Q. Both Schedule A – "The Project" and Schedule B – "Isolated Island Option" to the Terms of Reference refer to the period 2030 – 2067 as follows:

> In Schedule "A" – "2030 – 2067 Primarily thermal units for system reliability support" and in Schedule "B" – "2030 – 2067 Holyrood replacement; additional thermal."

Given that thermal based power and energy can be generated from various fuel types, please explain what fuel types were considered for providing thermal power in the 2030 – 2067 timeframe under Schedule A and B. Please also explain, of the fuel types considered, the reason for choosing and excluding (as applicable) fuel types from thermal generation in this period.

A. The fuel sources considered by Nalcor are discussed in detail in Section 4.2 of Nalcor's Submission filed with the Board on November 10, 2011. Following is a summary of Nalcor's conclusions on the various thermal generation alternatives, as extracted from the November 10 submission to the Board:

<u>Nuclear (Volume 1, Section 4.2.1)</u>

Given that nuclear generation a) is prevented by provincial legislation and b) would not integrate well into the Isolated Island system, nuclear generation was screened out as a possible supply option alternative.

Natural Gas (Volume 1, Section 4.2.2)

Given the lack of a confirmed development plan for Grand Banks natural gas, the small domestic requirement in comparison to the economic threshold for development, as well as the varying uses by operators, Nalcor has screened out domestic natural gas as a supply option.

Liquefied Natural Gas (LNG) (Volume 1, Section 4.2.3)

When analyzed from a cost perspective, LNG supplied at Asian prices virtually mirrors the forecasted cost of fuel for the Holyrood Thermal Generating Station. This means there is no clear advantage to LNG for rate payers. Nalcor's extensive analysis of supply alternatives show that the Interconnected Island Alternative, specifically Muskrat Falls and LIL, is considerably less expensive than the Isolated Island alternative, which is a predominantly thermal future.

Coal (Volume 1, Section 4.2.4)

Because of uncertainty in costs and feasibility associated with meeting gazetted federal regulations, there is significant risk in pursuing coal-fired generation as a resource option. Carbon capture and storage technology (CCS) would be required for a coal-fired facility to achieve the proposed federal target. This unproven technology is still at the research and development phase and has not been deployed on a commercial scale. Saskatchewan recently approved a $1.2 billion project to implement CCS demonstration project on the 110 MW Unit 3 of SaskPower's Boundary Dam thermal facility.

Given the potential for GHG regulation and the uncertainty and cost associated with CCS coal fired generation was screened out as an alternative source for the Isolated Island alternative.

Heavy Fuel Oil (HFO) (Volume 1, Section 4.2.5)

Continued oil-fired generation at the Holyrood plant is viewed as a viable alternative in both the short- to medium-term. Consequently, the continued operation of Holyrood with the appropriate pollution abatement technology was included in the generation expansion alternatives.

Light Fuel Oil (LFO) (Volume 1, Section 4.2.6 for Simple Cycle Combustion Turbine and Section 4.2.7 for Combined Cycle Combustion Turbine)

Combustion turbine technology is an integral part of the resource mix on the Isolated Island system today. CTs are applicable and necessary supply resource for both the Isolated Island alternative and the Interconnected Island alternative. Consequently, the combustion turbine technology was included in the generation expansion alternatives.

CCCTs are an applicable supply resource for both the Isolated Island alternative and the Interconnected Island alternative. Consequently, the combined cycle combustion turbine technology was included in the generation expansion alternatives.

Biomass (Volume 1, Section 4.2.9)

While biomass and other co-generation alternatives, when economically feasible, will be considered as future supply alternatives, they are not considered to be appropriate replacements for large-scale generation requirements due to the significant costs and risks around securing significant supply of feedstock. On this basis, biomass was screened out as an Isolated Island supply alternative.