REQUESTOR NAME: **BC Sustainable Energy Association and Sierra Club of British Columbia**

INFORMATION REQUEST ROUND NO: 2

TO: **FortisBC Inc.**

DATE: **September 30, 2011**

PROJECT NO: **3698620**

APPLICATION NAME: **2012-2013 Revenue Requirements, 2012-2013 Capital Expenditure Plan, and 2012 Integrated System Plan**

2.16.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, Resource / Load Balance Analysis, p.52

Fortis states, "The actual resource / load gap will depend upon load growth, DSM effectiveness and the availability of existing contracts, in particular the renewal terms of the BC Hydro PPA.

Load growth: FortisBC's load is expected to grow over time. The primary factor influencing the pace of residential load growth is customer count. However, other factors such as widespread adoption of new electric technologies (e.g. electric vehicles) and societal changes (e.g. a move to smaller residences) may have significant impacts. …

DSM Contribution: … As DSM is a non-firm resource with results subject to voluntary customer participation, it is prudent to consider a possible range of DSM impacts on resourcing needs rather than as a single pre-determined percentage of load growth avoidance."

2.16.1 Does Fortis believe that the future performance of energy-efficiency resource portfolios is subject to greater uncertainty than future load growth?

2.16.2 If yes, please explain the basis for this conclusion.

2.17.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, Load Forecast, p.41

"FortisBC's load forecast is prepared annually and is composed of individual forecasts for each of the residential, wholesale, industrial, commercial and irrigation and lighting classes and well as system losses and DSM savings. The methodology is primarily econometric in nature with survey data also employed. Forecasts of provincial housing starts and provincial Gross Domestic Product (GDP) by sector are primary drivers of sales. GDP and housing starts forecasts are provided by the Conference Board of Canada (CBoC).

Residential load growth is driven by the increase in customer count, which itself is determined econometrically as a function of provincial housing starts. This is then combined with forecast use per customer. Based on recent trends and the results of residential end use surveys, it is assumed that residential use per customer before DSM will remain constant over the forecast period. [underline added]

The commercial class is comprised of many diverse sectors including commercial enterprises, school, hospitals, other public buildings as well as small industrial

sites. As such the energy use in this class has been found to be well correlated with provincial real gross domestic product growth and has been forecast on that basis.

FortisBC's wholesale load is served to the communities of Penticton, Kelowna, Grand Forks, Summerland, Nelson, and two communities in the BC Hydro service territory. These loads are primarily residential and commercial in nature. Wholesale energy use is forecast based on an econometrically derived relationship with provincial real GDP.

Industrial loads are forecast based partly on survey data supplied by customers, and where customer information is not available, by forecast GDP growth rates in each industrial sector. In the long term, composite GDP growth rates of industrial sectors are used to escalate the entire industrial load. Out of 24 listed sectors by CBOC, only 12 sectors contribute to the FBC's industrial load growth rates, with 95 percent of growth determined by five sectors: agriculture, forestry, manufacturing, utilities, and commercial service.

The final two customer classes are irrigation and lighting which combined are less than two percent of gross system load. Irrigation loads are forecast to be constant on a before DSM basis while lighting loads grow based on a trend analysis.

2.17.1 Please explain the basis for assuming the residential use per customer across all end uses will remain constant for the next 30 years, providing any reports, analysis, data or other support for this assumption in light of impending increases in Canadian efficiency standards, particularly lighting.

2.17.2 Does Fortis agree that its econometric electric load forecasts for each customer class described above predict uninterrupted continuation of correlations observed in the past between electricity use, customer counts and GDP? If not, please explain why not.

2.18.0 Reference: B-1-2, 2012 Integrated System Plan, 2.4.3.3 Demand Side Management as a Source of Capacity, p.22

Fortis states that "..., the widespread adoption of DSM programs and energy efficiency targets as substitutes for firm generation resources has injected a large amount of uncertainty into future load forecasts. Should load growth exceed forecasts, reliance on DSM and energy efficiency programs may lead to both energy and capacity deficits. Overall failure to meet these DSM and efficiency targets could make system operations more challenging."

2.18.1 Please provide evidence that supports the conclusion that DSM savings are more likely to fall below targets than exceed them.

2.18.2 Has Fortis conducted any research to determine how often and to what extent efficiency portfolios have exceeded annual savings acquisition targets?

18.2.1 If so, please provide the results of this research and supporting documentation.

18.2.2 If not, why not?

2.18.3 Does Fortis agree that the primary risks of underperformance by an efficiency utility are that
(i) not enough customers will participate in the portfolio's programs;
(ii) the customers who do participate do not install enough of the high-efficiency measures the portfolio promotes; and/or
(iii) the high-efficiency technologies customers do install might not save as much as electricity as predicted?

18.3.1 If not, please indicate why not, identifying and explaining any other drivers omitted from this list.

18.3.2 Does Fortis agree that one effective way to correct the first two problems (described in Q2.18.3(i) and (ii)) is by raising financial incentives as high as 100 percent of the high-efficiency incremental or installed costs?

2.19.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, s.1.3 BCUC Directives, p.6

Quoting the previous BCUC decision on Fortis's 2010 DSM Plan: "The Panel … encourages FortisBC to incorporate additional best practices, empirical research, and evaluations and lessons learned from pilot programs and program models in other jurisdictions in the preparation of its long-term plan".

2.19.1 Is Fortis aware that utilities in California, Connecticut, and Vermont have achieved annual energy savings exceeding 1.5 percent of sales during the last three years (2008-2010)?

2.19.2 Is Fortis aware that utilities in Hawaii, Massachusetts, Nevada, the Pacific Northwest, and Rhode Island reported annual energy savings of between 1.0 and 1.5% of annual sales during the last three years?

2.19.3 Is Fortis aware that energy efficiency portfolio administrators in Nova Scotia, Rhode Island, and Vermont are planning to save 2 percent or more of annual sales in two or more of the next 5 years?

2.20.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, s.5.2.1.1 Application of Planning Reserve Margin, p.54

In justifying the need for maintaining its planning reserve margin, Fortis explains the need to protect against the following risks:

"Unexpectedly high loads, typically due to extreme weather events: In such circumstances it may not be prudent to rely on market energy to meet supply shortfalls because the market energy is likely to come from geographically proximate areas that may be experiencing the same weather, with the result that prices may be very high or excess supply may simply be unavailable at the time of greatest need.
A period of accelerated load growth that outpaces the installation of new power supply resources: Given the long lead time associated with most

electricity generation projects, it is inadvisable for utilities to function reactively and wait until unforeseen load spikes occur to plan more resources. Carrying a PRM provides a buffer which allows a utility adequate time to react to unforeseen load changes and acquire new assets before load becomes unmanageable."

2.20.1 Does Fortis agree that energy efficiency investment can help mitigate the risk of unexpectedly high loads due to extreme weather events, for example, high-efficiency air-conditioners save more electricity the hotter the weather?

20.1.1 If not, please explain why not, providing supporting documentation for the answer.

2.20.2 Does Fortis agree that energy efficiency investment can help mitigate the risk of accelerated load growth caused by unexpectedly high economic growth, since efficiency programs can reach a larger eligible population of new construction and business expansion?

20.2.1 If not, please explain why not, providing supporting documentation for the answer.

2.20.3 Does Fortis agree that discretionary retrofit programs targeting the early retirement of existing inefficient electrical equipment such as lighting and HVAC can be scaled up if load growth accelerates unexpectedly?

20.3.1 If not, please explain why not, providing supporting documentation for the answer.

2.20.4 Does Fortis agree that it has not accounted for any of the risk-mitigating advantages of energy-efficiency resources described in the previous three IRs in its resource planning, implicitly assigning them zero value?

20.4.1 If not, please explain why not, providing supporting documentation for the answer.

2.21.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, s.5.2.1.2 Capacity Resource / Load Gap, p.58

2.21.1 Does Fortis agree that each MW of load reduction from energy-efficiency resources lowers the amount planning reserve capacity needed by an additional 12-15 percent, i.e., each 1 MW of DSM displaces the need for 1.12 – 1.15 MW of installed generating capacity?

2.21.2 If not, please explain why not, providing supporting documentation for the answer.

2.22.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, s.5.2.1.2 Capacity Resource / Load Gap, p.59-60

2.22.1 Does Fortis agree that it anticipates capacity shortfall in 2030 in June, and in 2040 in June and July?

22.1.1 If not, please explain why not, providing supporting documentation for the answer.

2.22.2 Does Fortis agree that this expectation indicates that summer peak demand savings from energy efficiency resources would avoid some avoided generating capacity costs by reducing the need for peak reserve capacity?

22.2.1 If not, please explain why not, providing supporting documentation for the answer.

2.23.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, s.5.2.2 FortisBC Energy Resource/Load Balance, p.65

2.23.1 Is it correct to conclude that the energy gap first appears in 2017 and increases thereafter?

2.23.2 Does Fortis agree that accelerating energy-efficiency resource acquisition in the next five years to meet 100% of growth forecast over the next five years would postpone the arrival of the energy gap?

23.2.1 If so, by how long would this level of savings postpone it? Please provide supporting calculations for the answer.

23.2.2 If not, please explain why not, providing supporting documentation for the answer.

23.2.3 Does Fortis agree that such acceleration over the next five years would reduce the amount of uncertainty about long-term DSM performance risk?

23.2.4 If not, please explain why not, providing supporting documentation for the answer.

2.23.3 By how long would the energy resource gap be postponed assuming achieved 2 percent annual savings over the next five years? Please provide supporting calculations for the answer.

2.24.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, s.6 Resource Options and Strategies

2.24.1 Please explain why Fortis did not consider alternative DSM savings alternatives in its comparison of resource options and strategies, that is, considering side-by-side three competing choices consisting of “save, buy, and/or build”?

2.25.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, Table 6.1.2-B New Clean Energy Resources Rating Table (Sorted by Rating)

Fortis applied the following criteria in ranking competing supply options:

- Appropriate size

- Environmental impact and adherence to the Clean Energy Act
- Appropriate energy shape
- Comparative economics test – least cost

2.25.1 How would Fortis rank the High DSM option rejected in the DSM Plan (meeting 90 percent of load growth) according the these criteria relative to the supply options evaluated?

2.26.0 Reference: Exhibit B-1-2, 2012 Integrated System Plan, Appendix F, *Clean Energy Act* Objectives, p. 1

2.26.1 Please explain why the following British Columbia Energy Objectives are described as "not applicable" to the ISP and DSM Plan, providing any supporting documentation for the answer:
(b) to take demand side measures and to conserve energy, including the objective of the authority reducing its expected increase in demand for electricity by the year 2020 by at least 66 percent;
(d) to use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources;
(h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia;
(i) to encourage communities to reduce greenhouse gas emissions and use energy efficiently;
(k) to encourage economic development and the creation and retention of jobs.

2.27.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, s.3.5 Collaborative Programs, p.25; Exhibit B-5, FBC Response to BCSEA IR1 Q2.1

The DSM Plan states: "During 2012, FortisBC will explore, initiate or continue partnerships in the following collaborative programs which directly support Policy Action 2 of the *BC Energy Plan*:

- LiveSmart BC: partnership with BC Hydro, FortisBC Energy Inc. and the BC Ministry of Energy and Mines. LiveSmart BC is a residential retrofit program that encourages customers to upgrade building envelopes (insulation, windows, doors, draft proofing) and upgrade home space and water heating systems;"

FBC's Response to BCSEA IR1 Q2.1 provides examples of collaborative programs.

2.27.1 Please explain the nature and extent of the coordination, if any, between FortisBC's electric DSM program and FortisBC Energy Utilities gas DSM program and portfolio design, development, assessment, planning, implementation, management, tracking, and evaluation.

2.28.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, CDPR Ramp Rates, p.10

2.28.1 In addition to factors listed, does FortisBC agree that it can control program ramp rates through its program design and implementation choices by adjusting financial incentives and marketing strategies, especially in discretionary retrofit markets promoting early replacement of functioning inefficient equipment?

2.28.2 If not, please explain why not, providing supporting documentation for the answer.

2.29.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, s.1 Overview, p.1

"The overall DSM savings target is to offset 50 percent of load growth over the planning period."

2.29.1 Is Fortis aware that leading utilities achieving the highest percentage savings do not cap incentives at 50% as Fortis does in its high case?

2.30.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, p. 5, Prohibition on Use of RIM test; p. 12: Choice of Moderate over High DSM Scenario

At p. 12, Fortis states: "The High option also received support, but escalating the 2012 DSM Plan to the High option, is not considered prudent because it contains more uneconomic measures (B/C ratio 10 < 1.0), increases spending by paying a larger portion of the TRC cost, and hence increases the magnitude of rate increases due to the decreased load. [underline added

At pp.4-5, FortisBC states: "The DSM Regulation also provides in section 4 that the Commission, in determining the cost-effectiveness of a DSM measure proposed in a long-term resource plan or an expenditure schedule: …

(6) may not determine that a proposed measure is not cost effective on the basis of a 8 rate-impact measure (RIM) test."

2.30.1 Please reconcile the third justification (underlined) with s.4(6) of the DSM Regulation.

2.31.0 Reference: FortisBC Energy Utilities 2012-2013 Revenue Requirements Application and Rates Application

2.31.1 Please confirm that FortisBC Energy Utilities (FEU, natural gas) propose to increase DSM spending by at least 50% year over year, including $10 million annually on early retirement of inefficient furnaces with a TRC B/C ratio well below 1.0.

2.31.2 Does FortisBC believe the FEU 2012-13 DSM plan to be imprudent?

2.31.3 If not, please explain why this is prudent for FEU gas but would be imprudent for FEU electric.

2.32.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, Exhibit B-1-6, Errata, Figure 3.2.4, Acquired DSM vs. Load Growth Forecast

2.32.1 Please explain why FortisBC has chosen DSM ramp rates that decline from 2016 precisely when the load growth starts expanding?

2.32.2 Did FortisBC develop, examine, and compare any scenarios accelerating DSM ramp rates more rapidly to full 85% achievable of economic potential?

2.32.3 Did FortisBC analyze buy vs. build options using energy and peak demand forecasts net of the high DSM case? Why not?

32.3.1 If not, please explain why not.

2.33.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, 3.4.2 Commercial Sector Programs, Building Improvement Program (BIP), p.21; 3.4.3 Industrial Programs, Industrial Efficiency, p.23; Appendix C, Conservation and Demand Potential Review

The DSM Plan (p.21) states the Company's financial incentive design: "FortisBC also will provide rebates towards the incremental cost of efficiency measures compared to standard "baseline" construction. The rebate entitlement is based on estimated annual kWh savings, with the maximum rebate calculated to achieve a two-year payback on incremental cost." [underline added]

FortisBC indicates that the same design applies to industrial efficiency measures. (p. 23)

The CDPR provides the following information on financial incentive structure for General Service customers:

"Rebate structure – General Service rebates are the lesser of:

"Five cents per annual kWh saved; 50% of installed retrofit cost;

100% of incremental cost for new construction; or amount necessary to achieve a two-year payback."

2.33.1 Does Fortis agree that the third criterion (underlined) will dominate the other two, i.e., that the 2-year payback requirement will serve as a cap since it will usually be the most stringent of the three?

2.33.2 Does Fortis agree that 5 cents/kWh saved annually translates roughly to 0.6 cents/kWh for measures with 15-year life expectancy at a 10% discount rate?

33.2.1 Does Fortis acknowledge that this criterion could limit incentives to less than the incremental cost of non-residential efficiency savings?

33.2.2 Does Fortis agree that a measure could cost ten times more than this amount and still cost far less than the long-run avoided costs of electricity supply?

33.2.3 Does Fortis agree that applying these two criteria runs the risk of forfeiting opportunities for one-time opportunities to improve efficiency in new construction and equipment replacement?

2.34.0 Reference: Exhibit B-4, FBC Response to BCUC IR1 Q296.2, Avoided Power Purchase Costs

2.34.1 When FortisBC calculates its blended avoided cost of energy based in part on the BC Hydro long-run marginal cost of new supply does FortisBC weight the BC Hydro power according to its actual or forecast receipts of power from BC Hydro or according to the maximum receipts of power from BC Hydro available under FortisBC's power purchase agreement with BC Hydro?

2.34.2 Given that BC Hydro has to bear its long-run marginal cost of planning to have enough power to meet its maximum commitment under the power purchase agreement with FortisBC, does it make sense that FortisBC should use the maximum amount of power it is entitled to purchase from BC Hydro for weighting purposes in calculating FBC's blended avoided cost of power?

2.35.0 Reference: Exhibit B-5, FBC Response to BCSEA IR1 Q1.4.1

FortisBC confirms that the Fortis Energy Utilities in their 2012-2013 Revenue Requirements Application are proposing to use a Societal Test rather than the Total Resource Cost (TRC) test as the primary benefit- cost test for demand-side management programs.

FortisBC states: "The FortisBC (electric) DSM program portfolio is sufficiently robust without the use of the Societal Cost Test due to the use of the long-term marginal supply cost in the TRC calculation as mandated in the DSM Regulation. The long-term marginal supply cost, which incorporates the cost of the BC Hydro call for clean power, is currently about twice the current FortisBC marginal supply cost. This creates a larger avoided power purchase benefit and therefore increases the TRC."

2.35.1 Does FortisBC agree that its use of a long-term marginal supply cost incorporating the BC Hydro LRMC for power purchased at embedded cost rates from BC Hydro creates a more economically efficient price signal than using FBC's own (unblended) marginal supply cost?

2.35.2 Does FortisBC agree that screening its electricity DSM programs without using a Societal Cost Test, e.g., omitting the non-energy benefits adder, and using a higher discount rate would distort resource allocation between gas and electric efficiency resources and between their respective supply alternatives?

2.35.3 If not, please explain why not, providing supporting documentation for the answer.

2.36.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, Appendix A, 2009 Customer End-Use Study

At p. 25 of Appendix A, Fortis indicates that 52% of homes heat with gas. At p. 55, the survey results indicate that 50% have central air-conditioning.

2.36.1 Why has Fortis not accounted for or targeted high-efficiency central air-conditioning in homes that heat with gas?

2.37.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, Appendix C, CDPR

2.37.1 In the LiveSmart, Home Improvement Program summarized at pp 12-13, please explain why Fortis is not planning to promote whole-house retrofit of homes with gas heat and central air-conditioning?

2.37.2 Does FortisBC agree that instrumented air sealing and insulation would save both cooling electricity and heating gas, and that savings from both have the potential to be cost-effective whereas savings from either alone may not?

2.37.3 Please explain why FortisBC has not targeted central AC early retirement, when FortisBC Energy Utilities propose the Furnace Scrap-It program?

2.38.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, Appendix C, CDPR

At p. 62, the Conservation and Demand Potential Review considers fuel switching from electricity to natural gas for several end uses.

2.38.1 For the record, please indicate why the CDPR did not consider fuel-switching to high-efficiency gas space heat for the 33% of homes the Fortis territory with electric heat?

2.39.0 Reference: Exhibit B-1-2, 2012 Long-Term Demand-Side Management Plan, Appendix A, 2009 Customer End-Use Study

At p 42, the report indicates that homes in FBC territory average 11 CFLs per home, with 18 incandescents and 15 halogen/other.

2.39.1 Why does Fortis not offer incentives for the direct installation of all cost-effective high-efficiency lamps, including CFLs and LEDs, at the time of the home energy assessment conducted as part of the LiveSmart Home Improvement Program?

2.40.0 Reference: Exhibit B-5, FBC Response to BCSEA IR 1.4.2

2.40.1 For the record, please confirm the response should read “Please see the response to BCSEA IR1 Q4.1.”