Request IR-351:

With reference to CA/SBA IR-60 and Application, page 117, lines 18-19:

(a) What is meant by evaluation of "comparable alternatives" with Strategist?

(b) Please explain the extent to which Strategist, as an optimization model, allows for optimization of the least cost portfolio of resources that meet the modeled requirements, allowing the individual resource option components to have technology, location, timing, energy delivery profile, delivery period, firmness, and other differences.

Response IR-351:

(a-b) Strategist as a resource optimization software allows for comprehensive optimization of user defined resources within operating and system planning constraints and it produces the lowest cost resource expansion plan.

Strategist allows each individual resource alternative to be defined with respect to: energy source, technology, timing, delivery period, firm vs. non-firm capacity, energy delivery profile, and other parameters which differentiate resource alternatives. Strategist is a single node system model and as such it does not explicitly model geographical location of resources on the system. If required, the impact of geographical resource location can be modeled implicitly by using the resource definition parameters to reflect the electrical loss profile of an alternative resource relative to the load center or energy delivery profile characteristic to a particular geographic area. As well additional costs may be modeled for a specific option to reflect required system upgrades or operational requirements due to location. Please also refer to CanWEA IR-111 for more details regarding Strategist software algorithms.

NS Power cannot provide proprietary information regarding Strategist software which is not publically available, please refer to CA/SBA IR-23.

Ventyx describes Strategist functionality in the product brochure available on the vendor's website:
http://www.ventyx.com/~/media/files/brochures/strategist-data-sheet

NON-CONFIDENTIAL

Request IR-352:

With reference to CA/SBA IR-64 and Application, page 118, lines 12-13:

(a) Please provide all of the input assumptions for modeling the Nova Scotia system from 2015 to 2040 that were provided by NSPI to Ventyx in the electronic form(s) as provided to Ventyx.

(b) For any input assumptions provided by NSPI to Ventyx that were only transferred within Strategist input data files, please provide those data in the form of Excel files with clear labels of variables and units of measure.

(c) Provide all input assumptions that Ventyx revised from those provided by NSPI.

(d) Provide all additional model input assumptions that were used by Ventyx in order to formulate complete model cases.

Response IR-352:

(a) Please refer to CA/SBA IR-331 (c)

(b) This data does not exist in the form of Excel files.

(c) Please refer to CA/SBA IR-64 (c).

(d) No additional input assumptions were used by Ventyx. Please refer to CA/SBA IR-302.

Request IR-353:

With reference to CA/SBA IR-65 and Application, page 118, line 24 to page 119, line 1:

(a) Were any model runs performed before finalization of all input assumptions?

(b) What input assumptions were revised between the initial transfer of input assumptions from NSPI to Ventyx and their finalization?

Response IR-353:

Please refer to CA/SBA IR-65. Please refer to CA/SBA IR-331 (c) for the finalized, documented inputs for the Alternatives Analysis presented in the Application.

Request IR-354:

With reference to CA/SBA IR-70 Application, pages 120-126, Sections 6.3.2 and 6.3.3, (the alternatives to the Maritime Link Project analyzed by Ventyx included indigenous wind and other imports as separate alternatives such that each alternative would individually provide the equivalent of the entire amount of the long-term energy requirements that NSPI would obtain from the project as the basis for analysis.

(a) Why was the potential for a hybrid mix of technologies including wind, other imports, tidal power, and energy storage technologies backed by fast-start gas fired generation not considered as an alternative to the Project in the analysis?

(b) In NSPML's opinion, would the Ventyx analysis be more informed and therefore useful if a hybrid mix of technologies offering Nova Scotia the greatest environmental, economic and/or reliability benefits been tested in Strategist? If no, why not?

Response IR-354:

NSPML provided a comprehensive response to these questions when they were posed in CA/SBA IR-70. In addition, NSMPL offers the following:

(a) A mix of technologies that included wind, other imports, tidal power, energy storage technologies and gas fired generation was considered and each is anticipated to be available to NS Power in the future. Please refer to the first two paragraphs of CA/SBA IR-70.

(b) Strategist was provided with technologies that offer NS Power the greatest environmental, economic and reliability benefits. Please refer to the first two and final paragraphs of CA/SBA IR-70.

CONFIDENTIAL (Attachment Only)

Request IR-355:

With reference to CA/SBA IR-75 and Application, page 123, lines 8-9:

(a) Please provide all calculations, spreadsheets, reports, other work papers Strategist inputs and outputs and any other materials related to the "Indigenous Wind" alternative run or runs without any integration costs added including all scenarios and sensitivity runs.

(b) Please confirm that the "Indigenous Wind" alternative run or runs without any integration costs added included sufficient resources in each year to meet the reserve requirements or explain and quantify the extent to which the reserve requirements were not met in each year of the study.

(c) Please confirm that the "Indigenous Wind" alternative run or runs without any integration costs added included sufficient resources in each year to meet the needs for two shifting or fast acting generation or explain and quantify the extent to which the needs for two shifting or fast acting generation were not met in each year of the study.

(d) Please provide a tabulation of the curtailment in MWh, if any, of intermittent generators in the "Indigenous Wind" alternative run or runs without any integration costs added for on-peak and off-peak periods each month through 2050 including all scenarios and sensitivity runs. If data are not available for on-peak and off-peak periods each month, please provide most detailed data available. If on-peak data are provided, please specify if on-peak is a 5 x 16 or 7 x 16 period.

(e) Please provide the annual detailed results for the Indigenous Wind runs for the cases with and without integration costs.

Response IR-355:

(a) Please refer to Confidential Electronic Attachments 1 through 8 for the Strategist output and input reports for each Indigenous Wind Case without integration costs. The attachment and the associated case are given in the table below.

The annual planning period values shown are taken from the Strategist model. Strategist takes the input data, executes the run and produces the output results. There are no intermediate materials used to obtain these values. Strategist determines the end effects costs internally as a single net present value calculation and adds it to the planning period costs to give the study period costs. The Study Period Plan Comparison on the last page of the output reports show the end effects value calculated by Strategist for each case. Please also refer to CanWEA IR-20.

Output Reports	Input Reports	Case
Attachment 1	Attachment 5	Indigenous Wind Base Load - Without Integration Costs
Attachment 2	Attachment 6	Indigenous Wind Low Load - Without Integration Costs
Attachment 3	Attachment 7	Indigenous Wind Base Load - High Gas & Power, Without Integration Costs
Attachment 4	Attachment 8	Indigenous Wind Base Load - Low Gas & Power, Without Integration Costs

(b-d) Please refer to SBA IR-75 parts (b) through (d).

(e) Please refer to part (a) for the Strategist output reports for the without integration cost cases. Please refer to SBA IR-331 part (b) for the Strategist output reports for the with integration cost cases. These reports contain the annual results.

CA/SBA IR-355

Attachments 1-8

have been removed due to confidentiality

Request IR-356:

With reference to CA/SBA IR-79 and Application, page 124, lines 5-8 and 14-16, and with regard to the instruction to WKM to evaluate the options of a 500 MW increase in transmission capability to the West, and a 500 MW increase in capability to New Brunswick:

(a) Please provide the feasibility study reports and cost estimates for already submitted transmission intertie expansion projects.

Response IR-356:

WKM Energy does not have feasibility study reports and cost estimates of the transmission expansion projects.

Request IR-357:

With reference to CA/SBA IR-85 and Application, page 133, lines 11-13, please discuss whether the high market prices cases would be less of a disadvantage for an alternative that was composed of some Nova Scotia wind capacity additions plus some transmission additions tied to hydroelectric generation to supplement wind generation.

Response IR-357:

NSPML responded to this question when it was posed in CA/SBA IR-85 by referring to the response to CA/SBA IR-70, which explains that the alternative described (some wind, some transmission, and hydroelectric generation to supplement wind) is not economically available in Nova Scotia. High market prices would only be less of a disadvantage for the hypothetical alternative if the high market prices were higher than the cost of incremental wind capacity additions including the cost of backing up the wind.

Request IR-358:

With reference to CA/SBA IR-92 and Application page 144, line 14, please provide the most recent Annual Capital Expenditure (ACE) Plan 5-year outlook.

Response IR-358:

The 2013 ACE Plan process is an open matter (M05339) before the UARB. Documents relating to the matter are available on the UARB's website and Confidential Repository to which the CA and SBA have access. The most recent 5-year outlook was included in the 2013 ACE Plan Application at page 10.

The 2013 spend profile for the ACE Plan has since been revised as part of that matter, including the removal of projects initially identified as NS Power projects to support the Maritime Link. These projects have since been identified within the Maritime Link Application. An updated 5-year outlook as originally provided on page 10 has not been completed.

Request IR-359:

With reference to CA/SBA IR-93 and Application, page 144, Figure 8-1:

(a) Please explain whether or not Nova Scotia ratepayers receive a reliability benefit from the Nova Scotia Power Network Upgrades associated with the transit of Nalcor Surplus Energy through Nova Scotia.

(b) Please explain whether or not other than for the purposes of providing a path for Nalcor Surplus Energy there is a reliability need for the Nova Scotia Power Network Upgrades.

Response IR-359:

(a-b) Please refer to CA/SBA IR-309.

Request IR-360:

With reference to CA/SBA IR-95 and Application, page 144, footnote 57, please provide a copy of the non-redacted 2013 ACE report. Please include the 2013 spend profile as well as the 5-year outlook filed with ACE as referenced in the footnote.

Response IR-360:

Please refer to CA/SBA IR-358.

Request IR-361:

With reference to CA/SBA IR-101 and Application, page 146, Section 8.2.4:

(a) Please provide the quantity of Nalcor Surplus Energy assumed to be taken at cost by NSPI when it cannot be transmitted through New Brunswick by month over the study period.

(b) Please identify the generators assumed to back down in connection with the energy requested in part a and the associated reductions in fuel consumed and emissions reductions.

Response IR-361:

(a) As NS Power is held whole and there is no cost implication when energy is put back to Nova Scotia, it does not effect the cost of the Maritime Link options and thus no specific volume was modeled.

(b) The generators that would be backed down during the receipt of the energy would be based on economic and reliability requirements at that point in time. No specific modeling was performed to describe this.

Request IR-362:

With reference to CA/SBA IR-105 and Appendix 2.02, pages 63-64. Section 8.2(e):

(a) Why is Emera responsible for the Unapproved Overrun plus any applicable Financing Costs in the amount of up to 5% of the UARB Approved Amount?

(b) Why is Nalcor responsible for the unapproved Overrun plus the applicable Financing Costs that exceed 5% up to 10% of the UARB Approved Amount?

(c) Why do the Parties subsequently split on an equal basis any of the Overrun Amount and applicable Financing Costs that exceed 10% of the UARB Approved Amount?

(d) With respect to sub-parts (a) through (c) above, why is this apportionment approach preferable to the Parties splitting any Unapproved Overrun and applicable Financing Costs on a 50/50 basis?

Response IR-362:

(a-d) The apportionment of risk of overruns on the Maritime Link Project was a component of and the result of the commercial negotiations between NSPML and Nalcor. CA/SBA IR-105 provides four reasons that explain the result of the parties' negotiations about apportionment of Unapproved Overruns.

Request IR-363:

With reference to CA/SBA IR-108 and Appendix 2.03, page 18-19, the Nova Scotia Block is defined as including Supplemental Energy. However in Figure 2-1 of the Application on page 33, the Nova Scotia Block and Supplemental Energy are listed as separate energy blocks.

(a) Please clarify whether or not the Nova Scotia Block includes Supplemental Energy.

(b) If the Nova Scotia Block includes the Supplemental Energy block please specify the energy amounts (GWh/year) for the energy that is provided all year, on-peak and the energy that is provided in the winter months, off-peak.

Response IR-363:

(a) By definition in the Energy and Capacity Agreement (Appendix 2.03), the "Nova Scotia Block" includes "Supplemental Energy". They were separated in Figure 2-1 of the Application to distinguish between the basic and supplemental components.

(b) The basic component of the NS Block is delivered 16 hours per day, 365 days per year for the 35 year initial term (currently estimated to be 986 GWh/year before losses and 895 GWh/year after losses). The Supplemental Energy component of the NS Block is delivered off peak, 8 hours per day in the November to March period during the first five years (currently estimated to be 252 GWh/year after estimated losses – see further discussion in response to SBA IR-310).

Request IR-364:

With reference to CA/SBA IR-127 and Appendix 2.06, page 35, Section 2.6(c):

(a) Please explain how there could be a conflict between the Nova Scotia Transmission Utilization Agreement and the NS OATT when section 2.6(b) of the Nova Scotia Transmission Utilization Agreement specifically states that, "…Emera shall comply with the NS OATT in providing the Transmission Facilitation Service…"

(b) In the event of a conflict between the provisions of the Nova Scotia Transmission Utilization Agreement and the NS OATT, under what circumstances would the Nova Scotia Transmission Utilization Agreement subordinate the NS OATT?

Response IR-364:

(a) NS Power does not anticipate any conflict between the Nova Scotia Transmission Utilization Agreement and the NS OATT. Section 2.6(c) of the Nova Scotia Transmission Utilization Agreement is included for greater certainty given that Nalcor's rights in respect of the Transmission Facilitation Service are derived from the Nova Scotia Transmission Utilization Agreement and not the NS OATT.

Also, see response to CA/SBA IR-127.

(b) No conflict has been identified or is anticipated. Also, see response to CA/SBA IR-127.

Request IR-365:

With reference to CA/SBA IR-149 and Appendix 3.01, page 16, please provide a copy of the RFP for the cable supply contract and copies of the proposals by the proponents for the cable supply contract.

Response IR-365:

With respect to the RFP, please refer to CCI IR-034.

This highly confidential competitive solicitation process is ongoing. With NS Power fuel and energy procurement processes, the FAM requires RFPs, bid proposals, analysis and other supporting documentation to be collected and made available for UARB and intervenor review after completion of the process. NSPML anticipates a similar process in relation to significant contracts such as the cable supply contract.

Request IR-366:

With reference to CA/SBA IR-159 and Appendix 3.01, page 24, please provide the cost estimates for all three cable burial technique options.

Response IR-366:

1. Cable landfall: HDD alternative
   - This method protects the cable in the land fall area, and is limited in length/distance by the capability of the drilling rig
   - Estimated cost/m on the Nova Scotia side is roughly $ 6,000/m.
   - Cost/m on the Newfoundland side where there is harder rock is $ 11,000/m.
   - These costs/m can change as they are based on an estimate of the drilling duration, and could take longer if the drilling rig runs into unfavorable subsea formations.

2. Cable landfall: Trenching alternative
   - The excavation of the landfall, beach and near shore zone which requires an open trench be maintained for the placement of the cable.
   - The excavation would required rock breaking or blasting due to the shoreline composition.
   - The technique is disruptive to the area affected and the near shore fishing zone in the Cabot Strait.
   - This technique, if executed a year in advance of the cable installation, for risk mitigation, would reuire the trench remain open for an extended period.
   - Estimated cost /m for trenching is $ 12,000/m.

3. Cable landfall: Micro Tunneling alternative

- For shoreline landfall installations, such as the ones required at both ends of the Maritime Link submarine cable, the microtunneling construction method would have to include either a reception shaft constructed offshore using steel sheet pile walls or an underwater pit for retrieval of the microtunneling machine (along with associated procedures, personnel and equipment for underwater cutting head retrieval at the exit location).
- Estimated cost /m for micro-tunneling is $ 20,000/m.

Request IR-367:

With reference to CA/SBA IR-162 and Appendix 3.01, page 25, is it the NSPML position that the ratepayers in Nova Scotia should pay a share of the Newfoundland system reinforcement projects identified as required for reliable delivery of as much as 500 MW (including the prospective wheeling requirements) through the Maritime Link?

Response IR-367:

Yes. The premise of the commercial arrangements is based on the 20 For 20 Principle. The Newfoundland system reinforcements included in the Maritime Link Project costs are part of the total cost in question for which NSPML pays 20 percent. There are no additional costs for NSPML to use the Newfoundland system to transmit energy - it is all inclusive within the commercial agreements.

Request IR-368:

With reference to CA/SBA IR-174 and Appendix 3.01, page 58, please explain how the average loading was derived at 316 MW and 790 Amperes per pole.

Response IR-368:

Please see CA IR-81(b) for the derivation of the Maritime Link Capacity Factor of 61.4 percent. Average Loading equals Rated Capacity times Capacity Factor, therefore Average Loading = 500 MW x 0.614 = 309 MW. This value is dependent on the assumption of the amount of energy available for export (roughly 2.96 TWh) and the Total Export Loss Rate (9.1 per cent in 2018) and therefore has some variability based on changes in these parameters. A value of 316 MW was used in the conductor optimization, to account for the Supplemental Energy delivered during off-peak hours in the winter months for the first five years.

The Maritime Link has a nominal direct current voltage rating of +/- 200 kV. Since Power = Voltage x Current = 200,000 V x 790 A per pole = 158,000,000 W per pole = 158 MW per pole or 316 MW for two poles. Similarly, 309 MW equates to 773 Amperes per pole.

Request IR-369:

With reference to CA/SBA IR-179 and Appendix 3.01, page 64, please provide the statistical data for applications where the two types of the cable technology have been used: mass impregnated (MI) and cross-linked polyethylene (XLPE). The data should include, but not be limited to, the name of the project, year of installation, name of the cable vendor, land-based and subsea length, capacity, voltage, HVDC/AC technology type, cable type, core material (copper or aluminum), number of forced outages caused by the cable failure, the root cause of the failure, and duration of the outages.

Response IR-369:

Please refer to LPRA IR-18. NSPML does not have access to all statistical data for other installations other than what has been provided in Figure 3-6, page 69 of the M-2 application. NSPML has monitored Cigre reports and supplier published data on performance, please refer to Cigre B4 203 2010 HVDC VSC (HVDC light) Transmission – Operating Experiences and Cigre 279 Maintenance of HV Cables and Accessories.

The Cigre B4 203 reference is a report of the operating experiences for two HVDC cable systems operating at 150 kV installed in 2002. The cables are connected to VSC converter systems and located in Australia and the United States.

The Cigre 279 reference describes maintenance strategies, failure modes, analysis methods, diagnostic tools, remaining life estimation and recommendations for maintenance of power cable systems, based in part on results of utility survey data and case studies. The main reasons for performing maintenance are described, and the three main forms of maintenance are discussed, namely: i) Corrective Maintenance (to fix or repair failed cables); ii) Preventive Maintenance (performed on a scheduled basis, thus Time Based Maintenance (TBM)); and iii) Predictive Maintenance (performed based on measurements and tests in order to anticipate failures, thus Condition Based Maintenance (CBM)).

Request IR-370:

With reference to CA/SBA IR-183 and Appendix 3.01, page 68, please explain the NSPML approach in reviewing and evaluation of the bids it has received in response to the cable contract RFP. In particular, identify the criteria, factors, and evaluation methodology, including the score system, and provide all the work papers, tables, memos, spreadsheets, etc., in electronic form, prepared in the course of the analysis and evaluation of the bids.

Response IR-370:

Please refer to CCI IR-34.

Request IR-371:

With reference to CA/SBA IR-194 and Appendix 3.01, page 76, please provide any reports, studies, reviews, or other materials with the analyses of the industry statistics related to the based on VSC technology HVDC converter valve groups and their cooling systems, including aging evaluation, forced outage rates, reliability in service, failure modes, etc. To the extent a report is subject to the strict copyright laws (e.g., a CIGRE report) please provide a summary of the report observations and conclusions.

Response IR-371:

As indicated in the response to CA/SBA IR-194, protocols have been developed for data collection on VSC installations, but the industry has not yet started compiling the statistics. The following is summary data from CIGRE for LCC installations for the operating period 2009-2010, showing the relative contributions of various components in an HVdc system to the overall Forced Energy Unavailability of the system. The components referenced in the figure are:

- AC-E AC and Auxiliary Equipment
- V Valves
- C&P Control and Protection
- DC-E DC Equipment
- O Other
- TL Transmission Line or Cable

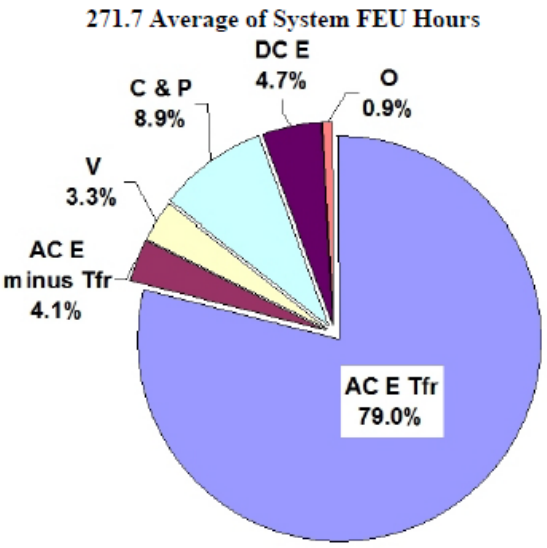

Figure 1
Breakdown of Average FEU By Equipment Category of All Reporting Thyristor HVDC Systems (2009-2010)

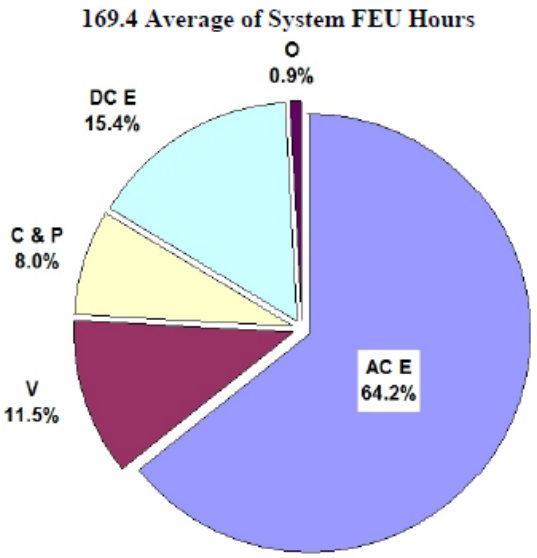

Figure 2
Breakdown of Average FEU By Equipment Category of All Reporting Thyristor HVDC Systems (1983-2008)

Source: CIGRE B4_113_2012: "A Survey of the Reliability of HVDC Systems Throughout the World During 2009-2010"

These statistics demonstrate that in both periods (1983-2008 and 2009-2010); AC Equipment and Auxiliaries (AC-E) are the dominant contributors to Forced Energy Unavailability. Within the category of AC Equipment and Auxiliaries, transformers have been a significant contributor. The contributions for Valves (V) cannot be validated for VSC installations, but a significant reduction of FEU contributions from LCC thyristor valves has been observed in recent years.

As noted, performance reporting for VSC systems is in its infancy, and reporting to date has been ad hoc and does not conform to standardized reporting templates. A 2010 CIGRE report dealt with the performance of two VSC systems that have been in service for 10 years or more: the Cross-Sound Cable project in the USA and the Murraylink Project in Australia.

The Cross-Sound Cable project is a +/-150-kV 330 MW symmetrical monopolar HVdc project linking Connecticut to Long Island New York through submarine XLPE cables. The project was

commissioned in August 2002, and performance of the system has been recorded since that time. The manufacturer's design targets included a Forced Outage Rate of 1.18 percent (103.6 hrs per year) and a Scheduled Outage Rate of 0.82 percent (72 hrs per year), with a total Energy Availability of 98 percent. Performance reported from 2003 to 2009 has been as shown in the table below:

Year	Forced Outage (%)	Scheduled Outage (%)	Energy Availability (%)
	Target is 1.18%	Target is 0.82%	Target is 98%
2003	0.74	0.69	98.57
2004	2.73	0.67	96.60
2005	0.93	0.96	98.11
2006	0.12	1.17	98.71
2007	0.81	4.03	95.16
2008	0.93	3.60	95.47
2009	1.87	2.34	95.79

Source: CIGRE B4_203_2010: "HVDC VSC (HVDC light) transmission – operating experiences"

The Forced Outage Rates have largely met expectations, whereas specific events between 2006 and 2009 have led to Scheduled Outage Rates falling above target and Energy Availability falling below target. Most of these events were related to AC equipment and auxiliaries, as opposed to the IGBT valves. The IGBT valves have generally performed better than the targeted performance. With a total of 2916 IGBTs at each converter (5832 in total), the targeted failure rate was 29.2 failures per year (0.5 percent), and the performance by year has steadily improved from 34 failures in 2003/04 to 7 failures in 2009/10.

The Murray Link Project is a +/- 150-kV 220-MW project connecting South Australia to Victoria State by 180 km of underground XLPE cables. The project was commissioned in 2002. The principal performance measure that has been tracked on the project since commissioning is the energy availability, targeted at 98 percent. Results have been as follows:

Energy Availability	2003	2004	2005	2006	2007	2008	2009
Total	95.18%	97.08%	95.39%	98.92%	90.56%	99.17%	99.37%
Scheduled	96.49%	98.77%	97.96%	98.51%	97.91%	99.12%	99.13%
Forced	98.21%	98.04%	97.11%	99.33%	90.98%	99.86%	100.00%

Source: CIGRE B4_203_2010: "HVDC VSC (HVDC light) transmission – operating experiences"

The only significant performance shortfall occurred in year 2007, and was attributable to a failure in the AC Equipment and Auxiliaries category.

As older vintage VSC installations, the Cross Sound and Murray Link converters are not directly comparable to the VSC technology that will be implemented on the Maritime Link Project. However, the specifications now under development for the Maritime Link converters call for Forced Energy Unavailability less than 1.0 percent and Scheduled Energy Unavailability less than 1.5 percent, and total Energy Availability of 98 percent, similar to the targets set on other projects over the past decade. Similarly, the IGBT failure target is 0.5 percent per year, similar to the targets set on other projects over the past decade.

The largest contributions to annual energy unavailability, both for LCC facilities and VSC facilities as summarized above, come from AC equipment and auxiliaries, and transformers in particular. The accumulated industry experience related to AC Equipment and Auxiliaries, in both LCC and VSC facilities, is applicable to the Maritime Link Project, and the lessons learned in recent applications will be factored into the design development and spares strategies for the Maritime Link converters. The specifications for the converter stations include prescribed spares requirements for a list of 26 separate components, including converter transformers and IGBT valves, and the proponents for the converter contract are required to identify supplementary spares requirements as needed to meet the reliability criteria.

Request IR-372:

With reference to CA/SBA IR-218 and Appendix 5.01, page 15, provide a copy of any documents that set forth environmental flow standards for the lower Churchill River with respect to flows (magnitude, frequency, duration, timing, and rate of change).

Response IR-372:

NSPML is not aware that such environmental flow standards have been established.

Request IR-373:

With reference to CA/SBA IR-219 and Appendix 5.01, page 15, provide a copy of any hydrologic studies of the Muskrat Falls project that analyze the power generation potential of the Lower Churchill River.

Response IR-373:

Given that the contractual provisions places the risk of hydrologic performance with Nalcor, this information is not relevant to the Application.

Request IR-374:

With reference to CA/SBA IR-221 and Appendix 6.02, page 9, Table 2.1, please provide historical hourly production data for each existing Nova Scotia wind resource for all years that each has operated. If hourly data is not available, please provide the most detailed data available, for example by month, on-peak and off-peak.

Response IR-374:

Please refer to Synapse IR-5 Attachment 1 for hourly wind generation since 2008.

Request IR-375:

With reference to CA/SBA IR-240 and Appendix 6.03, page 12, please provide the confidential net average heat rates from the July 2012 GRA-Refresh for each of the thermal units and combustion turbine units.

Response IR-375:

Please refer to CA IR-78 Attachment 3, pdf page 17 of 222.

Request IR-376:

With reference to CA/SBA IR-265 and Appendix 6.06, page 1, please provide all calculations, spreadsheets, reports, work papers, Strategist inputs and outputs, and any other materials showing all the data and calculations used to obtain the Study Period NPVs for the three alternatives against the base load forecast.

Response IR-376:

The annual planning period values shown in Appendix 6.06 are taken from the Strategist model. Strategist takes the input data, executes the run and produces the output results. There are no intermediate materials used to obtain these values.

Please refer to CA/SBA IR-331 parts (b) and (c) for the input and output reports for these cases. Strategist determines the end effects costs internally as a single net present value calculation and adds it to the planning period costs to give the study period costs. The Study Period Plan Comparison in the last page of the output reports show the end effects value calculated by Strategist for each case. The study period costs of the Maritime Link case have been adjusted to account for the 35 year depreciation life of the Project versus the 50 year operating life. Please refer to CA/SBA IR-334 (c) for the derivation of the adder.

Request IR-377:

With reference to CA/SBA IR-266 and Appendix 6.06, page 2. Please provide all calculations, spreadsheets, reports, workpapers, Strategist inputs and outputs, and any other materials showing all the data and calculations used to obtain the Planning Period annual operating costs and capital costs for the Maritime Link and Other Import comparison against the base load forecast.

Response IR-377:

Please refer to SBA IR-331 parts (b) and (c) for the Strategist input and output reports. The annual planning period values shown in Appendix 6.06 are taken from the Strategist model. Strategist takes the input data, executes the run and produces the output results. There are no intermediate materials used to obtain these values.

Request IR-378:

With reference to CA/SBA IR-267 and Appendix 6.06, page 3. Please provide all calculations, spreadsheets, reports, workpapers, Strategist inputs and outputs, and any other materials showing all the data and calculations used to obtain the Planning Period annual operating costs and capital costs for the Maritime Link and Indigenous Wind comparison against the base load forecast.

Response IR-378:

Please refer to SBA IR-331 parts (b) and (c) for the Strategist input and output reports. The annual planning period values shown in Appendix 6.06 are taken from the Strategist model. Strategist takes the input data, executes the run and produces the output results. There are no intermediate materials used to obtain these values.

Request IR-379:

With reference to CA/SBA IR-268 and Appendix 6.06, page 4. Please provide all calculations, spreadsheets, reports, workpapers, Strategist inputs and outputs, and any other materials showing all the data and calculations used to obtain the Study Period NPVs for the three alternatives against the low load forecast.

Response IR-379:

The annual planning period values shown in Appendix 6.06 are taken from the Strategist model. Strategist takes the input data, executes the run and produces the output results. There are no intermediate materials used to obtain these values.

Please refer to SBA IR-331 parts (b) and (c) for the input and output reports for these cases. Strategist determines the end effects costs internally as a single net present value calculation and adds it to the planning period costs to give the study period costs. The Study Period Plan Comparison in the last page of the output reports show the end effects value calculated by Strategist for each case. The study period costs of the Maritime Link case have been adjusted to account for the 35 year depreciation life of the Project versus the 50 year operating life. Please refer to SBA IR-334 (c) for the derivation of the adder.

Request IR-380:

With reference to CA/SBA IR-269 and Appendix 6.06, page 5. Please provide all calculations, spreadsheets, reports, workpapers, Strategist inputs and outputs, and any other materials showing all the data and calculations used to obtain the Planning Period annual operating costs and capital costs for the Maritime Link and Other Import comparison against the low load forecast.

Response IR-380:

Please refer to CA/SBA IR-331 parts (b) and (c) for the Strategist input and output reports. The annual planning period values shown in Appendix 6.06 are taken from the Strategist model. Strategist takes the input data, executes the run and produces the output results. There are no intermediate materials used to obtain these values.

Request IR-381:

With reference to CA/SBA IR-270 and Appendix 6.06, page 6. Please provide all calculations, spreadsheets, reports, workpapers, Strategist inputs and outputs, and any other materials showing all the data and calculations used to obtain the Planning Period annual operating costs and capital costs for the Maritime Link and Indigenous Wind comparison against the low load forecast.

Response IR-381:

Please refer to SBA IR-331 parts (b) and (c) for the Strategist input and output reports. The annual planning period values shown in Appendix 6.06 are taken from the Strategist model. Strategist takes the input data, executes the run and produces the output results. There are no intermediate materials used to obtain these values.

Request IR-382:

With reference to CA/SBA IR-274, does the addition of the Maritime Link improve the transfer capability between Nova Scotia and New Brunswick? If so, please provide the incremental transfer limit to the Nova Scotia – New Brunswick interface as a result of the Maritime Link.

Response IR-382:

Please refer to CA/SBA IR-329.

Request IR-383:

With reference to CA/SBA IR-276, please provide all the Strategist input data for each final model run, including system level and scenario level inputs, choices, or settings. Provide the data in Excel files. Please provide full documentation on the sources of the data.

Response IR-383:

Please refer to CA/SBA IR-331 (c). The data is not available in Excel files.

Request IR-384:

With reference to CA/SBA IR-277, please provide all Strategist output data for each final model run, including unit level operating performance indicators. Outputs should be reported separately at the monthly and annual level. Energy-related outputs should be reported for the standard 5x16, 2x16, and 7x8 market periods. Provide the data in Excel files.

Response IR-384:

Please refer to CA/SBA IR-331 (b) and (d).

Request IR-385:

(a) With reference to CA/SBA IR-278, please provide copies of all studies performed for the Nova Scotia Department of Energy that relate to the Maritime Link Project or any of its resource planning alternatives, including the January 16, 2003 study by Power Advisory LLC, *Analysis of Proposed Development of the Martime Link and Associated Energy from Muskrat Falls Relative to Alternatives*, along with its Addendum.

(b) Please comment on the reasonableness of the analysis and findings referenced in part (a).

(c) Please comment on the reasonableness of the analysis and findings of other reports provided in response to part (a).

Response IR-385:

(a) As explained in CA/SBA IR-278, and CA IR-15, NSPML did not perform any studies for the referenced report, the report is not in evidence in this proceeding, and NSPML is neither the author nor the sponsor of the report. Questions about the report are better posed to the author or sponsor of the report.

(b) NSPML has no comment on the reasonableness of the analysis and findings in the report.

(c) Not applicable.

Request IR-386:

With reference to CA/SBA IR-279 and Appendix 6.06, p. 2, please prepare similar tables and graphs for the Maritime Link and Other Import comparison against the base load forecast showing the annual and NPV impacts at the retail level for the following NSPI customer classes:

(a) Domestic Service Tariff (rate codes 2, 3, and 4)

(b) Domestic Service Time-of-Day Tariff (rate codes 5 and 6)

(c) Small General Tariff (rate code 10)

(d) General Tariff (rate code 11)

(e) Small Industrial Tariff (rate code 21)

Response IR-386:

In response to CA/SBA IR-279, NSPML explained that the referenced analysis does not determine retail impact by NS Power customer class. Appendix 6.06, page 2 shows a Present Value calculation for the overall investment alternatives. This Information Request asks for something that does not exist, and therefore, that cannot be provided.

Request IR-387:

With reference to CA/SBA IR-280 and Appendix 6.06, p. 3, please prepare similar tables and graphs for the Maritime Link and Indigenous Wind comparison against the base load forecast showing the annual and NPV impacts at the retail level for the following NSPI customer classes:

(a) Domestic Service Tariff (rate codes 2, 3, and 4)

(b) Domestic Service Time-of-Day Tariff (rate codes 5 and 6)

(c) Small General Tariff (rate code 10)

(d) General Tariff (rate code 11)

(e) Small Industrial Tariff (rate code 21)

Response IR-387:

In response to CA/SBA IR-280, NSPML explained that the referenced analysis does not determine retail impact by NS Power customer class. Appendix 6.06, page 3 shows a Present Value calculation for the overall investment alternatives. This Information Request asks for something that does not exist, and therefore, that cannot be provided.

Request IR-388:

With reference to CA/SBA IR-281 and Appendix 6.06, p. 5, please prepare similar tables and graphs for the Maritime Link and Other Import comparison against the low load forecast showing the annual and NPV impacts at the retail level for the following NSPI customer classes:

(a) Domestic Service Tariff (rate codes 2, 3, and 4)

(b) Domestic Service Time-of-Day Tariff (rate codes 5 and 6)

(c) Small General Tariff (rate code 10)

(d) General Tariff (rate code 11)

(e) Small Industrial Tariff (rate code 21)

Response IR-388:

In response to CA/SBA IR-281, NSPML explained that the referenced analysis does not determine retail impact by NS Power customer class. Appendix 6.06, page 5 shows a Present Value calculation for the overall investment alternatives. This Information Request asks for something that does not exist, and therefore, that cannot be provided.

Request IR-389:

With reference to CA/SBA IR-282 and Appendix 6.06, p. 6, please prepare similar tables and graphs for the Maritime Link and Indigenous Wind comparison against the low load forecast showing the annual and NPV impacts at the retail level for the following NSPI customer classes:

(a) Domestic Service Tariff (rate codes 2, 3, and 4)

(b) Domestic Service Time-of-Day Tariff (rate codes 5 and 6)

(c) Small General Tariff (rate code 10)

(d) General Tariff (rate code 11)

(e) Small Industrial Tariff (rate code 21)

Response IR-389:

In response to CA/SBA IR-282, NSPML explained that the referenced analysis does not determine retail impact by NS Power customer class. Appendix 6.06, page 6 shows a Present Value calculation for the overall investment alternatives. This Information Request asks for something that does not exist, and therefore, that cannot be provided.