

**IR# JRP.7S/85S**

**Greenhouse Gas Emissions**

**Requesting Organization – Joint Review Panel**

**Information Request No.: JRP.7S/85S**

**Subject – Need, Purpose and Rationale for the Project (Electricity Demand Projections)**

**References:**

EIS Guidelines, Section 4.5 (Environmental Effects – General)

EIS, Volume IA, Section 2.4.3 (Addressing Climate Change), Section 2.4.4 (Market Opportunities), Section 2.4.4.5 (Newfoundland and Labrador – Displacement of Holyrood) & Section 2.5.7 (No Project)

EIS, Volume IIA, Section 2.2 (Existing Environment – Atmospheric Environment)

**Related Comments / Information Requests:**

CEAR # 214 (Innu Nation – IN.8)

IR # JRP.7 & JRP.85

**Rationale:**

The EIS Guidelines require a description of specific greenhouse gas (GHG) emissions that the Project would or could offset, the necessary conditions for that offset occurring, and a quantitative net estimate of potential greenhouse gas reductions or increases (section 4.5.1). In discussing GHG displacement scenarios in response to JRP.7(a) the Proponent referred to broad markets rather than addressing specific markets and sources of energy.

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In addition to the information already provided in response to IR # JRP.7 (a) and in light of the response to IR# JRP.85, the Proponent is asked to:

- a. Provide a detailed analysis of specific sources of energy and associated GHG emissions that could potentially be replaced or avoided by the Project in each of the potential markets for the Project's electricity (including location, capacity, current energy sources and associated GHG emissions), including those with lower emissions such as wind or demand management options;

**Response:**

The specific sources of energy displaced by the Project in each of the potential markets will be determined by the dispatch decisions within the respective markets. The factors that affect dispatch decisions in each of the different types of markets are outlined in the response to IR# JRP.5S/25Sa. It is not possible for Nalcor Energy (Nalcor) to identify specific sources that would be displaced with any greater certainty than what is presented in the response to IR# JRP.7a because dispatch decisions on individual facilities are made by the operators of the facilities and not by the sellers in the market. The absence of a formal federal GHG policy framework both in the Canada and in the United States results in additional uncertainty in relation to the effect of the Project on displacing alternative energy sources and GHG emissions in each of the markets.

In Atlantic Canada, some of the potential sources of energy that could be displaced are those facilities with higher levels of emissions. Table 1 identifies the top 10 emitting generation stations in Atlantic Canada as well as their respective fuel source(s) and capacity. In the northeastern United States, it is expected that any short-term sales that occur would displace natural gas-fired generation. In Ontario, the provincial government has committed to retire its coal fired generation, and is on a path to eliminate its dependence on coal by 2014.

**Table 1 Top Ten Emitting Generating Stations in Atlantic Canada**

<b>Generating Station</b>	<b>Source</b>	<b>Primary Fuel Source</b>	<b>Capacity (MW)</b>	<b>2007 GHG Emissions (Mt)</b>
Lingan (NS)	2, 3	Coal	620	4.3
Belledune (NB)	1, 3	Coal	457	2.9
Trenton (NS)	2, 3	Coal	307	2.2
Dalhousie (NB)	1, 3	Oil	299	1.7
Point Aconi (NS)	2, 3	Coal	171	1.5
Coleson Cove (NB)	1, 3	Oil	969	1.4
Point Tupper (NS)	2, 3	Coal	154	1.2
Holyrood (NL)	3, 4	Oil	490	1.0
Tuft's Cove (NS)	2, 3	Oil/Gas	415	1.0
Bayside (NB)	1,3	Gas	263	0.5
<b>Total</b>				<b>17.7</b>

Sources:

1. New Brunswick System Operator (2009).
2. Nova Scotia Power (2009).
3. Environment Canada (2009).
4. EIS, Section 1A, Section 2.4.4.5, pg 2-11.

As stated in the response to IR# JRP.7a, Nalcor has a high degree of confidence that displacement of other generation alternatives will take place if the Project is constructed. Similar to hydroelectric developments, other renewable energy sources such as wind have low marginal operating costs and as such Nalcor does not expect to displace other in-service renewable production. Once completed, the Project will displace energy from thermal generation sources such as gas or oil powered facilities that have higher marginal operating costs due to the dependency on fuel costs.

Dispatch decisions within the various power markets will be, in part, governed by demand management and wind targets established by the respective jurisdictional governments and individual utilities – power from the Project will not directly contribute to meeting these targets.

**References:**

Environment Canada. 2009. Facility GHG Reporting, Search Data. Available at:

[http://www.ec.gc.ca/pdb/ghg/onlineData/dataSearch\\_e.cfm](http://www.ec.gc.ca/pdb/ghg/onlineData/dataSearch_e.cfm)

New Brunswick System Operator. 2009. 10-Year Assessment of the Adequacy of Generation and Transmission Facilities in New Brunswick: 2009-2019. April 2009. Available at:

[http://www.nbso.ca/public/\\_private/NBSO%2010-Year%20Assessment%202009.pdf](http://www.nbso.ca/public/_private/NBSO%2010-Year%20Assessment%202009.pdf)

Nova Scotia Power. 2009. NS Power Thermal Generating Facilities. Available at:

[http://www.nspower.ca/en/home/environment/reportsandmetrics/archivedemissionslevels/nspower\\_thermalgeneratingfacilities.aspx](http://www.nspower.ca/en/home/environment/reportsandmetrics/archivedemissionslevels/nspower_thermalgeneratingfacilities.aspx)

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- b. Describe the implications of each of the three factors presented in the response to JRP.7 (a), namely government policy, marginal operating costs and substitution effects, on each of the jurisdictions in which GHG emission could be offset by the Project; and**

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**Response:**

As discussed in the response to IR# JRP.7a government policy, marginal operating costs and substitution effects can affect the ranking and dispatch order for power in any given market. The degree of that effect is determined by the individual market and is largely dependent upon the market structure. The response to IR# JRP.5S/25S provides further detail on how dispatch decisions are made in each of the various market types.

While the full extent of the effect of each of the three factors cannot be fully determined there are a number of general assumptions that can be made in relation to the effects on power markets in general:

- government policy imposing limits on the emission of greenhouse gases should result in increased carbon prices; the more stringent the restriction, the higher the price;
- marginal operating costs of thermal generation facilities should increase as the price carbon increases;
- substitution of generation from non-emitting sources with very low marginal costs such as the Project, for generation from thermal sources should increase as the marginal operating costs, for thermal facilities increases; and
- displacement of GHG emissions will increase with increased use of non-emitting generation over thermal generation.

Both Canada and the United States are in the process of developing federal regulatory frameworks that will impose restrictions on GHG emissions upon implementation. The extent to which these new regulations will affect decisions in the various markets cannot be determined until the regulations are finalized. However, it can be assumed that the movement in government policy towards GHG regulations will result in higher carbon prices. In addition, as stated above, the more stringent the GHG regulations are, the greater the effect they will have on reducing emission levels.

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**Information Requested:**

- c. Indicate whether Nalcor Energy (Nalcor) plans to offset GHG emissions from the Project's construction and operation phases, and how this would be accomplished.**

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**Response:**

As discussed in IR# JRP.85 the GHG emissions from the Project's construction phase are low minimal (less than one megatonne (in total) over the 10 year construction phase). Nalcor is committed to reducing greenhouse gas emissions during construction through:

- conducting work according to regulations and codes of good practice;
- maintaining vehicles and other equipment in good working order, complying with federal emissions and efficiency standards;
- controlling vehicle emissions and thereby GHG emissions by posted speed limits; and
- implementing an anti-idling policy regarding vehicle operations.

As noted in IR# JRP.27 the GHG emissions from the Lower Churchill Project during operations, while not zero (i.e., similar to natural lakes), are dramatically less than other emitting generation alternatives (as illustrated in Table 1 of part (a)). In addition to nominal GHG emissions during construction and operations, the Project has the potential to displace up to 16 megatonnes of GHG emissions per year from other power generation.

Based on the consideration of the above factors, Nalcor Energy has no plans to offset GHG emissions.