
Rates	RIDER E - YEC DIESEL CONTINGENCY	¢ / kW.h					-0.680	-0.680
Rates	RIDER J - YEC SHORTFALL 2012	%		6.40%	11.01%	11.01%	11.01%	11.01%
Rates	RIDER R1 - YEC SHORTFALL 2013	%		3.750%	3.620%	0.000%	0.000%	0.000%
Rates	RIDER R - YECL SHORTFALL (13-15)	%			6.5%	7.2%	7.2%	11.6%
Rates	INTERIM ELECTRICAL REBATE (up to 1000 kWh)	¢ / kW.h		-2.661	-2.661	-2.661	-2.661	-2.661
Rates	YUKON RELIEF/INCOME TAX REBATE	%		-0.750%	-0.600%	-0.550%	-0.520%	-0.520%
Rates	GST	%		5.000%	5.000%	5.000%	5.000%	5.000%
Charges	CUSTOMER CHARGE			$ 14.65	$ 14.65	$ 14.65	$ 14.65	$ 14.65
Charges	ENERGY CHARGE 1st Block			$ 121.40	$ 121.40	$ 121.40	$ 121.40	$ 121.40
Charges	ENERGY CHARGE 2nd Block			$ 51.28	$ 51.28	$ 51.28	$ 51.28	$ 51.28
Charges	BASE RATE			$ 187.33	$ 187.33	$ 187.33	$ 187.33	$ 187.33
Charges	RIDER F - FUEL ADJUSTMENT RIDER			$ 2.67	$ -	$ -	$ (6.82)	$ (7.84)
Charges	RIDER E - YEC DIESEL CONTINGENCY			$ -	$ -	$ -	$ (9.52)	$ (9.52)
Charges	RIDER J - YEC SHORTFALL 2012			$ 11.99	$ 20.63	$ 20.63	$ 20.63	$ 20.63
Charges	RIDER R1 - YEC SHORTFALL 2013			$ 7.02	$ 6.78	$ -	$ -	$ -
Charges	RIDER R - YECL SHORTFALL (13-15)			$ -	$ 12.18	$ 13.49	$ 13.49	$ 21.77
Charges	TOTAL (before rate rebate/relief)			$ 209.01	$ 226.92	$ 221.45	$ 205.11	$ 212.37
Charges	TOTAL (before rate rebate/relief - including GST)			**$ 219.46**	**$ 238.27**	**$ 232.52**	**$ 215.37**	**$ 222.99**
Charges	% Change (Before Relief)				8.6%	-2.4%	-7.4%	3.5%
Charges	INTERIM ELECTRICAL REBATE (up to 1000 kWh)			$ (26.61)	$ (26.61)	$ (26.61)	$ (26.61)	$ (26.61)
Charges	YUKON RELIEF/INCOME TAX REBATE			$ (1.40)	$ (1.12)	$ (1.03)	$ (0.97)	$ (0.97)
Charges	TOTAL RELIEF			$ (28.01)	$ (27.73)	$ (27.64)	$ (27.58)	$ (27.58)
Charges	TOTAL (including rate rebate/relief)			$ 181.00	$ 199.19	$ 193.81	$ 177.53	$ 184.79
Charges	TOTAL (including rate rebate/relief - including GST)			**$ 190.05**	**$ 209.15**	**$ 203.50**	**$ 186.41**	**$ 194.03**
Charges	% Change (Including Relief)				10.0%	-2.7%	-8.4%	4.1%

UCG-AEY-17

Reference: May 11, 2016 Application, page 3-2

AEY justifies the creation of a deferral account based on the assumption that changes to purchased power costs may produce a loss or gain of substantial magnitude.

Request:

(a) Please provide statistical analysis showing changes to the cost of purchased power for 2010 through 2015.

(b) Please provide details of what AEY would classify as "a loss or gain of substantial magnitude" and why.

Response:

(a) The cost of purchase power ($ per kWh) has been as follows:

2010	2011	2012	2013	2014	2015
0.0684	0.0755	0.0830	0.0830	0.0830	0.0830

(b) AEY does not have a dollar value as to what would classify as a loss or gain of substantial magnitude. AEY is seeking the continuation of a deferral account for power purchase costs on the basis that it continues to meet the standard criteria for a deferral account. The power purchase costs which AEY is seeking a deferral account for, are outside the control of the company and are not reasonably forecastable.

UCG-AEY-18

Reference: May 11, 2016 Application, page 3-3

AEY states that total forecast purchases have been determined by applying a forecast line loss of 6.2% to ATCO Electric Yukon's sales load forecast and that this line loss was calculated using a 5-year historical average.

Request:

(a) Please provide the statistical analysis showing the calculation of the 6.2% line loss.

(b) Please describe the specific work that AEY has undertaken and specifically when it was undertaken to reduce the level of line losses on its various systems since 2010 and provide the analysis that shows how line losses have or have not been reduced.

(c) Under its Master Service Contract, does ATCO Electric still perform load and loss research studies for AEY? If yes, please provide the most recent loss research study.

Response:

(a) Please refer to AEY's response to YEC-AEY-13(c).

(b) AEY reduces and minimizes line losses on an ongoing basis, through engineering standards for new extensions and system improvement projects that target poor performing lines and infrastructure. All new infrastructure is built to current engineering standards that inherently reduce losses, as AEY installs large ampacity conductors for all new extensions and system improvement distribution lines. This improves line losses when old smaller distribution lines are upgraded with larger conductors. Line losses are also reduced on system loading when the distribution voltages are increased in voltage conversion projects. Standard utility material and infrastructure are sourced with the least amount of internal losses. In the period since 2010 line losses have remained flat at 6.2%

Please refer to AEY's response to YEC-AEY-13(c) for line loss calculation.

(c) ATCO Electric has not performed a load and loss research study.

UCG-AEY-19

Reference: May 11, 2016 Application, page 4-1

AEY states: *"Fuel is purchased on an ongoing basis for each of the five isolated diesel plants operated by ATCO Electric Yukon. ATCO Electric Yukon conducts a diesel fuel tendering process in which a vendor is selected to be the provider of diesel fuel to ATCO Electric Yukon".*

Request:

(a) Please explain when the new tender for diesel fuel purchases will be effective.

(b) Please confirm that any new diesel fuel prices will be reflected in fuel costs paid by Yukon ratepayers through the Rider F.

Response:

(a) AEY's 3 year fuel contracts were effective January 1, 2016.

(b) Confirmed.

UCG-AEY-20

Reference: May 11, 2016 Application, page 4-2

AEY states: *"Plant efficiencies are based on the average efficiencies of the previous five years adjusted for any changes due to the replacement of units".*

Request:

(a) Please expand Schedule 4.2 to provide details of the diesel fuel efficiencies for the 5 years used to support the 2016 and 2017 forecasts including how they were measured.

(b) Please explain work that AEY has undertaken in the last 5 years to improve diesel fuel efficiencies on its various systems and statistical analysis showing the results.

Response:

(a) Please refer to UCG-AEY-20(a) Attachment 1.

(b) AEY has carried out projects in which aging equipment has been replaced in order to increase the operational efficiency of the plants. These projects range from engine replacement to new control systems.

For example the replacement of Watson Lake Unit 4 was completed in Q1 of 2014 with the resultant change in the annual average gross heat rate.

Watson Lake	2012	2013	2014	2015
Average Heat Rate (Gross)	3.90	3.92	3.97	3.98

During 2013-2015, multiple projects were completed in Beaver Creek. These projects included the installation of a new control system with optimized dispatch and replacement of Units 1 and 2. This work was completed in Q4 of 2015, with Unit 1 being placed in service.

Beaver Creek	2012	2016
Average Heat Rate (Gross) January to May	3.58	3.69

Furthermore, AEY ensures that maintenance of units is carried out as per manufacturers' recommendation in order to maintain unit efficiency.

ATCO Electric Yukon
Historical Diesel Fuel Efficiencies
(kWh/litre)

	2011	2012	2013	2014	2015	Average
Watson Lake	3.79	3.80	3.88	3.89	3.89	3.85
Beaver Creek	3.48	3.52	3.36	3.28	3.49	3.43
Destruction Bay	3.56	3.68	3.67	3.60	3.54	3.61
Old Crow	3.54	3.45	3.42	3.30	3.30	3.40
Swift River	2.73	2.77	2.55	2.72	2.61	2.68
Standby Units	3.36	1.18	0.15	1.20	1.13	2.20

UCG-AEY-21

Reference: May 11, 2016 Application, page 4-2

Regarding diesel fuel costs, AEY states: "*Price forecasts for each community are based on the 2015 actual prices for diesel fuel*".

Request:

Please update Schedule 4.2 with the most recent actual diesel fuel prices for 2016 to date.

Response:

Please refer to UCG-AEY-21 Attachment 1 which reflects June 2016 actual diesel fuel prices. As outlined on page 4-2 of AEY's 2016-2017 General Rate Application, the variance between actual and forecast fuel prices are refunded to, or recovered from, customers through a fuel price flow through and the associated Rider F.

ATCO Electric Yukon
2016 - 2017 General Rate Application
Fuel Information

Line No.	Description	Cross Ref.	Actual 2013	Approved 2013	Actual 2014	Approved 2014	Actual 2015	Approved 2015	Test Period 2016	Test Period 2017
1	Average Cost (in cents per litre)									
2	Watson Lake	Note 1	100.71	101.76	106.90	101.76	76.18	101.76	78.66	78.66
3	Beaver Creek	Note 1	115.09	116.53	122.80	116.53	92.40	116.53	73.58	73.58
4	Destruction Bay	Note 1	114.56	115.41	122.68	115.41	91.90	115.41	68.51	68.51
5	Old Crow	Note 1	220.71	218.44	230.69	218.44	201.71	218.44	178.53	178.53
6	Swift River	Note 1	107.28	105.63	114.38	105.63	88.72	105.63	74.57	74.57
7	Standby Units	Note 1	89.92	89.56	106.78	89.56	97.81	89.56	98.70	98.70
8										
9	Generation (MWh)									
10	Watson Lake		15,120	15,085	14,966	15,261	14,534	15,267	14,721	14,795
11	Beaver Creek		1,893	1,800	1,804	1,832	1,829	1,834	1,769	1,786
12	Destruction Bay		1,886	1,826	1,856	1,860	1,789	1,862	1,778	1,703
13	Old Crow		2,199	2,083	2,205	2,114	2,264	2,114	2,180	2,248
14	Swift River		204	263	219	267	207	268	209	223
15	Standby Units		3	70	67	70	41	70	40	41
16		S.4.1 L.1	21,305	21,127	21,117	21,405	20,664	21,415	20,697	20,795
17										
18	Net Heat Rate (kWh/litre)									
19	Watson Lake		3.88	3.78	3.89	3.78	3.89	3.78	3.85	3.85
20	Beaver Creek		3.36	3.59	3.28	3.59	3.49	3.59	3.43	3.43
21	Destruction Bay		3.67	3.58	3.60	3.58	3.54	3.58	3.61	3.61
22	Old Crow		3.42	3.60	3.30	3.60	3.30	3.60	3.40	3.40
23	Swift River		2.55	2.79	2.72	2.79	2.61	2.79	2.68	2.68
24	Standby Units		0.20	3.02	1.45	3.02	1.13	3.02	2.20	2.20
25										
26	Litres Consumed ($000s)									
27	Watson Lake		3,894	3,988	3,851	4,034	3,740	4,036	3,825	3,844
28	Beaver Creek		563	502	540	511	525	512	516	521
29	Destruction Bay		514	510	525	520	505	520	492	472
30	Old Crow		643	578	667	587	687	587	642	662
31	Swift River		80	94	80	96	79	96	78	83
32	Standby Units		19	20	56	20	36	20	18	18
33		S.4.1 L.3	5,714	5,692	5,719	5,767	5,573	5,770	5,572	5,601
34										
35	Note 1 - 2016 and 2017 updated to average diesel fuel cost as at June 30, 2016.									

UCG-AEY-22

Reference: May 11, 2016 Application, page 4-3

AEY has applied for a LNG Fuel Deferral Account to track and subsequently refund or recover changes in costs due to the differential in actual LNG fuel prices and the price included in rates.

Rate Policy Directive Order in Council 1995/90 – Section 8

"8. The Board must permit Yukon Energy Corporation and The Yukon Electrical Company Limited to adjust their rates to retail customers, major industrial customers, and isolated industrial customers so as to reflect fluctuations in the prices for which the two utilities pay for diesel fuel, without the requirement for specific application to and approval of the Board."

Request:

(a) Please explain how variances in LNG fuel prices can be passed on to ratepayers when the Rate Policy Directive only addresses variances in diesel fuel.

(b) Please provide a breakdown for the last 4 years of the cost per kWh to generate electricity (i) using diesel generators, (ii) using LNG generators only, and (iii) the blended cost of using LNG and diesel generators.

Response:

(a) ATCO Electric Yukon is proposing to include the LNG price variances in the Rider F deferral account. The principles supporting a diesel price variance deferral are the same as those supporting a LNG price variance deferral or a fuel price variance deferral in general:

- Commodity prices are subject to material fluctuations outside the Utilites' control; and
- It is not in ratepayers', the Board's, or the utilities' interest to speculate on these price fluctuations.

ATCO Electric Yukon is firmly of the belief that it is within the Board's authority to approve deferral accounts in general. Should the Board determine that the wording of the OIC does not allow for the inclusion of LNG price variances to be included in the existing Rider F, a new deferral account and subsequent Rider should be approved that operates in the same manner as Rider F.

(b) Please note, only historical diesel generation data is available because ATCO Electric Yukon is not using LNG at this time.

- Please refer to UCG-AEY-22(b) Attachment 1 for the historical cost per kWh to generate electricity using diesel.
- ATCO Electric Yukon is not proposing to use LNG only generators in this application and has therefore not performed this analysis.
- Please refer to UCG-AEY-53(d) Attachment 1 for the projected cost to generate electricity using the blended cost of LNG and diesel generators. For historical fluctuations in the price of LNG and Diesel, please refer YUB-YECL-13(f).

ATCO Electric Yukon 2016-2017 GRA
UCG-AEY-22(b) - Attachment 1

	2012	2013	2014	2015
Diesel Cost ($000s)				
Watson Lake	$3,837	$3,914	$4,116	$2,849
Beaver Creek	$607	$647	$662	$485
Destruction Bay	$609	$588	$644	$464
Old Crow	$1,328	$1,416	$1,540	$1,386
Swift River	$88	$86	$92	$71
Standby Units	$20	$17	$62	$37
Total	**$6,490**	**$6,668**	**$7,116**	**$5,292**
Generation (MWh)				
Watson Lake	15,024	15,120	14,966	14,534
Beaver Creek	1,897	1,893	1,804	1,829
Destruction Bay	1,996	1,886	1,856	1,789
Old Crow	2,136	2,199	2,205	2,264
Swift River	233	204	219	207
Standby Units	25	3	67	41
Total	**21,310**	**21,305**	**21,117**	**20,664**
Price ($/kWh)				
Watson Lake	0.255	0.259	0.275	0.196
Beaver Creek	0.320	0.342	0.367	0.265
Destruction Bay	0.305	0.312	0.347	0.260
Old Crow	0.622	0.644	0.698	0.612
Swift River	0.376	0.420	0.420	0.340
Standby Units	0.821	6.020	0.929	0.907
Overall	**0.305**	**0.313**	**0.337**	**0.256**

UCG-AEY-23

Reference: May 11, 2016 Application, page 5-1

The table on page 5-1 shows AEY's actual operations and maintenance expenses for 2013, 2014 and 2015 and forecast for 2016 and 2017.

Request:

(a) Please provide a table showing non-fuel operating and maintenance costs per customer for 2012, 2013, 2014, 2015, 2016 (forecast) and 2017 (forecast).

(b) Please provide detail on what expenses are included in the $441,000 spent in 2013-2015 and the $295,000 to be spent in 2016 and 2017 under Public Information.

Response:

(a) Please refer to CW-YECL-13(b) Attachment 1.

(b) Please refer to CW-YECL-14 Attachment 1.

UCG-AEY-24

Reference: May 11, 2016 Application, page 5-2

The table on page 5-2 shows AEY's actual operations and maintenance expenses for 2013, 2014 and 2015 as compared to the amounts filed for in the 2013-2015 GRA and those approved by the Board in Board Order 2014-06.

Request:

Please explain the relevance of including proposed O&M expense levels that were filed in the last GRA for 2013, 2014 and 2015 and how these numbers and identified variances from these amounts provide assistance to the YUB to determine appropriate O&M levels for 2016 and 2017.

Response:

The purpose of the table was to demonstrate AEY's forecast accuracy and ability to manage operating costs. As stated in the Application:

> ***"****ATCO Electric Yukon's variances between actual operations and maintenance expenses and the amounts as filed were 4.1% for 2013, 0.1% for 2014 and -3.4% for 2015, with a total variance over the three-year test period of 0.2%. The variances between actual operations and maintenance expenses and the Board-approved amounts were 1.0% for 2013, -1.6% for 2014 and -2.8% for 2015, with a total variance over the three-year test period of -1.1%."*

UCG-AEY-25

Reference: May 11, 2016 Application, page 5-2

AEY states "*The total labour costs are calculated by multiplying the number of staff per job class by the rate of pay for each job class. These labour costs are then distributed to operations and maintenance accounts or capital accounts depending on the nature of work being performed by the staff in that job class*."

Request:

(a) Please identify the number of employees compensated more than $100,000 annually in 2013, 2014, 2015, 2016 (forecast) and 2017 (forecast).

(b) Please provide a table showing employee complement history by function for 2013 Allowed, 2013 Actual, 2014 Allowed, 2014 Actual, 2015 Allowed, 2015 Actual, 2016 Forecast and 2017 Forecast.

Response:

(a) Please refer to Response JM-AEY-2(b).

(b) Please refer to CW-YECL-14(b).

UCG-AEY-26

Reference: May 11, 2016 Application, pages 5-2 – 5-3

AEY has included placeholder amounts for 2016 and 2017 for costs related the defined benefit pension plans. AEY is seeking YUB approval to be tied to the outcome of the upcoming ATCO Utilities 2016 Pension Application which will set the 2016 pension expense levels. AEY is also seeking continuation of the deferral account currently in place to flow-through any increases or decreases to the defined benefit funding amounts as a result of any updated actuarial evaluations.

Request:

(a) What is the status of the ATCO Utilities 2016 Pension Application and when is a decision expected on this application?

(b) Please confirm that the Alberta Utilities Commission denied ATCO permission to include pension costs related to pensions having 100% cost-of-living adjustment in the estimates of revenue requirements.

(c) Please provide copies of the defined benefit pension actuarial evaluation as at December 31, 2012, 2013, 2014 and 2015 and identify the resulting funding amounts.

(d) Please provide copies of all oversight reports provided to supervisory authorities with respect to AEY's pension plans since 2010.

(e) Please provide details of the credits / debits recorded in the existing deferral account for 2013, 2014 and 2015.

(f) What returns or carrying costs have been accrued on the balances in the deferral account since it was approved in April 2014?

(g) Please provide evidence demonstrating that AEY's total compensation costs and compensation strategy are in line with utility sector practice.

(h) Please provide a breakdown of total compensation cost and pension cost showing separately the amount attributed to capital expenditures and the amount attributed to operating expenditures.

(i) Please provide a description of the actuarial cost method used to determine the value of the underlying DB obligation and the method used to determine

amounts attributed to capital expenditures and amounts attributed to operating expenditures for AEY's DB pension plan. Please explain any deviations from what is considered actuarial best practice along with an explanation of the implications of any such deviations.

(j) Does AEY provide enhanced benefits under early retirement or other severance arrangements? If yes, please provide evidence demonstrating the value of the enhancements and impact on ratepayers.

(k) Does AEY incur any pension-related costs directed to special categories of employees such as a supplementary executive retirement plan(s)? If yes, please identify the amounts contributed by employees to any such plan(s) and describe the basis of determining the amount included in rates.

(l) Please provide a description of the governance framework AEY employs to govern its pension plans (both DB and DC plans).

(m) Please confirm that all pension costs identified in the Application are only related to YUB rate-regulated activities.

Response:

(a) The ATCO Utilities Pension Application was filed July 20, 2016.

(b) The Alberta Utilities Commission previously only allowed ATCO Utilities COLA at 50% of CPI to a maximum of 3% to be included in recoverable pension costs. The Commission's denial of COLA at 100% CPI was with respect to a funding deficiency which no longer exists.

In Decision 2011-391 the Commission also indicated that the percentage of CPI included in the annual COLA amount allowed in recoverable pension costs would be reconsidered under the following circumstances:

> 104. The Commission's direction to reduce the pension costs permitted into ATCO Utilities" respective revenue requirements by restricting annual COLA amounts to 50 per cent of CPI up to a maximum of three per cent starting January 1, 2012 will remain in effect until such time as the Commission may direct otherwise. Before the Commission will reconsider this direction, ATCO Utilities will be required to file a new DB Plan funding valuation submission based on the next actuarial valuation to be filed with and accepted by the Superintendent of Pensions. At the time of the filing of the next valuation submission, the

Commission will review all of the relevant circumstances, including the size of any unfunded liability, when considering any adjustment for regulatory purposes to the COLA amount used in determining the pension cost component of revenue requirement. In this context, the Commission will consider increasing the percentage of CPI included in the annual COLA amount included in pension expense should the current DB Plan unfunded liability significantly decrease. Similarly, the Commission will consider further decreasing the percentage of CPI included in the annual COLA amount included in pension expense should the current DB Plan unfunded liability significantly increase.

(c) Please refer to YUB-YECL-36(f) Attachments 1 to 4.

The resulting AEY funding amounts for each year is as follows:

Year	Service Cost	Special Payments	Total
2013	$604,900	$348,000	$952,900
2014	$484,100	$417,100	$901,200
2015	$529,100	$48,500	$577,600
2016 onward	$505,300	$0	$505,300

(d) Please refer to part (c) for the actuarial reports.

(e) Please refer to CW-YECL-15 Attachment 1.

(f) No carrying costs have been accrued on the balances.

(g) ATCO Electric Yukon, with support from the ATCO Electric Human Resources group, establishes an overall compensation strategy based on a combination of factors including internal expertise and experience along with consideration and analysis of a variety of available external market compensation reports. External market data is obtained through various compensation survey organizations, government agencies, professional organizations and applied research organizations, and is analyzed and validated by ATCO Electric's compensation specialists and skilled Human Resource professionals.

(h) Please refer to the following table:

AEY Compensation		
	2016	**2017**
Compensation (excl pension)	8,210	8,460
Pension	854	864
Total Compensation	9,064	9,324
Operating Expenditures	6,095	6,264
Capital Expenditures	2,969	3,060

(i) For purposes of the going concern valuation, the projected unit credit actuarial cost method is used to determine the value of the DB obligation. Under this method, the present value of benefit cash flows expected to be paid is determined in respect of service accrued prior to the valuation date, based on projected final average earnings as of the assumed future date of retirement.

For the purposes of the hypothetical wind-up or solvency valuation, the cost method is prescribed by legislation. In this case, the DB obligation is determined on the assumption that the plan is wound up on the effective date of the valuation so there is no projection of future earnings. The DB obligation is the value of benefits that would have been paid had the Plan been wound up on the valuation date, with all members fully vested in their accrued benefits.

Pension costs are attributed to each of the operating companies in two ways. Service costs are determined for all employees on an individual basis, and the service cost attributed to a particular operating company is simply the sum of the service costs for all employees of that company. Special payments are attributed to the operating companies based on each company's pro-rata share of liabilities.

These methods are consistent with actuarial best practice.

(j) ATCO Electric Yukon has not provided any early retirement or severance arrangements.

(k) No, AEY does not incur pension-related costs directed to special categories of employees such as a supplementary executive retirement plan.

(l) ATCO Electric Yukon (AEY) is a participating employer in the Retirement Plan for Employees of Canadian Utilities Limited (CU). CU has a comprehensive pension governance policy and structure in place to fulfill statutory and fiduciary obligations as the administrator of the Plans. CU has a pension governance policy that meets the requirements of the Employment Pension Plans Act and sets out the structures and process for overseeing, managing and administering the Plans. The administration of each of the Plans is in accordance with its terms and applicable legislation.

(m) Confirmed.

UCG-AEY-27

Reference: May 11, 2016 Application, pages 5-4

AEY states: *"ATCO Electric Yukon outsources certain major administrative functions to affiliate companies, such as ATCO Electric, to take advantage of the economies associated with the scope and scale of services available from a larger utility. The costs of these services are detailed in Schedule 5.3 and are based on a fully allocated cost methodology that does not contain any element of profit or return. Labour support is purchased from ATCO Electric for various services including financial reporting, regulatory support, governance, human resources, health and safety, payroll, IT services, and customer care & billing support".*

Request:

(a) Are there additional affiliate charges that are capitalized and do not show up on the O&M schedule 5-3? Please provide details of these charges for 2013 through 2017.

(b) Are there any outbound affiliate services? If yes, where are they identified?

(c) Please provide copies of service level agreements for all affiliate services provided to and by AEY in 2013-2015 and forecast to be provided to and by AEY over the 2016-2017 test period.

(d) Please provide evidence demonstrating that it is more cost-effective to procure the services for 2013-2017 from affiliates than from other sources.

Response:

(a) The following table is capitalized affiliate charges in ($000s).

	2013	2014	2015	2016	2017
Capital Materials Management	67	98	98	101	104
Windows 7 Upgrade	49				
E-Post Charges	31	107			
Oracle R12 Upgrade	35	41			

(b) There are no outbound affiliate services. Please note that there are several positions, such as the VP, Northern Development and the Supervisor, Customer Accounting & Administration that are shared between AEY, Northland Utilities (Yellowknife) and Northland Utilities (NWT). However, these are considered allocations for which each company picks up its share of the costs based on the time dedicated to that particular company, not affiliate services.

(c) Please refer to the following attachments for amended or new agreements since the 2013-2015 General Rate Application.

UCG-AEY-27 Attachment 1 – ATCO Electric Various Services Agreement (amended 2013)

UCG-AEY-27 Attachment 2 – ATCO Electric Various Services Agreement (amended 2015)

UCG-YECL-27 Attachment 3 – ATCO Gas Meter Reading and Processing Services (Amended 2013)

UCG-YECL-27 Attachment 4 – ATCO Gas Meter Reading and Processing Services (Amended 2014)

UCG-YECL-27 Attachment 5 – ATCO I-Tek Business Services Ltd. Customer Care and Billing Master Services Agreement Notice of Extension (2014)

UCG-YECL-27 Attachment 6 – ATCO I-Tek Information Technology Master Services Agreement Notice of Extension (2014)

(d) All services provided by ATCO Electric and ATCO Gas are based on a fully allocated cost methodology. No element of profit or return is included in the costs of the services. If the services were to be procured from a third party, the costs would include an element of profit to the provider, increasing the costs to AEY.

YUKON ELECTRICAL COMPANY LIMITED/
ATCO ELECTRIC
VARIOUS SERVICES
Services Agreement #32
March 1, 2013

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

SCOPE OF SERVICES

ATCO Electric will make available to YECL the following services:

A. Financial Reporting Services

ATCO Electric will provide the following Financial Reporting support:

- Preparation of month end and year end accounting to Canadian Utilities
- Fixed asset administration
- Support for preparation of annual business plan
- Provide direction and supervision to the financial services department in YECL

B. Payroll Services

ATCO Electric will provide the following payroll services:

- Payroll Processing
- Employee Records Maintenance
- Reporting and Reconciliation
- Statutory Requirements and Payroll Taxes
- Benefits Administration and Reporting

Please refer to Appendix II for a detailed description of the Scope of Services.

C. Accounts Payable Services

ATCO Electric will provide the following accounts payable services:

- iExpense administration
- GST returns
- Wire transfers
- Training of YECL Accounts Payable staff.
- Processing and reporting of non-resident taxes (NR4) when applicable.

D. Use of Systems

ATCO Electric will provide the following computer processing services:

- Monthly processing of accounting and payroll information
- Maintaining chart of accounts
- Access to and maintenance of historical information on the Oracle Financial Information System
- Use of the query software which is part of Oracle Financials
- Use of human resources systems

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

SCOPE OF SERVICES

E. Metering and Load Settlement

ATCO Electric will provide the following metering services:

- Supplying new and used meters
- Testing, verifying and re-sealing the meters
- Performing load and loss research studies

F. Health, Safety and Environment

Health, Safety and Environment (HS&E) Management System support related to the ongoing development and maintenance of YECL's HS&E Management System. Typical activities, as requested by the General Manager, would include support in:

- Identify and prioritize YECL's HS&E risks and developing management strategies
- Conduct reviews of YECL's HS&E Management System and the Safe Standards Manual to the appropriate (Yukon, Northwest Territory and British Columbia) OH&S, WCB and environmental regulatory requirements and to corporate and other requirements such as the Canadian Electricity Association, as required
- Develop, implement and provide ongoing maintenance of HS&E Best Practices and Programs in YECL's HS&E Management System and Safe Standards Manual
- Conduct evaluations and audits of YECL's HS&E Management System to identify potential improvement opportunities
- Conduct environmental and safety compliance audits to identify regulatory and policy non-compliances and management practice non-conformances
- Research HS&E issues and conduct major incident investigations
- Provide expert assistance in the capabilities of the Safety First Software (SWMS) application
- Provide medical management through Occupational Health Services

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

SCOPE OF SERVICES

G. Corporate Communications

ATCO Electric will provide the following Corporate Communications shared services:

- ATCO Electric will include North of 60 web pages in its company intranet
- ATCO Electric will manage and execute the employee long service awards recognition program for the North of 60 companies. This includes: annual service recognition
- Communiqué (sticker program); milestone awards program; and inclusion in annual long service award banquet (every five years starting with 10 years of service).
- ATCO Electric will facilitate approval of external communications per ATCO Disclosure Policy.
- ATCO Electric will provide communications advice and counsel on selected strategic initiatives.

H. Human Resources

ATCO Electric will make available to YECL, through services provided by the Human Resources staff, the following:

- Advice and counsel on the interpretation and application of employment legislation
- Advice on and support for the implementation of corporate human resource policies and programs, including compensation and benefits, staffing and performance management, and employee relations
- Support for the negotiation and application of collective agreements
- Assistance in the recruitment, selection and orientation of employees, including preparation of internal and external advertising, coordination and conducting of interviews, assessment of candidates, and preparation of employment offers
- Coordination and administration of programs and services dealing with corporate pension and benefits plans, including Life, Health and Disability Insurance, and Pension
- Support for the implementation and administration of employee service programs including the Employee Assistance Program, Violence and Harassment-Free Workplace Program, and Disability Management Program
- Inclusion of YECL employees (less than 10 per year on average) in the long service recognition program
- General maintenance of employee earning and deduction elements at the employee level on the Oracle HRX system.
- Maintenance of annual TD1 forms for employee tax exemptions
- Maintenance of the annual Canada Savings Bond program as applicable.

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

As amended March 1, 2013

SCOPE OF SERVICES

- Maintenance of employee information on payroll system such as preset distribution and taxing information.
- Set up and maintenance of automatic payroll deposits to employee bank accounts

I. Regulatory Support

The use of Regulation & Business Plan staff to support regulatory matters on an as available basis. These tasks include, but are not limited to, the following:

- Preparation of filings
- Information requests
- Witness preparation
- Consultation and Negotiations with customers
- Responses to Board requests and inquiries

The use of Electric Pricing staff to support regulatory matters on an as available basis. These tasks include, but are not limited to, the following:

- Preparation of filings
- Information requests
- Load and losses forecast
- Rate / rider design
- Cost of service
- Witness preparation
- Consultation and Negotiations with customers
- Responses to Board requests and inquiries

J. Supply Chain Management

ATCO Electric will provide the following supply chain management services:

- Fill inventory requisitions submitted by YECL, from existing inventory or through the purchasing group, and arrange delivery to YECL
- Provide buying services to process requisitions into purchase orders for services or material not available through inventory
- Provide supply chain management consulting, for purchasing, inventory, investment recovery, warehousing and systems, education and training, on an as required basis

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

As amended March 1, 2013

SCOPE OF SERVICES

K. Information Technology

ATCO Electric will provide the following information technology support services:

- Contract support
- Resolution of service and billing issues

L. Governance

ATCO Electric senior management will provide support relating to governance, policy and strategic direction.

M. Training and Development

On an as requested and as available basis, ATCO Electric will provide training to YECL staff that is consistent in nature and scope to that provided to ATCO Electric employees.

N. Outage Call Management

ATCO Electric will provide to YECL the following Outage Call Management (OCM) services associated with answering emergency and outage telephone calls outside of YECL's normal business hours:

- Answer outage and emergency calls received on YECL's toll free number from 6 p.m. until 9 a.m. MST Monday through Friday and 24 hours a day on weekends and on Yukon Territory statutory holidays. This service is effective December 1, 2006. Hours will be extended until 9 a.m. MST on weekdays effective April 1, 2007.
- Dispatch YECL service personnel and track their status for "working alone" until return.
- Provide a single dedicated telephone line for both outage and emergency calls with a maximum capacity of four concurrent calls in queue after which a busy signal is received.
- Provide a dedicated phone line for YECL servicemen to contact the OCM agent. Unanswered calls will receive a message to call back.
- Forward to service personnel customer requests for urgent connections or disconnections outside of YECL's regular hours of operation. Receive outage-related complaints and forward to YECL.
- Provide email hand-off of ongoing situations at commencement of normal YECL business hours.
- Priority in answering will be given to ATCO Electric calls.

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

SCOPE OF SERVICES

- Monthly reporting will be provided as follows:
  - Total number of calls answered by agents
  - Total number of calls processed by agents
  - Average Speed of Answer (daily measure)
- Answered calls will be recorded and retained for 90 days.
- Planned outages are excluded from this service. Dispatched work will not be logged. Outage messaging (TVD system) will not be provided to callers in queue.
- No dedicated emergency line for use by police, ambulance and fire departments.
- Scripting, contact lists, procedures for emergency call out of OIC, call forwarding of YECL phone lines, and hand-offs of ongoing situations at ending of YECL business hours are all the responsibility of YECL.

O. Business Continuity Management

ATCO Group Policy A-22 "Emergency Preparedness & Communication" mandates the development, exercising, maintenance and ongoing review of Emergency Response Plans (ERPs), a Crisis Management Plan (CMP) and Business Continuity Plans (BCPs) for Yukon Electrical Company Limited.

ATCO Electric will make available to YECL, through the services provided by the Business Continuity Management Program (BCMP) office, the following:

- Provide ongoing leadership, establish guidelines & standards and make recommendations toward the continuous improvement of the BCMP
- Provide consultation and assist in the development of related plans
- Assist in the facilitation and gathering of Business Impact Analysis information and other information needed for the development of BCP's
- Ensure alignment with related corporate policy, procedure, practices, and industry best practices
- Share information and promote BCM best practice with business unit leaders and ERP/BCP team leads and plan owners
- Assist in the development and as appropriate the delivery of a training program for key personnel
- Ensure that Emergency Response and Business Continuity Plans are effectively monitored, reviewed and kept up to date
- Contribute to the development, participation and facilitation of annual plan exercises and reviews

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

SCOPE OF SERVICES

P. Building Construction and Facility Maintenance

On an as requested and as available basis, ATCO Electric will provide support for Northland Utilities that is consistent in nature and scope to that provided to ATCO Electric related to building construction and facilities maintenance.

Schedule "B" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

TERMS AND CONDITIONS

1. Term of Contract

The amendments are effective as of March 1, 2013.

The term is in perpetuity with annual renewal, subject to either party giving a six-month notice to terminate. In the event that new amendments are required, an amendment agreement will be renegotiated three months prior to the effective date of the amended agreement

ATCO Electric shall provide YECL reasonable notice of changes to ATCO Electric's systems or operation of its systems that would result in material changes in the cost of the service.

2. Cost of Service Provided

The method of cost allocation and compensation to be paid by YECL to ATCO Electric will be administered in compliance with ATCO Electric's accounting policy G.5.

ATCO Electric will provide the centralized payroll service on a Cost Recovery Basis as required by the ATCO Group Inter-Affiliate Code of Conduct. For regular payroll processing services, this is currently estimated at $6 per employee per direct deposit.

The time analysis of services rendered will be reviewed a minimum of annually but may be reviewed at any time by either party with a one month notice.

The estimated cost of the services for 2013 is detailed in Appendix I.

Schedule "C" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

YECL'S REPRESENTATIVE

Dwight Redden
General Manager
100 – 1100 1st Avenue, Whitehorse, Yukon Y1A 3T4
Telephone: (867) 633-7003
Fax: (867) 668-6692
dwight.redden@atco.com

Signature

FEBRUARY 25, 2013

Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Governance
Bobbi Lambright
President, Operations Division
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-7765 Fax: (780) 420-5077
bobbi.lambright@atcoelectric.com

Signature

Mar 1, 2013
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

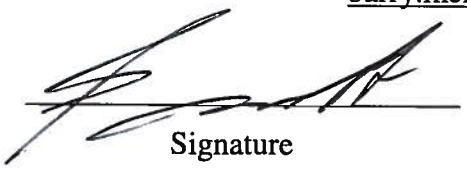
Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Financial Reporting, Payroll, Accounts Payable and Use of Systems

Barry McNabb
Vice President, Regulatory & Controller
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-7604 Fax: (780) 420-8026
barry.mcnabb@atcoelectric.com



Signature

Feb 25, 2013

Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Corporate Communications
Joanne Miller
Director, Corporate Communications
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-7463 Fax: (780) 420-4199
joanne.miller@atcoelectric.com

Signature

Feb 28/13
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Human Resources
Health, Safety & Environment
Supply Chain Management
Training & Development
Business Continuity Management
Building Construction & Facility Maintenance

Jerome Babyn
Vice President, Corporate Services
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-5035 Fax: (780) 420-7337
jerome.babyn@atcoelectric.com

Jerome Babyn
Signature

Feb 28/13
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Metering and Load Settlement
Bob Deyl
Manager, Metering and Load Settlement
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-5501 Fax: (780) 420-3854
bob.deyl@atcoelectric.com

Signature

Feb 28, 2013
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Regulatory Support – Phase I

James Grattan
Senior Manager, Regulatory
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 733-2489 Fax: (780) 420-7120
james.grattan@atcoelectric.com



Signature

February 26, 2013.

Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Regulatory Support – Phase II

Satar Parhar
Senior Manager, Pricing
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-7613 Fax: (780) 420-7120
satar.parhar@atcoelectric.com

S. Parhar — Signature

Feb 25/2013 — Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Information Technology
Maureen Lang
Senior Manager, Business and Technology Solutions
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-7164 Fax: (780) 508-4646
maureen.lang@atcoelectric.com

M Lang
Signature

2/27/13
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

ATCO ELECTRIC'S REPRESENTATIVES

Outage Call Management
Randy Loveseth
Senior Manager, Distribution Operations
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-3177 Fax: (780) 420-7056
randy.loveseth@atcoelectric.com

R. Loveseth
Signature

FEBRUARY 27, 2013
Date

Appendix I to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

The estimated cost of the services for 2013 is as follows:

Financial Reporting, Accounts Payable, Use of Systems	$ 586,000
Regulatory Support (Note 1)	$ 10,000
Payroll Services (Note 2)	$11,000
Metering and Load Settlement	$ 49,000
Health, Safety and Environment	$ 6,800
Human Resources	$ 99,000
Supply Chain Management	$ 76,400
Information Technology	$ 3,500
Governance	$ 15,000
Outage Call Management	$ 62,000
Business Continuity Management	$ 7,500
Building Construction and Facility Maintenance	$ 10,000
Total	$936,200

Note 1: This estimate excludes costs associated with Phase I and Phase II Regulatory Matters as the scope and quantity of work associated with these matters have yet to be determined.

Note 2: Payroll Services are estimated at $6 per employee per pay.

Appendix II to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

Yukon Electrical Company Limited ("YECL") and ATCO Electric

as amended March 1, 2013

This agreement states that ATCO Electric will provide services for the administration and coordination of Payroll Services as required by YECL. Functions and activities include:

1) **Payroll Processing**
   - Production of employee pay advices on a bi-weekly basis. Ensure that employees are paid accurately and any adjustments are made in a timely fashion.
   - Maintain controls to ensure employees are paid correctly.
   - Processing and reporting of bonuses and severance payments ensuring that all auditing and governmental requirements are met.
   - Distribute pay advices to locations defined and maintained by YECL.

2) **Employee Records Maintenance**
   - Set up and maintain the system payroll schedule and global tables.

3) **Reporting and Reconciliation**
   - Reconcile payroll clearing and control accounts based on general ledger information provided by YECL and provide completed reconciliations to YECL following each payroll run.
   - Distribute appropriate reports.

4) **Statutory Requirements and Payroll Taxes**
   - Payment and reconciliation of employee and employer source deductions to the Federal Government for the standard and lower rates of Employment Insurance.
   - Preparation of yearly source deductions summary for submission to Federal Government. Reconcile year end financial controls to T4 summary and determine appropriate adjustments when applicable.
   - Preparation of annual T4s for employees including all taxable benefits (such as parking, market differential loans, severance payments, bonuses, etc.). Preparation of annual T4As for non-employees such as pensioners, bursary recipients and directors as required.
   - Preparation of assessable earning reports for submission to WCB by YECL.
   - Payment of Health Care premiums as necessary and account reconciliation.
   - Process third party demands such as maintenance enforcement payments and wage garnishments.

5) **Benefits Administration and Reporting**
   - ATCO Flex group benefit payment and account reconciliation. Ensure that prepayment of benefits for employees taking an unpaid leave of absence (for educational purposes or parental leave, for example) are processed correctly.

THE YUKON ELECTRICAL COMPANY LIMITED DBA ATCO ELECTRIC YUKON ("ATCO ELECTRIC YUKON")/ ATCO ELECTRIC DISTRIBUTION, A DIVISION OF ATCO ELECTRIC LTD. ("ATCO ELECTRIC")

VARIOUS SERVICES

Services Agreement #32

As Amended January 1, 2015

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

SCOPE OF SERVICES

E. Metering and Load Settlement

ATCO Electric will provide the following metering services:

- Supplying new and used meters
- Testing, verifying and re-sealing the meters
- Performing load and loss research studies

F. Health, Safety and Environment

Health, Safety and Environment (HS&E) Management System support related to the ongoing development and maintenance of ATCO Electric Yukon's HS&E Management System. Typical activities, as requested by the General Manager, would include support in:

- Identify and prioritize ATCO Electric Yukon's HS&E risks and developing management strategies
- Conduct reviews of ATCO Electric Yukon's HS&E Management System and the Safe Standards Manual to the appropriate (Yukon, Northwest Territory and British Columbia) OH&S, WCB and environmental regulatory requirements and to corporate and other requirements such as the Canadian Electricity Association, as required
- Develop, implement and provide ongoing maintenance of HS&E Best Practices and Programs in ATCO Electric Yukon's HS&E Management System and Safe Standards Manual
- Conduct evaluations and audits of ATCO Electric Yukon's HS&E Management System to identify potential improvement opportunities
- Conduct environmental and safety compliance audits to identify regulatory and policy non-compliances and management practice non-conformances
- Research HS&E issues and conduct major incident investigations
- Provide expert assistance in the capabilities of the Safety First Software (SWMS) application
- Provide medical management through Occupational Health Services

G. Corporate Communications

ATCO Electric will provide the following Corporate Communications shared services:

- ATCO Electric will include North of 60 web pages in its company intranet
- ATCO Electric will manage and execute the employee long service awards recognition program for the North of 60 companies. This includes: annual service recognition

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

SCOPE OF SERVICES

G. Corporate Communications

- Communiqué (sticker program); milestone awards program; and inclusion in annual long service award banquet (every five years starting with 10 years of service).
- ATCO Electric will facilitate approval of external communications per ATCO Disclosure Policy.
- ATCO Electric will provide communications advice and counsel on selected strategic initiatives.

H. Human Resources

ATCO Electric will make available to ATCO Electric Yukon, through services provided by the Human Resources staff, the following:

- Advice and counsel on the interpretation and application of employment legislation
- Advice on and support for the implementation of corporate human resource policies and programs, including compensation and benefits, staffing and performance management, and employee relations
- Support for the negotiation and application of collective agreements
- Assistance in the recruitment, selection and orientation of employees, including preparation of internal and external advertising, coordination and conducting of interviews, assessment of candidates, and preparation of employment offers
- Coordination and administration of programs and services dealing with corporate pension and benefits plans, including Life, Health and Disability Insurance, and Pension
- Support for the implementation and administration of employee service programs including the Employee Assistance Program, Violence and Harassment-Free Workplace Program, and Disability Management Program
- Inclusion of ATCO Electric Yukon employees (less than 10 per year on average) in the long service recognition program
- General maintenance of employee earning and deduction elements at the employee level on the Oracle HRX system.
- Maintenance of annual TD1 forms for employee tax exemptions
- Maintenance of the annual Canada Savings Bond program as applicable.
- Maintenance of employee information on payroll system such as preset distribution and taxing information
- Set up and maintenance of automatic payroll deposits to employee bank accounts

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

As amended January 1, 2015

SCOPE OF SERVICES

I. Regulatory Support

ATCO Electric will provide staff to support regulatory matters on an as available basis. These tasks include, but are not limited to, the following:

- Preparation of filings
- Information requests
- Load and losses forecast
- Rate / rider design
- Cost of Service
- Witness preparation
- Consultation and Negotiations with customers
- Responses to Board requests and inquiries

J. Supply Chain Management

ATCO Electric will provide the following supply chain management services:

- Fill inventory requisitions submitted by ATCO Electric Yukon, from existing inventory or through the purchasing group, and arrange delivery to ATCO Electric Yukon
- Provide buying services to process requisitions into purchase orders for services or material not available through inventory
- Provide supply chain management consulting, for purchasing, inventory, investment recovery, warehousing and systems, education and training, on an as required basis

K. Information Technology

ATCO Electric will provide the following information technology support services:

- Contract support
- Resolution of service and billing issues

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

As amended January 1, 2015

SCOPE OF SERVICES

L. Governance

ATCO Electric senior management will provide support relating to governance, policy and strategic direction.

M. Training and Development

On an as requested and as available basis, ATCO Electric will provide training to ATCO Electric Yukon
staff that is consistent in nature and scope to that provided to ATCO Electric employees.

N. Outage Call Management

ATCO Electric will provide to ATCO Electric Yukon the following Outage Call Management (OCM) services associated with answering emergency and outage telephone calls outside of ATCO Electric Yukon's normal business hours:

- Answer outage and emergency calls received on ATCO Electric Yukon's toll free number from 6 p.m. until 9 a.m. MST Monday through Friday and 24 hours a day on weekends and on Yukon Territory statutory holidays. This service is effective December 1, 2006. Hours will be extended until 9 a.m. MST on weekdays effective April 1, 2007.
- Dispatch ATCO Electric Yukon service personnel and track their status for "working alone" until return.
- Provide a single dedicated telephone line for both outage and emergency calls with a maximum capacity of four concurrent calls in queue after which a busy signal is received.
- Provide a dedicated phone line for ATCO Electric Yukon servicemen to contact the OCM agent. Unanswered calls will receive a message to call back.
- Forward to service personnel customer requests for urgent connections or disconnections outside of ATCO Electric Yukon's regular hours of operation. Receive outage-related complaints and forward to ATCO Electric Yukon.
- Provide email hand-off of ongoing situations at commencement of normal ATCO Electric Yukon business hours.
- Priority in answering will be given to ATCO Electric calls.
- Monthly reporting will be provided as follows:
  - Total number of calls answered by agents
  - Total number of calls processed by agents
  - Average Speed of Answer (daily measure)

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

SCOPE OF SERVICES

N. Outage Call Management

- Answered calls will be recorded and retained for 90 days.
- Planned outages are excluded from this service. Dispatched work will not be logged. Outage messaging (TVD system) will not be provided to callers in queue.
- No dedicated emergency line for use by police, ambulance and fire departments.
- Scripting, contact lists, procedures for emergency call out of OIC, call forwarding of ATCO Electric Yukon phone lines, and hand-offs of ongoing situations at ending of ATCO Electric Yukon business hours are all the responsibility of ATCO Electric Yukon.

O. Business Continuity Management

ATCO Group Policy A-22 "Emergency Preparedness & Communication" mandates the development, exercising, maintenance and ongoing review of Emergency Response Plans (ERPs), a Crisis Management Plan (CMP) and Business Continuity Plans (BCPs) for Yukon Electrical Company Limited.

ATCO Electric will make available to ATCO Electric Yukon, through the services provided by the Business Continuity Management Program (BCMP) office, the following:

- Provide ongoing leadership, establish guidelines & standards and make recommendations toward the continuous improvement of the BCMP
- Provide consultation and assist in the development of related plans
- Assist in the facilitation and gathering of Business Impact Analysis information and other information needed for the development of BCP's
- Ensure alignment with related corporate policy, procedure, practices, and industry best practices
- Share information and promote BCM best practice with business unit leaders and ERP/BCP team leads and plan owners
- Assist in the development and as appropriate the delivery of a training program for key personnel
- Ensure that Emergency Response and Business Continuity Plans are effectively monitored, reviewed and kept up to date
- Contribute to the development, participation and facilitation of annual plan exercises and reviews

Schedule "A" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

SCOPE OF SERVICES

P. Building Programs and Facilities & Services

On an as requested and as available basis, ATCO Electric will provide support for ATCO Electric Yukon that is consistent in nature and scope to that provided to ATCO Electric related to building programs and facilities and services.

Q. Customer Care and Billing

ATCO Electric will provide the following customer care and billing services:

- Perform daily billing quality assurance processes: statement and charge check, special handling statements and approving statement batch work queue
- Perform daily financial activities: balance daily billing control reports, A/R reconciliation, investigate exceptions, process journal vouchers, verify daily credit card decline reports
- Perform monthly balancing and controls activities including setting up monthly controls, entering month end balancing and controls, balancing returned items, reconcile 3rd party invoicing for credit card payment processing
- Perform monthly price schedule changes (values)
- Perform the annual creation of the billing calendar
- Occasional support for ad-hoc change requests including price schedule design, GL mapping, domain narrowing and code table updates, statement messaging and inserts, work queue management.
- Invoice support for BPO-IT fee charges and CC&B projects.
- User Acceptance Testing for ATCO CIS changes.
- Incident and Problem management support for ATCO CIS

Schedule "B" to the Master Service Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

TERMS AND CONDITIONS

1. Term of Contract

This amending agreement is effective as of January 1, 2015.

The term is in perpetuity with annual renewal, subject to either party giving a six-month notice to terminate. In the event that new amendments are required, an amendment agreement will be renegotiated three months prior to the effective date of the amended agreement

ATCO Electric shall provide ATCO Electric Yukon reasonable notice of changes to ATCO Electric's systems or operation of its systems that would result in material changes in the cost of the service.

2. Cost of Service Provided

The method of cost allocation and compensation to be paid by ATCO Electric Yukon to ATCO Electric will be administered in compliance with ATCO Electric's accounting policy G.5.

ATCO Electric will provide the centralized payroll service on a Cost Recovery Basis as required by the ATCO Group Inter-Affiliate Code of Conduct. For regular payroll processing services, this is currently estimated at $6 per employee per direct deposit.

The time analysis of services rendered will be reviewed a minimum of annually but may be reviewed at any time by either party with a one month notice.

Schedule "C" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC YUKON'S REPRESENTATIVE

Dwight Redden
General Manager
100-1100 Front Street
Whitehorse, Yukon Y1A 3T4
Telephone: (867) 633-7003
Email: dwight.redden@atco.com

Signature

December 16, 2014

Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Governance
Bobbi Lambright
President, ATCO Electric Distribution
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-7765
bobbi.lambright@atcoelectric.com

Signature

Dec 17, 2014
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Financial Reporting, Payroll, Accounts Payable and Use of Systems

Barry McNabb
Vice President, Regulatory & Controller
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-7604
barry.mcnabb@atcoelectric.com

Signature

Dec 16, 2014

Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Corporate Communications
Colleen Foster
Director, Communications & Change Management
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-3828
colleen.foster@atcoelectric.com

Signature

Dec. 17, 2014
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Human Resources
Health, Safety & Environment
Supply Chain Management
Training & Development
Business Continuity Management
Building Programs
Facilities & Services

Jerome Babyn
Vice President, Corporate Services
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-5035
jerome.babyn@atcoelectric.com

Jerome Babyn
Signature

Dec. 18/14
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Metering and Load Settlement
Bob Deyl
Senior Manager, Metering and Load Settlement
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 509-2199
bob.deyl@atcoelectric.com



Signature

Dec 17, 2014

Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Regulatory Support
James Grattan
Director, Regulatory
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 733-2489
james.grattan@atcoelectric.com

Signature

December 22, 2014
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Information Technology
Maureen Lang
Director, IT Governance & Controls
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-7164 Fax: (780) 508-4646
maureen.lang@atcoelectric.com

Signature

Dec 17/2014
Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Outage Call Management
Randy Loveseth
Senior Manager, Distribution Operations
10035–105 Street, Edmonton, Alberta T5J 2V6
Telephone: (780) 420-3177
randy.loveseth@atcoelectric.com

Supervisor, CENTRAL WORK DESK — Signature per Randy Loveseth — December 29, 2014 — Date

Schedule "D" to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

ATCO ELECTRIC'S REPRESENTATIVES

Customer Care and Billing
Mike Jones
Senior Manager, Business Process & Customer Care
10035–105 Street
Edmonton, Alberta T5J 2V6
Telephone: (780) 509-9153
Email: mike.jones@atcoelectric.com

Signature

Dec 18, 2014
Date

Appendix I to the Master Services Contract

VARIOUS SERVICES

dated October 31, 2003 between

ATCO Electric Yukon and ATCO Electric

as amended January 1, 2015

This agreement states that ATCO Electric will provide services for the administration and coordination of Payroll Services as required by ATCO Electric Yukon. Functions and activities include:

1) **Payroll Processing**
   - Production of employee pay advices on a bi-weekly basis. Ensure that employees are paid accurately and any adjustments are made in a timely fashion.
   - Maintain controls to ensure employees are paid correctly.
   - Processing and reporting of bonuses and severance payments ensuring that all auditing and governmental requirements are met.
   - Distribute pay advices to locations defined and maintained by ATCO Electric Yukon.

2) **Employee Records Maintenance**
   - Set up and maintain the system payroll schedule and global tables.

3) **Reporting and Reconciliation**
   - Reconcile payroll clearing and control accounts based on general ledger information provided by ATCO Electric Yukon and provide completed reconciliations to ATCO Electric Yukon following each payroll run.
   - Distribute appropriate reports.

4) **Statutory Requirements and Payroll Taxes**
   - Payment and reconciliation of employee and employer source deductions to the Federal Government for the standard and lower rates of Employment Insurance.
   - Preparation of yearly source deductions summary for submission to Federal Government. Reconcile year-end financial controls to T4 summary and determine appropriate adjustments when applicable.
   - Preparation of annual T4s for employees including all taxable benefits (such as parking, market differential loans, severance payments, bonuses, etc.). Preparation of annual T4As for non-employees such as pensioners, bursary recipients and directors as required.
   - Preparation of assessable earning reports for submission to WCB by ATCO Electric Yukon.
   - Payment of Health Care premiums as necessary and account reconciliation.
   - Process third party demands such as maintenance enforcement payments and wage garnishments.

5) **Benefits Administration and Reporting**
   - ATCO Flex group benefit payment and account reconciliation. Ensure that prepayment of benefits for employees taking an unpaid leave of absence (for educational purposes or parental leave, for example) are processed correctly.

NORTH OF 60 COMPANIES
(NORTHLAND UTILITIES (NWT) LIMITED, THE YUKON ELECTRICAL COMPANY LIMITED) and ATCO GAS

METER READING AND PROCESSING SERVICES
Services Agreement #134/#60

As Amended April 1, 2013

Schedule "A" to the Master Services Contract

METER READING AND PROCESSING SERVICES

dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended April 1, 2013

SCOPE OF SERVICES

ATCO Gas will provide meter reading processing services to North of 60 Companies (North of 60) through the ATCO Gas Premierplus4 (PP4) and the Field Collection system (FCS) as follows:

1. Download/upload of meter reading routes to handheld units.
   - Identify download/upload processes unique to North of 60.
   - Set up daily meter reading assignments for applicable Meter Readers.

2. Processing of meter readings so that they post to appropriate customer accounts in the billing system.
   - Maintain meter reading processing requirements unique to North of 60.
   - Modify ATCO CIS interface to allow processing of North of 60 data.

3. Report production and distribution
   - Identify reporting requirements unique to North of 60.
   - Define North of 60 report distribution requirements.
   - Modify report processing in Premierplus4 or FCS as requested.

4. System maintenance and enhancements
   - Maintenance and enhancements related to PP4 or FCS software will be coordinated by Meter Reading Systems.

5. Inventory tracking and maintenance
   - Establish and maintain distribution and maintenance records of handheld units and accessories.

6. Yukon Energy Corporation services are being provided through a Memorandum of Agreement between ATCO Electric and Yukon Energy.

Schedule "B" to the Master Services Contract

METER READING AND PROCESSING SERVICES

Dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended April 1, 2013

TERMS AND CONDITIONS

1. Term of Contract

This amending agreement shall commence effective April 1, 2013 and will remain in effect in perpetuity with annual renewal. If amendments to the current agreement are required a new agreement will be negotiated 3 months prior to the new effective date of the contract. In the event that either party wishes to terminate the contract, written notice to the manager is required at least 12 months in advance of the termination date.

ATCO Gas shall provide to North of 60 written notice of changes to ATCO Gas' systems or operation of its systems as soon as is practical that could result in changes in the cost of the service.

2. Cost of Service Provided

Labour Charges

- Direct labour costs will be based on actual labour dollars, including overtime as defined Policy 80.04.
- Overtime will be based on actual labour hours and dollars at two times the regular rate of pay.

Equipment and Shipping Costs

- All equipment purchased and shipping of the same, incurred for North of 60 will be charged to North of 60 at the actual cost incurred.

Use of ATCO Gas' assets in the provision of service

- ATCO Gas will recover the operating, depreciation and capital costs of any assets used in the provision of this service.

Direct Supplies

- Direct supplies will be charged to North of 60 at the cost incurred by ATCO Gas.

Overhead Rate

- ATCO Gas will charge North of 60 an overhead rate on all labour costs including supervision, burden and non-direct labour charges at the rate stated in Policy 80.04.

Schedule "B" to the Master Services Contract

METER READING AND PROCESSING SERVICES

Dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended April 1, 2013

TERMS AND CONDITIONS

2. Cost of Service Provided

Operating costs are estimated based on forecast volumes of usage per Appendix A. These estimated costs may be adjusted, with appropriate notice, to reflect changes in actual functionality or volumes used. Effective April 1, 2013 these costs are estimated to be $26,160 Canadian plus GST per annum.

3. Additional Support

Requests for additional support including, but not limited to:

- software maintenance and upgrading of equipment, processes and software specific to North of 60,
- training of new North of 60 Company staff , and
- any costs associated with termination of agreement by North of 60 (such costs may include, but are not limited to I-Tek charges for removal of North of 60 from meter reading systems and alterations to mainframe applications to remove records, processes and reports)

Additional support will be billed in accordance with Policy 80.04. Special requests and non-routine work will be billed independently of ongoing operating costs.

4. Billing

The Financial Services department of ATCO Gas will be responsible for the charging of costs associated with this agreement through the inter-company debit note process, and the provision of details supporting the charges. Settlement of these charges will be consistent with the normal settlement date for inter-company transactions.

ATCO Gas will provide services to North of 60 Companies and charge to the following accounts:

- ATCO Gas charges services to account:
  001.72122.561014.11742.000.00000
  001.72119.561014.11700.000.00000
- ATCO Gas charges labour to account:
  001.71230.540000.11742.000.00000
- ATCO Gas records recovery in account 001.00000.413117.11742.005.00000.

Schedule "C" to the Master Services Contract

METER READING AND PROCESSING SERVICES

Dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended April 1, 2013

REPRESENTATIVE FOR

NORTHLAND UTILITIES (NWT) LIMITED

YUKON ELECTRICAL COMPANY LIMITED

Dwight Redden
General Manager
100-1100 1st Avenue
Whitehorse, Yukon Y1A 3T4
Telephone: (867) 633-7003
Fax: (867) 668-3965
Email: dwight.redden@atco.com

Signature

March 23, 2013
Date

Schedule "D" to the Master Services Contract

METER READING AND PROCESSING SERVICES

Dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended April 1, 2013

ATCO GAS' REPRESENTATIVE

Blain Smetaniuk
Director, Edmonton South
5623 – 82 Avenue
PO Box 2426
Edmonton, AB T5J 2V6
Telephone: (780) 733-2553
Email: blaine.smetaniuk@atcogas.com

Signature

Mar. 25, 2013
Date

NORTH OF 60 COMPANIES(NORTHLAND UTILITIES (NWT) LIMITED, THE YUKON ELECTRICAL COMPANY LIMITED DBA ATCO ELECTRIC YUKON) and ATCO GAS

METER READING AND PROCESSING SERVICES

Services Agreement #134/#60

As Amended August 1, 2014

Schedule "A" to the Master Services Contract

METER READING AND PROCESSING SERVICES

dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended August 1, 2014

SCOPE OF SERVICES

ATCO Gas will provide meter reading processing services to North of 60 Companies (North of 60) through the ATCO Gas Field Collection system (FCS) as follows:

1. Download/upload of meter reading routes to handheld units.
   - Identify download/upload processes unique to North of 60.
   - Set up daily meter reading assignments for applicable Meter Readers.

2. Processing of meter readings so that they post to appropriate customer accounts in the billing system.
   - Maintain meter reading processing requirements unique to North of 60.

3. Provide daily meter reading reports as required.

4. System maintenance and enhancements
   - Maintenance and enhancements related to FCS software will be coordinated by Meter Reading Systems.

5. Inventory tracking and maintenance
   - Establish and maintain distribution and maintenance records of handheld units and accessories.

6. Yukon Energy Corporation services are being provided through a Memorandum of Agreement between ATCO Electric and Yukon Energy.

Schedule "B" to the Master Services Contract

METER READING AND PROCESSING SERVICES

Dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended August 1, 2014

TERMS AND CONDITIONS

1. Term of Contract

This amending agreement shall commence effective August 1, 2014 and will remain in effect in perpetuity with annual renewal. If amendments to the current agreement are required a new agreement will be negotiated 3 months prior to the new effective date of the contract. In the event that either party wishes to terminate the contract, written notice to the manager is required at least 12 months in advance of the termination date.

ATCO Gas shall provide to North of 60 written notice of changes to ATCO Gas' systems or operation of its systems as soon as is practical that could result in changes in the cost of the service.

2. Cost of Service Provided

Labour Charges

- Direct labour costs will be based on actual labour dollars, including overtime as defined Policy 80.04.
- Overtime will be based on actual labour hours and dollars at two times the regular rate of pay.

Equipment and Shipping Costs

- All equipment purchased and shipping of the same, incurred for North of 60 will be charged to North of 60 at the actual cost incurred.

Use of ATCO Gas' assets in the provision of service

- ATCO Gas will recover the operating, depreciation and capital costs of any assets used in the provision of this service.

Direct Supplies

- Direct supplies will be charged to North of 60 at the cost incurred by ATCO Gas.

Overhead Rate

- ATCO Gas will charge North of 60 an overhead rate on all labour costs including supervision, burden and non-direct labour charges at the rate stated in Policy 80.04.

Schedule "B" to the Master Services Contract

METER READING AND PROCESSING SERVICES

Dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended August 1, 2014

TERMS AND CONDITIONS

2. Cost of Service Provided (con't)

Operating costs are estimated based on forecast volumes of usage per Appendix A. These estimated costs may be adjusted, with appropriate notice, to reflect changes in actual functionality or volumes used. Effective August 1, 2014 these costs are estimated to be $30,856 Canadian plus GST per annum.

3. Additional Support

Requests for additional support including, but not limited to:

- software maintenance and upgrading of equipment, processes and software specific to North of 60,
- training of new North of 60 Company staff , and
- any costs associated with termination of agreement by North of 60 (such costs may include, but are not limited to I-Tek charges for removal of North of 60 from meter reading systems and alterations to mainframe applications to remove records, processes and reports)

Additional support will be billed in accordance with Policy 80.04. Special requests and non-routine work will be billed independently of ongoing operating costs.

4. Billing

The Financial Services department of ATCO Gas will be responsible for the charging of costs associated with this agreement through the inter-company debit note process, and the provision of details supporting the charges. Settlement of these charges will be consistent with the normal settlement date for inter-company transactions.

ATCO Gas will provide services to North of 60 Companies and charge to the following accounts:

- ATCO Gas charges services to account:
  001.72122.561014.11742.000.00000
  001.72119.561014.11700.000.00000
- ATCO Gas charges labour to account:
  001.71230.540000.11742.000.00000
- ATCO Gas records recovery in account 001.00000.413117.11742.011.00000.

Schedule "C" to the Master Services Contract

METER READING AND PROCESSING SERVICES

Dated November 1, 2003 between

North of 60 Companies and ATCO Gas

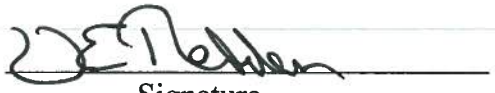
as amended August 1, 2014

REPRESENTATIVE FOR

NORTHLAND UTILITIES (NWT) LIMITED

YUKON ELECTRICAL COMPANY LIMITED DBA ATCO ELECTRIC YUKON

Dwight Redden
General Manager
100-1100 Front Street
Whitehorse, Yukon Y1A 3T4
Telephone: (867) 633-7003
Email: dwight.redden@atco.com



Signature

July 5, 2014

Date

Schedule "D" to the Master Services Contract

METER READING AND PROCESSING SERVICES

Dated November 1, 2003 between

North of 60 Companies and ATCO Gas

as amended August 1, 2014

ATCO GAS' REPRESENTATIVE

Ross Gordon
Senior Manager, Shop Services
5623 – 82 Avenue
PO Box 2426
Edmonton, AB T5J 2V6
Telephone: (780) 733-2553
Email: ross.gordon@atcogas.com

Signature

July 4/14
Date

ATCO Gas
Meter Reading Systems Support
North of 60 Affiliates (ATCO Electric)
Effective August 1, 2014

	$ CDN Charges		Estimated Monthly Fees: Hay River (06)	YEC (04)	YECL (05)	Total N60	Jan to Dec Total	Previous Agreement (April 1, 2013)	Difference	Assumptions
	Customers- N of 60	21,775	**2,678**	**1,982**	**17,115**	**21,775**	**21,775**	21,662	113	Number of customers from ATCO CIS report RP1632A at December 31, 2013.
	Total Company Customers	1,162,301					1,162,301	1,122,339	39,962	Total number of ATCO Gas customers at December 31, 2013 per Becky Choi plus N of 60 customers from Wendy Scramstad.
	% to allocate costs	1.9%	12.30%	9.10%	78.60%	100.00%	1.9%	1.9%	-0.1%	
1)	Work Management Processing		$10.50	$7.77	$67.14	**$85.42**	**$1,025.00**	1,025.00	-	Assume $1,000 WMS fee per S. Murray, inflated by 2.5% per the 2014 Business Plan inflation rates.
2)	5% System Coordinator		$44.31	$32.79	$283.16	**$360.26**	**$4,323.09**	4,107.20	215.89	Based on 2014 Business Plan labour costs. Assume that 5% of the total time is spent on N of 60 customers per S. McAvoy.
3)	5% Administrative Coordinator		$34.87	$25.81	$222.88	**$283.56**	**$3,402.77**	3,162.95	239.82	
4)	5% Supervisory Charge		$53.46	$39.56	$341.65	**$434.67**	**$5,216.02**	4,679.10	536.92	
5)	70% Overhead on Labour		$92.85	$68.72	$593.38	**$754.94**	**$9,059.31**	8,006.00	1,053.31	Corporate overhead rate at February 1, 2014 per B. Sadowsky, Controllers.
	Total $CDN		**$235.99**	**$174.66**	**$1,508.20**	**$1,918.85**	**$23,026.19**	**20,980.25**	**2,045.94**	
	ITRON									Items 6 through 12 are allocated based on number of N of 60 customers over total customers.
6)	PP4 Additional Software Support (2013 only)		$0.00	$0.00	$0.00	**$0.00**	**$0.00**	57.90	(57.90)	Additional ITRON support during transition of PP4 to FCS. Charges for 2013 only.
7)	FCS Annual Software License Fee		$8.27	$6.12	$52.86	**$67.25**	**$806.97**	415.68	391.29	Annual charge as charged by ITRON December 2013.
	ITEK									
8)	Monthly Maintenance- PP4		$0.00	$0.00	$0.00	**$0.00**	**$0.00**	988.23	(988.23)	PP4 Distributed application charges per the 2013 Business Plan (6 months).
9)	Development/Enhancements-PP4		$0.00	$0.00	$0.00	**$0.00**	**$0.00**	-	-	
10)	Monthly Maintenance- FCS		$53.44	$39.55	$341.54	**$434.53**	**$5,214.32**	2,760.78	2,453.54	FCS Distributed application charges per the 2014 Business Plan.
	Other Charges									
11)	Maintenance Fees for FC300s		$17.80	$13.18	$113.79	**$144.77**	**$1,737.24**	883.56	853.68	ITRON fees paid directly per the 2013 actual costs received in December.
12)	Escrow Fees for FCS		$0.73	$0.54	$4.65	**$5.92**	**$71.05**	73.20	(2.15)	These are charges from Iron Mountain for offsite storage based on 2013 actuals inflated by 2.5%.
	Total $CDN		**$80.24**	**$59.39**	**$512.83**	**$652.46**	**$7,829.58**	**5,179.35**	**2,650.23**	
	Sub Total		**$316.23**	**$234.05**	**$2,021.04**	**$2,571.31**	**$30,855.77**	**26,159.60**	**4,696.17**	
	GST - 5%		$15.81	$11.70		$27.51	$330.17	184.41	145.76	
	Total		**$332.04**	**$245.75**	**$2,021.04**	**$2,598.83**	**$31,185.94**	**26,344.01**	**4,841.93**	

* All prices listed are estimates only and are not guaranteed. ATCO Gas reserves the right to adjust prices based on actual costs incurred.

June 09, 2014

Bobbi Lambright
ATCO Electric
20th Floor, 10035-105 Street
Edmonton, Alberta
T5J 2V6

Dear Bobbi,

In response to your letter dated June 5, 2014 requesting an extension to the "Renewal Notice" period, ATCO I-Tek hereby grants such an extension to ATCO Electric. ATCO I-Tek, as per Article 13, Section 13.1 Term and Renewal, of the ATCO I-Tek Customer Care and Billing Master Services Agreement, will not issue a "Renewal Notice" to ATCO Electric prior to October 1, 2014.

Sincerely,

Shirley A'Hearn

Shirley A'Hearn
President

10035 - 105 Street, Edmonton, Alberta, Canada T5J 1C8
Tel: 780-420-7875 Fax: 780-420-7746
www.atcoitek.com

ATCO I-Tek

June 09, 2014

Bobbi Lambright
ATCO Electric
20th floor, 10035-105 Street
Edmonton, Alberta
T5J 2V6

Dear Bobbi,

In response to your letter dated June 3, 2014 requesting an extension to the "Renewal Notice" period, ATCO I-Tek hereby grants such an extension to ATCO Electric. ATCO I-Tek, as per Article 15, Section 15.2 Renewal, of the ATCO I-Tek Information Technology Master Services Agreement, will not issue a "Renewal Notice" to ATCO Electric prior to October 1, 2014.

Sincerely,

Shirley A'Hearn

Shirley A'Hearn
President

10035 - 105 Street, Edmonton, Alberta, Canada T5J 1C8
Tel: 780-420-7875 Fax: 780-420-7746
www.atcoitek.com

UCG-AEY-28

Reference: May 11, 2016 Application, pages 6-1

AEY states: *"Property taxes are paid to the communities annually for ATCO Electric Yukon's office building, generation facilities, substation properties and power lines. The increases in the forecast over the test period are due to inflation."*

Request:

(a) Please update the table on page 6-1 to show the allowed property taxes for 2013, 2014 and 2015.

(b) Please provide a breakdown of actual property taxes paid in 2013, 2014 and 2015 and forecast for 2016 and 2017 to each entity to which property taxes are paid.

(c) Is there any planned capital work that would result in increased property taxes in 2016 and 2017 beyond the proposed inflation increase?

Response:

(a) The table from page 6-1 has been updated below to include approved property taxes for 2013, 2014, and 2015.

	2013 Actual	2013 Approved	2014 Actual	2014 Approved	2015 Actual	2015 Approved	Test Period 2016	Test Period 2017
	($000s)							
Property Taxes	273	257	251	265	256	273	262	267

(b) Property tax by entity paid is as noted in Table 1 below.

Table 1:
Property Tax by Entity
($000s)

	2013 Actual	2014 Actual	2015 Actual	Test Period 2016	Test Period 2017
City of Whitehorse	135	136	138	141	144
Yukon Government	51	51	53	54	55
Town of Watson Lake	57	33	35	36	36
Village of Teslin	10	10	10	10	10
Village of Carmacks	9	9	9	9	10
British Columbia Government	6	6	6	6	6
Village of Haines Junction	5	5	5	6	6
	273	251	256	262	267

(c) No, AEY does not foresee any of the planned capital work in 2016 and 2017 to increase property taxes beyond the proposed inflationary increases.

UCG-AEY-29

Reference: May 11, 2016 Application, pages 7-1

AEY states: *"The annual increases in depreciation expense from 2013-2017 are due to growth in property, plant and equipment."*

Request:

(a) Please confirm that costs related to Future Removal and Site Restoration costs are not included in the depreciation expense for 2013-2017 identified in this Application.

(b) Please provide details of the accumulated amount for net negative salvage since 2010 including any reductions as salvage costs are incurred.

(c) Please explain how AEY treated the difference between the depreciation expense allowed to be recovered in rates in 2013, 2014 and 2015 and the depreciation expense identified as incurred in 2013, 2014 and 2015.

(d) Please provide specific calculations related to assets being added to rate base that result in an increase in depreciation expense of $380,000 in 2016 (2016 forecast vs. 2015 actual) and an additional $491,000 in 2017 (2017 forecast vs. 2016 forecast).

Response:

(a) Confirmed.

(b) The following is the accumulated net negative salvage balance since 2010:

($000s)					
2010	**2011**	**2012**	**2013**	**2014**	**2015**
4,559	4,497	4,443	4,213	3,729	3,685

(c) AEY incurred depreciation expenses as per the actuals provided as part of the Application.

(d) The calculation for depreciation expense is [Opening Asset Balance + ½ Current Year Additions] * Depreciation Rate.

UCG-AEY-30

Reference: May 11, 2016 Application, pages 8-2

AEY is proposing that the benchmark ROE to be set in a currently incomplete BCUC generic cost of capital proceeding be used to set the AEY ROE for the 2016 and 2017 test years and that the add-on risk premium be increased from the current 0.46% to 0.6%.

Request:

(a) Please confirm AEY's understanding that to accept changes to any element of its revenue requirement after a decision on the test period has been made by the YUB would violate the prospective nature of rate-setting in the Yukon.

(b) Please identify the YUB-allowed ROE and equity ratio currently incorporated in rates charged by Yukon Energy Corporation.

(c) Please confirm AEY's understanding that the Rate Policy Directive (OIC 1995/90 as amended by OIC 1998/32) requires the YUB to include in the rates of AEY and YEC a provision to recover a fair return on their equity used to finance their rate base and that YEC's rates will only be allowed to recover this fair return less 0.5%.

(d) What costs have / will AEY incur for hiring Concentric Energy Advisors to assess the risk of AEY in relation to other electricity and gas distribution utilities? How much of this cost will be recovered from Yukon ratepayers versus AEY's shareholders?

(e) Please confirm that the current benchmark ROE of 8.75% established by the BCUC was for a utility having a 38% equity ratio with no provision for an add-on risk premium.

(f) Please confirm that the current benchmark ROE of 8.75% established by the Alberta Utilities Commission does not allow for an add-on risk premium.

(g) Please provide a table that reflects the actual annual ROE earned by AEY for 2010 through 2015 (% and $).

(h) Please indicate all cases in the last 5 years where AEY has had to defer or abandon expenditures needed to provide service due to an inability to raise the necessary capital under reasonable terms and conditions. Please provide details.

(i) Is AEY planning to raise any capital to finance investment growth in the 2016-2017 test period?

Response:

(a) AEY's application for approval of a revenue requirement effective January 1, 2016 does not request or endorse rate retroactivity. Section 29 of the PUA expressly permits the Board to approve a revenue requirement for the whole year in which a proceeding is initiated. It provides as follows:

> ***29*** *In setting rates that a public utility is permitted to charge, (a) the board may consider the revenues and costs of the public utility in the financial year in which the proceedings for setting the rates and charges began or in any period immediately following, without considering the allocation of those revenues and costs to any part of that period;*
>
> *(b) the board may give effect to that part of any excess of revenue received or deficiency incurred that is in the opinion of the board applicable to the whole of the financial year of the public utility in which the proceeding was initiated as the board considers just and reasonable;*
>
> *(c) the board may give effect to any part of any excess revenue received or deficiency incurred after the commencement of the proceeding as the board determines has been due to undue delay in the hearing and determining of the matter; and (d) the board shall by order approve the method by which and the period during which any excess revenue received or deficiency incurred is to be used or dealt with. R.S., c.143, s.29.*

AEY filed its Application in May 2016 in accordance with the PUA and in a manner that results in regulatory efficiencies that make it just and reasonable for the Board to exercise its discretion under Section 29(b) of the PUA to allow AEY to recover its revenue deficiency for the whole of 2016.

This treatment is also consistent with various approvals of AEY's historical GRA applications.

(b) YEC's 2015 approved ROE is set at 8.25% and a 40% equity ratio.

(c) Confirmed.

(d) Please refer to AEY's response to CW-YECL-20(a).

(e) Not Confirmed. The 8.75% was established for the Stage 1 proceeding to determine the appropriate benchmark ROE for FortisBC Energy. The Stage 2

proceedings in BC determine the appropriate risk premium above the generic ROE for the various utilities operating in BC.

(f) Not confirmed. The current AUC approved ROE is set at 8.3%.

(g) The actual annual ROE earned by AEY for 2010 through 2015 is noted in Table 1 below.

Table 1:
Actual Annual ROE

	2010	2011	2012	2013	2014	2015
%	10.63	10.74	10.18	10.78	8.85	7.40
$000s	2,204	2,335	2,484	3,073	2,948	2,743

(h) Due to AEY's subsidiary relationship with CU Inc., there have been no cases in the last 5 years where AEY has had to defer or abandon expenditures needed to provide service due to an inability to raise the necessary capital under reasonable terms and conditions.

(i) AEY will finance investment growth within the previously approved and current application for Capital Structure.

UCG-AEY-31

Reference: May 11, 2016 Application, pages 8-9

AEY states: *"To determine the working capital for the 2016-2017 test periods, ATCO Electric Yukon completed a review of the components of each of the items in necessary working capital to ensure that the nature of the revenue/expenses included in each category had not changed materially since the previous lead/lag study. Based on this review, payment dates were updated, which reflect a reduction in lag days from the lag days reported in the previous lead lag study."*

Request:

Please provide all details of the lead lag analysis conducted by AEY for this application as well as the referenced previous lead lag study. Please provide all schedules in Excel format.

Response:

Please refer to AEY's response to YUB-YECL-77.

UCG-AEY-32

Reference: May 11, 2016 Application, Schedule 8-5

AEY provides a calculation of actual vs. approved rate base for 2013-2015 and forecast rate base for 2016 and 2017.

Request:

(a) Please confirm that AEY's actual rate base for 2013, 2014 and 2015 was lower in each year than was approved by the YUB.

(b) Since rates for 2013 through 2015 were based in part on a return on rate base that was in excess of what would have been earned on actual rate base, please provide a calculation of the excess return incorporated in rates for 2013 through 2015.

Response:

(a) Confirmed. AEY's rate base was $1,635,000 (2.3%) lower for 2013, $2,018,000 (2.4%) lower for 2014, and $1,665,000 (1.8%) lower for 2015 than was approved in its YECL 2013-2015 GRA.

(b) Please refer to UCG-AEY-32(b) Attachment 1 for the calculation of return on rate base included in rates and the return on rate base that would have been earned on actual rate base for 2013, 2014, and 2015. Based solely on the differences between approved rate base and actual rate base, the higher than forecast return incorporated into rates was:

Year	Return on Rate Base Included in Rates ($000s)	Return on Rate Base Based on Actual Rate Base ($000s)	Variance ($000s)
2013	5,080	4,965	115
2014	5,936	5,795	141
2015	6,545	6,430	115

ATCO Electric Yukon
Return on Rate Base
($000s)

	Ratio	Mid Year Rate Base	Mid Year Cost Rate	Return
2013 GRA Approved				
Long-Term Debt	59.89%	43,261	5.91%	2,557
Common Stock	39.92%	28,840	8.75%	2,523
No Cost Capital	0.19%	136	0.00%	-
Total	100.0%	72,237	7.03%	5,080
2013 Based on Actual Rate Base				
Long-Term Debt	59.89%	42,281	5.91%	2,499
Common Stock	39.92%	28,188	8.75%	2,466
No Cost Capital	0.19%	133	0.00%	-
Total	100.0%	70,602	7.03%	4,965
2014 GRA Approved				
Long-Term Debt	60.06%	51,084	5.78%	2,955
Common Stock	40.04%	34,056	8.75%	2,981
No Cost Capital	-0.11%	(92)	0.00%	-
Total	100.0%	85,048	6.98%	5,936
2014 Based on Actual Rate Base				
Long-Term Debt	60.06%	49,871	5.78%	2,885
Common Stock	40.04%	33,248	8.75%	2,910
No Cost Capital	-0.11%	(89)	0.00%	-
Total	100.0%	83,030	6.98%	5,795
2015 GRA Approved				
Long-Term Debt	59.73%	56,542	5.74%	3,245
Common Stock	39.82%	37,695	8.75%	3,300
No Cost Capital	0.45%	423	0.00%	-
Total	100.0%	94,660	6.91%	6,545
2015 Based on Actual Rate Base				
Long-Term Debt	59.73%	55,548	5.74%	3,188
Common Stock	39.82%	37,032	8.75%	3,242
No Cost Capital	0.45%	416	0.00%	-
Total	100.0%	92,995	6.91%	6,430

UCG-AEY-33

Reference: May 11, 2016 Application, Schedule 8.8

AEY has identified the deferred cost associated with various studies.

Request:

(a) In order to test the prudence of all costs incurred, please provide details on the costs incurred for any study identified resulting in costs to be recovered from ratepayers.

(b) Please explain why there are no DSM-related costs forecast for 2017.

Response:

(a) Costs have not yet been incurred for the Renewables Feasibility or Smart Grid Studies.

The Watson Lake Bi-Fuel Costs include as follows:

- Project Management
  - Understanding and evaluating costs to develop a budget
  - Identify Risk ledger
  - Identifying and understanding stakeholder requirements
- Legal
  - Understanding legal contracts required
- Financial
  - Understanding economic parameters: diesel, natural gas, liquefaction rates, transportation costs and distance implications, LNG sourcing options, equipment options
  - Developing and evaluating an economic model
- Procurement
  - Understanding project requirements to be supplied by 3rd parties
- Design
  - Evaluating technical feasibility of the project:
    - Bi-fuel equipment

- § Power plant upgrade requirements
- § LNG supply chain (supply and transportation)
- § LNG facility development (vaporization system options and impoundment options)

- o Siting study – evaluating proximity to other power plant facilities, neighbors, environmental considerations
- o Emissions studies – literature review on bi-fuel system emissions compared with modeled Watson Lake Power Plant diesel combustion (status quo) emissions
- o Life Cycle Analysis comparing status quo to bi-fuel operations – production well-head (oil versus natural gas) through product production

  (diesel versus LNG), transportation, and use at power plant Issues identification for operations at -50 degree C temperatures – sensors, valves, equipment
- o Risk Analysis of design (thermal radiation and dispersion modeling)
- o Identify HAZOP development and exercise requirements

· Permitting

- o Identify and understand implications of all federal, territorial and provincial (LNG source), and municipal acts and regulations that apply
- o Identify and understand all codes and standards which apply
- o Outline approvals need related to regulations
- o Prepare information for YESAB submission
- o Investigate Transportation of Dangerous Goods requirements including emergency response requirements

· Operations

- o Investigate Emergency Response Planning specific to power plant infrastructure and Environment Canada Environmental Emergency Plan (E2Plan)
- o Consultation with territorial and municipal first responders
- o Logistics planning – internal and coordination with external suppliers
- o Maintenance planning – internal and coordination with external suppliers

- Training
  - Identify LNG Spill and Fire Suppression training requirements and current training locations
  - Investigate LNG on and off loading of tanker and on-site operations
- Communications
  - Develop communication related to natural gas, liquefied natural gas, risks and safety, stakeholder outreach, coordination with authorities having jurisdiction
  - Carrying out communication plan – meetings with authorities having jurisdiction, stakeholder (local community and first nations) consultation

(b) There are no DSM-related costs forecast in 2017 because the Board approved DSM program will be finished in 2016.

UCG-AEY-34

Reference: May 11, 2016 Application, Section 8, Attachment 8.1

AEY has submitted an assessment by Concentric Energy Advisors of the business and financial risk of AEY to FortisBC Energy as well as other regulated electricity and gas distribution utilities in Canada and the business and financial risk of AEY compared to AEY's risk profile at the time of its 2008 GRA filing.

Request:

(a) Please provide details and documentation related to the RFP process followed by AEY before hiring Concentric to undertake the business and financial risk study.

(b) Please confirm that in its Board Order 2014-06 (dated April 23, 2014), the YUB determined that AEY did not qualify for a risk premium over the BCUC benchmark utility.

(c) Please confirm that in its Board Order 2014-06, the YUB determined that if YEC's business risks are higher than those of AEY, then it would not make sense to approve an equity ratio for AEY higher than that approved for YEC.

(d) Please confirm that in its Board Order 2014-06, the YUB determined that the equity thickness presented for the NWT jurisdiction or for the BCUC benchmark utility (FortisBC Energy) is not comparable to AEY.

(e) Please confirm that Concentric believes that FortisBC Energy has lower business risk than AEY because (i) FortisBC Energy is substantially larger than AEY both in terms of retail customers served and regulated rate base; (ii) FortisBC Energy has more cost recovery protection through deferral and variance accounts; (iii) FortisBC Energy has more revenue stability through a weather normalization clause; and (iv) AEY owns and operates electricity generation.

(f) Please confirm that Concentric's references to Maritime Electric's deemed equity ratio and allowed ROE for 2016 (40.9% and 9.35% respectively) were determined as part of a 3-year rate setting settlement agreement (March 2016 – February 2019) and that the deemed equity ratio will be reduced to 40% for 2017 and 2018.

(g) While Concentric refers to a forecast reduction in Yukon GDP in 2015 of 6% and a forecast reduction in retail sales of 0.6% in 2015, please confirm that Yukon's

GDP only decreased by 3.8% in 2015 and that retail sales increased by 4.7% over 2014.

(h) Has AEY (or YECL) ever applied to the YUB for a variance account for changes in demand due to abnormal weather conditions or DSM/energy efficiency programs? If yes, what was the result of the applications?

(i) Concentric states on page 26 of its report that "AEY's residential customers tend to switch between various fuels for electric space heating depending on the relative price of those fuels". Please provide the evidence that supports this statement.

(j) Has there been any change in AEY's business risk since Board Order 2014-06 (dated April 23, 2014) that would materially impact AEY's risk profile?

(k) Has there been any change in AEY's weather risk since Board Order 2014-06 (dated April 23, 2014) that would materially impact AEY's risk profile?

(l) Has there been any change in AEY's power supply risk since Board Order 2014-06 (dated April 23, 2014) that would materially impact AEY's risk profile?

(m) Please provide an analysis for each of the transmission and distribution utilities in the U.S. that Concentric is comparing against AEY. Please provide specific comparative analysis by utility similar to that provided for the Canadian utility proxy group.

Response:

(a) No RFP was conducted to hire Concentric Energy Advisors. Please refer to UCG-AEY-34 Attachment 1 for the engagement letter between Concentric Energy Advisors and ATCO Electric Yukon. Concentric Energy Advisors was selected considering their involvement in the current BCUC GCOC proceeding.

(b) The YUB at page 51 of Decision 2014-06 states that YECL did not provide a prima facie case to quantify the risk premium over the BCUC benchmark utility and directed YECL to provide justification for the risk premium relative to the BCUC GCOC standard as part of its next GRA. As a result of this direction, AEY engaged Concentric Energy Advisors to provide expert evidence in the determination and quantification of the appropriate risk premium.

(c) Confirmed. As indicated on page 17 of Concentric's report, the Board has consistently determined that an equity ratio of 40 percent is reasonable for AEY,

and the Company is not requesting to change its equity ratio as part of this proceeding.

(d) Confirmed. Please refer to part (c).

(e) Confirmed.

(f) Confirmed.

(g) Confirmed. In its report, Concentric refers to the forecast provided by the Department of Economic Development of the Yukon Government in their October 2015 Outlook. The Department released a similar outlook as of May 2016, whereby its estimate of the value of retail sales has changed from $644M in October 2015 to $692M in May 2016. This updated figure represents a 4.7% increase over 2014 estimates. The Department also updated its forecast of GDP growth in 2015 from -6% to -3.8%.

(h) AEY has a variance account for costs associated with DSM/energy efficiency programs. However, this account does not cover lost revenue due to changes in volume attributable to DSM/energy efficiency.

(i) Please refer to response YUB-YECL-68.

(j) In Concentric's view, the most important factor in determining whether a risk premium above the benchmark utility is justified is AEY's risk profile relative to the proxy group, not whether AEY's risk profile has materially changed since the previous YUB order in 2014. On pages 28-31 of the report, Concentric does provide an assessment of changes in risk for AEY since 2009, which was when the Board last awarded a risk premium above the benchmark utility to AEY.

(k) Please refer to part (j).

(l) Please refer to part (j).

(m) Concentric did not perform a risk assessment of AEY relative to the U.S. transmission and distribution utilities. As stated on page 31 of the report, the vast majority of these U.S. companies are substantially larger than AEY. Based on Mr. Coyne's experience, he believes the operating risks for U.S. electric utilities are similar to those in Canada. Similarly, the cost recovery provisions and regulatory regimes in the U.S. and Canada are comparable. As such, he concludes that the U.S. utilities have lower business risk than AEY, due primarily to the extremely small size of AEY.

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CONCENTRIC ENERGY ADVISORS

February 10, 2016

Ms. Corinne Severson
Director, Regulatory
ATCO Electric
10035 - 105 Street
Edmonton, AB T5J 2V6

RE: ATCO ELECTRIC YUKON

Dear Ms. Severson,

Concentric Energy Advisors, Inc. ("Concentric") appreciates the opportunity to provide our proposal to ATCO Electric Yukon ("AEY" or the "Company") for the provision of expert services pertaining to the development of testimony on the appropriate return on equity ("ROE") for the Company's electric operations in the Yukon. This letter provides a scope of work, project team, schedule, pricing and terms.

SCOPE OF SERVICES

Concentric understands that AEY requires an expert opinion on the cost of capital for AEY's general rate application to the Yukon Utilities Board ("Board") for the 2016-17 rate years. We further understand that the Board has, in previous decisions, linked the allowed ROE for AEY to benchmarks from other jurisdictions, principally that of the British Columbia Utility Commission (BCUC). The Board in the past (Board Order 2009-02) has also approved a ROE risk premium differential in relation to the BCUC benchmark, but in its most recent decision (Board Order 2014-06) the Board found insufficient evidence to justify a ROE risk premium in relation to the BCUC GCOC benchmark. The purpose of Concentric's evidence will be to determine if a ROE risk premium remains appropriate, and the magnitude of the premium in relation to the BCUC benchmark. Concentric will evaluate the risk premium in the context of the currently allowed equity ratio of 40%, and the appropriateness of the allowed equity ratio for AEY's business risk.

To do so, Concentric will undertake the following tasks:

1. North American Cost of Capital Review

Concentric researches and tracks cost of capital decisions in Canada and the U.S., and maintains a database extending back to the year 2000 for Canadian gas and electric utilities. This data is summarized and published on a periodic basis, with support from the Canadian Gas Association. This research work is updated periodically, and we would check for any new decisions, and summarize the results in the evidence, with particular attention to recent Canadian decisions applicable to AEY.

2. AEY's Business Risk

Concentric understands that AEY's business risk profile was last considered in 2008. In its 2014 decision, the Board directed AEY to "provide justification for a risk premium relative to the BCUC GCOC standard in its next GRA." For the 2016 filing, Concentric believes it would be appropriate to evaluate AEY's risk profile over the period from 2008-2016, and also consider any known or anticipated changes over the next several years.

Concentric's business risk analysis will include consideration of, as appropriate the following elements, with both consideration of AEY's risk profile since 2008, and in relation to the BCUC benchmark utility, FortisBC (now the amalgamated FEI), and/or other Canadian peers.

Business Risk Factors

- Electric supply risk
- Electric price levels
- Competitiveness of electricity to alternative energy sources
- Market share
- Changes in customer mix
- Large customer exposure
- Macroeconomic trends in the Territory and service area
- Capital/O&M spending levels
- Longer term industry risks

Regulatory Risk Factors

- Federal or territorial policy mandates (including DSM programs, clean air and greenhouse gas regulations, carbon tax, retail competition, etc.)
- Volume/demand risk (including mechanisms to decouple volume from cost recovery)
- Cost recovery provisions (including both capital and operating costs)
- Form of rate regulation
- Regulatory lag

Financial Risk Factors

- Capital structure
- Credit metrics
- Capital market changes
- Credit ratings

3. ROE and Common Equity Ratio

Based on the risk analysis conducted above, Concentric will assess whether a ROE risk premium is appropriate and common equity ratio for AEY. This assessment will be based on an evaluation of:

- The Board's findings concerning AEY's ROE and common equity ratio in its prior orders
- The risk assessment developed above
- The relative risk of AEY in relation to its Canadian peers and BC benchmark
- Credit metrics



4. Consultation and Hearings

Based on the analysis resulting from the above tasks, Concentric will draft expert testimony summarizing its research, conclusions and recommendations, and be prepared to present these findings to stakeholders and before the Board. These activities will be responsive to the Board's process and AEY's determinations regarding participation. Concentric will specifically:

- Develop expert evidence for submission to the Board
- Respond to interrogatories and undertakings
- Review the work of other witnesses and develop interrogatories as required
- Appear as a witness in formal hearings
- Assist with briefs and additional comments as necessary.

PROJECT TEAM

James M. Coyne, Senior Vice President, will serve as the Responsible Officer and expert witness. Mr. Coyne will be supported by John Trogonoski, Senior Project Manager, who will manage the day-to-day activities related to this assignment and direct supporting research. Mr. Trogonoski will be supported by Concentric's consulting staff for additional research and analytical support, as necessary. Short biographical summaries for the primary project team members are shown below.

James M. Coyne, Senior Vice President, is an energy industry expert who provides financial, regulatory, litigation and strategic support services to clients in the power and gas utilities industries. Drawing upon his industry and regulatory expertise, he regularly advises utilities, public agencies and investors on business strategies, investment evaluations, cross-border trade, rate and regulatory policy, capital cost determinations and energy markets. He is a frequent speaker and author of numerous articles on the energy industry and regularly provides expert testimony before federal, state and provincial jurisdictions in the U.S. and Canada. He testifies on matters pertaining to the cost of capital, capital structure, business risk, alternative ratemaking mechanisms and regulatory policy. Prior to Concentric, Mr. Coyne worked in senior consulting positions focused on North American utilities industries, in corporate planning for an integrated energy company, and in regulatory and policy positions in Maine and Massachusetts. Mr. Coyne holds a B.S. in Business from Georgetown University with honors and an M.S. in Resource Economics from the University of New Hampshire.

John P. Trogonoski, Senior Project Manager, is a financial and economic consultant with over 20 years of experience in utility regulation, financial analysis, business valuation, property taxation, and program administration. Since joining Concentric in 2008, Mr. Trogonoski has assisted clients with a variety of regulatory matters including drafting expert testimony and reports on cost of capital and business and financial risk analysis. As a member of the Staff of the Colorado Public Utilities Commission, Mr. Trogonoski supervised the financial analysts in the energy and telecommunications sections and filed expert testimony on rate of return, revenue requirement, cost allocation, rate design, incentive regulation, and policy matters. He has a Master's degree in Business Administration and an undergraduate degree in Marketing from the University of Colorado at Denver.

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SCHEDULE

Concentric understands that the testimony is proposed to be filed in April 2016 and hearings would take place in October 2016.

TERMS AND BUDGET

Concentric will provide the services described above on a time and materials basis based on Concentric's Standard Hourly Billing Rates provided in Attachment A, in addition to out-of-pocket expenses incurred relating to the engagement. For budgeting purposes, Concentric estimates a budget of US$ 75,000 to complete the direct testimony. Concentric's Standard Terms and Conditions of Service are provided in Attachment B.

We appreciate the opportunity to work with AEY on this assignment. Please contact me at your earliest convenience with any questions you may have regarding this engagement letter or to discuss next steps.

Very truly yours,

CONCENTRIC ENERGY ADVISORS, INC.

James M. Coyne
Senior Vice President
293 Boston Post Road West, Suite 500
Marlborough, MA 01752
508-263-6255
jcoyne@ceadvisors.com

Attachments

A. Concentric's Standard Billing Rates
B. Concentric's Standard Terms and Conditions

CONCENTRIC ENERGY ADVISORS

ATTACHMENT A
STANDARD BILLING RATES
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CONCENTRIC ENERGY ADVISORS, INC.
HOURLY RATE SCHEDULE

TITLE	HOURLY RATE
CHAIRMAN AND CHIEF EXECUTIVE OFFICER	$775
SENIOR VICE PRESIDENT	$575
VICE PRESIDENT	$515
ASSISTANT VICE PRESIDENT	$415
SENIOR PROJECT MANAGER	$375
PROJECT MANAGER	$350
SENIOR CONSULTANT	$325
CONSULTANT	$300
ASSISTANT CONSULTANT	$275
ANALYST	$235
ASSOCIATE	$155
PROJECT ASSISTANT	$70

ATTACHMENT B
STANDARD TERMS AND CONDITIONS
CONFIDENTIAL

CONCENTRIC ENERGY ADVISORS, INC.
STANDARD TERMS AND CONDITIONS

1. *Scope* – Concentric Energy Advisors, Inc. ("Concentric") will perform the services set forth in the Letter or Proposal of which these Terms and Conditions (Terms) are a part. The provisions of these Terms shall control in the case of conflict with any provisions of the Letter or Proposal.

2. *Fees and Expenses* – Unless otherwise stated, fees for services by Concentric shall be based upon the rates, at the time the work is performed, of the personnel actually involved in the assignment. Report production and printing, reproduction, and telephone charges will be billed to you at Concentric's standard charges for such materials for services. Expenses of consultants while on assignment or any other charge incurred or expenditure made on your behalf will be charged at our cost.

3. *Payment* – Concentric will submit monthly invoices reflecting actual work performed and expenses incurred. Payment shall be due in U.S. funds 30 days after the date of an invoice. Amounts past due more than 30 days shall bear interest at an annual rate of 12% from the due date until payment is received.

4. *Sales Tax* – You are responsible for paying any local, state, or federal sales, use, or ad valorem tax that might be assessed on our services.

5. *Independent Contractor* – It is understood and agreed that Concentric shall for all purposes be an independent contractor, shall not hold itself out as representing or acting in any manner for you, and shall have no authority to bind you to any contract or in any other manner.

6. *Termination* – These terms shall be subject to the right of either party to terminate at any time upon not less than ten (10) days prior written notice to the other party. Upon termination, you shall pay the full amount due for services rendered and costs and expenses incurred and not paid for up to that time, and the costs of returning consultant personnel to home base and other reasonable costs and expenses incurred in effecting termination and returning documents.

7. *Responsibility Statement* – Concentric agrees that the services provided for herein will be performed in accordance with recognized professional consulting standards for similar services and that adequate personnel will be assigned for that purpose. If, during the performance of these services or within six months following completion of the assignment, such services shall prove to be faulty or defective by reason of a failure to meet such standards, Concentric agrees that upon prompt written notification from you prior to the expiration of the six-month period following the completion of the assignment containing any such fault or defect, such faulty portion of the services shall be redone at no cost to you up to a maximum amount equivalent to the cost of the services rendered under this assignment. The foregoing shall constitute Concentric's sole liability with respect to the accuracy or completeness of the work and the activities involved in its preparation. In no event shall Concentric, its agents, employees, or others providing materials or performing services in connection with work on this assignment be liable for any direct, consequential or special loss or damage, whether attributable to breach of contract, tort, including negligence, or otherwise; and except as herein provided, you release, indemnify, and hold Concentric, its agents, employees, or others providing materials or performing services in connection with work on this



assignment harmless from any and all liability including costs of defense, settlement and reasonable attorney's fees.

8. *Work Product* – Any report or other document prepared pursuant to these Terms shall be for your use only. Concentric's prior written consent is required for the use of (or reference to) its report or any other document prepared pursuant to these Terms in connection with a public offering of securities or in connection with any other financing. Concentric hereby agrees, however, to the Client's reference to the work product in connection with any proxy relating to a combination between two parties. It is understood and agreed that Concentric's use of its proprietary computer software, methodology, procedures, or other proprietary information in connection with an assignment shall not give you any rights with respect to such proprietary computer software, methodology, procedures or other proprietary information. Concentric may retain and further use the technical content of its work hereunder.

9. *Excused Performance* – Concentric shall not be deemed in default of any provision hereof or be liable for any delay, failure in performance, or interruption of service resulting directly or indirectly from acts of God, civil or military authority, civil disturbance, war, strikes or other labor disputes, fires, other catastrophes, or other forces beyond its reasonable control, whether or not such event may be deemed foreseeable.

10. *Related Litigation* – In the event that Concentric employees (current or former), subcontractors or agents are compelled to provide testimony, produce documents, or otherwise incur costs or expend time in any legal proceeding related to Concentric's work for you, you agree to reimburse Concentric at its regular billing rate per hour for its time expended, and for any expenses incurred (at Concentric's direct cost).

11. *Notices* – All notices given under or pursuant to the Terms shall be sent by Certified or Registered Mail, Return Receipt Requested, and shall be deemed to have been delivered when physically delivered if to Concentric Energy Advisors, Inc., 293 Boston Post Road West, Suite 500, Marlborough, MA 01752, Attention Mr. John J. Reed, Chairman and Chief Executive Officer, and if to you at the address shown on the Letter or Proposal of which these Terms are a part or such other address as you may designate by written notice to us.

12. *Complete Agreement* – It is understood and agreed that these Terms and the Letter or Proposal of which they are a part embody the complete understanding of the parties and that any and all provisions, negotiations and representations not included herein are hereby abrogated and that these terms cannot be changed, modified or varied except by written instrument signed by both parties. In the event you issue a purchase order or memorandum or other instrument covering the services herein provided, it is hereby specifically agreed and understood that such purchase order, memorandum, or instrument is for your internal purposes only, and any and all terms and conditions contained therein, whether printed or written, shall be of no force or effect unless agreed to in writing by Concentric. No waiver by either parties of a breach hereof or default hereunder shall be deemed a waiver by such party of a subsequent breach or default of like or similar nature.

13. *Governing Law* – This Agreement (consisting of the Letter or Proposal and these terms) shall be construed and otherwise governed pursuant to the laws of the Commonwealth of Massachusetts. The attached Proposal, of which these General terms and Conditions (terms) form a part, constitutes an agreement of

the parties hereto, and supersedes any previous agreement or understanding. It may not be modified except in writing, and only if executed by both parties.

AGREED AND ACCEPTED:

CLIENT SIGNATURE

TITLE: Director-Regulatory

COMPANY: ATCO Electric

DATE: February 11, 2016

UCG-AEY-35

Reference: May 11, 2016 Application, page 9-3

AEY states: "*In addition to the above, ATCO Electric Yukon tracks distribution system performance on an ongoing basis and the performance is reviewed when preparing the capital forecast. Additionally, ATCO Electric Yukon reviews unplanned outages that may be attributed to system deficiencies and implements corrective action*".

Request:

(a) Please provide all reports prepared since 2012 related to AEY's ongoing tracking of distribution system performance and outages.

(b) Please identify the specific distribution system performance improvements and the related impact on revenue requirement that have resulted from capital expenditures since 2010.

Response:

(a) Please refer to UCG-AEY-35(a) Attachment 1.

(b) Please refer to Table 1 below for total Distribution Improvement projects for the period 2010-2015. Please refer to Schedule 9.2 of the Application for a listing of all Distribution Improvement projects over $20,000 for the years 2013-2015. A listing of 2010-2012 Distribution Improvement projects was provided in Information Request YUB-YECL-61 Attachment 1 of YECL's 2013-2015 GRA, and has been attached as UCG-AEY-35(b) Attachment 1 for your convenience. AEY does not track system performance on an individual capital project basis.

Table 1:
ATCO Electric Yukon
Distribution Improvement Projects
Capital Expenditures by Year
($000s)

	2010	2011	2012	2013	2014	2015	**Total**
Distribution Improvements	2,251	4,626	4,018	4,002	4,008	3,399	**22,304**

AEY's sales in MWh have grown by 8.2% from 2010 to 2015 (from 291,808 MWh to 315,816 MWh). The associated increase in load would normally be expected to increase losses. However, ATCO Electric Yukon's losses over the same period have remained flat, as shown in Table 2 below. Therefore, AEY believes the Distribution Improvement projects it has undertaken have been successful in preventing the level of losses from increasing as load has grown from 2010 to 2015.

The total value of Distribution Improvement projects completed from 2010-2015 was $22,304. These projects have impacted the return on rate base, depreciation and income taxes included in revenue requirement for 2016-2017.

Table 2:
ATCO Electric Yukon
Line Losses by Year
(% of Total Energy Sales)

	2010	2011	2012	2013	2014	2015
Line Losses	6.1	6.1	6.4	6.4	6.4	6.0

Reliability Performance

Yukon Electrical tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

Yukon Electrical's 2012 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	2.60	2.15
SAIDI	3.15	2.97
CAIDI	1.21	1.38
IOR	99.963%	99.966%

Reliability Performance

ATCO Electrical Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon's 2013 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	5.34	3.02
SAIDI	6.37	3.47
CAIDI	1.19	1.15
IOR	99.927%	99.960%

Reliability Performance

ATCO Electrical Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon's 2014 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	4.47	2.70
SAIDI	5.51	3.90
CAIDI	1.23	0.32
IOR	99.937%	99.960%

Reliability Performance

ATCO Electrical Yukon tracks the following reliability indices as defined below:

SAIFI refers to the System Average Interruption Frequency Index. This index is defined as the average number of interruptions per customer served per year. SAIFI is calculated by taking the total number of customers affected by interruptions divided by the total number of customers served.

SAIDI refers to the System Average Interruption Duration Index. This index is defined as the system average interruption duration for customers served per year. SAIDI is calculated by taking the total customer hours of interruptions divided by total customers served.

CAIDI refers to the Customer Average Interruption Duration Index. This index is defined as the customer average interruption duration for customers interrupted during the year. CAIDI is calculated by taking the total customer hours of interruptions divided by total customer interruptions.

IOR refers to the Index of Reliability which defines the annual customer-hours that service is available measured as a percentage.

ATCO Electric Yukon's 2015 results (including and excluding loss of supply from Yukon Energy) are as follows:

	Including Loss of Supply From Yukon Energy	Excluding Loss of Supply From Yukon Energy
SAIFI	4.39	2.48
SAIDI	5.80	3.49
CAIDI	1.32	1.40
IOR	99.933%	99.960%

The Yukon Electrical Company Limited
Continuity of Capital Additions 2010-2012

Appropriation Type	Project Name	Reference	2010	2011	2012	Total
Distribution Improvements	Hillcrest Subdivision Conversion	Bus Case 18, Pg 9-9, 9-15, 9-22, 9-31, 9-39, 9-47, 9-57	226,000	2,000	252,000	**480,000**
	Whistlebend 34.5kV Substation Distribution Lines	Bus Case 19, Pg 9-21, 9-30	492,000	156,000		**648,000**
	Whistle Bend Substation	Bus Case 20, Pg 9-29, 9-39		1,690,000	423,000	**2,113,000**
	5L628 Crestview to Mayo Road Corner Double Circuit	Bus Case 21, Pg 9-39			628,000	**628,000**
	Right of Way Widening	Pg 9-8, 9-15, 9-21, 9-30, 9-39, 9-47, 9-57, 9-63	304,000	331,000	377,000	**1,012,000**
	Miscellaneous Pole Replacements	Pg 9-9, 9-16, 9-23, 9-31, 9-40, 9-48, 9-57, 9-64	26,000	70,000	60,000	**156,000**
	Test and Treat Pole Program	Pg 9-9, 9-22, 9-40, 9-49, 9-58, 9-64	57,000		153,000	**210,000**
	Teslin and Klondike Road Upgrade	Pg 9-16, 9-23	30,000			**30,000**
	Destruction Bay Distribution Breaker Addition	Pg 9-22	54,000			**54,000**
	Destruction Bay Main Feeder	Pg 9-22	42,000			**42,000**
	Haines Junction Distribution Breaker Addition	Pg 9-22	51,000			**51,000**
	Main Steel Alley 4th - 7th Avenue Upgrade	Pg 9-22	98,000			**98,000**
	Main Street Alley Upgrade	Pg 9-22	44,000			**44,000**
	Mount Sima Subdivision	Pg 9-22	42,000			**42,000**
	North Klondike Grounding Improvements	Pg 9-22	42,000			**42,000**
	Old Crow Pole Change Outs	Pg 9-22	46,000			**46,000**
	Porter Creek Breaker Replacement	Pg 9-22	54,000			**54,000**
	Takhini North Upgrade	Pg 9-22	134,000			**134,000**
	Watson Lake 3-Phase System Protection Upgrade	Pg 9-22	100,000			**100,000**
	4L316 Two Mile Hill Conductor Upgrade	Pg 9-23	38,000			**38,000**
	McIntyre Subdivision Prebuilding Work	Pg 9-23	22,000			**22,000**
	Nordenskiold River Bridge Rerouting	Pg 9-23	42,000			**42,000**
	Pole Removal Wickstrom Road	Pg 9-23	25,000			**25,000**
	Whithorse Copper Rebuild	Pg 9-23	27,000			**27,000**
	System Frequency Upgrades at S150 Substation	Pg 9-23, 9-31	39,000	37,000		**76,000**
	System Upgrade, Extension of 5L628 to Grizzly Valley	Pg 9-29		454,000		**454,000**
	5L626 Double Circuit Line to Whistle Bend Substation	Pg 9-30		200,000		**200,000**
	Hotsprings Road Upgrade	Pg 9-30		190,000		**190,000**
	Laberge Substation Distribution Upgrades	Pg 9-30		416,000		**416,000**
	Upgrade Laberge Substation Transformer to 10 MVA	Pg 9-30		189,000		**189,000**
	PCB Identification and Transformer Change Outs	Pg 9-30, 9-39, 9-48, 9-58, 9-65		239,000	401,000	**640,000**
	Carcross Town Pole Replacements	Pg 9-31		27,000		**27,000**
	Centennial Street Upgrades	Pg 9-31		20,000		**20,000**
	Configure Pelly Substation to Yukon Interconnected System	Pg 9-31		23,000		**23,000**
	Line Relocation Eagle Way	Pg 9-31		30,000		**30,000**
	Line Upgrade and Relocation Army Beach	Pg 9-31		92,000		**92,000**
	Line Upgrade and Relocation Lot 56 Paint Mountain	Pg 9-31		69,000		**69,000**
	System Upgrade 113 Copper Road	Pg 9-31		53,000		**53,000**
	Whistle Bend Substation Transformer	Pg 9-31		127,000		**127,000**
	Shipyard's Substation Transformer Failure and Upgrades	Pg 9-39			473,000	**473,000**
	97 Lewes Boulevard Transformer Upgrade	Pg 9-40			70,000	**70,000**
	Breaker Replacement in Services Substation	Pg 9-40			84,000	**84,000**
	Laberge Substation 34.5kV Conductor Upgrade	Pg 9-40			103,000	**103,000**
	Laberge Substation Upgrade	Pg 9-40			57,000	**57,000**
	Old Crow 3rd Distribution Breaker	Pg 9-40			78,000	**78,000**
	Range Road Line Rerouting	Pg 9-40			56,000	**56,000**
	Regulator to North Klondike Highway	Pg 9-40			154,000	**154,000**
	Whitehorse Elementary School Transformer Upgrade	Pg 9-40			94,000	**94,000**
	CRE Breaker Replacement in Lewes Boulevard	Pg 9-41			30,000	**30,000**
	Marsh Lake Structure Upgrade	Pg 9-41			21,000	**21,000**
	Marsh Lake Substation Upgrade	Pg 9-41			45,000	**45,000**
	Ponderosa Road Vault Addition and Service Upgrade	Pg 9-41			35,000	**35,000**
	Porter Creek Underground Vaults Replacement	Pg 9-41			28,000	**28,000**
	Ross River Recloser for S7580	Pg 9-41			30,000	**30,000**
	System Improvements Lowe Street	Pg 9-41			21,000	**21,000**
	Whitehorse Service Area Line Clearance Upgrades	Pg 9-41			25,000	**25,000**
	Other Projects Less Than $20,000	Pg 9-10, 9-16, 9-23, 9-31, 9-41, 9-49, 9-58, 9-65	216,000	211,000	320,000	**747,000**
Distribution Improvements Total			**2,251,000**	**4,626,000**	**4,018,000**	**10,895,000**

UCG-AEY-36

Reference: May 11, 2016 Application, page 9-5

AEY states: "*A listing of the capital expenditures for 2016-2017 is provided in Attachment 9.1 and 9.2 which includes a project description for those projects greater than $100,000. Full business cases for the following major capital projects ($500,000 or greater) are 19 included in Appendix 1 - 11.*"

Board Order 2014-06, Reasons for Decision, page 64

"However, YECL needs to provide information in relation to project costs overruns in its Application. Therefore, the Board directs YECL in future applications to explain more fully the reasons for project overruns. For clarity, for project costs overruns that are (collectively) 100 percent over and $100,000 greater than the original estimate, YECL is to provide business case type descriptions in the Application, to alert interveners and the Board to the cost overruns, thereby allowing for a more efficient process to examine the cost overruns. Furthermore, YECL, in their explanations, are to explain why the expenditures were not foreseen and actions it takes to ensure that such overruns will not occur in future. Moreover, for projects similar in nature to the Oracle HRxcellence HR management project with expenditures greater than $100,000, which may arise between GRAs, YECL in future applications is directed to furnish business cases for such projects and the reasons why YECL deemed it necessary and reasonable to proceed with the project."

Board Order 2009-2, page 37

"The Board directs YECL in future to provide business cases for all major capital expenditures at the time YECL files its rate applications to give the Board and Intervenors better opportunity to examine the business cases and time to allow for written information requests. Further, the Board directs that YECL provide an annual update on its capital plans and expenditures. The Board further directs YECL in future rate applications to provide an itemized list of miscellaneous capital expenditures."

Request:

(a) Please provide business case type information in relation to all projects added to rate base in 2013, 2014 and 2015 where actual total project costs were $100,000 greater than originally estimated.

(b) Please provide business case type information in relation to projects forecast to be added to rate base in 2016 and 2017 where actual total project costs are forecast to be $100,000 greater than originally estimated.

(c) Please confirm that AEY considers "major capital projects" to only be those projects costing $500,000 or greater.

(d) Please provide references to YUB Orders in which Board defines what it believes to be the spending threshold for a major project for AEY.

(e) Does AEY believe that a utility with a $100 million rate base (such as AEY) should have the same expenditures threshold to define a major project as a utility with a $226 million rate base (such as YEC)?

Response:

(a) Consistent with Board Order 2014-06 Appendix A: Reasons for Decision, AEY has provided business case type explanations for cost over runs in excess of $100,000 and 100% of approved costs in Attachments 11.1-11.6 of the Application. AEY has also provided business cases for projects in excess of $100,000 that arose between GRAs in Attachments 11.7-11.13 of the Application.

(b) Business cases have been provided for projects in Appendices 1-10 of this Application where costs exceed $500,000 for the 2016 and 2017 test period.

AEY has also provided project descriptions for all projects in the 2016 and 2017 test period in excess of $100,000 in Attachments 9.1 and 9.2 of the Application.

AEY has provided project information for over 96-percent of the capital projects in the 2016-2017 test periods.

(c) Confirmed.

(d) AEY is not aware of any YUB Orders in which the Board defines what it believes to be the spending threshold for a major project for AEY.

(e) AEY believes its business case threshold of $500,000 for a major project is reasonable and strikes an appropriate balance between regulatory efficiency and adequate detail with which to test its forecast and is consistent with the YECL 2013-2015 GRA. AEY has no opionion as the expenditure threshold for YEC.

UCG-AEY-37

Reference: May 11, 2016 Application, Schedule 9.2

AEY provides a listing of generation plant projects many of which have actual expenditures over $100,000.

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Board Order 2014-06, Reasons for Decision, page 64

"However, YECL needs to provide information in relation to project costs overruns in its Application. Therefore, the Board directs YECL in future applications to explain more fully the reasons for project overruns. For clarity, for project costs overruns that are (collectively) 100 percent over and $100,000 greater than the original estimate, YECL is to provide business case type descriptions in the Application, to alert interveners and the Board to the cost overruns, thereby allowing for a more efficient process to examine the cost overruns. Furthermore, YECL, in their explanations, are to explain why the expenditures were not foreseen and actions it takes to ensure that such overruns will not occur in future. Moreover, for projects similar in nature to the Oracle HRxcellence HR management project with expenditures greater than $100,000, which may arise between GRAs, YECL in future applications is directed to furnish business cases for such projects and the reasons why YECL deemed it necessary and reasonable to proceed with the project."

Request:

(a) Please provide a detailed description and detailed breakdown of the total costs incurred in all of the generation plant projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are

proposed to be added to rate base. Please provide the supporting analyses in an Excel spreadsheet.

(b) If AEY has already provided business cases for any of these projects in a general rates application, please identify when they were filed with the YUB and when the YUB approved the capital expenditures.

(c) If not previously provided, please provide business cases per the expectations of business cases as outlined in Board Order 2009-8 for each of these projects and the reasons why AEY deemed it necessary and reasonable to proceed with the project. Please provide the supporting analyses in an Excel spreadsheet.

(d) What were the average annual capital expenditures on generation plant projects for the period 2010-2015?

Response:

(a) AEY notes that the Board Order 2009-8 (provided in the reference to this IR) is not applicable to AEY as it pertains to a YEC decision. AEY submits that is has complied with the appropriate directions contained in Board Order 2014-06.

Schedule 9.2 of the Application lists the project, the forecast cost and timing of the project. Any projects over $500,000 have a business case in Appendices 1-11. Project information is available in Attachments 9.1 and 9.2 of the Application for the 2016 and 2017 test period.

(b) Business cases are in Appendices 1-11 and Attachments 11.7-11.13 of this Application.

(c) Please refer to AEY's response to UCG-AEY-36(b).

(d) Please refer to the following table:

2010	2011	2012	2013	2014	2015
1,810	1,652	3,115	5,574	8,599	3,060
				AVERAGE	**3,968**

UCG-AEY-38

Reference: May 11, 2016 Application, Schedule 9-2

AEY provides a listing of new extensions projects many of which have actual expenditures over $100,000.

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Board Order 2014-06, Reasons for Decision, page 64

"However, YECL needs to provide information in relation to project costs overruns in its Application. Therefore, the Board directs YECL in future applications to explain more fully the reasons for project overruns. For clarity, for project costs overruns that are (collectively) 100 percent over and $100,000 greater than the original estimate, YECL is to provide business case type descriptions in the Application, to alert interveners and the Board to the cost overruns, thereby allowing for a more efficient process to examine the cost overruns. Furthermore, YECL, in their explanations, are to explain why the expenditures were not foreseen and actions it takes to ensure that such overruns will not occur in future. Moreover, for projects similar in nature to the Oracle HRxcellence HR management project with expenditures greater than $100,000, which may arise between GRAs, YECL in future applications is directed to furnish business cases for such projects and the reasons why YECL deemed it necessary and reasonable to proceed with the project."

Request:

(a) Please provide a detailed description and detailed breakdown of the total costs incurred in all of the new extension projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are

proposed to be added to rate base. Please provide the supporting analyses in an Excel spreadsheet:

(b) If AEY has already provided business cases for any of these projects in a general rates application, please identify when they were filed with the YUB and when the YUB approved the capital expenditures.

(c) If not previously provided, please provide business cases per the expectations of business cases as outlined in Board Order 2009-8 for each of these projects and the reasons why AEY deemed it necessary and reasonable to proceed with the project. Please provide the supporting analyses in an Excel spreadsheet.

(d) What were the average annual capital expenditures on new extensions projects for the period 2010-2015?

Response:

(a) Schedule 9.2 of the Application lists the project, the forecast cost and timing of the project. Any projects over $500,000 have a business case in Appendices 1-11. Project information is available in Attachments 9.1 and 9.2 of the Application for the 2016 and 2017 test period.

(b) Business cases are in Appendices 1-11 and Attachments 11.7-11.13 of this Application.

(c) Please refer to AEY's response to UCG-AEY-38(b).

(d) Please refer to the following table:

2010	2011	2012	2013	2014	2015
3,397	6,078	4,919	2,350	1,693	2,098
				AVERAGE	**3,423**

UCG-AEY-39

Reference: May 11, 2016 Application, Schedule 9-2

AEY provides a listing of distribution improvements projects many of which have actual expenditures over $100,000.

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Board Order 2014-06, Reasons for Decision, page 64

"However, YECL needs to provide information in relation to project costs overruns in its Application. Therefore, the Board directs YECL in future applications to explain more fully the reasons for project overruns. For clarity, for project costs overruns that are (collectively) 100 percent over and $100,000 greater than the original estimate, YECL is to provide business case type descriptions in the Application, to alert interveners and the Board to the cost overruns, thereby allowing for a more efficient process to examine the cost overruns. Furthermore, YECL, in their explanations, are to explain why the expenditures were not foreseen and actions it takes to ensure that such overruns will not occur in future. Moreover, for projects similar in nature to the Oracle HRxcellence HR management project with expenditures greater than $100,000, which may arise between GRAs, YECL in future applications is directed to furnish business cases for such projects and the reasons why YECL deemed it necessary and reasonable to proceed with the project."

Request:

(a) Please provide a detailed description and detailed breakdown of the total costs incurred in all of the distribution improvement projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are

proposed to be added to rate base. Please provide the supporting analyses in an Excel spreadsheet:

(b) If AEY has already provided business cases for any of these projects in a general rates application, please identify when they were filed with the YUB and when the YUB approved the capital expenditures.

(c) If not previously provided, please provide business cases per the expectations of business cases as outlined in Board Order 2009-8 for each of these projects and the reasons why AEY deemed it necessary and reasonable to proceed with the project. Please provide the supporting analyses in an Excel spreadsheet.

(d) What were the average annual capital expenditures on distribution improvement projects for the period 2010-2015?

Response:

(a) Schedule 9.2 of the Application lists the project, the forecast cost and timing of the project. Any projects over $500,000 have a business case in Appendices 1-11. Project information is available in Attachments 9.1 and 9.2 of the Application for the 2016 and 2017 test period.

(b) Business cases are in Appendices 1-11 and Attachments 11.7-11.13 of this Application.

(c) Please refer to AEY's response to UCG-AEY-39(b).

(d) Please refer to the following table:

2010	2011	2012	2013	2014	2015
2,251	4,626	4,018	4,002	4,008	3,399
			AVERAGE		**3,717**

UCG-AEY-40

Reference: May 11, 2016 Application, Schedule 9-2

AEY provides a listing of street and sentinel lighting projects many of which have actual expenditures over $100,000.

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Board Order 2014-06, Reasons for Decision, page 64

"However, YECL needs to provide information in relation to project costs overruns in its Application. Therefore, the Board directs YECL in future applications to explain more fully the reasons for project overruns. For clarity, for project costs overruns that are (collectively) 100 percent over and $100,000 greater than the original estimate, YECL is to provide business case type descriptions in the Application, to alert interveners and the Board to the cost overruns, thereby allowing for a more efficient process to examine the cost overruns. Furthermore, YECL, in their explanations, are to explain why the expenditures were not foreseen and actions it takes to ensure that such overruns will not occur in future. Moreover, for projects similar in nature to the Oracle HRxcellence HR management project with expenditures greater than $100,000, which may arise between GRAs, YECL in future applications is directed to furnish business cases for such projects and the reasons why YECL deemed it necessary and reasonable to proceed with the project."

Request:

(a) Please provide a detailed description and detailed breakdown of the total costs incurred in all of the street and sentinel lighting projects where actual expenditures are over $100,000, when these costs were incurred and when

these projects are proposed to be added to rate base. Please provide the supporting analyses in an Excel spreadsheet:

(b) If AEY has already provided business cases for any of these projects in a general rates application, please identify when they were filed with the YUB and when the YUB approved the capital expenditures.

(c) If not previously provided, please provide business cases per the expectations of business cases as outlined in Board Order 2009-8 for each of these projects and the reasons why AEY deemed it necessary and reasonable to proceed with the project. Please provide the supporting analyses in an Excel spreadsheet.

(d) What were the average annual capital expenditures on street and sentinel lighting projects for the period 2010-2015?

Response:

(a) Schedule 9.2 of the Application lists the project, the forecast cost and timing of the project. Any projects over $500,000 have a business case in Appendices 1-11. Project information is available in Attachments 9.1 and 9.2 of the Application for the 2016 and 2017 test period.

(b) Business cases are in Appendices 1-11 and Attachments 11.7-11.13 of this Application.

(c) Please refer to AEY's response to UCG-AEY-40(b).

(d) Please refer to the following table:

2010	2011	2012	2013	2014	2015
486	1,045	456	536	322	466
		AVERAGE			**552**

UCG-AEY-41

Reference: May 11, 2016 Application, Schedule 9-2

AEY identifies Replacement of Meters and New Installations as a single line item with actual expenditures in 2013-2015 ($708,000) well below approved.

Request:

(a) Please provide details of where these expenditures were made and why the actual expenditures were so much lower than forecast / allowed.

(b) What were the average annual capital expenditures on replacement of meters and new installations for the period 2010-2015?

(c) Please provide a breakdown by year of all the capital costs for new meters since changeover from analog to digital including how many meter changes, how many in new service areas, amounts added to rate base, type of digital meters used, manufacturer of meters, where meters were purchased, price of meters purchased, specifications of meters including current standard compliance for electric magnetic fields, radiation, radio frequency, and the cost of analog meters today.

Response:

(a) The costs for the purchase of new meters required to accommodate load growth associated with customer requests for service are included here. As New Extensions and customer growth were lower than expected, so are the number of new meters required. New meters are required throughout AEY's service area.

(b) The average annual capital expenditures on replacement of meters and new installations for the period 2010-2015 are noted in Table 1 below.

Table 1:
Replacement of Meters and New Installations
Annual Capital Expenditures
($000s)

2010	2011	2012	2013	2014	2015	Total	Average
460	199	283	308	166	234	1,650	275

(c) Please refer to UCG-AEY-41(c) Attachment 1. This spreadsheet contains all of AEY's revenue meters and you will find the manufacturer name, model, unit price, district name (service area) and configuration of each meter.

As far as specifications for compliance of standards for electric magnetic fields, radiation and radio frequency are concerned; the digital meters that AEY utilizes do not use RF or transmit information in any manner. Meters, especially the digital ones, use very little power (less than 10 volt-amperes), so the electric magnetic field at the meter is minute.

Analog meters approved for revenue metering in Canada have not been available for several years, so there is no current pricing for comparison.

The amounts added to rate base for new meters from 2010 to 2015 are the mid-year values of the capital expenditures found in Table 1 as part of response (b) above.

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
BEAVERCREEK	Analog	1 Element Form 1S 4-Jaw	120	100	SANGAMO	K2S	1980	$ 33.90	1
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-70S	1991	$ 65.35	1
					SANGAMO	K2S	1977	$ 29.55	1
							1981	$ 41.70	2
							1987	$ 46.14	2
							1992	$ 58.00	4
								$ 62.00	4
							1993	$ 57.00	4
							2005	$ 25.00	2
					Westinghouse Canada Inc	D4S	1969	$ 29.95	1
							1970	$ 29.55	1
							1976	$ 26.95	2
							1977	$ 29.95	1
							1981	$ 37.95	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	5	SANGAMO	KYF	1983	$ 281.05	1
							1985	$ 326.30	1
							1992	$ 408.60	1
		2 Element Network Form 12S 5-Jaw	120	100	SCHLUMBERGER	KYS	1999	$ 135.00	3
	Digital	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2008	$ 32.50	2
							2009	$ 32.50	6
					ITRON	C1S	2006	$ 32.50	3
							2011	$ 30.00	10
							2012	$ 30.00	24
								$ 32.50	5
							2015	$ 30.00	5
						SENTINEL	2006	$ 255.00	2
							2010	$ 180.00	10
							2011	$ 180.00	4
							2012	$ 180.00	1
							2013	$ 180.00	3
							2014	$ 180.00	1
							2015	$ 180.00	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	6
		2 Element Network Form 12S 5-Jaw	120	200	GE CANADA	I-210+N	2014	$ 60.50	2
					SCHLUMBERGER	CN1S	2001	$ 115.00	1
								$ 117.00	3
						SV2SD	2004	$ 200.00	1
		3 Element Wye Form 16S 7-Jaw	120	200	GE CANADA	VIM-E4S	2004	$ 200.00	1
					ITRON	SENTINEL	2013	$ 160.00	2
							2014	$ 160.00	3
BEAVERCREEK Total									129

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
CARCROSS	Analog	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-60S	1965	$ 22.00	1
						I-70S	1976	$ 26.95	1
							1980	$ 34.90	3
					SANGAMO	K2S	1973	$ 21.95	1
							1979	$ 32.25	1
							1982	$ 46.70	3
							1987	$ 58.75	1
							1992	$ 58.00	19
								$ 62.00	11
							1993	$ 57.00	14
							2005	$ 25.00	15
					Westinghouse Canada Inc	D4S	1974	$ 22.70	1
							1977	$ 26.95	1
								$ 29.55	1
							1978	$ 31.30	1
							1980	$ 34.90	1
							1981	$ 37.95	3
						D5S	1989	$ 58.10	3
							1990	$ 62.89	1
		2 Element Network Form 12S 5-Jaw	120	100	SCHLUMBERGER	KYS	2000	$ 135.00	1
	Digital	1 Element Form 1S 4-Jaw	120	100	GE CANADA	I-210+	2010	$ 42.00	1
		1 Element Form 3CS 4-Jaw	120-480	10	GE CANADA	KV2C	2010	$ 160.00	4
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2007	$ 84.25	8
								$ 97.00	4
							2008	$ 32.50	3
							2009	$ 32.50	13
							2011	$ 32.50	4
						I-210+	2012	$ 109.00	3
							2013	$ 108.25	43
								$ 113.25	1
					ITRON	C1S	2006	$ 32.50	12
							2011	$ 30.00	23
							2012	$ 30.00	33
								$ 32.50	21
							2014	$ 30.00	14
							2015	$ 30.00	29
						C1SX	2005	$ 152.00	1
							2007	$ 86.08	4
								$ 90.02	6
						SENTINEL	2005	$ 255.00	6
							2006	$ 255.00	3
							2010	$ 180.00	3
							2011	$ 180.00	9
							2012	$ 180.00	7
							2015	$ 180.00	6
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	2
		2 Element Network Form 12S 5-Jaw	120	200	ITRON	SENTINEL	2008	$ 255.00	1
							2010	$ 255.00	1
		3 Element Delta Form 17S 7-Jaw	240	200	ITRON	SENTINEL	2010	$ 157.00	2
		3 Element Wye Form 16S 7-Jaw	120	200	ITRON	SENTINEL	2005	$ 255.00	1
							2014	$ 160.00	3
		3 Element Wye Form 9S 13-Jaw	120	10	SCHLUMBERGER	SV4SR	2001	$ 468.00	1
							2014	$ 550.00	1
CARCROSS Total									356

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
CARMACKS	Analog	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-70S	1975	$ 25.45	1
							1980	$ 34.90	2
							1991	$ 65.35	5
					SANGAMO	K2S	1973	$ 21.95	2
							1978	$ 31.30	1
							1980	$ 34.90	1
							1981	$ 37.95	1
							1982	$ 46.70	2
							1985	$ 55.45	1
							1986	$ 55.95	1
							1987	$ 46.14	3
							1992	$ 58.00	14
								$ 62.00	11
							1993	$ 57.00	11
							2005	$ 25.00	9
					Westinghouse Canada Inc	D3S	1967	$ 26.95	1
							1969	$ 26.95	2
						D4S	1976	$ 26.95	1
							1977	$ 26.95	2
							1978	$ 31.30	5
							1980	$ 34.90	1
							1981	$ 37.95	2
		2 Element Network Form 12S 5-Jaw	120	100	SCHLUMBERGER	KYS	2000	$ 135.00	1
	Digital	1 Element Form 3CS 4-Jaw	120-480	10	GE CANADA	KV2C	2010	$ 160.00	1
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2007	$ 84.25	1
							2008	$ 32.50	6
							2009	$ 32.50	4
							2011	$ 32.50	8
						I-210+	2013	$ 113.25	1
					ITRON	C1S	2006	$ 32.50	14
							2011	$ 30.00	16
							2012	$ 30.00	63
								$ 32.50	24
							2013	$ 30.00	20
							2014	$ 30.00	30
							2015	$ 30.00	9
						C1SX	2007	$ 90.02	1
						SENTINEL	2005	$ 255.00	2
							2006	$ 255.00	1
							2011	$ 180.00	4
							2012	$ 180.00	1
							2014	$ 180.00	9
							2015	$ 180.00	5
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	VIM-E3S	2007	$ 255.00	1
							2014	$ 430.00	2
		2 Element Network Form 12S 5-Jaw	120	200	ITRON	SENTINEL	2009	$ 255.00	1
					SCHLUMBERGER	CN1S	2001	$ 115.00	1
		3 Element Delta Form 17S 7-Jaw	240	200	ITRON	SENTINEL	2009	$ 468.00	1
		3 Element Wye Form 16S 7-Jaw	120	200	ITRON	SENTINEL	2005	$ 255.00	1
							2012	$ 160.00	2
							2014	$ 160.00	2
			345	200	GE CANADA	VIM-E4S	2015	$ 510.00	1
		3 Element Wye Form 9S 13-Jaw	120	10	SCHLUMBERGER	SV4SR	2000	$ 468.00	1
							2010	$ 100.00	1
							2014	$ 550.00	3
CARMACKS Total									317

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
DESTRUCTION BAY	Analog	1.5 Element Form 2S 4-Jaw	240	100	Westinghouse Canada Inc	D2S	1964	$ 22.00	1
						D3S	1967	$ 22.00	1
				200	GE CANADA	I-60S	1967	$ 26.95	1
						I-70S	1978	$ 31.30	1
							1980	$ 34.90	2
							1991	$ 65.35	1
					SANGAMO	K2S	1979	$ 32.25	1
							1987	$ 46.14	4
							1992	$ 58.00	2
								$ 62.00	5
							1993	$ 57.00	2
							2005	$ 25.00	4
					Westinghouse Canada Inc	D4S	1981	$ 37.95	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	5	SANGAMO	KYF	1983	$ 281.05	1
							1987	$ 359.90	1
						KYWF	1989	$ 619.60	1
						P20F	1968	$ 108.00	1
	Digital	1 Element Form 1S 4-Jaw	120	100	ITRON	C1S	2010	$ 32.50	2
		1 Element Form 3CS 4-Jaw	240	10	GE CANADA	VIM-E1S	2013	$ 100.00	1
			120-480	10	GE CANADA	KV2C	2010	$ 160.00	1
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2009	$ 32.50	11
							2011	$ 32.50	1
						KV2C	2010	$ 275.00	1
					ITRON	C1S	2006	$ 32.50	17
							2011	$ 30.00	4
							2012	$ 30.00	32
								$ 32.50	14
							2015	$ 30.00	13
						SENTINEL	2005	$ 255.00	3
							2010	$ 180.00	7
							2011	$ 180.00	2
							2012	$ 180.00	1
							2013	$ 180.00	1
							2014	$ 180.00	3
							2015	$ 180.00	3
			240-480	200	ACLARA	KV2C	2016	$ 363.63	17
		1.5 Element Form 4S 6-Jaw	240	10	ITRON	SENTINEL	2010	$ 180.00	1
			120-480	20	ACLARA	KV2C	2015	$ 363.63	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	1
				20	ACLARA	KV2C	2016	$ 383.47	1
		2 Element Network Form 12S 5-Jaw	120	200	ACLARA	KV2C	2016	$ 363.63	5
					SCHLUMBERGER	CN1S	2001	$ 115.00	1
						SV2SD	2004	$ 200.00	3
						SV4SR	2004	$ 200.00	2
		3 Element Wye Form 16S 7-Jaw	120	200	ITRON	SENTINEL	2005	$ 255.00	1
							2013	$ 160.00	1
			120-345	200	ACLARA	KV2C	2016	$ 383.47	2
		3 Element Wye Form 9S 13-Jaw	120	10	SCHLUMBERGER	SV4SR	2014	$ 550.00	1
			120-277	20	ACLARA	KV2C	2016	$ 383.47	1
DESTRUCTION BAY Total									185

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
HAINES JUNCTION	Analog	1.5 Element Form 2S 4-Jaw	240	100	Westinghouse Canada Inc	D2S	1962	$ 22.00	1
						D3S	1965	$ 22.00	2
							1966	$ 22.00	3
							1967	$ 22.00	3
				200	GE CANADA	I-70S	1976	$ 26.95	2
							1980	$ 34.90	4
							1981	$ 37.95	1
							1991	$ 65.35	7
					SANGAMO	K2S	1973	$ 21.95	1
							1974	$ 24.95	1
							1982	$ 46.70	4
							1984	$ 44.95	1
							1987	$ 46.14	2
							1992	$ 58.00	11
								$ 62.00	17
							1993	$ 57.00	23
							2005	$ 25.00	9
					Westinghouse Canada Inc	D4S	1970	$ 31.30	1
							1974	$ 22.70	5
							1975	$ 26.95	1
							1976	$ 26.95	1
							1977	$ 29.55	2
								$ 29.95	14
							1978	$ 31.30	4
							1979	$ 32.25	1
							1980	$ 34.90	3
							1981	$ 37.95	1
	Digital	1 Element Form 1S 4-Jaw	120	100	GE CANADA	I-210+	2010	$ 42.00	3
		1 Element Form 3CS 4-Jaw	240	10	GE CANADA	VIM-E1S	2013	$ 100.00	2
			120-480	10	GE CANADA	KV2C	2010	$ 160.00	5
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2008	$ 32.50	6
							2009	$ 32.50	33
							2011	$ 32.50	26
						I-210+	2013	$ 108.25	1
					ITRON	C1S	2006	$ 32.50	36
							2011	$ 30.00	46
							2012	$ 30.00	141
								$ 32.50	22
							2013	$ 30.00	1
							2015	$ 30.00	107
						SENTINEL	2005	$ 255.00	5
							2006	$ 255.00	2
							2010	$ 180.00	22
							2011	$ 180.00	10
							2012	$ 180.00	8
							2013	$ 180.00	4
							2014	$ 30.00	1
								$ 180.00	6
							2015	$ 180.00	4
		1.5 Element Form 4S 6-Jaw	240	20	ITRON	SENTINEL	2007	$ 315.00	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	6
			240	10	SCHLUMBERGER	SV3SR	2013	$ 550.00	1
		2 Element Network Form 12S 5-Jaw	120	200	GE CANADA	I-210+N	2014	$ 60.50	3
					ITRON	SENTINEL	2010	$ 200.00	1
					SCHLUMBERGER	CN1S	2001	$ 115.00	1
								$ 117.00	1
		3 Element Delta Form 17S 7-Jaw	240	200	ITRON	SENTINEL	2009	$ 468.00	1
							2010	$ 157.00	3
		3 Element Wye Form 16S 7-Jaw	120	200	ITRON	SENTINEL	2005	$ 255.00	3
							2012	$ 160.00	1
							2014	$ 160.00	2
			277	200	SCHLUMBERGER	SV4SR	1999	$ 468.00	1
							2000	$ 468.00	1
			345	200	SCHLUMBERGER	SV4SR	2000	$ 468.00	1
		3 Element Wye Form 9S 13-Jaw	120	10	ITRON	SENTINEL	2015	$ 468.00	2
					SCHLUMBERGER	SV4SR	1999	$ 468.00	1
							2000	$ 468.00	1
							2014	$ 550.00	3
HAINES JUNCTION Total									650

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
KENO CITY	Analog	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-70S	1975	$ 25.45	3
							1980	$ 34.90	2
							1991	$ 65.35	3
					SANGAMO	K2S	1982	$ 46.70	2
							1992	$ 58.00	7
								$ 62.00	6
							1993	$ 57.00	3
							2005	$ 25.00	6
					Westinghouse Canada Inc	D3S	1968	$ 26.95	1
						D4S	1973	$ 22.70	1
							1976	$ 26.95	1
							1977	$ 29.55	1
								$ 29.95	2
							1979	$ 32.25	1
							1980	$ 34.90	4
							1981	$ 37.95	7
	Digital	1 Element Form 1S 4-Jaw	120	100	GE CANADA	I-210+	2010	$ 42.00	1
					ITRON	C1S	2010	$ 32.50	5
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2008	$ 32.50	1
							2009	$ 32.50	6
							2011	$ 32.50	2
					ITRON	C1S	2006	$ 32.50	2
							2012	$ 30.00	10
								$ 32.50	11
							2014	$ 30.00	9
							2015	$ 30.00	3
						SENTINEL	2005	$ 255.00	3
		1.5 Element Form 4S 6-Jaw	240	20	ITRON	SENTINEL	2007	$ 315.00	1
		3 Element Delta Form 17S 7-Jaw	240	200	ITRON	SENTINEL	2010	$ 157.00	1
		3 Element Wye Form 9S 13-Jaw	120	10	SCHLUMBERGER	SV4SR	2001	$ 468.00	1
KENO CITY Total									106

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
MARSH LAKE	Analog	1.5 Element Form 2S 4-Jaw	240	100	Westinghouse Canada Inc	D3S	1966	$ 22.00	1
				200	GE CANADA	I-70S	1974	$ 25.45	1
							1975	$ 26.95	2
							1976	$ 26.95	3
							1980	$ 34.90	2
							1991	$ 65.35	4
					SANGAMO	K2S	1973	$ 21.95	1
							1974	$ 21.95	1
							1978	$ 31.30	1
							1979	$ 32.25	2
							1980	$ 34.90	1
							1981	$ 37.95	1
							1982	$ 46.70	4
							1992	$ 58.00	33
								$ 62.00	21
							1993	$ 57.00	15
							2005	$ 25.00	11
						KS	1972	$ 21.95	1
					Westinghouse Canada Inc	D3S	1967	$ 24.95	1
							1969	$ 26.95	3
						D4S	1970	$ 31.30	2
							1973	$ 22.70	2
							1974	$ 22.70	1
							1975	$ 24.95	1
							1976	$ 26.95	1
							1977	$ 26.95	2
								$ 29.55	3
								$ 29.95	1
							1978	$ 31.30	5
							1979	$ 32.25	4
							1980	$ 34.90	12
							1981	$ 37.95	3
						D5S	1989	$ 58.10	1
	Digital	1 Element Form 3CS 4-Jaw	120-480	10	GE CANADA	KV2C	2010	$ 160.00	2
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2007	$ 84.25	2
								$ 97.00	2
							2008	$ 32.50	4
							2009	$ 32.50	18
							2011	$ 32.50	7
						I-210+	2012	$ 109.00	7
							2013	$ 108.25	86
								$ 113.25	2
					ITRON	C1S	2006	$ 32.50	11
							2011	$ 30.00	41
							2012	$ 30.00	27
								$ 32.50	34
							2013	$ 30.00	7
							2014	$ 30.00	57
							2015	$ 30.00	20
						C1SX	2007	$ 86.08	2
								$ 90.02	4
						SENTINEL	2006	$ 255.00	1
							2008	$ 475.00	1
							2012	$ 180.00	3
							2014	$ 180.00	2
							2015	$ 180.00	2
		2 Element Network Form 12S 5-Jaw	120	200	SCHLUMBERGER	SV2SD	2004	$ 200.00	1
						SV4SR	2004	$ 200.00	1
		3 Element Wye Form 16S 7-Jaw	120	200	ITRON	SENTINEL	2006	$ 255.00	1
		3 Element Wye Form 9S 13-Jaw	120	10	SCHLUMBERGER	SV4SR	2009	$ 450.00	1
MARSH LAKE Total									493

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
MINTO LANDING	Digital	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2009	$ 32.50	1
					ITRON	SENTINEL	2011	$ 180.00	1
							2015	$ 180.00	1
MINTO LANDING Total									3

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
OLD CROW	Analog	1.5 Element Form 2S 4-Jaw	240	200	SANGAMO	K2S	1992	$ 58.00	2
	Digital	1 Element Form 3CS 4-Jaw	120-480	10	GE CANADA	KV2C	2010	$ 160.00	1
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2009	$ 32.50	2
							2011	$ 32.50	12
					ITRON	C1S	2006	$ 32.50	10
							2011	$ 30.00	22
							2012	$ 30.00	43
								$ 32.50	9
							2013	$ 30.00	41
							2014	$ 30.00	13
							2015	$ 30.00	12
						CENTRON	2013	$ 30.00	3
						SENTINEL	2010	$ 180.00	2
							2011	$ 180.00	6
							2012	$ 180.00	2
							2013	$ 180.00	3
							2015	$ 180.00	8
		1.5 Element Form 4S 6-Jaw	240	10	ITRON	SENTINEL	2015	$ 280.00	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	VIM-E3S	2006	$ 255.00	1
		2 Element Network Form 12S 5-Jaw	120	200	SCHLUMBERGER	CN1S	2001	$ 115.00	1
						SV2SD	2004	$ 200.00	1
		3 Element Wye Form 9S 13-Jaw	120	10	ITRON	SENTINEL	2015	$ 468.00	2
					SCHLUMBERGER	SV4SR	1999	$ 468.00	1
							2000	$ 468.00	1
							2014	$ 550.00	1
OLD CROW Total									200

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
PELLY CROSSING	Analog	1.5 Element Form 2S 4-Jaw	240	100	Westinghouse Canada Inc	D3S	1966	$ 22.00	1
				200	GE CANADA	I-70S	1976	$ 26.95	1
							1980	$ 34.90	1
							1991	$ 65.35	1
					SANGAMO	K2S	1973	$ 21.95	2
							1982	$ 46.70	3
							1992	$ 58.00	3
								$ 62.00	5
							1993	$ 57.00	12
							2005	$ 25.00	7
					Westinghouse Canada Inc	D4S	1970	$ 31.30	1
							1973	$ 22.70	1
							1975	$ 26.95	1
							1976	$ 26.95	1
							1978	$ 31.30	1
							1980	$ 34.90	1
							1981	$ 37.95	4
						D5S	1990	$ 62.89	1
	Digital	1 Element Form 3CS 4-Jaw	120-480	10	GE CANADA	KV2C	2010	$ 160.00	2
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2007	$ 97.00	11
							2009	$ 32.50	15
							2011	$ 32.50	6
						I-210+	2012	$ 109.00	1
					ITRON	C1S	2006	$ 32.50	10
							2011	$ 30.00	8
							2012	$ 30.00	64
								$ 32.50	5
							2014	$ 30.00	10
							2015	$ 30.00	5
						SENTINEL	2005	$ 255.00	2
							2012	$ 180.00	2
							2014	$ 180.00	1
							2015	$ 180.00	2
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	1
		3 Element Wye Form 9S 13-Jaw	120	10	SCHLUMBERGER	SV4SR	2014	$ 550.00	1
				20	ITRON	SENTINEL	2008	$ 475.00	1
PELLY CROSSING Total									194

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
ROSS RIVER	Analog	1.5 Element Form 2S 4-Jaw	240	100	Westinghouse Canada Inc	D2S	1961	$ 22.00	1
				200	GE CANADA	I-70S	1975	$ 26.95	1
							1991	$ 65.35	6
					SANGAMO	K2S	1973	$ 21.95	1
							1982	$ 46.70	1
							1992	$ 58.00	10
								$ 62.00	3
							1993	$ 57.00	1
							2005	$ 25.00	8
					Westinghouse Canada Inc	D4S	1976	$ 26.95	4
							1977	$ 26.95	3
								$ 29.95	1
							1978	$ 31.30	1
							1979	$ 32.25	2
							1980	$ 34.90	2
						D5S	1989	$ 58.10	1
		2 Element Network Form 12S 5-Jaw	120	100	SCHLUMBERGER	KYS	2000	$ 135.00	1
	Digital	1 Element Form 1S 4-Jaw	120	100	ITRON	C1S	2010	$ 32.50	1
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2007	$ 84.25	1
							2008	$ 32.50	3
							2009	$ 32.50	2
							2011	$ 32.50	5
						I-210+	2013	$ 108.25	1
					ITRON	C1S	2006	$ 32.50	3
							2011	$ 30.00	20
							2012	$ 30.00	50
								$ 32.50	28
							2013	$ 30.00	15
							2014	$ 30.00	5
							2015	$ 30.00	12
						SENTINEL	2005	$ 255.00	6
							2010	$ 180.00	2
							2011	$ 180.00	1
							2012	$ 180.00	5
							2013	$ 180.00	1
							2015	$ 180.00	3
		1.5 Element Form 4S 6-Jaw	240	10	ITRON	SENTINEL	2010	$ 180.00	1
				20	ITRON	SENTINEL	2007	$ 315.00	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	1
		2 Element Network Form 12S 5-Jaw	120	200	ITRON	SENTINEL	2010	$ 255.00	1
					SCHLUMBERGER	CN1S	2001	$ 115.00	4
		3 Element Wye Form 16S 7-Jaw	120	200	GE CANADA	VIM-E4S	2004	$ 200.00	1
					ITRON	SENTINEL	2012	$ 160.00	2
							2014	$ 160.00	2
		3 Element Wye Form 9S 13-Jaw	120	10	ITRON	SENTINEL	2015	$ 468.00	1
					SCHLUMBERGER	SV4SR	2000	$ 468.00	1
							2001	$ 468.00	1
							2014	$ 550.00	2
ROSS RIVER Total									229

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
STEWART CROSSING	Analog	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-70S	1976	$ 26.95	1
					SANGAMO	K2S	1992	$ 58.00	1
							2005	$ 25.00	1
					Westinghouse Canada Inc	D4S	1970	$ 31.30	1
							1976	$ 26.95	1
							1980	$ 34.90	1
	Digital	1 Element Form 3CS 4-Jaw	120-480	10	GE CANADA	KV2C	2010	$ 160.00	1
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2009	$ 32.50	1
					ITRON	C1S	2006	$ 32.50	2
							2011	$ 30.00	1
							2012	$ 30.00	10
								$ 32.50	1
							2014	$ 30.00	1
						SENTINEL	2005	$ 255.00	1
							2010	$ 180.00	1
							2011	$ 180.00	1
							2014	$ 180.00	1
							2015	$ 180.00	2
STEWART CROSSING Total									29

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
SWIFT RIVER	Analog	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-70S	1980	$ 34.90	1
							1991	$ 65.35	1
					SANGAMO	K2S	1992	$ 62.00	1
	Digital	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2009	$ 32.50	2
					ITRON	C1S	2012	$ 30.00	4
								$ 32.50	3
							2015	$ 30.00	1
						SENTINEL	2011	$ 180.00	2
							2013	$ 180.00	1
		3 Element Wye Form 16S 7-Jaw	120	200	ITRON	SENTINEL	2006	$ 255.00	1
							2015	$ 160.00	1
SWIFT RIVER Total									18

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
TAGISH S.R.	Analog	1.5 Element Form 2S 4-Jaw	240	100	GE CANADA	I-55S	1967	$ 20.00	1
				200	GE CANADA	I-60S	1968	$ 26.95	1
						I-70S	1975	$ 26.95	1
							1980	$ 34.90	12
							1991	$ 65.35	4
					SANGAMO	K2S	1973	$ 21.95	2
							1976	$ 26.95	2
							1982	$ 46.70	1
							1992	$ 58.00	21
								$ 62.00	13
							1993	$ 57.00	16
							2005	$ 25.00	11
					Westinghouse Canada Inc	D3S	1969	$ 26.95	1
								$ 31.30	1
						D4S	1968	$ 29.95	1
							1976	$ 26.95	2
							1977	$ 26.95	2
								$ 29.55	1
								$ 29.95	1
							1978	$ 31.30	3
							1979	$ 32.25	1
							1981	$ 37.95	6
						D5S	1989	$ 58.10	1
							1990	$ 62.89	2
	Digital	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2007	$ 84.25	6
								$ 97.00	4
							2008	$ 32.50	3
							2009	$ 32.50	7
							2011	$ 32.50	9
						I-210+	2012	$ 109.00	9
							2013	$ 108.25	65
					ITRON	C1S	2006	$ 32.50	25
							2011	$ 30.00	29
							2012	$ 30.00	9
								$ 32.50	23
							2013	$ 30.00	9
							2014	$ 30.00	28
							2015	$ 30.00	42
						C1SX	2007	$ 86.08	4
								$ 90.02	6
						SENTINEL	2005	$ 255.00	1
							2011	$ 180.00	1
							2012	$ 180.00	1
							2013	$ 180.00	1
							2014	$ 30.00	1
								$ 180.00	1
							2015	$ 180.00	5
					LANDIS+GYR	ALF	2015	$ 135.66	1
		1.5 Element Form 4S 6-Jaw	240	10	ITRON	SENTINEL	2011	$ 180.00	1
		2 Element Network Form 12S 5-Jaw	120	200	ITRON	SENTINEL	2009	$ 255.00	1
					SCHLUMBERGER	SV2SD	2004	$ 200.00	1
		3 Element Wye Form 16S 7-Jaw	120	200	ITRON	SENTINEL	2014	$ 160.00	1
TAGISH S.R. Total									401

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
TESLIN	Analog	1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-70S	1975	$ 25.45	1
							1976	$ 26.95	2
							1991	$ 65.35	4
					SANGAMO	K2S	1973	$ 21.95	2
							1977	$ 29.95	1
							1982	$ 46.70	4
							1992	$ 58.00	10
								$ 62.00	15
							1993	$ 57.00	13
							2005	$ 25.00	13
					Westinghouse Canada Inc	D3S	1969	$ 26.95	1
						D4S	1970	$ 31.30	3
							1971	$ 31.30	1
							1972	$ 22.70	1
							1974	$ 22.70	1
							1977	$ 29.55	1
								$ 29.95	2
							1978	$ 31.30	7
							1981	$ 37.95	5
		2 Element Network Form 12S 5-Jaw	120	100	SANGAMO	KYS	1981	$ 109.90	1
	Digital	1 Element Form 3CS 4-Jaw	120-480	10	GE CANADA	KV2C	2010	$ 160.00	3
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2007	$ 84.25	3
								$ 97.00	3
							2008	$ 32.50	10
							2009	$ 32.50	5
							2011	$ 32.50	10
						I-210+	2012	$ 109.00	61
							2013	$ 108.25	5
					ITRON	C1S	2006	$ 32.50	12
							2011	$ 30.00	18
							2012	$ 30.00	13
								$ 32.50	22
							2013	$ 30.00	20
							2014	$ 30.00	14
							2015	$ 30.00	19
						C1SX	2007	$ 86.08	3
								$ 90.02	7
						SENTINEL	2005	$ 255.00	8
							2006	$ 255.00	2
							2007	$ 475.00	2
							2008	$ 475.00	1
							2010	$ 180.00	1
							2011	$ 180.00	4
							2013	$ 180.00	2
							2014	$ 180.00	1
							2015	$ 180.00	8
		1.5 Element Form 4S 6-Jaw	240	20	ITRON	SENTINEL	2007	$ 315.00	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	5
		2 Element Network Form 12S 5-Jaw	120	200	GE CANADA	I-210+N	2012	$ 136.00	1
					SCHLUMBERGER	CN1S	2001	$ 115.00	1
								$ 117.00	2
		3 Element Delta Form 17S 7-Jaw	240	200	ITRON	SENTINEL	2009	$ 468.00	1
							2010	$ 157.00	2
		3 Element Wye Auto-Service Detect Form 16S 7-Jaw	120-345	200	ITRON	CP1S	2012	$ 175.00	1
		3 Element Wye Form 16S 7-Jaw	120	200	GE CANADA	VIM-E4S	2004	$ 445.00	2
					ITRON	SENTINEL	2005	$ 255.00	1
							2012	$ 160.00	1
							2015	$ 160.00	3
			345	200	ITRON	SENTINEL	2009	$ 255.00	1
		3 Element Wye Form 9S 13-Jaw	120	10	ITRON	SENTINEL	2015	$ 468.00	2
					SCHLUMBERGER	SV4SR	2001	$ 468.00	1
							2002	$ 550.00	1
							2014	$ 550.00	2
TESLIN Total									373

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
WATSON LAKE	Analog	1.5 Element Form 2S 4-Jaw	240	100	SANGAMO	CJ3S	1965	$ 22.00	3
					Westinghouse Canada Inc	D3S	1966	$ 22.00	2
				200	GE CANADA	I-60S	1944	$ 25.45	1
							1969	$ 29.55	1
						I-70S	1976	$ 26.95	6
							1980	$ 27.90	1
								$ 34.90	18
							1991	$ 65.35	9
					SANGAMO	K2S	1973	$ 21.95	6
							1976	$ 26.95	3
							1977	$ 29.95	1
							1979	$ 31.30	2
								$ 32.25	1
							1980	$ 34.90	1
							1981	$ 37.95	1
							1982	$ 46.70	13
							1986	$ 55.95	1
							1987	$ 58.75	1
							1992	$ 58.00	48
								$ 62.00	38
							1993	$ 57.00	8
							2005	$ 25.00	13
						KS	1973	$ 21.95	2
					Westinghouse Canada Inc	D4S	1970	$ 31.30	3
							1972	$ 22.70	1
							1973	$ 21.95	2
								$ 22.70	1
							1974	$ 22.70	5
							1975	$ 26.95	1
							1976	$ 26.95	6
							1977	$ 26.95	3
								$ 29.55	2
								$ 29.95	5
							1978	$ 31.30	6
							1979	$ 31.30	3
								$ 32.25	7
							1980	$ 34.90	7
							1981	$ 37.95	1
						D5S	1990	$ 62.89	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	5	SANGAMO	KYF	1983	$ 281.05	2
							1985	$ 326.30	3
						KYWF	1985	$ 326.30	3
						P20F	1968	$ 108.00	1
	Digital	1 Element Form 3CS 4-Jaw	240	10	GE CANADA	VIM-E1S	2013	$ 100.00	1
			120-480	10	GE CANADA	KV2C	2010	$ 160.00	2
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2008	$ 32.50	11
							2009	$ 32.50	48
							2011	$ 32.50	12
					ITRON	C1S	2006	$ 32.50	51
							2011	$ 30.00	63
							2012	$ 30.00	159
								$ 32.50	112
							2013	$ 30.00	28
							2015	$ 30.00	132
						SENTINEL	2005	$ 255.00	29
							2006	$ 255.00	10
							2010	$ 180.00	20
							2011	$ 180.00	19
							2012	$ 180.00	2
							2013	$ 180.00	4
							2015	$ 180.00	7
							2016	$ 195.00	12
		1.5 Element Form 4S 6-Jaw	240	10	ITRON	SENTINEL	2010	$ 180.00	1
				20	ITRON	SENTINEL	2008	$ 315.00	2
		2 Element Delta Form 12S 5-Jaw	480	200	GE CANADA	VIM-E2S	2015	$ 445.00	4
					ITRON	SENTINEL	2005	$ 255.00	2
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	9
			240	10	GE CANADA	KV2C	2010	$ 175.00	2
		2 Element Network Form 12S 5-Jaw	120	200	ITRON	SENTINEL	2010	$ 255.00	1
					SCHLUMBERGER	SV2SD	2004	$ 200.00	1
		3 Element Delta Form 17S 7-Jaw	240	200	ITRON	SENTINEL	2009	$ 468.00	1
							2010	$ 200.00	8
							2012	$ 468.00	2
		3 Element Wye Auto-Service Detect Form 16S 7-Jaw	120-345	200	ITRON	CP1S	2012	$ 175.00	1
		3 Element Wye Form 16S 7-Jaw	120	200	GE CANADA	VIM-E4S	2004	$ 200.00	1
					ITRON	SENTINEL	2005	$ 255.00	5
							2006	$ 255.00	2
							2013	$ 160.00	2
							2014	$ 160.00	5
							2015	$ 160.00	3
			277	200	GE CANADA	VIM-E4S	2015	$ 570.00	3
			345	200	GE CANADA	VIM-E4S	2015	$ 510.00	2
					SCHLUMBERGER	SV4SR	2000	$ 468.00	2
		3 Element Wye Form 9S 13-Jaw	120	10	ITRON	SENTINEL	2015	$ 468.00	8
					SCHLUMBERGER	SV4SR	2000	$ 468.00	3
							2001	$ 468.00	2
							2014	$ 550.00	5
			277	10	SCHLUMBERGER	SV4SR	2007	$ 255.00	1
WATSON LAKE Total									1,043

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
WHITEHORSE	Analog	1 Element Form 1S 4-Jaw	120	100	SANGAMO	K2S	1980	$ 33.90	1
							1982	$ 45.35	1
							1983	$ 48.10	5
		1.5 Element Form 2S 4-Jaw	240	100	GE CANADA	I-55S	1965	$ 20.00	1
							1967	$ 20.00	3
					SANGAMO	CJ3S	1965	$ 22.00	1
					Westinghouse Canada Inc	D2S	1961	$ 22.00	14
							1962	$ 22.00	5
							1964	$ 22.00	3
							1967	$ 22.00	1
							1968	$ 22.00	1
						D3S	1961	$ 22.00	1
							1963	$ 22.00	1
							1965	$ 22.00	1
							1966	$ 22.00	5
				200	GE CANADA	I-60S	1941	$ 22.00	1
							1944	$ 26.95	1
							1946	$ 26.95	2
							1964	$ 22.00	2
							1965	$ 22.00	3
							1966	$ 21.00	1
								$ 22.00	1
								$ 25.45	1
								$ 26.95	1
							1967	$ 21.00	9
								$ 25.45	14
								$ 26.95	7
							1968	$ 21.00	2
								$ 26.95	8
						I-70S	1972	$ 21.95	2
							1974	$ 25.45	5
							1975	$ 25.45	19
								$ 26.95	8
							1976	$ 26.95	54
							1980	$ 34.90	51
							1982	$ 41.70	3
							1986	$ 55.95	1
							1991	$ 65.35	60
					SANGAMO	K2S	1973	$ 21.95	48
							1974	$ 24.95	1
							1975	$ 24.95	3
								$ 26.95	1
							1976	$ 26.95	2
							1977	$ 29.95	2
							1979	$ 32.25	1
								$ 34.90	1
							1980	$ 34.90	1
							1981	$ 37.95	1
							1982	$ 46.70	84
							1984	$ 44.95	1
							1987	$ 46.14	5
							1992	$ 58.00	442
								$ 62.00	386
							1993	$ 57.00	280
							2005	$ 25.00	344
						KS	1972	$ 21.95	3
							1973	$ 21.95	1
					Westinghouse Canada Inc	D3S	1967	$ 24.95	1
								$ 26.95	1
							1968	$ 26.95	20
								$ 29.95	1
							1969	$ 26.95	68
								$ 31.30	1
							1970	$ 26.95	2
								$ 31.30	1
						D4S	1968	$ 29.95	4
							1970	$ 29.55	6
								$ 31.30	52
							1971	$ 26.95	2
							1972	$ 22.70	2
							1973	$ 22.70	4
							1974	$ 22.70	22
								$ 24.95	3
							1975	$ 24.95	4
								$ 26.95	4
							1976	$ 26.95	83
							1977	$ 26.95	48
								$ 29.55	35
								$ 29.95	47
							1978	$ 31.30	123
							1979	$ 31.30	3
								$ 32.25	8
							1980	$ 34.90	36
							1981	$ 37.95	172
						D5S	1989	$ 58.10	31
							1990	$ 62.89	24
		2 Element Delta or Wye Form 5S 8-Jaw	120	5	SANGAMO	KYF	1991	$ 385.50	1
							1998	$ 325.00	1
		2 Element Network Form 12S 5-Jaw	120	100	SANGAMO	KYS	1970	$ 78.70	1

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
							1973	$ 53.50	2
							1974	$ 53.50	1
							1975	$ 53.50	1
							1976	$ 67.80	3
							1981	$ 89.25	1
							1982	$ 123.05	14
							1986	$ 138.55	2
							1991	$ 168.09	2
							1995	$ 109.90	2
							1999	$ 53.50	1
								$ 123.05	7
					SCHLUMBERGER	KYS	1999	$ 135.00	15
							2000	$ 135.00	108
	Digital	1 Element Form 1S 4-Jaw	120	100	GE CANADA	I-210+	2010	$ 42.00	3
					ITRON	C1S	2010	$ 32.50	12
							2013	$ 44.00	4
						C1SX	2006	$ 261.00	1
							2011	$ 152.00	11
					SCHLUMBERGER	C1SX	2003	$ 152.00	2
		1 Element Form 3CS 4-Jaw	240	10	GE CANADA	VIM-E1S	2013	$ 100.00	6
			120-480	10	GE CANADA	KV2C	2010	$ 160.00	35
		1.5 Element Form 2S 4-Jaw	240	200	GE CANADA	I-210	2007	$ 84.25	101
								$ 97.00	70
							2008	$ 32.50	55
							2009	$ 32.50	433
							2011	$ 32.50	267
						I-210+	2012	$ 109.00	450
								$ 110.00	8
							2013	$ 108.25	1,447
								$ 113.25	42
						KV2C	2010	$ 275.00	2
					ITRON	C1S	2006	$ 32.50	515
							2011	$ 30.00	686
							2012	$ 30.00	468
								$ 32.50	878
							2013	$ 30.00	251
							2014	$ 30.00	763
							2015	$ 30.00	1,423
						C1SX	2004	$ 152.00	1
							2006	$ 152.00	2
							2007	$ 86.08	70
								$ 90.02	115
						SENTINEL	2005	$ 255.00	109
							2006	$ 255.00	23
							2007	$ 475.00	57
							2008	$ 475.00	19
							2010	$ 180.00	94
							2011	$ 180.00	96
							2012	$ 180.00	34
							2013	$ 180.00	12
							2014	$ 30.00	9
								$ 180.00	45
								$ 550.00	6
							2015	$ 180.00	131
							2016	$ 195.00	22
					LANDIS+GYR	ALF	2015	$ 135.66	5
					SCHLUMBERGER	SENTINEL	2011	$ 55.95	6
		1.5 Element Form 4S 6-Jaw	240	10	GE CANADA	KV2C	2014	$ 439.44	1
					ITRON	SENTINEL	2010	$ 180.00	6
				20	ITRON	SENTINEL	2007	$ 315.00	2
							2008	$ 315.00	2
			120-480	20	ACLARA	KV2C	2015	$ 363.63	1
		2 Element Delta Form 12S 5-Jaw	240	200	ITRON	SENTINEL	2010	$ 250.00	1
			480	200	ITRON	SENTINEL	2005	$ 255.00	1
		2 Element Delta or Wye Form 5S 8-Jaw	120	10	GE CANADA	KV2C	2010	$ 175.00	108
						VIM-E3S	2006	$ 255.00	3
							2007	$ 255.00	6
							2008	$ 255.00	7
							2010	$ 100.00	2
							2013	$ 100.00	5
							2014	$ 430.00	13
			240	10	GE CANADA	KV2C	2010	$ 175.00	25
							2011	$ 175.00	4
					SCHLUMBERGER	SV3SR	2013	$ 550.00	2
		2 Element Network Form 12S 5-Jaw	120	200	GE CANADA	I-210+N	2010	$ 137.00	11
							2012	$ 55.00	314
								$ 136.00	53
							2013	$ 136.00	26
							2014	$ 60.50	308
								$ 153.78	36
							2015	$ 63.00	13
						KV2C	2013	$ 456.00	2
					ITRON	CN1SX	2003	$ 261.00	2
							2004	$ 261.00	1
							2006	$ 261.00	3
							2007	$ 212.70	62
							2008	$ 190.00	42
							2013	$ 261.00	3
						SENTINEL	2005	$ 255.00	7

ATCO Electric Yukon
Meter Data Summary by Community

District Name	Analog/Digital	Configuration/Form	Voltage	Current	Manufacturer	Model	Purchase Year	Unit Price	Count
							2007	$ 475.00	40
							2008	$ 255.00	32
							2009	$ 255.00	11
							2010	$ 200.00	24
								$ 255.00	13
							2014	$ 475.00	1
					SCHLUMBERGER	CN1S	2001	$ 115.00	324
								$ 117.00	47
						CN1SX	2003	$ 261.00	11
						SV2SD	2004	$ 200.00	58
							2007	$ 200.00	4
							2010	$ 200.00	1
						SV2SR	2002	$ 550.00	1
							2013	$ 550.00	4
						SV4SR	2004	$ 200.00	41
							2006	$ 200.00	4
							2007	$ 200.00	6
		3 Element Delta Form 17S 7-Jaw	240	200	GE CANADA	VIM-E7S	2001	$ 430.00	4
					ITRON	SENTINEL	2009	$ 468.00	4
							2010	$ 157.00	35
								$ 200.00	39
							2011	$ 200.00	6
							2012	$ 200.00	3
								$ 468.00	2
		3 Element Wye Auto-Service Detect Form 16S 7-Jaw	120-345	200	ITRON	CP1S	2012	$ 175.00	78
		3 Element Wye Form 16S 7-Jaw	120	200	GE CANADA	VIM-E4S	2004	$ 200.00	8
								$ 445.00	11
					ITRON	SENTINEL	2005	$ 255.00	196
							2006	$ 255.00	33
								$ 550.00	14
							2007	$ 475.00	30
							2008	$ 475.00	6
							2012	$ 160.00	42
							2013	$ 160.00	8
							2014	$ 160.00	193
								$ 355.00	1
							2015	$ 160.00	75
					LANDIS+GYR	RXS4E	2005	$ 480.50	1
					SCHLUMBERGER	SV4SR	2006	$ 255.00	7
			277	200	SCHLUMBERGER	SV4SR	1999	$ 468.00	3
							2000	$ 468.00	2
							2011	$ 468.00	1
			345	200	GE CANADA	VIM-E4S	2002	$ 510.00	3
							2015	$ 510.00	1
					ITRON	SENTINEL	2009	$ 255.00	4
					SCHLUMBERGER	SV4SR	2000	$ 468.00	7
			120-345	200	GE CANADA	KV2C	2011	$ 405.00	1
							2012	$ 425.00	1
			347/600	200	GE CANADA	KV2C	2007	$ 530.00	5
		3 Element Wye Form 9S 13-Jaw	120	10	GE CANADA	VIM-E4S	2013	$ 445.00	4
					ITRON	SENTINEL	2015	$ 468.00	27
							2016	$ 468.00	1
					SCHLUMBERGER	SV4SR	1999	$ 468.00	11
							2000	$ 468.00	44
							2001	$ 468.00	11
							2002	$ 550.00	1
							2009	$ 450.00	1
							2010	$ 100.00	5
								$ 200.00	2
							2013	$ 468.00	2
							2014	$ 550.00	55
				20	ITRON	SENTINEL	2006	$ 550.00	6
							2007	$ 475.00	3
								$ 550.00	4
							2008	$ 475.00	1
			277	10	ITRON	SENTINEL	2015	$ 255.00	5
					SCHLUMBERGER	SV4SR	2006	$ 255.00	1
							2007	$ 255.00	2
WHITEHORSE Total									14,370
Grand Total									19,096

UCG-AEY-42

Reference: May 11, 2016 Application, Schedule 9-2

AEY provides a listing of general plant projects many of which have actual expenditures over $100,000.

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Board Order 2014-06, Reasons for Decision, page 64

"However, YECL needs to provide information in relation to project costs overruns in its Application. Therefore, the Board directs YECL in future applications to explain more fully the reasons for project overruns. For clarity, for project costs overruns that are (collectively) 100 percent over and $100,000 greater than the original estimate, YECL is to provide business case type descriptions in the Application, to alert interveners and the Board to the cost overruns, thereby allowing for a more efficient process to examine the cost overruns. Furthermore, YECL, in their explanations, are to explain why the expenditures were not foreseen and actions it takes to ensure that such overruns will not occur in future. Moreover, for projects similar in nature to the Oracle HRxcellence HR management project with expenditures greater than $100,000, which may arise between GRAs, YECL in future applications is directed to furnish business cases for such projects and the reasons why YECL deemed it necessary and reasonable to proceed with the project."

Request:

(a) Please provide a detailed description and detailed breakdown of the total costs incurred in all of the general plant projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are

proposed to be added to rate base. Please provide the supporting analyses in an Excel spreadsheet:

(b) If AEY has already provided business cases for any of these projects in a general rates application, please identify when they were filed with the YUB and when the YUB approved the capital expenditures.

(c) If not previously provided, please provide business cases per the expectations of business cases as outlined in Board Order 2009-8 for each of these projects and the reasons why AEY deemed it necessary and reasonable to proceed with the project. Please provide the supporting analyses in an Excel spreadsheet.

(d) What were the average annual capital expenditures on general plant projects for the period 2010-2015?

Response:

(a) Schedule 9.2 of the Application lists the project, the forecast cost and timing of the project. Any projects over $500,000 have a business case in Appendices 1-11. Project information is available in Attachments 9.1 and 9.2 of the Application for the 2016 and 2017 test period.

(b) Business cases are in Appendices 1-11 and Attachments 11.7-11.13 of this Application.

(c) Please refer to AEY's response to UCG-AEY-42(b).

(d) Please refer to the following table:

2010	2011	2012	2013	2014	2015
985	1,330	1,766	2,516	2,002	1,402
			AVERAGE		**1,667**

UCG-AEY-43

Reference: May 11, 2016 Application, Schedule 10.1

AEY is anticipating that its Utility Earnings Before Tax will increase by 36% in 2016 (over 2015) and then reduce by 5% in 2017 (versus 2016). By the time 2017 is ended, AEY is expecting its Utility Earnings Before Tax to increase by 77% over 2013 levels.

Request:

(a) Please provide a detailed explanation for why AEY's Utility Earnings Before Tax will increase at such an alarming rate between 2013 and 2017.

(b) Please provide a detailed explanation for the changes in AEY's CCA deduction between 2013 and 2017.

Response:

(a) Utility Earnings Before Tax is the sum of the Return on Common Stock, as calculated on Schedule 8.1 of the Application for each test year, and the Income Tax Provision, as calculated on Schedule 10.1 of the Application for each test year. As the Return on Common Stock is growing each year due to growth in rate base and the increase in the ROE for 2016-2017, the Utility Earnings Before Tax is also increasing between 2013 and 2017.

(b) The change in the CCA deduction is a function of: 1) undepreciated capital cost at the opening of the year plus the current year gross capital additions (subject to the half-year rule for the CCA claim); 2) reductions to gross capital adds, which include construction contributions and fully-deductible capitalized costs, as well as various other minor reductions; and 3) the mix of assets put into service as each asset CCA class has a different % rate.

As AEY's capital additions are growing through the period 2013-2017, the CCA deduction is also increasing in that period and reducing taxable income.

UCG-AEY-44

Reference: May 11, 2016 Application, Attachment 11.7

Business Case for Actual Expenditures over $100,000 - 2013-2015 Completed Projects Old Crow Unit #2 Replacement

Reference: Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Attachment 11.7 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

(d) Please provide a breakdown by year of all the costs (capital and operating) that have been incurred for the Old Crow plant for the last 10 years including a

description of what work was completed and when amounts were added to rate base.

(e) Please provide a breakdown by year for the last 10 years of the cost per kWh to generate electricity at Old Crow.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(a).

(b) Please refer to AEY's response to UCG-AEY-36(a).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

(d-e) A cost of service study has not been completed as this is a Phase 1 Application. Cost of generation is not available by community, please refer to UCG-AEY-44(d) Attachment 1 for estimated costs directly related to generation of electricity for AEY as a whole.

Details of capital expenditures and the communities they relate to can be found in UCG-AEY-35(b) Attachment 1 as well as Schedule 9.2 of the Application.

ATCO Electric Yukon
Diesel System Expenditures
($000s)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Capital Expenditures	638	476	390	425	741	413	1,711	3,500	5,896	2,957
O&M Expenditures	1,100	1,175	1,455	1,494	1,462	1,678	1,719	1,448	1,385	1,659

ATCO Electric Yukon
Diesel System - Cost per kWh

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
O&M Expenditures ($000s)	1,100	1,175	1,455	1,494	1,462	1,678	1,719	1,448	1,385	1,659
Diesel Costs	4,886	5,226	6,603	4,342	4,658	6,149	6,490	6,668	7,116	5,292
Depreciation	532	542	474	394	445	431	369	493	811	1,029
Net Carrying Costs	3,828	4,050	4,853	4,308	4,272	4,793	4,609	4,736	4,933	4,277
	10,345	10,993	13,385	10,538	10,837	13,051	13,187	13,346	14,245	12,257
Diesel Generation (kWh)	22,165,014	22,333,749	22,223,451	19,966,441	19,839,202	20,932,748	21,310,067	21,304,764	21,118,303	20,664,107
Cost per kWh ($)	**$ 0.4667**	**$ 0.4922**	**$ 0.6023**	**$ 0.5278**	**$ 0.5462**	**$ 0.6235**	**$ 0.6188**	**$ 0.6264**	**$ 0.6745**	**$ 0.5932**

UCG-AEY-45

Reference: May 11, 2016 Application, Attachment 11.8

Business Case for Actual Expenditures over $100,000 - 2013-2015 Completed Projects Whistle Bend Subdivision Stage 1 & 2

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Attachment 11.8 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(a).

(b) Please refer to AEY's response to UCG-AEY-36(a).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-46

Reference: May 11, 2016 Application, Attachment 11.9

Business Case for Actual Expenditures over $100,000 - 2013-2015 Completed Projects Whistle Bend Underground Residential Service

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Attachment 11.9 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) The referenced analysis was not used by AEY.

(b) The requested analysis is not relevant. Residential service was requested, AEY has an obligation to provide service.

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-47

Reference: May 11, 2016 Application, Attachment 11.10

Business Case for Actual Expenditures over $100,000 - 2013-2015 Completed Projects City of Whitehorse Range Road Widening

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Attachment 11.10 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) The referenced analysis was not used by AEY.

(b) The requested analysis is not relevant. The City of Whitehorse requested AEY relocate infrastructure to allow for road widening construction.

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-48

Reference: May 11, 2016 Application, Attachment 11.11

Business Case for Actual Expenditures over $100,000 - 2013-2015 Completed Projects 4L314 Chilkoot Way Upgrade

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Attachment 11.11 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) This project was completed as an alternative to a project previously approved as part of Decision 2014-06.

(b) This project was completed as an alternative to a project previously approved as part of Decision 2014-06.

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-49

Reference: May 11, 2016 Application, Attachment 11.12

Business Case for Actual Expenditures over $100,000 - 2013-2015 Completed Projects Azure Road Extension

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Attachment 11.12 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) The referenced analysis was not used by AEY.

(b) The requested analysis is not relevant. The Government of Yukon requested AEY relocate infrastructure to accommodate road construction.

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-50

Reference: May 11, 2016 Application, Attachment 11.13

Business Case for Actual Expenditures over $100,000 - 2013-2015 Completed Projects 2nd Ave Relocation

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Attachment 11.13 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) The referenced analysis was not used by AEY.

(b) The requested analysis is not relevant. It was requested that AEY relocate infrastructure to accommodate future development.

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-51

Reference: May 11, 2016 Application, Appendix 1

Business Case - Fish Lake Ditch 3 Diversion Replacement ($3,049,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 1 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-52

Reference: May 11, 2016 Application, Appendix 2

Business Case - Fish Lake #2 Head Pond Spillway Replacement ($593,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 2 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-53

Reference: May 11, 2016 Application, Appendix 3

Business Case - Watson Lake Bi-Fuel Project (Phase 1 - $3.26 million, Phase 2 - $1.7 million)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) AEY states that it is only seeking approval of Phase 1 expenditures. Isn't AEY committed to incur Phase 2 costs if Phase 1 is undertaken?

(b) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 3 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(c) If the items in part a) are not provided, please provide.

(d) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) AEY is seeking approval of the Watson Lake project. With respect to the 2016 and 2017 test period, the Phase 1 expenditures are the only costs to be incurred within the test period and AEY is seeking to recover as part of this GRA. Phase 2 of the project is necessary to provide all of the benefits to rate payers and reduce costs over the long term by increasing consumption of LNG over the life of the project thus spreading the capital over more GJ's. It is AEY's objective in this GRA to obtain YUB approval to complete both phases of this project and will bring forth Phase 2 costs for a prudency determination as part of a future GRA.

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Please refer to AEY's response to UCG-AEY-36(b).

(d) Please refer to UCG-AEY-53(d) Attachment 1. Please note that this model incorporates the revision identified in response to YUB-YECL-13(b). The resulting NPV impact is considered to be immaterial and within $0.1 million of the numbers originally presented in the business case. Revised business case tables have been provided in response to YUB-YECL-13(b).

	Fortis		AltaGas	
	Payback (yrs)	**20-year NPV**	**Payback (yrs)**	**20-year NPV**
I. Sproule	11	$0.6	9	$2.4
II. Escalated at 5%	11	$3.0	9	$5.9
III. Escalated at 2.5%	15	($0.7)	10	$2.0
IV. Diesel at 5%, NG at 2.5%	11	$3.7	9	$6.4
V. Diesel at 2.5%, NG at 5%	16	($1.4)	11	$1.5
VI. Commodity prices doubled	6	$7.4	5	$10.5

	Diesel		LNG		NG	
	HHV	**LHV**	**HHV**	**LHV**	**HHV**	**LHV**
Energy Content (MJ/kg)	45.575	42.612	55.206	48.632	52.225	47.141
Density (g/gal)	3,206	3,206	1,621	1,621		
Density (kg/L)	0.85	0.85	0.43	0.43		
Energy Content (MJ/L)	38.6	36.1	23.6	20.8		21.3

Capital Costs	-$4,695,000
Annual LNG O&M	-$50,000
Discount Rate	6.94%
General Escalation	2.0%
GJ per Trip	1,095

	Year		0 2017	1 2018	2 2019	3 2020	4 2021	5 2022	6 2023	7 2024	8 2025	9 2026	10 2027	11 2028	12 2029	13 2030	14 2031	15 2032	16 2033	17 2034	18 2035	19 2036	20 2037
1 Fuel Volumes	**Escalation**																						
LNG Deliveries (L)	0.68%		205,257	1,646,972	3,293,946	3,316,345	3,338,896	3,361,601	3,384,459	3,407,474	3,430,645	3,453,973	3,477,460	3,501,107	3,524,914	3,548,884	3,573,016	3,597,313	3,621,774	3,646,402	3,671,198	3,696,162	3,721,296
LNG Deliveries (GJ)	0.68%		4,380	35,145	70,290	70,768	71,249	71,734	72,221	72,712	73,207	73,705	74,206	74,711	75,219	75,730	76,245	76,763	77,285	77,811	78,340	78,873	79,409
LNG Volume (DLE)	0.68%		121,365	973,824	1,947,649	1,960,893	1,974,227	1,987,652	2,001,168	2,014,776	2,028,476	2,042,270	2,056,157	2,070,139	2,084,216	2,098,389	2,112,658	2,127,024	2,141,488	2,156,050	2,170,711	2,185,472	2,200,333
2 Transportation Costs																							
Trips per year			4	32	64	65	65	66	66	66	67	67	68	68	69	69	70	70	71	71	72	72	73
Mileage Cost	2.0%		$8,504	$8,674	$8,847	$9,024	$9,205	$9,389	$9,577	$9,768	$9,963	$10,163	$10,366	$10,573	$10,785	$11,000	$11,221	$11,445	$11,674	$11,907	$12,145	$12,388	$12,636
Trailer Rental	2.0%		$1,275	$1,301	$1,327	$1,353	$1,380	$1,408	$1,436	$1,465	$1,494	$1,524	$1,554	$1,585	$1,617	$1,649	$1,682	$1,716	$1,750	$1,785	$1,821	$1,857	$1,895
Subtotal - Total Cost			**$39,115**	**$319,178**	**$651,123**	**$674,523**	**$688,013**	**$712,570**	**$726,822**	**$741,358**	**$767,643**	**$782,995**	**$810,576**	**$826,787**	**$855,725**	**$872,839**	**$903,199**	**$921,263**	**$953,112**	**$972,174**	**$1,005,584**	**$1,025,696**	**$1,060,741**
Subtotal ($/DLE)			**$0.322**	**$0.3278**	**$0.334**	**$0.344**	**$0.348**	**$0.358**	**$0.363**	**$0.368**	**$0.378**	**$0.383**	**$0.394**	**$0.399**	**$0.411**	**$0.416**	**$0.428**	**$0.433**	**$0.445**	**$0.451**	**$0.463**	**$0.469**	**$0.482**
3 Liquefaction Costs																							
Liquefaction ($/GJ)	2.0%		$4.947	$5.046	$5.147	$5.250	$5.355	$5.462	$5.571	$5.683	$5.796	$5.912	$6.030	$6.151	$6.274	$6.399	$6.527	$6.658	$6.791	$6.927	$7.066	$7.207	$7.351
Subtotal ($/DLE)			**$0.179**	**$0.182**	**$0.186**	**$0.189**	**$0.193**	**$0.197**	**$0.201**	**$0.205**	**$0.209**	**$0.213**	**$0.218**	**$0.222**	**$0.226**	**$0.231**	**$0.236**	**$0.240**	**$0.245**	**$0.250**	**$0.255**	**$0.260**	**$0.265**
4 Price Scenarios																							
I. Sproule Forecast																							
LNG Commod. ($/GJ)	1.5%	8	$2.891	$3.333	$3.797	$4.076	$4.147	$4.219	$4.292	$4.366	$4.442	$4.518	$4.586	$4.655	$4.725	$4.796	$4.868	$4.941	$5.015	$5.090	$5.166	$5.244	$5.323
LNG Commod. ($/DLE)			$0.104	$0.120	$0.137	$0.147	$0.150	$0.152	$0.155	$0.158	$0.160	$0.163	$0.166	$0.168	$0.171	$0.173	$0.176	$0.178	$0.181	$0.184	$0.186	$0.189	$0.192
Total LNG Price ($/DLE)			$0.605	$0.630	$0.657	$0.681	$0.691	$0.708	$0.719	$0.731	$0.748	$0.760	$0.777	$0.789	$0.808	$0.820	$0.839	$0.852	$0.871	$0.885	$0.905	$0.919	$0.939
Diesel Price ($/L)	1.5%	3	$0.712	$0.815	$0.936	$0.961	$0.976	$0.991	$1.007	$1.022	$1.038	$1.055	$1.070	$1.086	$1.103	$1.119	$1.136	$1.153	$1.170	$1.188	$1.206	$1.224	$1.242
Savings ($/DLE)			$0.107	$0.185	$0.279	$0.280	$0.284	$0.283	$0.287	$0.292	$0.290	$0.295	$0.293	$0.297	$0.295	$0.299	$0.297	$0.301	$0.299	$0.303	$0.301	$0.305	$0.303
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$13	$180	$542	$549	$562	$563	$575	$588	$589	$602	$603	$615	$615	$628	$628	$641	$641	$654	$654	$667	$666
Project Costs	**6.94%**	**$640**	**-$4,682**	**$129**	**$490**	**$496**	**$507**	**$508**	**$519**	**$530**	**$531**	**$542**	**$542**	**$553**	**$552**	**$563**	**$562**	**$574**	**$572**	**$584**	**$582**	**$594**	**$592**
		11	-$4,682	-$4,553	-$4,062	-$3,566	-$3,058	-$2,551	-$2,032	-$1,501	-$971	-$428	$113	$666	$1,218	$1,781	$2,344	$2,918	$3,490	$4,074	$4,656	$5,250	$5,842

II. Escalate at 2.5%																						
LNG Commod. ($/GJ)	2.5%		$2.804	$2.874	$2.946	$3.019	$3.095	$3.172	$3.252	$3.333	$3.416	$3.502	$3.589	$3.679	$3.771	$3.865	$3.962	$4.061	$4.162	$4.266	$4.373	$4.482	$4.594
LNG Commod. ($/DLE)			$0.101	$0.104	$0.106	$0.109	$0.112	$0.114	$0.117	$0.120	$0.123	$0.126	$0.130	$0.133	$0.136	$0.139	$0.143	$0.147	$0.150	$0.154	$0.158	$0.162	$0.166
Total LNG Price ($/DLE)			$0.602	$0.614	$0.626	$0.642	$0.653	$0.670	$0.682	$0.693	$0.711	$0.723	$0.741	$0.754	$0.773	$0.786	$0.806	$0.820	$0.840	$0.855	$0.876	$0.891	$0.913
Diesel Price ($/L)	2.5%		$0.619	$0.634	$0.650	$0.666	$0.683	$0.700	$0.717	$0.735	$0.754	$0.772	$0.792	$0.812	$0.832	$0.853	$0.874	$0.896	$0.918	$0.941	$0.965	$0.989	$1.013
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.163	$0.169	$0.176	$0.179	$0.187	$0.191	$0.200	$0.210	$0.214	$0.224	$0.229	$0.239	$0.244	$0.255	$0.261	$0.273	$0.278	$0.291	$0.297	$0.311	$0.317
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$20	$165	$342	$351	$370	$380	$401	$423	$434	$457	$470	$495	$509	$536	$551	$580	$596	$627	$645	$679	$699
Project Costs	**6.94%**	**($652)**	**-$4,675**	**$114**	**$290**	**$297**	**$316**	**$325**	**$344**	**$365**	**$375**	**$398**	**$409**	**$433**	**$445**	**$471**	**$485**	**$512**	**$528**	**$557**	**$574**	**$606**	**$624**
		15	-$4,675	-$4,561	-$4,271	-$3,974	-$3,658	-$3,333	-$2,989	-$2,624	-$2,248	-$1,851	-$1,442	-$1,009	-$564	-$93	$392	$905	$1,432	$1,990	$2,564	$3,169	$3,794
III. Escalate at 5%																							
LNG Commod. ($/GJ)	5.0%		$2.804	$2.944	$3.091	$3.246	$3.408	$3.578	$3.757	$3.945	$4.143	$4.350	$4.567	$4.795	$5.035	$5.287	$5.551	$5.829	$6.120	$6.426	$6.748	$7.085	$7.439
LNG Commod. ($/DLE)			$0.101	$0.106	$0.112	$0.117	$0.123	$0.129	$0.136	$0.142	$0.150	$0.157	$0.165	$0.173	$0.182	$0.191	$0.200	$0.210	$0.221	$0.232	$0.244	$0.256	$0.268
Total LNG Price ($/DLE)			$0.602	$0.616	$0.632	$0.651	$0.665	$0.685	$0.700	$0.715	$0.737	$0.754	$0.777	$0.794	$0.819	$0.838	$0.863	$0.884	$0.911	$0.933	$0.962	$0.985	$1.016
Diesel Price ($/L)	5.0%		$0.619	$0.649	$0.682	$0.716	$0.752	$0.789	$0.829	$0.870	$0.914	$0.959	$1.007	$1.058	$1.111	$1.166	$1.225	$1.286	$1.350	$1.418	$1.488	$1.563	$1.641
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.163	$0.182	$0.202	$0.221	$0.245	$0.266	$0.294	$0.323	$0.348	$0.380	$0.409	$0.445	$0.477	$0.518	$0.554	$0.599	$0.640	$0.689	$0.735	$0.791	$0.842
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$20	$178	$394	$432	$484	$529	$588	$650	$706	$777	$841	$922	$995	$1,086	$1,170	$1,274	$1,370	$1,487	$1,597	$1,728	$1,854
Project Costs	**6.94%**	**$3,023**	**-$4,675**	**$127**	**$342**	**$379**	**$430**	**$474**	**$531**	**$593**	**$647**	**$717**	**$780**	**$859**	**$932**	**$1,022**	**$1,104**	**$1,206**	**$1,301**	**$1,416**	**$1,525**	**$1,655**	**$1,779**
		11	-$4,675	-$4,549	-$4,207	-$3,827	-$3,397	-$2,924	-$2,392	-$1,800	-$1,152	-$435	$345	$1,204	$2,136	$3,157	$4,262	$5,468	$6,769	$8,186	$9,711	$11,366	$13,146
IV. Escalate at Diesel at 5%, NG at 2.5%																							
LNG Commod. ($/GJ)	2.5%		$2.804	$2.874	$2.946	$3.019	$3.095	$3.172	$3.252	$3.333	$3.416	$3.502	$3.589	$3.679	$3.771	$3.865	$3.962	$4.061	$4.162	$4.266	$4.373	$4.482	$4.594
LNG Commod. ($/DLE)			$0.101	$0.104	$0.106	$0.109	$0.112	$0.114	$0.117	$0.120	$0.123	$0.126	$0.130	$0.133	$0.136	$0.139	$0.143	$0.147	$0.150	$0.154	$0.158	$0.162	$0.166
Total LNG Price ($/DLE)			$0.602	$0.614	$0.626	$0.642	$0.653	$0.670	$0.682	$0.693	$0.711	$0.723	$0.741	$0.754	$0.773	$0.786	$0.806	$0.820	$0.840	$0.855	$0.876	$0.891	$0.913
Diesel Price ($/L)	5.0%		$0.619	$0.649	$0.682	$0.716	$0.752	$0.789	$0.829	$0.870	$0.914	$0.959	$1.007	$1.058	$1.111	$1.166	$1.225	$1.286	$1.350	$1.418	$1.488	$1.563	$1.641
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.163	$0.185	$0.208	$0.229	$0.257	$0.281	$0.312	$0.345	$0.374	$0.411	$0.444	$0.485	$0.523	$0.569	$0.611	$0.663	$0.710	$0.767	$0.821	$0.885	$0.945
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$20	$180	$404	$448	$507	$558	$624	$695	$759	$839	$913	$1,005	$1,090	$1,194	$1,292	$1,409	$1,521	$1,655	$1,783	$1,933	$2,079
Project Costs	**6.94%**	**$3,741**	**-$4,675**	**$129**	**$352**	**$395**	**$452**	**$503**	**$568**	**$637**	**$700**	**$780**	**$853**	**$943**	**$1,027**	**$1,129**	**$1,226**	**$1,342**	**$1,453**	**$1,585**	**$1,711**	**$1,861**	**$2,005**
		11	-$4,675	-$4,546	-$4,194	-$3,799	-$3,346	-$2,843	-$2,276	-$1,638	-$938	-$158	$694	$1,637	$2,664	$3,793	$5,019	$6,361	$7,813	$9,398	$11,109	$12,970	$14,975

V. Escalate at Diesel at 2.5%, NG at 5%																					
LNG Commod. ($/GJ)	5.0%		$2.804	$2.944	$3.091	$3.246	$3.408	$3.578	$3.757	$3.945	$4.143	$4.350	$4.567	$4.795	$5.035	$5.287	$5.551	$5.829	$6.120	$6.426	$6.748	$7.085	$7.439
LNG Commod. ($/DLE)			$0.101	$0.106	$0.112	$0.117	$0.123	$0.129	$0.136	$0.142	$0.150	$0.157	$0.165	$0.173	$0.182	$0.191	$0.200	$0.210	$0.221	$0.232	$0.244	$0.256	$0.268
Total LNG Price ($/DLE)			$0.602	$0.6161	$0.632	$0.651	$0.665	$0.685	$0.700	$0.715	$0.737	$0.754	$0.777	$0.794	$0.819	$0.838	$0.863	$0.884	$0.911	$0.933	$0.962	$0.985	$1.016
Diesel Price ($/L)	2.5%		$0.619	$0.634	$0.650	$0.666	$0.683	$0.700	$0.717	$0.735	$0.754	$0.772	$0.792	$0.812	$0.832	$0.853	$0.874	$0.896	$0.918	$0.941	$0.965	$0.989	$1.013
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.163	$0.16694	$0.170	$0.171	$0.176	$0.176	$0.182	$0.188	$0.188	$0.193	$0.193	$0.199	$0.198	$0.204	$0.203	$0.209	$0.208	$0.213	$0.212	$0.217	$0.215
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$20	$163	$332	$334	$348	$351	$364	$378	$381	$395	$397	$412	$414	$428	$430	$444	$445	$459	$459	$473	$473
Project Costs	**6.94%**	**($1,370)**	**-$4,675**	**$112**	**$280**	**$281**	**$294**	**$295**	**$308**	**$321**	**$322**	**$335**	**$336**	**$349**	**$350**	**$363**	**$364**	**$377**	**$376**	**$389**	**$388**	**$401**	**$398**
		16	-$4,675	-$4,564	-$4,284	-$4,003	-$3,709	-$3,414	-$3,106	-$2,785	-$2,463	-$2,128	-$1,791	-$1,442	-$1,092	-$728	-$365	$12	$388	$778	$1,166	$1,566	$1,964
VI. Double commodity prices, no escalation																					
LNG Commod. ($/GJ)	0.0%		$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608	$5.608
LNG Commod. ($/DLE)			$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202	$0.202
Total LNG Price ($/DLE)			$0.703	$0.7122	$0.722	$0.736	$0.744	$0.758	$0.767	$0.775	$0.790	$0.799	$0.814	$0.824	$0.839	$0.849	$0.865	$0.876	$0.893	$0.903	$0.921	$0.932	$0.950
Diesel Price ($/L)	0.0%		$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.680	$0.674	$0.667	$0.656	$0.651	$0.640	$0.635	$0.629	$0.618	$0.613	$0.601	$0.595	$0.583	$0.577	$0.564	$0.558	$0.545	$0.538	$0.525	$0.518	$0.504
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$83	$656	$1,298	$1,287	$1,285	$1,273	$1,271	$1,268	$1,254	$1,251	$1,236	$1,232	$1,215	$1,210	$1,192	$1,187	$1,167	$1,161	$1,140	$1,132	$1,110
Project Costs	**6.94%**	**$7,396**	**-$4,612**	**$605**	**$1,246**	**$1,234**	**$1,231**	**$1,218**	**$1,214**	**$1,211**	**$1,196**	**$1,191**	**$1,175**	**$1,170**	**$1,152**	**$1,146**	**$1,126**	**$1,119**	**$1,099**	**$1,091**	**$1,069**	**$1,060**	**$1,036**
		6	-$4,612	-$4,007	-$2,761	-$1,527	-$296	$922	$2,136	$3,347	$4,543	$5,734	$6,909	$8,078	$9,230	$10,375	$11,502	$12,621	$13,720	$14,811	$15,879	$16,939	$17,974

	Diesel		LNG		NG	
	HHV	**LHV**	**HHV**	**LHV**	**HHV**	**LHV**
Energy Content (MJ/kg)	45.575	42.612	55.206	48.632	52.225	47.141
Density (g/gal)	3,206	3,206	1,621	1,621		
Density (kg/L)	0.85	0.85	0.43	0.43		
Energy Content (MJ/L)	38.6	36.1	23.6	20.8		21.3

Capital Costs	-$4,695,000
Annual LNG O&M	-$50,000
Discount Rate	6.94%
General Escalation	2.0%
GJ per Trip	1,095

			0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
	Year		**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**
1 Fuel Volumes	**Escalation**																						
LNG Deliveries (L)	0.68%		205,257	1,646,972	3,293,946	3,316,345	3,338,896	3,361,601	3,384,459	3,407,474	3,430,645	3,453,973	3,477,460	3,501,107	3,524,914	3,548,884	3,573,016	3,597,313	3,621,774	3,646,402	3,671,198	3,696,162	3,721,296
LNG Deliveries (GJ)	0.68%		4,380	35,145	70,290	70,768	71,249	71,734	72,221	72,712	73,207	73,705	74,206	74,711	75,219	75,730	76,245	76,763	77,285	77,811	78,340	78,873	79,409
LNG Volume (DLE)	0.68%		121,365	973,824	1,947,649	1,960,893	1,974,227	1,987,652	2,001,168	2,014,776	2,028,476	2,042,270	2,056,157	2,070,139	2,084,216	2,098,389	2,112,658	2,127,024	2,141,488	2,156,050	2,170,711	2,185,472	2,200,333
2 Transportation Costs																							
Trips per year			4	32	64	65	65	66	66	66	67	67	68	68	69	69	70	70	71	71	72	72	73
Mileage Cost	2.0%		$4,108	$4,190	$4,273	$4,359	$4,446	$4,535	$4,626	$4,718	$4,813	$4,909	$5,007	$5,107	$5,209	$5,314	$5,420	$5,528	$5,639	$5,752	$5,867	$5,984	$6,104
Trailer Rental	2.0%		$765	$780	$796	$812	$828	$845	$862	$879	$896	$914	$933	$951	$970	$990	$1,009	$1,030	$1,050	$1,071	$1,093	$1,114	$1,137
Subtotal - Total Cost			**$19,490**	**$159,040**	**$324,441**	**$336,101**	**$342,823**	**$355,059**	**$362,160**	**$369,403**	**$382,500**	**$390,150**	**$403,893**	**$411,971**	**$426,390**	**$434,917**	**$450,045**	**$459,046**	**$474,916**	**$484,414**	**$501,061**	**$511,083**	**$528,545**
Subtotal - $/DLE			**$0.161**	**$0.163**	**$0.167**	**$0.171**	**$0.174**	**$0.179**	**$0.181**	**$0.183**	**$0.189**	**$0.191**	**$0.196**	**$0.199**	**$0.205**	**$0.207**	**$0.213**	**$0.216**	**$0.222**	**$0.225**	**$0.231**	**$0.234**	**$0.240**
3 Liquefaction Costs																							
Liquefaction ($/GJ)	2.0%		$7.500	$7.500	$7.500	$7.650	$7.803	$7.959	$8.118	$8.281	$8.446	$8.615	$8.787	$8.963	$9.142	$9.325	$9.512	$9.702	$9.896	$10.094	$10.296	$10.502	$10.712
Subtotal - $/DLE			**$0.271**	**$0.271**	**$0.271**	**$0.276**	**$0.282**	**$0.287**	**$0.293**	**$0.299**	**$0.305**	**$0.311**	**$0.317**	**$0.323**	**$0.330**	**$0.337**	**$0.343**	**$0.350**	**$0.357**	**$0.364**	**$0.372**	**$0.379**	**$0.387**
4 Price Scenarios																							
I. Sproule Forecast																							
LNG Commod. ($/GJ)	1.5%	6	$2.417	$2.859	$3.323	$3.602	$3.673	$3.745	$3.818	$3.893	$3.968	$4.045	$4.105	$4.167	$4.229	$4.293	$4.357	$4.422	$4.489	$4.556	$4.624	$4.694	$4.764
AltaGas Adder ($/GJ)		15.0%	$0.363	$0.429	$0.498	$0.540	$0.551	$0.562	$0.573	$0.584	$0.595	$0.607	$0.616	$0.625	$0.634	$0.644	$0.654	$0.663	$0.673	$0.683	$0.694	$0.704	$0.715
BC Carbon Tax ($/GJ)		$1.4898	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223
Subtotal LNG Commod. ($/DLE)			**$0.108**	**$0.127**	**$0.15**	**$0.158**	**$0.160**	**$0.163**	**$0.167**	**$0.170**	**$0.173**	**$0.176**	**$0.178**	**$0.181**	**$0.184**	**$0.186**	**$0.189**	**$0.192**	**$0.194**	**$0.197**	**$0.200**	**$0.203**	**$0.206**
Total LNG Price ($/DLE)			$0.540	$0.561	$0.583	$0.605	$0.616	$0.629	$0.640	$0.652	$0.666	$0.678	$0.692	$0.703	$0.718	$0.730	$0.745	$0.758	$0.773	$0.786	$0.802	$0.816	$0.833
Diesel Price ($/L)	1.5%	3	$0.712	$0.815	$0.936	$0.961	$0.976	$0.991	$1.007	$1.022	$1.038	$1.055	$1.070	$1.086	$1.103	$1.119	$1.136	$1.153	$1.170	$1.188	$1.206	$1.224	$1.242
Savings ($/DLE)			$0.172	$0.255	$0.352	$0.356	$0.360	$0.362	$0.366	$0.371	$0.372	$0.377	$0.378	$0.383	$0.385	$0.389	$0.391	$0.396	$0.397	$0.402	$0.403	$0.408	$0.410
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$21	$248	$686	$698	$711	$719	$733	$747	$755	$769	$778	$793	$802	$817	$826	$841	$851	$866	$876	$892	$901
Project Costs	**6.94%**	**$2,394**	**-$4,674**	**$197**	**$634**	**$644**	**$657**	**$664**	**$676**	**$689**	**$696**	**$710**	**$717**	**$731**	**$738**	**$752**	**$760**	**$774**	**$782**	**$796**	**$804**	**$819**	**$827**
		9	-$4,674	-$4,477	-$3,843	-$3,198	-$2,542	-$1,878	-$1,201	-$512	$184	$894	$1,611	$2,342	$3,080	$3,832	$4,592	$5,366	$6,148	$6,944	$7,749	$8,568	$9,395
II. Escalate at 2.5%																							
LNG Commod. ($/GJ)	2.5%		$1.715	$1.758	$1.802	$1.847	$1.893	$1.940	$1.989	$2.038	$2.089	$2.142	$2.195	$2.250	$2.306	$2.364	$2.423	$2.484	$2.546	$2.609	$2.675	$2.741	$2.810
AltaGas Adder ($/GJ)		15.0%	$0.257	$0.264	$0.270	$0.277	$0.284	$0.291	$0.298	$0.306	$0.313	$0.321	$0.329	$0.338	$0.346	$0.355	$0.363	$0.373	$0.382	$0.391	$0.401	$0.411	$0.421
BC Carbon Tax ($/GJ)		$1.4898	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223
Subtotal LNG Commod. ($/DLE)			**$0.079**	**$0.081**	**$0.083**	**$0.085**	**$0.087**	**$0.089**	**$0.091**	**$0.093**	**$0.095**	**$0.097**	**$0.099**	**$0.101**	**$0.104**	**$0.106**	**$0.109**	**$0.111**	**$0.114**	**$0.116**	**$0.119**	**$0.122**	**$0.125**
Total LNG Price ($/DLE)			$0.511	$0.515	$0.520	$0.532	$0.542	$0.554	$0.565	$0.575	$0.588	$0.599	$0.613	$0.624	$0.638	$0.650	$0.665	$0.677	$0.693	$0.705	$0.721	$0.735	$0.751
Diesel Price ($/L)	2.5%		$0.619	$0.634	$0.650	$0.666	$0.683	$0.700	$0.717	$0.735	$0.754	$0.772	$0.792	$0.812	$0.832	$0.853	$0.874	$0.896	$0.918	$0.941	$0.965	$0.989	$1.013
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.254	$0.268	$0.282	$0.289	$0.299	$0.307	$0.317	$0.328	$0.337	$0.348	$0.357	$0.369	$0.379	$0.392	$0.402	$0.415	$0.426	$0.440	$0.452	$0.467	$0.479
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$31	$261	$549	$567	$590	$610	$635	$661	$683	$711	$734	$765	$790	$822	$849	$884	$913	$950	$981	$1,021	$1,054
Project Costs	**6.94%**	**$1,967**	**-$4,664**	**$210**	**$497**	**$514**	**$536**	**$554**	**$579**	**$604**	**$624**	**$651**	**$673**	**$702**	**$726**	**$757**	**$783**	**$816**	**$844**	**$880**	**$910**	**$948**	**$980**
		10	-$4,664	-$4,454	-$3,957	-$3,444	-$2,907	-$2,353	-$1,774	-$1,170	-$546	$105	$779	$1,481	$2,207	$2,965	$3,748	$4,564	$5,408	$6,288	$7,197	$8,145	$9,125
III. Escalate at 5%																							
LNG Commod. ($/GJ)	5.0%		$1.715	$1.801	$1.891	$1.985	$2.084	$2.189	$2.298	$2.413	$2.534	$2.660	$2.793	$2.933	$3.080	$3.234	$3.395	$3.565	$3.743	$3.930	$4.127	$4.333	$4.550
AltaGas Adder ($/GJ)		15.0%	$0.257	$0.270	$0.284	$0.298	$0.313	$0.328	$0.345	$0.362	$0.380	$0.399	$0.419	$0.440	$0.462	$0.485	$0.509	$0.535	$0.561	$0.590	$0.619	$0.650	$0.683
BC Carbon Tax ($/GJ)		$1.4898	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223
Subtotal LNG Commod. ($/DLE)			**$0.079**	**$0.083**	**$0.087**	**$0.090**	**$0.095**	**$0.099**	**$0.103**	**$0.108**	**$0.113**	**$0.118**	**$0.124**	**$0.130**	**$0.136**	**$0.142**	**$0.149**	**$0.156**	**$0.163**	**$0.171**	**$0.179**	**$0.188**	**$0.197**
Total LNG Price ($/DLE)			$0.511	$0.517	$0.524	$0.538	$0.550	$0.565	$0.577	$0.590	$0.607	$0.620	$0.638	$0.652	$0.670	$0.686	$0.705	$0.722	$0.742	$0.760	$0.782	$0.801	$0.824
Diesel Price ($/L)	5.0%		$0.619	$0.649	$0.682	$0.716	$0.752	$0.789	$0.829	$0.870	$0.914	$0.959	$1.007	$1.058	$1.111	$1.166	$1.225	$1.286	$1.350	$1.418	$1.488	$1.563	$1.641
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.2542	$0.2817	$0.3102	$0.3332	$0.3602	$0.3860	$0.4161	$0.4478	$0.4785	$0.5137	$0.5481	$0.5873	$0.6257	$0.6693	$0.7122	$0.7606	$0.8084	$0.8621	$0.9155	$0.9751	$1.0346
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$31	$274	$604	$653	$711	$767	$833	$902	$971	$1,049	$1,127	$1,216	$1,304	$1,404	$1,505	$1,618	$1,731	$1,859	$1,987	$2,131	$2,276
Project Costs	**6.94%**	**$5,854**	**-$4,664**	**$223**	**$552**	**$600**	**$657**	**$712**	**$776**	**$845**	**$912**	**$989**	**$1,066**	**$1,154**	**$1,241**	**$1,340**	**$1,439**	**$1,550**	**$1,663**	**$1,789**	**$1,916**	**$2,058**	**$2,202**
		9	-$4,664	-$4,441	-$3,889	-$3,288	-$2,632	-$1,920	-$1,143	-$298	$614	$1,603	$2,669	$3,823	$5,063	$6,403	$7,842	$9,392	$11,055	$12,843	$14,759	$16,817	$19,020

IV. Escalate at Diesel at 5%, NG at 2.5%																						
LNG Commod. ($/GJ)	2.5%		$1.715	$1.758	$1.802	$1.847	$1.893	$1.940	$1.989	$2.038	$2.089	$2.142	$2.195	$2.250	$2.306	$2.364	$2.423	$2.484	$2.546	$2.609	$2.675	$2.741	$2.810
AltaGas Adder ($/GJ)		15.0%	$0.257	$0.264	$0.270	$0.277	$0.284	$0.291	$0.298	$0.306	$0.313	$0.321	$0.329	$0.338	$0.346	$0.355	$0.363	$0.373	$0.382	$0.391	$0.401	$0.411	$0.421
BC Carbon Tax ($/GJ)		$1.4898	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223
Subtotal LNG Commod. ($/DLE)			**$0.079**	**$0.081**	**$0.083**	**$0.085**	**$0.087**	**$0.089**	**$0.091**	**$0.093**	**$0.095**	**$0.097**	**$0.099**	**$0.101**	**$0.104**	**$0.106**	**$0.109**	**$0.111**	**$0.114**	**$0.116**	**$0.119**	**$0.122**	**$0.125**
Total LNG Price ($/DLE)			$0.511	$0.515	$0.520	$0.532	$0.542	$0.554	$0.565	$0.575	$0.588	$0.599	$0.613	$0.624	$0.638	$0.650	$0.665	$0.677	$0.693	$0.705	$0.721	$0.735	$0.751
Diesel Price ($/L)	5.0%		$0.619	$0.649	$0.682	$0.716	$0.752	$0.789	$0.829	$0.870	$0.914	$0.959	$1.007	$1.058	$1.111	$1.166	$1.225	$1.286	$1.350	$1.418	$1.488	$1.563	$1.641
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.254	$0.284	$0.314	$0.339	$0.368	$0.396	$0.429	$0.463	$0.497	$0.535	$0.573	$0.616	$0.658	$0.705	$0.753	$0.805	$0.858	$0.917	$0.976	$1.041	$1.107
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$31	$276	$611	$665	$727	$788	$858	$934	$1,008	$1,093	$1,178	$1,274	$1,371	$1,480	$1,590	$1,713	$1,838	$1,977	$2,118	$2,275	$2,435
Project Costs	**6.94%**	**$6,360**	**-$4,664**	**$225**	**$559**	**$612**	**$673**	**$732**	**$802**	**$876**	**$949**	**$1,033**	**$1,117**	**$1,212**	**$1,308**	**$1,415**	**$1,524**	**$1,646**	**$1,769**	**$1,907**	**$2,047**	**$2,203**	**$2,361**
		9	-$4,664	-$4,439	-$3,880	-$3,268	-$2,596	-$1,863	-$1,061	-$185	$764	$1,798	$2,915	$4,127	$5,435	$6,850	$8,374	$10,020	$11,789	$13,696	$15,743	$17,945	$20,306
V. Escalate at Diesel at 2.5%, NG at 5%																							
LNG Commod. ($/GJ)	5.0%		$1.715	$1.801	$1.891	$1.985	$2.084	$2.189	$2.298	$2.413	$2.534	$2.660	$2.793	$2.933	$3.080	$3.234	$3.395	$3.565	$3.743	$3.930	$4.127	$4.333	$4.550
AltaGas Adder ($/GJ)		15.0%	$0.257	$0.270	$0.284	$0.298	$0.313	$0.328	$0.345	$0.362	$0.380	$0.399	$0.419	$0.440	$0.462	$0.485	$0.509	$0.535	$0.561	$0.590	$0.619	$0.650	$0.683
BC Carbon Tax ($/GJ)		$1.4898	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223
Subtotal LNG Commod. ($/DLE)			**$0.079**	**$0.083**	**$0.087**	**$0.090**	**$0.095**	**$0.099**	**$0.103**	**$0.108**	**$0.113**	**$0.118**	**$0.124**	**$0.130**	**$0.136**	**$0.142**	**$0.149**	**$0.156**	**$0.163**	**$0.171**	**$0.179**	**$0.188**	**$0.197**
Total LNG Price ($/DLE)			$0.511	$0.517	$0.524	$0.538	$0.550	$0.565	$0.577	$0.590	$0.607	$0.620	$0.638	$0.652	$0.670	$0.686	$0.705	$0.722	$0.742	$0.760	$0.782	$0.801	$0.824
Diesel Price ($/L)	2.5%		$0.619	$0.634	$0.650	$0.666	$0.683	$0.700	$0.717	$0.735	$0.754	$0.772	$0.792	$0.812	$0.832	$0.853	$0.874	$0.896	$0.918	$0.941	$0.965	$0.989	$1.013
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.254	$0.266	$0.278	$0.283	$0.291	$0.296	$0.304	$0.313	$0.318	$0.327	$0.332	$0.341	$0.347	$0.356	$0.362	$0.371	$0.376	$0.386	$0.392	$0.401	$0.407
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$31	$259	$542	$555	$575	$589	$609	$630	$646	$667	$683	$706	$723	$746	$764	$788	$806	$831	$850	$876	$895
Project Costs	**6.94%**	**$1,461**	**-$4,664**	**$208**	**$490**	**$502**	**$521**	**$534**	**$553**	**$573**	**$587**	**$607**	**$622**	**$644**	**$659**	**$682**	**$698**	**$721**	**$738**	**$761**	**$779**	**$803**	**$821**
		11	-$4,664	-$4,456	-$3,966	-$3,464	-$2,943	-$2,409	-$1,856	-$1,284	-$697	-$90	$533	$1,177	$1,836	$2,517	$3,215	$3,936	$4,674	$5,435	$6,214	$7,017	$7,838
VI. Double commodity prices, no escalation																							
LNG Commod. ($/GJ)	0.0%		$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430	$3.430
AltaGas Adder ($/GJ)		15.0%	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514	$0.514
BC Carbon Tax ($/GJ)		$1.4898	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223	$0.223
Subtotal LNG Commod. ($/DLE)			**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**	**$0.150**
Total LNG Price ($/DLE)			$0.582	$0.584	$0.588	$0.598	$0.606	$0.616	$0.624	$0.633	$0.644	$0.652	$0.664	$0.673	$0.685	$0.694	$0.707	$0.716	$0.729	$0.739	$0.753	$0.763	$0.777
Diesel Price ($/L)	0.0%		$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237	$1.237
Diesel Transport Price ($/L)	2.0%		$0.146	$0.149	$0.152	$0.155	$0.158	$0.161	$0.165	$0.168	$0.171	$0.175	$0.178	$0.182	$0.185	$0.189	$0.193	$0.197	$0.201	$0.205	$0.209	$0.213	$0.217
Savings ($/DLE)			$0.801	$0.802	$0.801	$0.794	$0.790	$0.782	$0.777	$0.772	$0.764	$0.759	$0.751	$0.746	$0.737	$0.732	$0.723	$0.717	$0.708	$0.702	$0.693	$0.687	$0.677
Costs	2.0%		-$4,695	-$51	-$52	-$53	-$54	-$55	-$56	-$57	-$59	-$60	-$61	-$62	-$63	-$65	-$66	-$67	-$69	-$70	-$71	-$73	-$74
Fuel Savings			$97	$781	$1,561	$1,557	$1,559	$1,555	$1,555	$1,556	$1,551	$1,551	$1,545	$1,544	$1,537	$1,536	$1,528	$1,526	$1,517	$1,514	$1,504	$1,501	$1,490
Project Costs	**6.94%**	**$10,482**	**-$4,598**	**$730**	**$1,509**	**$1,504**	**$1,505**	**$1,499**	**$1,499**	**$1,499**	**$1,492**	**$1,491**	**$1,484**	**$1,482**	**$1,474**	**$1,471**	**$1,462**	**$1,459**	**$1,448**	**$1,444**	**$1,433**	**$1,428**	**$1,415**
		5	-$4,598	-$3,868	-$2,359	-$855	$650	$2,149	$3,648	$5,147	$6,639	$8,130	$9,613	$11,095	$12,569	$14,040	$15,502	$16,960	$18,409	$19,853	$21,285	$22,713	$24,129

	Year	Watson Lake Yukon Annual Avg Diesel Price $/L Used	FC WL Avg Diesel Price $/L - Linear Regression	Canadian Light Sweet 40 API $/Bbl *	B.C. Westcoast Station 2 $/Mmbtu	B.C. Westcoast Station 2 $/GJ	Huntingdon / Sumas 30 d Spot $/Mmbtu	Huntingdon / Sumas 30 d Spot $/GJ
Actual	1999	0.247	0.247	27.54				
	2000	0.398	0.398	44.03				
	2001	0.410	0.410	39.06				
	2002	0.381	0.381	40.12				
	2003	0.420	0.420	43.23				
	2004	0.481	0.481	52.91				
	2005	0.672	0.672	69.29	8.22	7.787	8.59	8.144
	2006	0.748	0.748	73.30	6.58	6.234	7.13	6.760
	2007	0.782	0.782	77.06	6.40	6.063	7.01	6.646
	2008	1.009	1.009	102.85	8.20	7.776	8.78	8.326
	2009	0.671	0.671	66.20	4.17	3.954	4.54	4.302
	2010	0.757	0.757	77.80	4.01	3.801	4.43	4.201
	2011	0.959	0.959	95.16	3.39	3.214	3.88	3.681
	2012	0.971	0.971	86.57	2.38	2.253	2.76	2.617
	2013	1.007	1.007	93.27	3.11	2.945	3.84	3.641
	2014	1.069	1.069	93.99	4.16	3.941	4.82	4.570
	2015	0.762	0.762	57.45	1.81	1.715	2.96	2.804
Forecast - Sproule	2016	0.619	0.546	53.87	1.49	1.408	2.42	2.295
	2017	0.619	0.712	69.00	2.55	2.417	3.05	2.891
	2018	0.703	0.815	78.43	3.02	2.859	3.52	3.333
	2019	0.801	0.936	89.41	3.51	3.323	4.01	3.797
	2020	0.822	0.961	91.71	3.80	3.602	4.30	4.076
	2021	0.834	0.976	93.08	3.88	3.673	4.38	4.147
	2022	0.847	0.991	94.48	3.95	3.745	4.45	4.219
	2023	0.860	1.007	95.90	4.03	3.818	4.53	4.292
	2024	0.873	1.022	97.34	4.11	3.893	4.61	4.366
	2025	0.886	1.038	98.80	4.19	3.968	4.69	4.442
	2026	0.899	1.055	100.28	4.27	4.045	4.77	4.518

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.97151243
R Square	0.943836402
Adjusted R Square	0.940092162
Standard Error	0.063911738
Observations	17

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.029661113	1.029661113	252.0769068	8.68193E-11
Residual	15	0.061270653	0.00408471		
Total	16	1.090931766			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.043483865	0.048773661	-0.891544004	0.386715499	-0.147442463	0.060474733	-0.147442	0.0604747
X Variable 1	0.010950409	0.000689706	15.87693002	8.68193E-11	0.009480337	0.012420482	0.0094803	0.0124205

Watson Lake Generation

Year	Gross Generation (kWh)	Linear Regression (kWh)	
1991	12,734,000	12,842,517	
1992	13,375,200	12,936,526	
1993	13,032,000	13,030,535	
1994	13,402,800	13,124,544	
1995	13,050,000	13,218,552	
1996	13,912,800	13,312,561	
1997	13,338,000	13,406,570	
1998	13,017,600	13,500,579	
1999	13,324,800	13,594,588	
2000	13,983,600	13,688,597	
2001	13,526,400	13,782,606	
2002	13,618,800	13,876,615	
2003	13,746,000	13,970,624	
2004	14,044,800	14,064,633	
2005	13,949,995	14,158,642	
2006	14,268,000	14,252,651	
2007	14,348,400	14,346,659	
2008	14,488,800	14,440,668	
2009	14,226,000	14,534,677	
2010	14,362,800	14,628,686	
2011	14,670,000	14,722,695	
2012	15,414,000	14,816,704	
2013	15,266,400	14,910,713	
2014	15,285,600	15,004,722	
2015	14,878,800	15,098,731	0.68%

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.920288104
R Square	0.846930193
Adjusted R Square	0.840274985
Standard Error	300467.6767
Observations	25

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.1489E+13	1.1489E+13	127.2582418	7.50885E-11
Residual	23	2.07646E+12	90280824719		
Total	24	1.35654E+13			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-174329233.7	16692056.51	-10.44384397	3.348E-10	-208859383.5	-139799084	-208859383.5	-139799084
X Variable 1	94008.91538	8333.47396	11.28087948	7.50885E-11	76769.81106	111248.0197	76769.81106	111248.0197

SPROULE ASSOCIATES LTD.
TABLE 1
OIL PRICE FORECAST
****

- Prices in Canadian Dollars -

Year	Canadian Light Sweet 40 API $/Bbl
2005 Act	69.29
2006 Act	73.30
2007 Act	77.06
2008 Act	102.85
2009 Act	66.20
2010 Act	77.80
2011 Act	95.16
2012 Act	86.57
2013 Act	93.27
2014 Act	93.99
2015 Act	57.45
2016 1 mo. Act	39.28
2016 11 mo. Est	55.20
2017	69.00
2018	78.43
2019	89.41
2020	91.71
2021	93.08
2022	94.48
2023	95.90
2024	97.34
2025	98.80
2026	100.28

Escalation Rate of 1.5% Thereafter

1. 40 Deg API, 0.4% sulphur
2. Based on WTI
3. Based on IHS Upstream Capital Cost Index
4. Projects with minimal cost containment in 2015

SPROULE ASSOCIATES LTD.
TABLE 2
NATURAL GAS PRICE FORECASTS
****

- Prices in Canadian Dollars -

Year	B.C. Westcoast Station 2 $/MMbtu	Huntingdon / Sumas 30 d Spot $/MMbtu
2005 Act	8.22	8.59
2006 Act	6.58	7.13
2007 Act	6.40	7.01
2008 Act	8.20	8.78
2009 Act	4.17	4.54
2010 Act	4.01	4.43
2011 Act	3.39	3.88
2012 Act	2.38	2.76
2013 Act	3.11	3.84
2014 Act	4.16	4.82
2015 Act	1.81	2.96
2016 1 mo. Act	1.87	3.21
2016 11 mo. Est	1.45	2.35
2017	2.55	3.05
2018	3.02	3.52
2019	3.51	4.01
2020	3.80	4.30
2021	3.88	4.38
2022	3.95	4.45
2023	4.03	4.53
2024	4.11	4.61
2025	4.19	4.69
2026	4.27	4.77

Escalation Rate of 1.5% Thereafter

UCG-AEY-54

Reference: May 11, 2016 Application, Appendix 4

Business Case - Watson Lake Unit #2 Replacement ($1,390,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 4 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-55

Reference: May 11, 2016 Application, Appendix 5

Business Case - Old Crow Unit #3 Replacement ($1,262,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 5 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-56

Reference: May 11, 2016 Application, Appendix 6

Business Case - Destruction Bay Unit #2 Replacement ($758,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 6 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

(d) Please provide a breakdown by year of all the costs (capital and operating) that have been incurred for the Destruction Bay plant for the last 10 years including a description of what work was completed and when amounts were added to rate base.

(e) Please provide a breakdown by year for the last 10 years of the cost per kWh to generate electricity at Destruction Bay.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

(d-e) Please refer to AEY's response to UCG-AEY-44(d-e).

UCG-AEY-57

Reference: May 11, 2016 Application, Appendix 7

Business Case - Whistle Bend Subdivision - Stage 3C ($1,530,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 7 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-58

Reference: May 11, 2016 Application, Appendix 8

Business Case - McIntyre Subdivision - Replacement Project Update ($5,129,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 8 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-59

Reference: May 11, 2016 Application, Appendix 9

Business Case - Downtown Whitehorse Capacity Improvement ($1,823,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 9 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-60

Reference: May 11, 2016 Application, Appendix 10

Business Case - Paint Mountain Cable Replacement ($562,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 10 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.

UCG-AEY-61

Reference: May 11, 2016 Application, Appendix 11

Business Case - Destruction Bay Unit 3 Replacement ($634,000)

Board Order 2009-8, page 37

"*Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*

- *descriptions of the project*
- *economic analysis including preliminary engineering estimates*
- *discussion of alternatives and how the chosen option was determined*
- *discussion of the risks of proceeding with the chosen alternative*
- *discussion of risks of not proceeding with the chosen alternative; and*
- *discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.*"

Request:

(a) Pursuant to the components of business cases identified in YUB Order 2009-8, please identify where in Appendix 11 the following has been provided:

- economic analysis including preliminary engineering estimates
- discussion of the risks of proceeding with the chosen alternative
- discussion of risks of not proceeding with the chosen alternative; and
- discussion of assumptions included in the business case including escalation factors, loading, financial measures, term of project and associated ancillary costs.

(b) If the items in part a) are not provided, please provide.

(c) Please provide details of capital and operating costs related to this project as well as the discounted cash flow analysis used by AEY to determine the feasibility of proceeding with this project.

Response:

(a) Please refer to AEY's response to UCG-AEY-36(b).

(b) Please refer to AEY's response to UCG-AEY-36(b).

(c) Capital costs for the project were filed as part of schedule 9.2 of the Application. There are no operating costs related to this project.

No discounted cash flow analysis was used by AEY to determine the feasibility of proceeding with this project.