ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act, 1998*, S.O. 1998, c.15 (Schedule. B);

AND IN THE MATTER OF an Application by Union Gas Limited pursuant to Section 36(1) of the *Ontario Energy Board Act, 1998*, for an Order or Orders approving the 2015 to 2020 Demand Side Management (**DSM**) Plan.

EB-2015-0029/EB-2015-0049

Interrogatories From

The Association of Power Producers of Ontario (APPrO)

To

Green Energy Coalition (GEC)

(Mr. Chernick's Evidence)

August 7, 2015

Question 1:

Reference: i) Evidence of Mr. Chernick page 24:

> *"The carbon emissions from the existing electric system would be almost entirely from gas-fired generation, which appears to be on the margin about 70% of the time.."*

Preamble: APPrO would like to understand how Mr. Chernick arrived at his understanding of the amount of time that gas-fired generation is expected to be on the margin for the period 2016-2020.

a) Please explain in detail how Mr. Chernick arrived at the conclusion that gas-fired generation would be the marginal generation source 70% of the time for the period 2016-2020. Please provide all current, past and projected Independent Electricity System Operator (**IESO**) and Ontario Power Authority (**OPA**) data, including market clearing price data that was used to arrive at this conclusion.
b) Please provide the assumed system-wide emission factor that Mr. Chernick used for Ontario and all supporting sources of information.
c) Please provide the assumed Ontario gas-fired electricity generation fleet emission factor that Mr. Chernick used and all supporting sources of information.

Question 2:

Reference: i) Evidence of Mr. Chernick page 9 and Table 1.
ii) Evidence of Mr. Chernick page 15.

Preamble: The evidence indicates that:

> "*Most of these analyses estimated that a 1% reduction in US gas consumption would reduce gas prices by about 1%-3%. For the current forward Henry Hub supply prices for 2016-2020, a price reduction of 1%-3% would be about US $0.034-$0.10/MMBtu or about $0.001-$0.004/m^3 (in U.S. dollars)."*

a) Please provide any and all forward price curves for gas at Henry Hub that Mr. Chernick considered or relied upon for this statement.
b) Please provide any and all updated forward price curves for gas at Henry Hub following the recent release of the U.S. Environmental Protection Agency's final Clean Power Plan (**CPP**).
c) Please provide any and all assessments of the impact of the CPP on U.S. gas demand.
d) Please provide data for Table 1 to reflect the period and estimates in years from 2005 to 2015.
e) Please comment on how load reductions and decontracting affected the costs of gas transportation in Canada along the TransCanada Pipeline (**TCPL**) mainline routes with specific reference to the regulated tolls resulting from the National Energy Board RH-003-2011 and RH-001-2014.

Question 3:

Reference: i) Evidence of Mr. Chernick pages 18-25.

Preamble: In the evidence, Mr. Chernick indicates that: (i) Ontario proposes to impose a charge on gas use; (ii) Ontario recently joined the Western Climate Initiative (**WCI**); and (iii) the forward price of carbon is in the range of $20 USD/tonne in 2014 rising linearly to $35 USD/tonne in 2030 and $61.50 USD/tonne in 2040.

a) Please confirm that Synapse is providing other paid evidence in this proceeding.
b) Please provide any and all information that Mr. Chernick relied upon indicating that the point of regulation for carbon pricing will be the gas user (i.e. end-use gas customer).
c) Please indicate when Ontario joined the WCI and its terms of entry.
d) Please provide the actual carbon allowance auction prices in California and Québec in accordance with the following table:

Auction Period		Auction Price		
2013	**Q1**	**California**	**Québec**	**RGGI[1]***
	Q2			
	Q3			
	Q4			
2014	**Q1**			
	Q2			
	Q3			
	Q4**			
2015	**Q1**			
	Q2			

*while not technically linked, Québec provides for consideration of RGGI allowances in related export transactions for power.
**California/Québec linked auction.

e) Please provide any and all assumptions of carbon pricing in multi-state cooperation programs, such as RGGI and WCI both pre- and post-implementation of the U.S. CPP.
f) Please provide any and all factual/technical support for the 1.89 kg CO_2/m^3 emission factor used in the analysis.
g) Please provide any and all relevant currency exchange forecasts for the 2016-2020 period.
h) Please provide all carbon and related cost estimates set out in this section of the evidence on a metric tonne basis.
i) Please provide all assumptions and limitations implicit in the proposed social cost of carbon estimates.
j) Please confirm that Mr. Chernick assumed that the avoided cost of carbon emissions would be, in part, a function of the prevailing carbon price.
k) Please provide any and all data supporting the implied CO_2 costs in footnote 15.

[1] Regional Greenhouse Gas Initiative

l) Please provide Mr. Chernick's assumed cost of reducing 28 MT of CO_2 from the Ontario power sector over the 2003-2015 period and the commensurate impact on power pricing in Ontario.

m) Please provide any and all data on the cost of greenhouse gas (**GHG**) emission reductions from any jurisdiction in the world that are comparable in ambition to Ontario's coal phase-out.

n) Please indicate how, in lieu of the 15% added to avoided natural gas costs, Mr. Chernick would reflect yet-to-be-determined carbon prices in DSM?

o) Please provide all actual data from the IESO to support that gas-fired generation has been on margin 70% of the time during the 2010-2014 period.

p) Please provide any and all actual data to support the stated gas emissions factors of 53.1 kg per MMBtu/1.5 kg/m^3 and the average Ontario gas plant heat rate of 9 MMBtu/MWh based on actual electricity production.

q) Please provide any and all assumptions that Mr. Chernick made relating to who/which entities Ontario's carbon pricing program will apply to, with a clear indication of whether or not Mr. Chernick assumed the scheme would apply to large industrial gas customers and gas-fired power generation customers.

r) Please provide any and all assumptions that Mr. Chernick made regarding the political acceptability and tolerance of (a) natural gas and (b) electricity customers to price increases relating to carbon costs.

s) Please provide published data on the established demand elasticity (as a function of price) for (a) natural has and (b) electricity in each of Canada and the U.S.

t) Please provide all temperature and relative humidity data underlying Mr. Chernick's reduced condensation and mold assertions.

ALL OF WHICH IS RESPECTFULLY
SUBMITTED THIS
7th day of August, 2015

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