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BY EMAIL

March 10, 2021

Ms. Christine E. Long
Registrar
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4
Registrar@oeb.ca

Dear Ms. Long:

**Re: Ontario Energy Board (OEB) Staff Response to Undertakings J4.1B, J4.2,
J4.3
Enbridge Gas Inc. – Integrated Resource Planning Proposal
OEB File Number: EB-2020-0091**

Please find attached the response to undertakings J4.1B, J4.2, and J4.3,
undertaken by OEB staff at the IRP oral hearing on March 4, 2021.

The attached documents have been forwarded to Enbridge Gas Inc. and to all
other parties to this proceeding.

Yours truly,

Michael Parkes
Project Advisor, Application Policy & Conservation

Encl.



Natural Gas Integrated Resource Planning in New York State and Ontario

Response to Undertakings at Oral Hearing

Prepared for:

Ontario Energy Board staff

Submitted by:

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Introduction

The Ontario Energy Board staff (the OEB staff) contracted Guidehouse Canada Ltd. (Guidehouse) to provide expert support to contribute to the OEB's review of integrated resource planning (IRP) for Enbridge Gas in the regulatory proceeding EB-2020-0091. Guidehouse prepared a report "Natural Gas Integrated Resource Planning in New York State and Ontario" to provide a summary of key IRP activities in New York State, a side-by-side comparison with each of the IRP issues in the Issues List for the EB-2020-0091 proceeding (Issues List) and Enbridge Gas's original IRP proposal in that proceeding (Enbridge Gas IRP Proposal), as well as Enbridge Gas's Additional Evidence filed with the OEB on October 15, 2020.

The original report was filed as OEB staff evidence on November 12, 2020 (OEB File Number: EB-2020-0091). During the Oral Hearing for EB-2020-0091 on March 4, 2021, Guidehouse was assigned the following undertakings:

UNDERTAKING NO. J4.1B: TO CONFIRM THAT AVOIDED CARBON COMMODITY COSTS ARE NOT INCLUDED IN THAT CATEGORY

UNDERTAKING NO. J4.2: TO PROVIDE THE CALCULATION OF THE SOCIAL COST OF CARBON IN THE SEPTEMBER 2020 VERSION OF THE BCA HANDBOOK

UNDERTAKING NO. J4.3: TO ILLUSTRATE ON A BEST-EFFORTS BASIS HOW CARBON AND LCFS-RELATED REVENUES WOULD BE TREATED UNDER THE REVISED CONED BCA HANDBOOK.

This document contains Guidehouse's response to these undertakings.

1.1 Guidehouse Response to Undertaking No. J4.1B

UNDERTAKING NO. J4.1B: TO CONFIRM THAT AVOIDED CARBON COMMODITY COSTS ARE NOT INCLUDED IN THAT CATEGORY

On Page 65-67 of the Vol. 4 March 4, 2021 transcript, during cross-examination by Ms. DeMarco:

MS. DeMARCO: Thank you very much, Panel. I just have a few questions for you, and they pertain to Table 2 on page 22 of your report. ...

MS. DeMARCO: Great. So I would like to ask you about the category that says "avoided commodity costs" under that left column. That's strictly gas commodity cost, is that fair?

MR. YOUNG: We would need to check on that for the specifics of what is included within that avoided commodity cost.

MS. DeMARCO: Can I ask for an undertaking to do that? And very specifically, I can narrow it for you. It's just that avoided carbon commodity costs are not included in that category.

Guidehouse Response:

It is Guidehouse's opinion that Avoided Carbon Commodity Costs are not included in the Avoided Commodity Cost category in the Revised Con Edison *Gas Benefit-Cost Analysis Handbook*.¹

On Pages 19-20 of the Revised Con Edison *Gas Benefit-Cost Analysis Handbook* (filed September 15, 2020), the Avoided Commodity Costs are defined as:

"Avoided Commodity Cost benefits are calculated using a forecast of natural gas prices. NYISO's CARIS Natural Gas Price forecast ("CARIS") is used for the Gas BCA framework to create a blended gas price to reflect CECONY's actual commodity costs. The blend is calculated using a volume weighted blend of the CARIS Zone J and Zones F-I natural gas price forecasts."

Avoided Commodity Cost is one of the benefit categories that relate to "gas costs" in the Handbook, which are listed on Pages 11 and 12:

- **Avoided Peaking Services:** Benefits derived from avoiding the need to hold Peaking Services contracts; these contracts are used for gas supply services delivered to the citygate acquired from a third party (i.e., exclude the storage and pipeline costs listed

¹ Handbook within the appendix of Con Edison "Proposal for Use of a Framework to Pursue Non-Pipeline Alternatives to Defer or Eliminate Capital Investment in Certain Traditional Natural Gas Distribution Infrastructure." Case 19-G-0066 September 15, 2020 <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={2CCB0D2A-183A-483B-9F56-87878E0471FA}>

below) and include both a capacity and a commodity component. Peaking Services are currently considered the marginal source of supply during peak days.

- **Avoided Pipeline and Storage Capacity Costs:** To the extent that Peaking Services is no longer the marginal source of supply, then supplies delivered with the pipeline and storage capacity portfolio would become the marginal source of supply. This benefit is derived from avoiding the need to hold capacity on off-system storage and pipeline assets required to deliver natural gas to CECONY's citygates. These generally consist of fixed costs (e.g. reservation fees) and associated avoided variable costs (e.g. volumetric charges for the costs associated with physical delivery of natural gas to the city-gate).⁸ The commodity component, associated with the physical molecules of natural gas that are delivered to CECONY's citygates, is covered in "Avoided Commodity Cost" below.
- **Avoided On-System Capacity Expense:** Benefits derived from avoiding the need to invest in on-system infrastructure. On-system infrastructure includes CECONY's transmission system, regulators, and distribution system. These generally consist of avoided carrying charges (including items such as depreciation and applicable taxes) for capital additions necessary for expanding or upgrading the distribution system to accommodate new business and/or avoided O&M related to maintaining on-system infrastructure.

Avoided CO₂ emissions are classified under External Benefits. Page 28-29 of the Handbook describes the Avoided CO₂ Emissions calculation, using a Social Cost of Carbon estimate.

1.2 Guidehouse Response to Undertaking No. J4.2

UNDERTAKING NO. J4.2: TO PROVIDE THE CALCULATION OF THE SOCIAL COST OF CARBON IN THE SEPTEMBER 2020 VERSION OF THE BCA HANDBOOK

Guidehouse Response:

Page 28-29 of the Revised Con Edison *Gas Benefit-Cost Analysis Handbook*² (filed September 15, 2020) describes the Avoided CO₂ Emissions calculation, using a Social Cost of Carbon estimate, and is classified under External Benefits. The screenshot below from Page 29 outlines the specific calculation.

² Handbook within the appendix of Con Edison "Proposal for Use of a Framework to Pursue Non-Pipeline Alternatives to Defer or Eliminate Capital Investment in Certain Traditional Natural Gas Distribution Infrastructure." Case 19-G-0066 September 15, 2020 <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={2CCB0D2A-183A-483B-9F56-87878E0471FA}>

Equation 4-10. Avoided Greenhouse Gas Emissions

$$\text{Benefit}_Y = \Delta\text{Commodity}_Y * \text{GHG Intensity}_Y * \text{Social Cost CO}_2_Y$$

Where:

Y	The year that the benefit is recognized / realized through the actual avoidance of distribution system capacity infrastructure.
$\Delta\text{Commodity}_Y$	For demand-side measures, the change in natural gas used on-site as a result of the program or project. This is measured in Dth at the customer delivery point or revenue meter and accounts for the net change in use related to the program or project over the entire year. For RNG and other local supplies, the change in emissions attributable to the specific process used to provide the local gas supplies.
CRG_Y	The Company Retained Gas for the system applicable to year Y.
GHG Intensity_Y	The GHG emission rate of natural gas emissions (i.e., for demand-side measures, 117 lbs. /MMBtu or 0.0531 Metric Tons/Dt).
$\text{Social Cost CO}_2_Y$	An estimate of the total impacts to society associated with an incremental increase in carbon dioxide emissions, measured in dollars per ton of CO ₂ equivalent.

Considerations on Equation Components

The net cost of CO₂ emissions will be taken into account with the intent to use a common cost of carbon across all aspects of the BCA. The SocialCostCO_2 is based on the Federal Environmental Protection Agency's Societal Cost of Carbon.¹³ The benefit should be based on net changes in gas consumption at the customer site. Projects or programs that defer consumption to periods outside of the peak but do not otherwise reduce annual consumption will not realize benefits from reduction in CO₂ emissions.

¹³ "Benefit-Cost Analysis Filing Requirement Guidance," New York Department of Public Service, Case 15-M-0252, May 15, 2018.

The referenced Guidance document provides for two options for calculating the value of carbon: "Based on the Clean Energy Standard Tier 1 Renewable Energy Credit (REC) price or the Federal Environmental Protection Agency's (EPA) Societal Cost of Carbon (SCC) net of Regional Greenhouse Gas Initiative (RGGI) clearing price." Con Edison's BCA handbook indicates it has chosen the second method.

Guidehouse also located a [spreadsheet](#) with a calculation of the net value of carbon reduction in a different Case from 2018, [Case 15-E-0751](#), on March 13, 2018. The values used in the calculation match the U.S. EPA's social cost of carbon [published in 2016, which includes a range of values for the social cost of carbon, ranging from \\$11 to \\$212, depending on the assumed discount rate and the year.](#) Guidehouse notes that these values may be under review due to the new administration in the U.S. government.³

³ <https://news.bloomberglaw.com/environment-and-energy/biden-turns-back-to-obama-era-method-of-valuing-climate-change>

1.3 Guidehouse Response to Undertaking No. J4.3

UNDERTAKING NO. J4.3: TO ILLUSTRATE ON A BEST-EFFORTS BASIS HOW CARBON AND LCFS-RELATED REVENUES WOULD BE TREATED UNDER THE REVISED CONED BCA HANDBOOK.

Guidehouse Response:

The Con Edison NPS BCA Handbook presents applicable BCA methodologies and describes how to calculate individual benefits and costs for NPS projects as well as how to apply the necessary cost-effectiveness tests for performing a complete BCA for NPS projects. The Handbook provides several generic BCA examples for non-pipeline solutions such as RNG, local gas storage, including CNG and LNG, environmentally advantageous fuel switching, and DR.

Renewable natural gas (RNG) is comparable to hydrogen in that there are policies and regulations that incentivize the development of low carbon fuels for different end-uses, such as the Low Carbon Fuel Standard (LCFS) for transportation fuels. Specific guidance on LCFS-related revenues is not provided in the BCA Handbook.

Pages 31-32 of the Original Con Edison *Interim Benefit Cost Analysis Handbook for Non-Pipeline Solutions*⁴ (filed September 28, 2018) includes an RNG example BCA calculation. The RNG example is not included in the 2020 Handbook, and it is not clear why this example was omitted.

It is Guidehouse's opinion that alternative revenue sources from RNG, hydrogen, or other NPS projects may be accounted for in any of the Avoided Upstream Supply Costs, External Benefits, and Participant NPS Costs categories described below. How the benefits and costs are allocated to the utility will depend on the specific project and agreement between the utility and developer. For example, the utility may or may not contract with the developer for the environmental attributes of the gas supply in addition to the gas commodity itself. Other cost and benefit categories may be relevant depending on the specific project and agreement between the utility and developer and/or other parties.

Excerpts from pages 31-32:

Avoided Upstream Supply Costs – Commodity Costs

In this example, an RNG will supply gas throughout the year at a negotiated commodity rate with the utility. In evaluating such a project on an incremental basis, this commodity price will need to be compared with the price the utility would have otherwise paid for the equivalent quantity of gas supply. This differential represents avoided commodity supply costs which may, in fact, represent an incremental cost relative to the utility's options depending on the commodity rate paid to the RNG.

External Benefits (Avoided CO₂, Other Emissions)

⁴ Con Edison. "Interim Benefit Cost Analysis Handbook for Non-Pipeline Solutions." Case 17-G-0606. September 28, 2018. <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={812C5EFA-FA1F-43D8-BC2A-83B542EC70EF}>

Any avoided CO₂ or Other Emissions associated with an RNG project should be based on the net impact of the project. In general, impacts at the point such gas is ultimately consumed by the consumer are minimal to zero, given that the ultimate product still consumed is gas. However, benefits associated with the creation of the source fuel (e.g., capture of CO₂ as part of the RNG creation process) should be accounted for in the evaluation.

Participant NPS Costs

Participant NPS costs will be estimated based on any amount paid to the RNG developer by the utility in addition to any difference between the price of gas paid to the RNG plant and the price the utility would have otherwise paid for such supply. However, the overall investment may, in certain cases, be superior to the amount paid by the utility to the developer. The developer may be layering multiple other revenue streams in addition to amounts paid by the utility (e.g., municipal bonds, tipping fees, etc.), and the sum of all the cash streams is what makes the project worthwhile to the developer. The assumption is that only the cash streams paid to the developer by the utility are to be accounted for as incremental technology cost.