



Delivered by Email

Ontario Energy Board  
2300 Yonge Street,  
Suite 2601  
Toronto, ON M4P 1E4  
**Attention:** Kristin Walli, Board Secretary

January 18, 2017

Dear Ms. Walli,

**RE: EB-2016-0330 Natural Resource Gas Limited – 2017 Cap-and-Trade Compliance Plan**

As per the Board's direction of January 17, 2017, NRG has undertaken a review of the redacted version of its 2017 Cap-and-Trade Compliance Plan, previously submitted on November 15<sup>th</sup>, 2016.

NRG has no objections to the changes requested. Therefore, please accept NRG's updated redacted Compliance Plan. Adjustments have been made to the following areas of the plan so to be placed on the public record:

**Ex 1 – Ex Summary**

-page 2, lines 9-10; lines 12-17

**Ex 3 – Compliance Plan**

- Page 12, lines 22 – 24 (1st sentence)
- Page 13, lines 1 – 3 (first two sentences)
- Page 13, lines 21 – 23 (last sentence of paragraph)
- Page 13, lines 24 – 27 (first two sentences)

If you should have any questions regarding this submission, please contact me at (519)773-5321, Ext. 205

Sincerely,

Brian Lippold,  
General Manager,  
Natural Resource Gas Ltd.

## Exhibit 1 – Administrative Documents

### 1. Executive Summary

For the year 2017, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

NRG expects linkage to become official over the course of 2017, and will evaluate the compliance plan again as regulations change. [REDACTED]

[REDACTED]

Furthermore, NRG will not be implementing emissions reduction strategy for the compliance year 2017.

OEB's Marginal Abatement Cost Curve (MACC) is expected to be developed for use in the next compliance year, and NRG will employ that as the main tool to assess the efficacy of potential abatement solutions using the cost curve. NRG is currently exploring biogas generated from agricultural waste as an option for abatement, and will use OEB's MACC as a tool to assess these projects' financial feasibility and their potential impact to NRG's customer-related and facility-related emission.

## 2. Administration

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**Impact Statement:**

The Cap and Trade Compliance Plan will affect all rate payers of NRG, including 1 Large Final Emitters (LFE) participant (IGPC) that will be responsible for the procurement of its own emission allowances.

**Confirmation of applicant's internet address:**

<http://www.nrgas.ca/>

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**Bill Impact:**

The Cap and Trade compliance plan will have the following bill impact for the calendar year 2017 for:

Residential Customer: the initial costs will be between 3.3 and 3.6 cents per M3 of natural gas. The average home consumes approximately 2000 cubic metres of natural gas per year. Therefore, customers should expect to pay between \$70 and \$80 more per year for their natural gas.

General Service Customer: Commercial and Industrial customers will be impacted. The same volumetric charge of 3.3 - 3.6 cents per cubic metre will be applicable to these rate classes. However, consumption will vary considerably in these categories.

**Legislation and approval requests referenced:**

Relevant Sections of the legislation and specific approvals request as it relates to this filing is as follows:

Reference	Description
Bill 172	Climate Change Mitigation and Low-carbon Economy Act, 2016
O. Reg. 452/09	Environmental Protection Act
O. Reg. 144/16	The Cap and Trade program
O. Reg. 143/16	Quantification, Reporting and Verification of greenhouse gas emissions
	Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions (Effective January 2017)
EB-2015-0363	Report of the Board: Regulatory Framework for the Assessment of Costs of Natural Gas Utilities' Cap and Trade Activities
EB-2016-0263	Accounting Orders
EB-2016-0236	Load Forecast and Weather Normalization
RRR Filing Number 2.1.12	NRG Does not have an approved DSM plan

**Deviations from the filing guidelines:**

NRG has not included information for Exhibit 4 – Monitoring and Reporting in this filing as the information required by OEB's regulatory framework will not be available until the beginning of the first compliance year (2017).

NRG has not included information for Exhibit 6 – Deferral and Variance Accounts in this filing as the information required by OEB’s regulatory framework will not be available until the beginning of the first compliance year (2017).

### 3. Confidentiality

This filing contains Auction Confidential and Market Sensitive information as discussed in the OEB Report and required by the Climate Change Act. NRG request strict confidential treatment of the following information, clearly identified in the filing.

This information has been disclosed to Kenneth Poon of Blackstone Energy Services Inc and Richard King of Osler, Hoskin & Harcourt LLP. Both parties have been contracted to advise on the development of this filing.

Cap and Trade information is discussed in the OEB Report. An applicant that is seeking confidential or strictly confidential treatment of any information filed with the OEB regarding the applicant’s Compliance Plans must file documentation supporting the claim for confidentiality.

- Auction strategy under Section 2 of Exhibit 3
- Auction target price strategy under Section 2 of Exhibit 3
- Outline of compliance and offset credit volume under Section 2 of Exhibit 3

## Exhibit 2 – Forecasts

### 1. Forecasting Period

NRG will opt to generate one-year forecasts of volume, GHG emissions, and carbon prices for the year 2017. Given policy and regulatory changes expected in 2018 for compliance offsets and linkage to the wider WCI market with California and Quebec, NRG believes it is prudent to focus the carbon forecasts on the first year (2017) only.

Regulatory changes have shown to significantly impact Cap and Trade markets, given the stability of these markets are largely influenced by the stability of the Cap and Trade system. For example, the Supreme Court stay of the U.S. Clean Power Plan in February 2016 have translated to negative price shocks for multiple Cap and Trade markets. NRG believes future policy changes in Ontario, California, and the U.S. coming in the new year may have significant impact on secondary market prices in 2018. Clearer policy signals are required to generate a clean forecast for 2018.

NRG will provide annual forecasts for the remaining three years of the compliance period (2018 – 2020), to be submitted by August 1 of the filing year.

### 2. Volume Forecasts

Under the Cap and Trade Regulation, NRG is responsible for the greenhouse gas emissions of its entire rate-base, with the exception of 1 Large Final Emitter (LFE) – IGPC. 2017 forecasted values are taken from Exhibit 3 of EB 2016-0236, filed August 9, 2016. Given that NRG does not operate its own natural gas storage facilities, it's facility-related consumption will include only natural gas loss during distribution. Distribution loss is calculated by dividing the volume of gas delivered by the volume of gas purchased, on a cubic metre (m<sup>3</sup>) basis. The 2016 distribution loss is estimated using the same methodology used by Union Gas (average weighted 3/2/1), based on historical year-to-date annual gas loss percentage from 2013 to 2015. NRG expects the distribution loss (%) in 2017 will be the same as that calculated for 2016. Details of the weighted average calculation is outlined in Appendix A.

*Table 1 – Original Forecast of Customer-related and Facility-related natural gas volumes for 2017, in cubic metres, forecasted August 9, 2016*

Forecast Range 1-Jan-17 to 31-Dec-17 (forecasted August 9, 2016)	Row	Annual Customer-related Volume (year-to-date) (m <sup>3</sup> )	Annual Facility-related Volume (m <sup>3</sup> )
Total Forecasted Volume	A	60,008,474	
Total Forecasted LFE Volume	B	33,416,616	
Total Forecasted Volume without LFE	C = A - B	26,519,858	-
Measured Distribution Loss %	D	2.7172%	
Facility-related Volume	E = C x D	-	720,598
Customer-related Volume	F = D - E	25,799,260	-
<b>Original 2017 Forecasted Volume (m<sup>3</sup>)</b>		<b>25,799,260 m<sup>3</sup></b>	<b>720,598 m<sup>3</sup></b>

As outlined in NRG's consumption forecast for 2017 in Exhibit 3 of EB-2016-0236, we expect a 3.5% year-to-year increase in natural gas consumption due to strong growth in the residential sector (already incorporated in the forecast provided in EB-2016-0236). An updated weather forecast estimates an additional 19% increase in natural gas consumption was provided to NRG on September 30, 2016: given NRG's most recent degree day calculations, 2016 was approximately 19% warmer than the average temperature over the past 30 years (30-year normal). Updated forecast suggest 2017 temperatures will be closer to 30-year normal. See Appendix B for the latest HDD forecast values.

*Table 2 – Updated Customer-related and Facility-related natural gas volumes for 2017*

	Row	Annual Customer-related Volume (m <sup>3</sup> )	Annual Facility-related Volume (m <sup>3</sup> )
Original 2017 Forecasted Volume (m <sup>3</sup> )	A	25,799,260	720,598
Consumption increase due to updated weather forecast (September 30 <sup>th</sup> , 2016)	B	x 1.19	
<b>Updated 2017 Forecasted Volume (m<sup>3</sup>)</b>	<b>C = A x B</b>	<b>30,701,120</b>	<b>857,511</b>

Furthermore, NRG has been exempt from providing DSM programs to its rate base (RRR Filing Number 2.1.12). NRG has experienced approximately 85% of its growth over the last 15 years, predominately driven by growth in the residential and agricultural sector. Due to the relatively compressed time frame of the growth of NRG's rate base, a majority of the equipment operated by the rate bases is already considered to be energy efficient, leaving little room for a DSM program to contribute to a reduction in demand in a cost-effective manner. NRG is currently considering other ways to reduce emissions of its



rate base, with a focus on biogas projects. NRG await the OEB-developed Marginal Abatement Cost Curve as an additional tool for NRG to assess the feasibility and potential carbon-mitigating impacts of these projects.

### 3. GHG Emissions Forecasts

NRG have used the following factors to convert natural gas consumption volume to emissions, following MOECC's Guideline for Quantification, Reporting and Verification of Greenhouse Gas Emissions (sections ON.403, ON.404), based on a standardized GJ to emissions conversion, using Higher Heating Value (HHV) from Union Gas approved by the Ministry of Energy and Climate Change.

Along with carbon dioxide emission, methane and nitrous oxide emission must also be reported and emission allowances must be purchased for these emissions. Global Warming Potentials convert methane and nitrous oxide emissions into carbon dioxide equivalence based on their relatively atmospheric impact. Global warming potential of the related methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emission is sourced from Schedule 1 of O. Reg. 143/16 - Quantification, Reporting and Verification of greenhouse gas emissions. Higher Heating Value (HHV) is taken from Union Gas. This value is used for the purpose of compliance reporting obligation under O. Reg. 452/09 under the Environmental Protection Act. Note that NRG receives natural gas from Union's distribution network.

*Table 3 – GHG emission per GJ and per m<sup>3</sup> of natural gas*

Column	A	B	C = A x B
GHG released from natural gas combustion	Default Emissions Factor (kg per GJ)	Global Warming Potential (kg <sub>CO2e</sub> per kg <sub>GHG</sub> )	CO2e emissions (kg <sub>CO2e</sub> per GJ of natural gas)
Carbon Dioxide (CO <sub>2</sub> )	49.01	1	49.01
Methane (CH <sub>4</sub> )	0.000966	21	0.020286
Nitrous Oxide (N <sub>2</sub> O)	0.000913	310	0.28303
Total kg of CO2e per GJ of natural gas combusted:			49.33316
Higher Heating Value (HHV) in GJ/m <sup>3</sup> :			0.039
<b>Total kg of CO2e per m<sup>3</sup> of natural gas combusted:</b>			<b>1.92399324</b>

Filed: November 15, 2016

- 1 Given the standardized emissions factor provided by MOECC, customer-related and facility-related GHG  
 2 obligations for the calendar year 2017 are calculated to be:

3 *Table 4 – Estimated Customer-related and Facility-related annual emission for 2017*

	Row	Annual Customer-related Volume	Annual Facility-related Volume
Forecasted 2017 Volume (m <sup>3</sup> )	A	30,701,120	857,511
Emission Factor	B	1.92399324 kg CO <sub>2</sub> e per m <sup>3</sup>	
<b>Forecasted Emission</b>	<b>D = (A x B) ÷ 1000</b>	<b>59,068.75 t CO<sub>2</sub>e</b>	<b>1,649.85 t CO<sub>2</sub>e</b>

4

#### 4. Annual Carbon Price Forecasts

NRG used the averages of the Intercontinental Exchange (ICE) daily settlement prices of a California Carbon Allowance for each day of the forecast period. This was carried through for each month of the forecast year, for carbon allowances of the 2017 vintage year at each delivery month in 2017.

For settlement prices, NRG referenced the 21 trading days between September 26<sup>th</sup>, 2016 to October 24<sup>th</sup>, 2016. For the exchange rate, NRG used the Canadian Dollar Futures Settlements data posted on the Chicago Mercantile Exchange (CME) on October 24<sup>th</sup> to convert the price of each 3-month strip from USD to CAD, approximating potential exchange rate risk over the course of 2017. See Appendix C for all settlement price data in USD, the conversion factors used for each delivery month, and the settlement prices converted to CAD. The average price reported at the bottom of the table is the arithmetic average of the settlement price in CAD posted on the table.

From the analysis, NRG expect the procurement cost of carbon to be approximately \$13.04 USD per allowance, or \$17.41 CAD per allowance. Note that the estimated price through the use of the settlement prices on the futures market is below the expected auction minimum price of \$18 CAD per allowance announced by MOECC. The \$18 CAD auction reserve price also comes close to NRG's calculation of \$18.10 CAD using the following assumptions and calculations:

1. The reserve price of \$12.73 USD per allowance in the 2016 WCI Joint Auctions,
2. An expected 6.5% increase in the auction reserve price, based on 5% plus the posted U.S. annual inflation rate of 1.5% ending September 2016, and
3. An average exchange rate of 0.749 CAD per USD over the 2017 calendar year, using the average of the Canadian Dollar Futures Settlements data posted on the Chicago Mercantile Exchange CME on October 24<sup>th</sup> for twelve months from January to December 2017.

While NRG expects the auction reserve price in the 2017 Ontario emissions allowances auction to be above the \$17.41 CAD estimated using the method required by OEB, this estimated price will be used for the basis of cost estimations in Exhibit 3.

## Exhibit 3 – Compliance Plan

### 1. Overview of Compliance Plan

In establishing the Cap and Trade Compliance Plan for the calendar year 2017, NRG will follow the guidelines established by the OEB as it relates to carbon outlined in “Report of the Board: Regulatory Framework for the Assessment of Costs of Natural Gas Utilities’ Cap and Trade Activities” (EB-2015-0363). To this end, NRG will insure the carbon procurement plan will adhere to the guiding principles laid out by the OEB: cost-effectiveness, rate predictability, cost recovery, transparency, flexibility, and continuous improvement.

Given NRG’s small size and operational constraints as it relates to the nascent carbon market, the Utility have elected to contract consulting services from Blackstone Energy Services Inc. and Osler, Hoskin & Harcourt LLP as it relates to carbon market information, and regulatory compliance. Blackstone Energy is providing market intelligence, compliance options analysis, assistance on CITSS account registration and administration. Starting 2018, Blackstone energy will also provide introductory brokerage services for secondary market emission allowances and offset credits. Osler, Hoskin & Harcourt LLP is providing regulatory and legal counsel, and will act as the oversight body for process validation.

- 1) The secondary carbon market relevant for Cap and Trade compliance is contingent on the official linkages of the Ontario system to the wider Western Climate Initiative (WCI) system, which encapsulates the California and Quebec markets.

1        2) The offset protocols, regulations, and guidelines for the Ontario Cap and Trade system have yet  
2        to be developed by the MOECC. The first set of protocols (3 of 13) are slated to be completed by  
3        March of 2017 (see Appendix D). [REDACTED]

4        [REDACTED]

5        [REDACTED]

6        [REDACTED]

7

8        2. Compliance Option Analysis and Optimization of Decision-making

9        [REDACTED]

10       [REDACTED]

11       [REDACTED]

12       [REDACTED]

13       [REDACTED]

14       [REDACTED]

15       [REDACTED]

16       [REDACTED]

17       [REDACTED]

18       [REDACTED]

19       [REDACTED]

20       [REDACTED]

21       [REDACTED] The offset protocols

22       currently being developed by MOECC will determine the eligibility of various offset projects that can be

23       used for compliance purposes within the Ontario Cap and Trade system.

24       Note that NRG will be monitoring regulatory and market developments as they relate to the Ontario Cap

25       and Trade system. Depending on the timing of linkage to the wider WCI market and the timing of the

26       development of regulation and protocols surrounding offset, NRG will address these opportunities in the

27       next compliance plan.

We believe that given the regulatory constraints in the calendar year 2017, NRG has taken the steps in strategic decision making and risk mitigation that is as cost-effective as possible. In the next compliance plan, NRG will be able to properly assess cost-effective solutions in the short term (1 to 4 years) and long term (5 to 10 years) in reducing its customer-related and facility-related GHG emission using the OEB-developed MACC an analytical tool. NRG also believe the compliance plan outlined below is sufficiently flexible to adapt to variability in volume, changes in market prices, market dynamics and other sources of risk given the limited tools available in 2017.

**Auction Strategy [AUCTION CONFIDENTIAL]:**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]				
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

1 [REDACTED]

2 [REDACTED]

3 [REDACTED]

4 [REDACTED]

5 [REDACTED]

[REDACTED]					
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

6 [REDACTED]

7 [REDACTED]

8 [REDACTED]

9 [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 [REDACTED]

14 [REDACTED]

[REDACTED]					
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

15 [REDACTED]

16 [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

Response	Percentage
Yes, the U.S. should take action to address climate change	95%
No, the U.S. should not take action to address climate change	5%

6 **Auction target price strategy [AUCTION CONFIDENTIAL]:**

7 [REDACTED]

8 [REDACTED]

Year	Percentage
9	95%
10	93%
11	95%
12	94%
13	15%

[REDACTED]

[REDACTED]

[illegible]

15	[REDACTED]
16	[REDACTED]
17	[REDACTED]

18 [REDACTED]  
19 [REDACTED]  
20 [REDACTED]



1 [REDACTED]  
 2 [REDACTED]  
 3 [REDACTED]

### 3. Performance Metrics and Cost Information

This section highlights the estimated emissions allowance requirements and associated costs for 2017, using ICE average settlement prices (Market Sensitive):

*Table 8 – Example of Credit Procurement Scenario with Strategy C*

	Annual Customer-related	Annual Facility-related
Forecasted Emission, 2017 (t CO <sub>2</sub> e)	59018.47 t CO <sub>2</sub> e	1700.12 t CO <sub>2</sub> e
Allowance Purchase Requirements, 2017	61,000	
Forecasted Allowance Price (\$ CAD per allowance)	\$17.41	
Cost of Allowance Purchase (\$ CAD)	\$1,062,010	
Administrative Cost (\$ CAD)	\$100,000	
<b>Cost of Total Compliance Plan, 2017 (\$ CAD)</b>	<b>\$1,162,010</b>	

An outline of the utility's compliance options for 2017 is highlighted below:

a. Allowances (Auction Confidential and Market Sensitive)

11 [REDACTED]  
 12 [REDACTED]  
 13 [REDACTED]  
 14 [REDACTED]  
 15 [REDACTED]  
 16 [REDACTED]  
 17 [REDACTED]  
 18 [REDACTED]  
 19 [REDACTED]  
 20 [REDACTED]  
 21 [REDACTED]  
 22 [REDACTED]  
 23 [REDACTED]

Offset credits (Market Sensitive): [REDACTED]

c. Abatement activities – customer-related: Not applicable for 2017

1

2 d. Abatement activities – facility-related: Not applicable for 2017

## Administrative Costs

Administrative Costs for the calendar year 2017 are broken down as follows:

*Table 9 – Administrative Costs as it relates to Ontario Cap and Trade compliance*

Cost item	
Consulting Services	\$ 80,000 CAD per year
Legal Services	\$ 10,000 CAD per year
Auditing Services	\$ 5,000 CAD per year
Communications and Marketing	\$ 5,000 CAD per year
Total Administrative Costs, 2017	\$100,000 CAD per year

Due to the lack of experience with the carbon market and the small operational footprint of NRG, the Utility contracted Blackstone Energy Services Inc. to advise on the carbon market intelligence, CITSS account management, and general procurement strategies at \$80,000 CAD per year for 2 years. NRG includes \$10,000 CAD per year for legal services, \$5,000 CAD per year for potential auditing costs, and another \$5,000 CAD per year for communication to rate payers via bill inserts (additional printing costs). NRG expects administrative cost to increase slightly in 2018 with access to the secondary market for emissions allowances and offset credits procurement.

## Financing costs

As mentioned in Accounting Order EB-2016-0263 filed August 9, 2016, the cost of carrying related to the acquisition of emissions units for future compliance will be financed by the Cap and Trade related deferral account.

## 4. Risk Management

### Volume variability

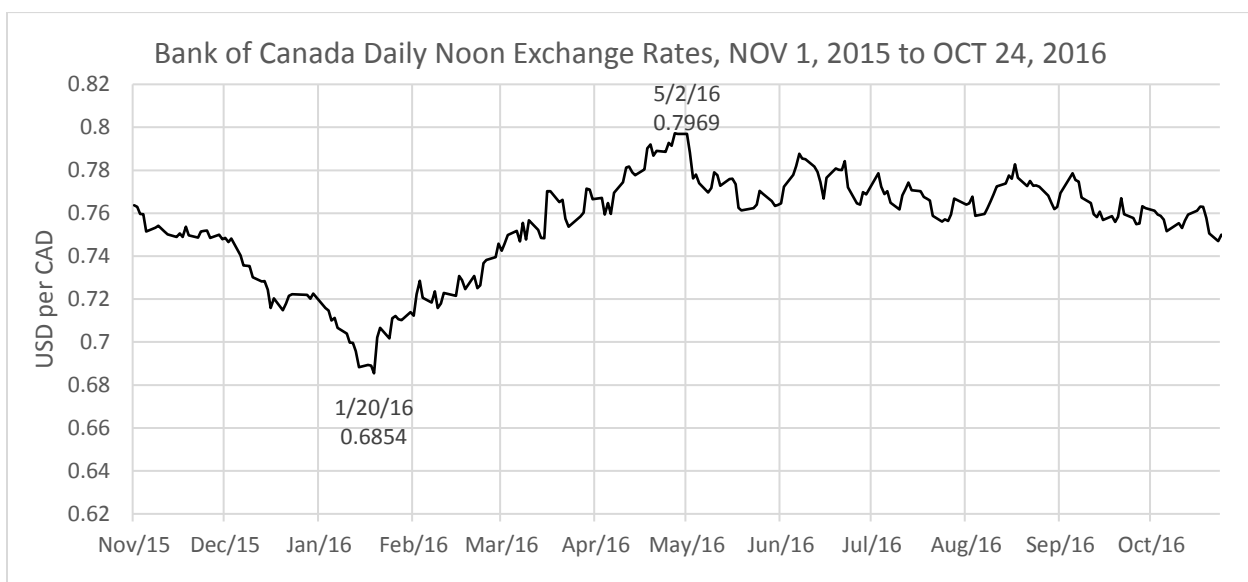
OEB expects volume may vary within +/- 10% of the estimate provided in Table 2 of Exhibit 2, due to unforeseen changes in winter forecast as well as from volume variability in agricultural output (therefore natural gas for agricultural use). A large portion of NRG's non-residential rate based uses natural gas for grain drying in the fall; therefore, variability in grain production in a particular year can have major impact on natural gas demand on NRG. The emission volume 66,790 and 54,647 tonnes of CO<sub>2</sub>e are used in the high risk and low risk scenario respectively in the Risk Mitigation and Scenario

Analysis, requiring 67,000 and 55,000 emission allowances to be procured to meet compliance requirement for the calendar year 2017 under each scenario.

### Emissions Unit Availability and Allowance Price Variability

NRG expect very low variance in emission allowances prices in 2017. For 2017, it is estimated that the number of emissions allowances available to compliance entities will be in surplus when compared for the number of allowances required for compliance by Cap and Trade participants, based on modeling results of supply and demand of Ontario emission allowances. Furthermore, due to uncertainty regarding whether 2017 Ontario allowances can be used for California and Quebec participants, NRG also expects tepid demand from market participants (entities that purchase and sell allowances for non-compliance purposes). As such, we expect ample volume and little price volatility heading into 2017. The major price setting mechanism for 2017 in Ontario is expected to be the quarterly auctions.

USD and CAD exchange rates has also been relatively stable, with exchange rate for the Canadian dollar slightly improving since April as oil prices stabilize. Figure 1 shows the Bank of Canada Daily noon exchange rate over the last 12 months. Since May 2016, exchange rates between USD and CAD have stayed in a relatively tight range. NRG will employ the maximum and minimum noon exchange rate as the basis for the exchange rate risks for the Risk Mitigation and Scenario Analysis. The Bank of Canada noon exchange rate of 0.7969 USD per CAD is used for the low risk scenario, and 0.6854 USD per CAD is used for the high risk scenario.



Source: Bank of Canada; <http://www.bankofcanada.ca/rates/exchange/noon-rates-5-day/>

1 *Figure 1 – Historical Bank of Canada Daily Noon Exchange Rate, November 1, 2015 to October 31, 2016*

2 **Market risk**

3 For 2017, NRG identifies market risk to be very low. The emission allowance market will be mainly  
4 driven by the quarterly auctions and compliance requirements.

5 **Non-compliance**

6 For 2017, the risk of non-compliance is very low. Emission allowances are not required to be  
7 surrendered to MOECC until the end of the 2020 calendar year. NRG is expected to receive the required  
8 number of allowances equal to its emissions

9 **Other risks identified by the utility**

10 NRG do not foresee other risk factors in 2017

11

## Risk Mitigation and Scenario Analysis

Scenario analysis for the duration of the compliance period that includes high, medium and low risk scenarios associated with price risk and volume variability highlighted

*Table 10 – Cost Pass-through calculations for medium, high, and low risk scenarios as it pertains to NRG's Cap and Trade compliance plan*

	Row	Scenarios		
		MEDIUM RISK	HIGH RISK	LOW RISK
Allowance Price (USD per allowance)	A	\$13.04	\$13.04	\$13.04
Exchange Rate (USD per CAD)	B	0.749	0.6854	0.7969
<b>Allowance Price (CAD per allowance)</b>	<b>C = A ÷ B</b>	<b>\$17.41</b>	<b>\$19.03</b>	<b>\$16.36</b>
Emission (t CO <sub>2</sub> e): Customer-Related	D	59,069	64,976	53,162
Emission (t CO <sub>2</sub> e): Facility-Related	E	1,650	1,815	1,485
<b>Allowances required, Total</b>	<b>F</b>	<b>61,000</b>	<b>67,000</b>	<b>55,000</b>
Compliance Costs (\$ CAD)				
Cost of allowance, Customer-related	G = C x D	\$1,028,391	\$1,236,493	\$869,730
Cost of allowance, Facility-related	H = C x E	\$28,727	\$34,539	\$24,295
Administrative Cost	I	\$100,000	\$100,000	\$100,000
Facility-Related Natural Gas Consumption (m3)	J	857,511	943,262	771,760
Customer-Related Natural Gas Consumption (m3)				
without LFE	K	30,701,120	33,771,232	27,631,008
with LFE	L	64,117,736	70,529,509	57,705,962
Compliance Costs (cents per m3)				
<b>Allowance Cost pass-through, Customer-related (via Delivery Charge)</b>	<b>M = G ÷ K</b>	<b>3.3497</b>	<b>3.6610</b>	<b>3.1480</b>
<b>Allowance Cost pass-through, Facility-related (via Delivery Charge)</b>	<b>N = H ÷ L</b>	<b>0.0448</b>	<b>0.0539</b>	<b>0.0379</b>
<b>Administrative Cost pass-through (via Administrative Charge)</b>	<b>O = I ÷ L</b>	<b>0.1560</b>	<b>0.1420</b>	<b>0.1730</b>

NRG has filed, in confidence, its 5-year Gas Distribution Rate Application under the file number EB-2016-0236. In that application under Exhibit 1, Paragraph 4 (d) NRG requests the establishment of a deferral account to capture all costs related to GHG emission allowance procurement and all cost associated with the delivery of the Ontario Cap and Trade Program.

1 NRG does not plan to undertake any financial hedging activities in 2017. The secondary market has not  
2 been developed for Ontario. Secondary market allowances will be mostly from California Quebec, and  
3 until linkage of the Ontario system to the rest of WCI is announced, this carries a risk.

4

1    **5. Longer Term Investments**

2    NRG is not expected to take long-term investments associated with Cap and Trade for the year 2017.

3    NRG will be using the OEB MACC to identify the financial feasibility of future investment opportunities in  
4    future compliance years.

5    **6. New Business Activities**

6    NRG will not be taking on new business activities in 2017 as a result of the Cap and Trade program.



## Exhibit 4 – Monitoring and Reporting

Monitoring and Reporting will commence starting 2017 calendar year. The appropriate information will be reported in this section for the next compliance plan.

## Exhibit 5 – Customer Outreach

### Key Messaging:

Natural Resource Gas Limited is a regulated Utility. We receive direction from the Ontario Energy Board with regard to all rate-setting activities. Under the 2016 Climate Change Act, new Regulations have been issued that pertain to the Cap and Trade Program. This program will affect residential, commercial and industrial consumers in the province of Ontario beginning January 1, 2017. All Natural Gas utilities, including NRG have been directed to purchase GHG allowances on behalf of its customers. The costs to purchase these allowances will be passed on to customers.

The cost to customers will vary. However, it has been determined that the initial costs will be between 3.3 and 3.6 cents per M3 of natural gas. The average home consumes approximately 2000 cubic metres of natural gas per year. Therefore, customers should expect to pay between \$70 and \$80 more per year for their natural gas.

Commercial and Industrial customers will be impacted. The same volumetric charge of 3.3 - 3.6 cents per cubic metre will be applicable these rate classes. However, consumption will vary considerably in these categories.

### Print:

NRG plans to purchase ¼ Page, colour advertisements in local publications such as the Aylmer Express and the Elgin Weekly. These education ads will run in the first 2 weeks of December 2016 and contain the key messaging.

### Bill Messages and Inserts:

December Gas Bills will display an abbreviated message, directing customers to find out more by visiting NRG's website. The specific message will be edited to fit the limitations of our billing software and January 2017 bills will contain a printed insert, containing FAQs as well as an explanation for their increase.

1

**2 Call-Handling; Scripting:**

3 On or before January 1, NRG will change their IVR message on the phone system to include a basic  
4 message about Climate Change Initiatives. This message will be followed by a prompt directing  
5 customers with questions about increased bills related to Cap and Trade to a more detailed message. In  
6 this message, callers will be directed to NRG's Website and/or to the applicable Government of Ontario  
7 site or phone number for more information.

**8 Website:**

9 Natural Resource Gas Limited is a regulated Utility. We receive direction from the Ontario Energy Board  
10 with regard to all rate-setting activities. Under the 2016 Climate Change Act, new Regulations have been  
11 issued that pertain to the Cap and Trade Program. This program will affect residential, commercial and  
12 industrial consumers in the province of Ontario beginning January 1, 2017. All Natural Gas utilities,  
13 including NRG have been directed to purchase GHG allowances on behalf of its customers. The costs to  
14 purchase these allowances will be passed on to customers.

15 The cost to customers will vary over time, dependent on the actual allowance costs at auction. However,  
16 it has been determined that the initial costs will be between 3.3 and 3.6 cents per M3 of natural gas. The  
17 average home consumes approximately 2000 cubic metres of natural gas per year. Therefore, residential  
18 customers should expect to pay between \$70 and \$80 more per year for their natural gas.

19 The above message will be accompanied by helpful tips on conservation. Links will also be on the  
20 website, directing customers to incentive programs that are currently in development.

21

**22 Front Desk FAQ/Bill Inserts:**

23 In January of 2017, bill inserts will be available at the front desk if customers should come to NRG in  
24 person and have questions pertaining to the Cap and Trade Program.

25

26

1     **Union Gas Messaging Market Penetration:**

- 2     In addition to marketing initiatives planned by NRG, proximity to Union's franchise ensures popular  
3     publications and radio in the London, St. Thomas and Tillsonburg areas will ensure similar messages will  
4     reach the entire NRG customer base with multiple touch-points.

## Exhibit 6 – Deferral and Variance Accounts

In its current rate application filing (EB-2016-0263), NRG has made a request to establish a deferral account for purposes of recording and tracking its Cap and Trade costs. The appropriate information will be reported in this section for the next compliance plan.

## Exhibit 7 – Cost Recovery

NRG will apply the following cap-and-trade related charges to customers starting January 1, 2017. The unit charges and total costs reported are based on the medium risk scenario provided in Table 10 of Exhibit 3.

1. For customer-related obligations:

- Total Cost: \$1,028,391
- Unit charge by rate class: 3.3497 cents per cubic metre will be passed through uniformly to all rate classes, excluding one LFE customer (IGPC)

2. For facility-related obligations:

- Total costs: \$28,727
- Unit charge by rate class: 0.0448 cents per cubic metre will be passed through uniformly to all rate classes, including one LFE customer (IGPC)

3. For administrative costs:

- Total costs \$100,000
- Adjustment to delivery rate by rate class: 0.1560 cents per cubic metre will be passed through uniformly to all rate classes, including one LFE customer (IGPC)

The bill impact on all NRG rate payers will be the same, with the exception of one LFE (IGPC) in NRG's distribution system. All rate payers except IGPC will see an increase of 3.3945 cents per cubic metre in their delivery cost, and an increase of 0.1560 cents per cubic metre in their administrative charges. IGPC's delivery charges will increase by 0.0448 cents per cubic metre, and will see an increase of 0.156 cents per cubic metre in their administrative charges.

Customer-related and facility-related deferral and variance account balances are not provided in this filing.

## APPENDIX A – 2017 Emission Allowance Price Forecast

Forecasted distribution loss (in %) is calculated as the weighted average of the distribution loss (in %) over the last three years, with the distribution loss of the most recent year assigned a weighting of 3, the year before that assigned a weighting of 2, and the year before that assigned a weighting of 1. The percentage loss of each year is taken as the difference in the volume of natural gas consumed and the volume of natural gas delivered, divided by the total of natural gas consumed. See the table below for the measured volumes and the weighted loss used in calculating the weighted loss for 2016.

	Volume	Weighting	Weighted Loss (%) (YTD % x Weighting)
FYE 09/30/13			
Gas Consumption	24,288,293 m <sup>3</sup>	1	-4.1%
Gas Deliveries	25,285,340 m <sup>3</sup>		
Gas Gain (Loss)	(997,047) m <sup>3</sup>		
YTD %	-4.1%		
FYE 09/30/14			
Gas Consumption	28,097,184 m <sup>3</sup>	2	-6.3%
Gas Deliveries	28,978,088 m <sup>3</sup>		
Gas Gain (Loss)	(880,904) m <sup>3</sup>		
YTD %	-3.1%		
FYE 09/30/15			
Gas Consumption	28,231,239 m <sup>3</sup>	3	-5.9%
Gas Deliveries	28,789,077 m <sup>3</sup>		
Gas Gain (Loss)	(557,838) m <sup>3</sup>		
YTD %	-2.0%		
2016 Unaccounted for gas calculated at: Sum of Weighted Loss (%) ÷ Sum of Weighting			-2.7172%

Filed: November 15, 2016

## 1 APPENDIX B – 2017 HDD Forecast Factor

## NATURAL RESOURCE GAS LIMITED

DATE: 09/30/2016

GAS / CUSTOMER ANALYSIS  
AS OF AUG/16*consumption profile*

MONTHLY FIGURES						YEAR TO DATE FIGURES					
GAS VOLUME IN M3			NUMBER OF CUSTOMERS			GAS VOLUME IN M3			NUMBER OF CUSTOMERS		
AUG/16	AUG/15	CHANGE	% AUG/16	AUG/15	CHANGE	CURRENT	LAST	CHANGE	% AUG/16	SEPT	CHANGE

## SALES

258637	273034	14397-	5-	7932	7708	224	3	RESIDENTIA	13363402	15737963	2374561-	15-	7932	7708	224	3
41303	38908	2395	6	61	59	2	3	IND-RATE 1	1403177	1691989	288812-	17-	61	58	3	5
4677	6649	1972-	30-	34	33	1	3	IND-RATE 4	833668	1369819	536151-	39-	34	33	1	3
93002	103624	10622-	10-	412	408	4	1	COMMERCIAL	3926327	4589909	663582-	14-	412	406	6	1
272104	276753	4649-	2-	55	61	6-	10-	SEASONAL	672485	800761	128276-	16-	55	60	5-	8-
30512	46853	16341-	35-	3	3	0	0	CON-RATE 3	1491306	1690918	199612-	12-	3	3	0	0
3240	16848	13608-	81-	3	3	0	0	CON-RATE 5	627688	1178067	550379-	47-	3	3	0	0
703475	762669	59194-	8-	8500	8275	225	3	TOTAL SALE	22318053	27059426	4741373-	18-	8500	8271	229	3

			% THIS		% LAST			DELIVERIES INTO SYSTEM			% THIS		% LAST	
581455	640057	58602-	9-	82	81			WEST GAS	21713722	25673238	3959516-	15-	95	93
0	0	0	0					HEMLOCK	0	257848	257848-	100-		1
123684	152957	29273-	19-	18	19			NORFOLK	1235880	1732306	496426-	29-	5	6
705139	793014	87875-	11-	100	100			TOTAL PURCHAS	22949602	27663392	4713790-	17-	100	100

1664	30345	28681-	724					GAS LOSS (GAIN)	631549	603966	27583	4
.2 %	3.9 %								2.8 %	2.2 %		

3370342	2938068	432274	15	0	0	0	0	ETHANOL	35928486	30919433	5009053	16	0		
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## DEGREE DAYS

.3	14.0	13.7	98% WARMER THIS YEAR	ACTUAL	3344.7	4119.0	774.3	19% WARMER THIS YEAR
47.2	19.6			NORMAL	3982.6	3955.0		

(A Degree Day is the average daily temperature below 18 degrees Celsius.)

Definition of rates:

Rate 1 - customer gas use year round broken out into Residential, Industrial, and Commercial which is determined by volume

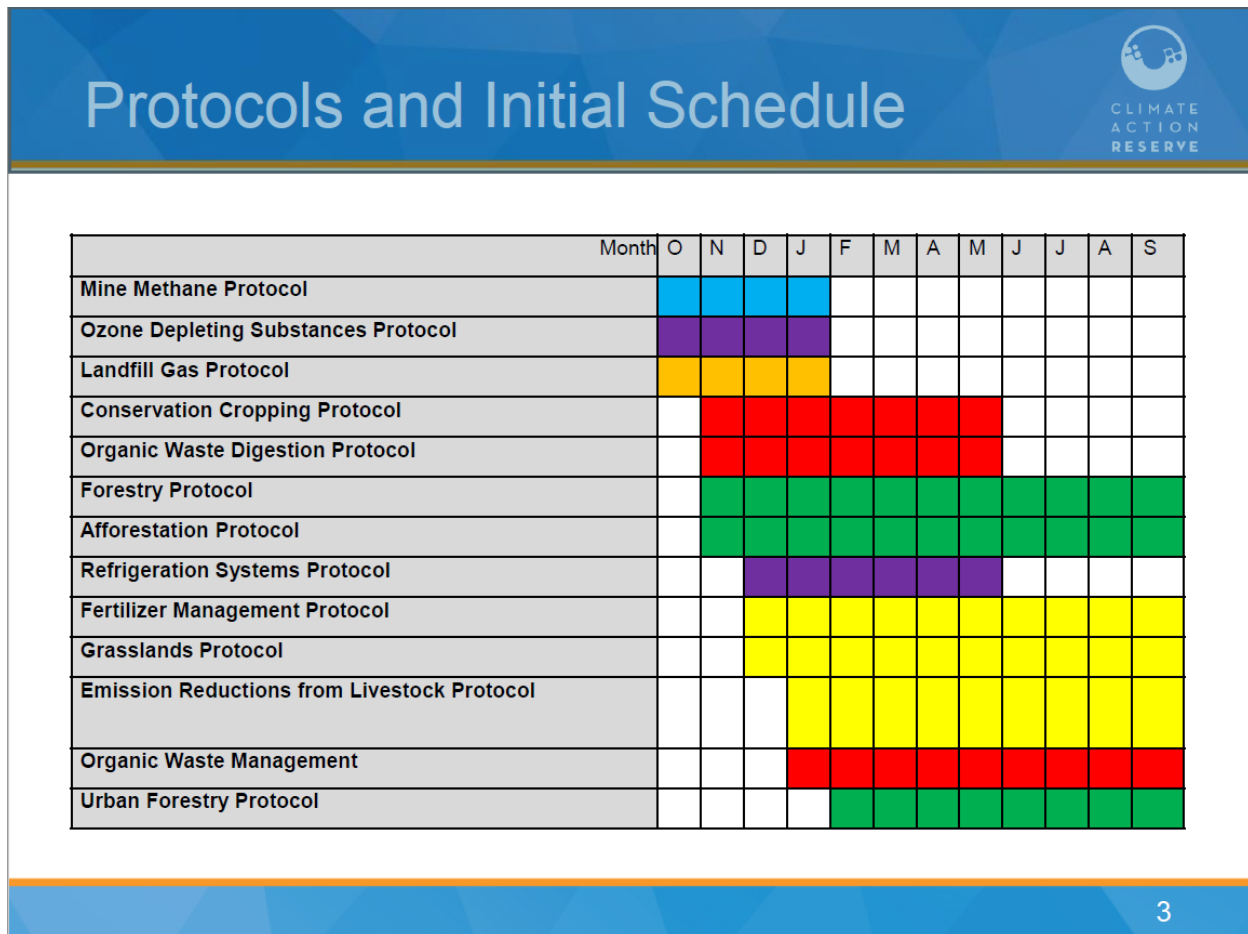


1

Trade Date	Trading Strips											
	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17
	SECONDARY MARKET PRICE IN USD per ALLOWANCE											
26-Sep	\$ 12.98	\$ 13.01	\$ 13.03	\$ 13.06	\$ 13.08	\$ 13.11	\$ 13.13	\$ 13.15	\$ 13.18	\$ 13.20	\$ 13.23	\$ 13.25
27-Sep	\$ 12.97	\$ 13.00	\$ 13.02	\$ 13.05	\$ 13.07	\$ 13.10	\$ 13.12	\$ 13.14	\$ 13.17	\$ 13.19	\$ 13.22	\$ 13.24
28-Sep	\$ 12.95	\$ 12.98	\$ 13.00	\$ 13.03	\$ 13.05	\$ 13.08	\$ 13.10	\$ 13.12	\$ 13.15	\$ 13.17	\$ 13.20	\$ 13.22
29-Sep	\$ 12.95	\$ 12.98	\$ 13.00	\$ 13.03	\$ 13.05	\$ 13.08	\$ 13.10	\$ 13.12	\$ 13.15	\$ 13.17	\$ 13.20	\$ 13.22
30-Sep	\$ 12.94	\$ 12.97	\$ 12.99	\$ 13.02	\$ 13.04	\$ 13.07	\$ 13.09	\$ 13.11	\$ 13.14	\$ 13.16	\$ 13.19	\$ 13.21
3-Oct	\$ 12.91	\$ 12.94	\$ 12.96	\$ 12.99	\$ 13.01	\$ 13.04	\$ 13.06	\$ 13.08	\$ 13.11	\$ 13.13	\$ 13.16	\$ 13.18
4-Oct	\$ 12.89	\$ 12.92	\$ 12.94	\$ 12.97	\$ 12.99	\$ 13.02	\$ 13.04	\$ 13.06	\$ 13.09	\$ 13.11	\$ 13.14	\$ 13.16
5-Oct	\$ 12.89	\$ 12.92	\$ 12.94	\$ 12.97	\$ 12.99	\$ 13.02	\$ 13.04	\$ 13.06	\$ 13.09	\$ 13.11	\$ 13.14	\$ 13.16
6-Oct	\$ 12.87	\$ 12.90	\$ 12.92	\$ 12.95	\$ 12.97	\$ 13.00	\$ 13.02	\$ 13.04	\$ 13.07	\$ 13.09	\$ 13.12	\$ 13.14
7-Oct	\$ 12.86	\$ 12.89	\$ 12.91	\$ 12.94	\$ 12.96	\$ 12.99	\$ 13.01	\$ 13.03	\$ 13.06	\$ 13.08	\$ 13.11	\$ 13.13
10-Oct	\$ 12.87	\$ 12.90	\$ 12.92	\$ 12.95	\$ 12.97	\$ 13.00	\$ 13.02	\$ 13.04	\$ 13.07	\$ 13.09	\$ 13.12	\$ 13.14
11-Oct	\$ 12.88	\$ 12.91	\$ 12.93	\$ 12.96	\$ 12.98	\$ 13.01	\$ 13.03	\$ 13.05	\$ 13.08	\$ 13.10	\$ 13.13	\$ 13.15
12-Oct	\$ 12.88	\$ 12.91	\$ 12.93	\$ 12.96	\$ 12.98	\$ 13.01	\$ 13.03	\$ 13.05	\$ 13.08	\$ 13.10	\$ 13.13	\$ 13.15
13-Oct	\$ 12.88	\$ 12.91	\$ 12.93	\$ 12.96	\$ 12.98	\$ 13.01	\$ 13.03	\$ 13.05	\$ 13.08	\$ 13.10	\$ 13.13	\$ 13.15
14-Oct	\$ 12.86	\$ 12.89	\$ 12.91	\$ 12.93	\$ 12.96	\$ 12.98	\$ 13.00	\$ 13.03	\$ 13.05	\$ 13.07	\$ 13.10	\$ 13.12
17-Oct	\$ 12.86	\$ 12.89	\$ 12.91	\$ 12.93	\$ 12.96	\$ 12.98	\$ 13.00	\$ 13.03	\$ 13.05	\$ 13.07	\$ 13.10	\$ 13.12
18-Oct	\$ 12.89	\$ 12.92	\$ 12.94	\$ 12.96	\$ 12.99	\$ 13.01	\$ 13.03	\$ 13.06	\$ 13.08	\$ 13.10	\$ 13.13	\$ 13.15
19-Oct	\$ 12.87	\$ 12.90	\$ 12.92	\$ 12.94	\$ 12.97	\$ 12.99	\$ 13.01	\$ 13.04	\$ 13.06	\$ 13.08	\$ 13.11	\$ 13.13
20-Oct	\$ 12.88	\$ 12.91	\$ 12.93	\$ 12.95	\$ 12.98	\$ 13.00	\$ 13.01	\$ 13.05	\$ 13.07	\$ 13.09	\$ 13.12	\$ 13.14
21-Oct	\$ 12.89	\$ 12.92	\$ 12.94	\$ 12.97	\$ 12.99	\$ 13.02	\$ 13.01	\$ 13.06	\$ 13.09	\$ 13.11	\$ 13.14	\$ 13.16
24-Oct	\$ 12.96	\$ 12.99	\$ 13.01	\$ 13.04	\$ 13.06	\$ 13.09	\$ 13.01	\$ 13.13	\$ 13.16	\$ 13.18	\$ 13.21	\$ 13.23
	Exchange Rate Futures (USD per CAD)											
	DEC 16		MAR 17			JUN 17			SEP 17		DEC 17	
24-Oct	0.7479		0.7485			0.74915			0.74975		0.7505	
	SECONDARY MARKET PRICE IN CAD per ALLOWANCE											
	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17
26-Sep	\$ 17.36	\$ 17.40	\$ 17.41	\$ 17.45	\$ 17.47	\$ 17.50	\$ 17.53	\$ 17.55	\$ 17.58	\$ 17.61	\$ 17.65	\$ 17.65
27-Sep	\$ 17.34	\$ 17.38	\$ 17.39	\$ 17.43	\$ 17.46	\$ 17.49	\$ 17.51	\$ 17.54	\$ 17.57	\$ 17.59	\$ 17.63	\$ 17.64
28-Sep	\$ 17.32	\$ 17.36	\$ 17.37	\$ 17.41	\$ 17.43	\$ 17.46	\$ 17.49	\$ 17.51	\$ 17.54	\$ 17.57	\$ 17.61	\$ 17.61
29-Sep	\$ 17.32	\$ 17.36	\$ 17.37	\$ 17.41	\$ 17.43	\$ 17.46	\$ 17.49	\$ 17.51	\$ 17.54	\$ 17.57	\$ 17.61	\$ 17.61
30-Sep	\$ 17.30	\$ 17.34	\$ 17.35	\$ 17.39	\$ 17.42	\$ 17.45	\$ 17.47	\$ 17.50	\$ 17.53	\$ 17.55	\$ 17.59	\$ 17.60
3-Oct	\$ 17.26	\$ 17.30	\$ 17.31	\$ 17.35	\$ 17.38	\$ 17.41	\$ 17.43	\$ 17.46	\$ 17.49	\$ 17.51	\$ 17.55	\$ 17.56
4-Oct	\$ 17.23	\$ 17.28	\$ 17.29	\$ 17.33	\$ 17.35	\$ 17.38	\$ 17.41	\$ 17.43	\$ 17.46	\$ 17.49	\$ 17.53	\$ 17.53
5-Oct	\$ 17.23	\$ 17.28	\$ 17.29	\$ 17.33	\$ 17.35	\$ 17.38	\$ 17.41	\$ 17.43	\$ 17.46	\$ 17.49	\$ 17.53	\$ 17.53
6-Oct	\$ 17.21	\$ 17.25	\$ 17.26	\$ 17.30	\$ 17.33	\$ 17.35	\$ 17.38	\$ 17.41	\$ 17.43	\$ 17.46	\$ 17.50	\$ 17.51
7-Oct	\$ 17.19	\$ 17.23	\$ 17.25	\$ 17.29	\$ 17.31	\$ 17.34	\$ 17.37	\$ 17.39	\$ 17.42	\$ 17.45	\$ 17.49	\$ 17.50
10-Oct	\$ 17.21	\$ 17.25	\$ 17.26	\$ 17.30	\$ 17.33	\$ 17.35	\$ 17.38	\$ 17.41	\$ 17.43	\$ 17.46	\$ 17.50	\$ 17.51
11-Oct	\$ 17.22	\$ 17.26	\$ 17.27	\$ 17.31	\$ 17.34	\$ 17.37	\$ 17.39	\$ 17.42	\$ 17.45	\$ 17.47	\$ 17.51	\$ 17.52
12-Oct	\$ 17.22	\$ 17.26	\$ 17.27	\$ 17.31	\$ 17.34	\$ 17.37	\$ 17.39	\$ 17.42	\$ 17.45	\$ 17.47	\$ 17.51	\$ 17.52
13-Oct	\$ 17.22	\$ 17.26	\$ 17.27	\$ 17.31	\$ 17.34	\$ 17.37	\$ 17.39	\$ 17.42	\$ 17.45	\$ 17.47	\$ 17.51	\$ 17.52
14-Oct	\$ 17.19	\$ 17.23	\$ 17.25	\$ 17.27	\$ 17.31	\$ 17.33	\$ 17.35	\$ 17.39	\$ 17.41	\$ 17.43	\$ 17.47	\$ 17.48
17-Oct	\$ 17.19	\$ 17.23	\$ 17.25	\$ 17.27	\$ 17.31	\$ 17.33	\$ 17.35	\$ 17.39	\$ 17.41	\$ 17.43	\$ 17.47	\$ 17.48
18-Oct	\$ 17.23	\$ 17.28	\$ 17.29	\$ 17.31	\$ 17.35	\$ 17.37	\$ 17.39	\$ 17.43	\$ 17.45	\$ 17.47	\$ 17.51	\$ 17.52
19-Oct	\$ 17.21	\$ 17.25	\$ 17.26	\$ 17.29	\$ 17.33	\$ 17.34	\$ 17.37	\$ 17.41	\$ 17.42	\$ 17.45	\$ 17.49	\$ 17.50
20-Oct	\$ 17.22	\$ 17.26	\$ 17.27	\$ 17.30	\$ 17.34	\$ 17.35	\$ 17.38	\$ 17.42	\$ 17.43	\$ 17.46	\$ 17.50	\$ 17.51
21-Oct	\$ 17.23	\$ 17.28	\$ 17.29	\$ 17.33	\$ 17.35	\$ 17.38	\$ 17.41	\$ 17.43	\$ 17.46	\$ 17.49	\$ 17.53	\$ 17.53
24-Oct	\$ 17.33	\$ 17.37	\$ 17.38	\$ 17.42	\$ 17.45	\$ 17.47	\$ 17.50	\$ 17.53	\$ 17.55	\$ 17.58	\$ 17.62	\$ 17.63
	AVERAGE PRICE OVER 21-DAY PERIOD (CAD per ALLOWANCE):											\$ 17.41

## APPENDIX D – Estimated Timeline Ontario Offset Protocol Development

Climate Action Reserve (CAR) have been contracted by MOECC to evaluate and develop a set of compliance offset protocol for the Ontario Cap and Trade system. CAR released their development schedule on October 14<sup>th</sup>, 2016. Please see the posted development schedule below:



Source: <http://californiacarbon.info/wp-content/uploads/Presentations/CAR-OntarioOffsetProtocolAdaptation.pdf>