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September 13, 2018

FortisBC Energy Inc.

Attn: Diane Roy

By email: gas.regulatory.affairs@fortisbc.com

Dear Madam:

Re: FortisBC Energy Inc. 2017 Long Term Gas Resource Plan ~ Project No.1598946
B.C. Sustainable Energy Association and Sierra Club B.C.
Response to Information Requests from FortisBC Energy Inc.

In accordance with the regulatory timetable established by Order G-132-18 [Exhibit A-7], attached please find BCSEA-SCBC's responses to FBC's information requests [Exhibit B-9].

If further information is required, please contact me.

Yours truly,

William J. Andrews



Barrister & Solicitor

Encl.

BRITISH COLUMBIA UTILITIES COMMISSION

**FortisBC Energy Inc. 2017 Long Term Gas Resource Plan
Project No.1598946**

**British Columbia Sustainable Energy Association and
Sierra Club British Columbia**

**Response
to Information Request No. 1
from FortisBC Energy Inc. (FEI) (Exhibit B-9)**

on BCSEA-SCBC Evidence (Exhibit C2-7)

September 13, 2018

DSM Infrastructure Deferral

**1.0 Reference: DSM Infrastructure Deferral
Exhibit C2-7, pages 4-5
Empirical Examples**

On pages 4 and 5 of Exhibit C2-7, Mr. Grevatt states:

FEI's perception that DSM demand measures are inherently too risky for planning purposes is not supported by Con Edison's successful experience in using DSM to defer infrastructure investments:

"...using DSM to defer projects bought time for demand uncertainty to resolve, leading to better capital decision making. Moreover, widespread policy and cultural shifts favoring energy efficiency may further defer some projects to the point where they are never needed...In fact, Con Edison has projected that in the absence of this program it would have installed up to \$85 million in capacity extensions that may never be needed."

Mr. Grevatt thus describes one example of a utility (Con Edison) using DSM to defer electrical infrastructure investments.

1.1 Please confirm whether Con Edison has deferred any gas transmission infrastructure investments through gas DSM or Demand Response (DR) programs.

- 1.1.1 If yes, please provide details of the deferrals that have resulted from these programs.

RESPONSE:

Mr. Grevatt is not aware of any gas transmission infrastructure deferrals that Con Edison has achieved through gas DSM or DR.

- 1.2 In addition to Con Edison, please provide a list of gas utilities Mr. Grevatt is aware of in North America that have successfully deferred transmission infrastructure investment by reducing peak demand through DSM programs.
 - 1.2.1 For each listed utility, please describe the details of the deferrals made and benefits accrued.
 - 1.2.2 For each listed utility, please describe how similar and applicable the utility's operating and regulatory environment is to FEI's operations.
 - 1.2.3 How many of the listed utilities, including Con Edison, are using Advanced Meter Infrastructure (AMI) with more granular hourly/daily measurement at customer premises to support their estimate of natural gas peak demand and infrastructure deferral?
 - 1.2.4 Does Mr. Grevatt agree that AMI with more granular hourly/daily measurement at customer premises is important to validate the impacts of DSM programs on natural gas peak demand?
 - 1.2.5 In the absence of granular data from AMI, how have the listed natural gas utilities validated the impacts of DSM on peak demand sufficiently to permit deferral of natural gas infrastructure? Please discuss any variances between planned benefits and benefits that were actually accrued.

RESPONSE:

The only publicly available information regarding gas transmission infrastructure deferrals that Mr. Grevatt is aware of concerns Vermont Gas Systems ("VGS"), which routinely includes the impacts of its efficiency programs in its integrated resource planning (IRP). As noted in its revised 2012 IRP, efficiency programs are forecast to not only reduce gas purchases, but also contribute to "delayed

transmission investment during the term of (the) plan.”¹ In its 2001 plan, VGS was even more explicit, concluding that its efficiency programs would produce sufficient peak day savings to delay implementation of at least one transmission system looping project by one year.²

In response to IR 1.2.1, to Mr. Grevatt’s knowledge the details are not publicly available, other than as cited in VGS’ IRP dockets.

In response to IRs 1.2.2 to 1.2.5, Mr. Grevatt’s evidence does not speak to the technical details of how FEI should use DR and DSM to defer infrastructure investments, and such questions are beyond the scope of his remit. Rather, the evidence illustrates that such deferrals should be possible, and therefore that a technical analysis should be carried out according to a Plan and Timeline, and that FEI should develop such a Plan and timeline and submit it to the BCUC.

2.0 Reference: DSM Infrastructure Deferral

Exhibit C2-7, pages 4, 8;

EB-2017-0127 / EB-2017-0128 – DSM Mid-Term Review
Submission of Enbridge Gas Distribution Inc., Appendix D,
pages 1, 3-5;

EB-2017-0127 / EB-2017-0128 – DSM Mid-Term Review
Submission of Enbridge Gas Distribution Inc., Appendix E,
pages 10, 11

Reliability Risk

On page 4 of Exhibit C2-7, Mr. Grevatt states:

Reliability risk can be addressed effectively. For example, a report produced by the Northeast Energy Efficiency Partnerships (NEEP) described Con Edison’s use of binding contracts for demand reduction in the early 2000’s:

For these early projects, the Company chose to contract out the acquisition of demand resources to energy service companies (ESCOs). To address reliability risks its contracts contained both “significant upfront security and downstream liquidated damage provisions”, as well as rigorous measurement and verification requirements, including 100% pre- and post-installation inspections.

On page 8 of Exhibit C2-7, Mr. Grevatt cites the Ontario Energy Board (OEB), Decision and Order EB-2015-0049. As part of this order, the OEB approved a study scope proposed by Enbridge Gas Distribution, Inc. and Union Gas Limited

¹ Vermont Gas Systems, Inc., REVISED Integrated Resource Plan, 2012

² Vermont Gas Systems, Inc., Integrated Resource Plan, 2001

(Enbridge & Union) whose purpose page 1 of Appendix D of EB-2017-0127 / EB-2017-0128 describes as follows:

[...] to evaluate the potential of DSM to avoid or defer (reduce) infrastructure costs through implementation of broad based or geo-targeted DSM to meet the forecasted hourly peak energy demand [...]

EB-2017-0127 / EB-2017-0128 includes the executive summary of the study conducted by ICF Canada. On pages 3-5 of Appendix D, the executive summary's study highlights that it appears possible some infrastructure investments may be reduced through the use of targeted DSM. However, numerous changes to energy policy and utility regulatory structure and utility planning processes would be required to facilitate the use of DSM to reduce infrastructure investments. The study concludes by stating:

[...] Overall, there is currently a fundamental disconnect between the limited risk acceptable to the Utilities in the facilities planning process and the lack of information on the ability of DSM to reliably reduce peak period demand that will need to be addressed before the Utilities would be able to rely on DSM to reduce infrastructure investment:

The lack of measured data on the actual impacts of DSM measures on peak period demand increases the risk (hence the cost) of using DSM to reduce infrastructure investments.

The lack of reliable program implementation cost data for geo-targeted DSM programs makes accurate cost comparisons between facilities and DSM unavailable.

The maximum market penetration rate for geo-targeted DSM programs limits the number of infrastructure projects where geo-targeted DSM programs should be considered as an alternative to infrastructure projects to low growth market areas.

As a result, additional research and additional hourly data by way of additional metered hourly reads (i.e. automated meter reading or infrastructure installation (AMI), as well as pilot studies to determine the cost effectiveness and implementation potential of DSM programs are necessary before the Gas Utilities would be able to rely on DSM to reduce new infrastructure investments as part of the standard facilities planning process [...]

On pages 10 and 11 of Appendix E of EB-2017-0127 / EB-2017-0128, Enbridge and Union outline next steps for addressing the study findings and the OEB's order.

- 2.1 Please discuss your understanding of the measurement technology generally deployed and available in gas versus electric utilities and whether any differences are significant when considering the ability to measure impacts of DSM on peak demand?

RESPONSE:

Mr. Grevatt acknowledges that there are significant differences in peak supply and demand measures, and measurement technologies, between gas utilities and electricity utilities. Further, the availability of line pack in the gas utility sphere means that the underlying physical challenge of meeting peak demand is somewhat different in the gas realm than in the electricity realm. Mr. Grevatt's evidence does not minimize these differences. Rather, his evidence is that while DSM and DR in gas utilities can serve to defer infrastructure investments, realization of these opportunities is currently impeded by information gaps. This is supported by the passages that FEI cites from EB-2017-0127 / EB-2017-0128 above.

- 2.2 Since Mr. Grevatt cites Ontario as an example to support his reasoning, does Mr. Grevatt agree that the Ontario case, including the associated ICF Canada study represents one of the better, if not the most, leading edge examples of DSM impacts on peak demand being explored in a gas utility?

RESPONSE:

Agreed.

- 2.2.1 Please confirm that the associated ICF Canada study represents the latest publicly available findings from the study scope approved by OEB Decision and Order EB-2015-00400049.

- 2.2.1.1 If the BCSEA-SCBC or Mr. Grevatt is aware of any more recent publicly available and relevant information in this proceeding, please provide it along with any source information indicating where on the public record this information can be found.

RESPONSE:

Mr. Grevatt is not aware of any more recent publicly available information in this proceeding but is unable to confirm that the ICF study is the latest. Mr. Grevatt notes, however, that in a public stakeholder meeting held the week of September 3, 2018, in which Mr. Grevatt's colleague Mr. Neme participated, both Enbridge

and Union indicated that they have active pilot projects in the field and are currently gathering data to support such analyses.

- 2.3 Please confirm that the mid-term review and study does not include a defined timeline for completing analysis that would result in providing the requisite data to support DSM as an alternative to natural gas infrastructure investment.

RESPONSE:

The OEB has not yet solicited stakeholder comments on the mid-term review, nor has it issued any orders related to it, therefore it is premature to state any conclusions about what outcomes will occur as a result of the utility filings.

Reference Case DSM Savings Trajectory

**3.0 Reference: Reference Case DSM Savings Trajectory
Exhibit C2-7, pages 9, 17**

Integration of the BC CPR Analysis into the 2017 LTGRP

On page 9 of Exhibit C2-7, Mr. Grevatt states:

FEI relies on the Conservation Potential Review by Navigant Consulting Ltd, which rejects “Maximum Achievable Savings. [...] The CPR provides estimates of energy savings potential in several categories, including Technical, Economic, and Achievable Market Potential, and does so under the Reference Case, Upper Bound, and Lower Bound scenarios.

The BC CPR includes a Market Potential under a single reference case only, whereas the 2017 LTGRP C&EM analysis provided a Reference Case, Upper Bound, and Lower Bound scenario, and the 2017 LTGRP C&EM section includes a sensitivity analysis which directionally demonstrates outcomes from varying incentive levels from the values assumed in the BC CPR.

On page 17 of Exhibit C2-7, Mr. Grevatt concludes that:

[...]The Reference Case savings in the LTGRP are based in the BC CPR’s Market Potential Forecast, which is very likely to significantly underestimate the savings that FEI could be expected to achieve through programs that are designed to maximize savings. Analysis in the CPR of the “Maximum Achievable” savings potential would provide useful information for the BCUC to consider in its determinations regarding the DSM Expenditure Schedules that FEI has filed and will file in the coming years. Absent a fully fleshed out picture of the available savings it is unlikely that FEI will propose savings targets that will maximize the benefits to ratepayers.

- 3.1 Please identify by way of a page reference the BC CPR passage that explicitly rejects maximum achievable potential.

RESPONSE:

The BC CPR Section 5, Market Potential, does not explicitly reject maximum potential. Rather, Mr. Grevatt's evidence is that the CPR *de facto* rejects Maximum Achievable by designing an incentive strategy based on an arbitrary target and then correlating that to historic experience. The CPR states:

“Lastly, the team adjusted sector-level incentive levels to be different percentages of incremental costs until the percentage of 2016 total spending attributable to incentives was similar to 2015 historic values. The calibrated incentive levels produce a weighted average incentive percentage of 56% for the simulated portfolio. This calibrated value coincides well with the initial target of having modelled incentives cover roughly 50% of incremental costs across the portfolio.”³

- 3.2 Please explain BCSEA-SCBC's view as to what, if any, provision in section 44.1 of the Utilities Commission Act requires FEI to provide analysis of “Maximum Achievable” savings as referenced in the above passage.

RESPONSE:

As FEI is aware, the UCA does not specifically refer to “Maximum Achievable savings.” Rather, section 41.1 (2) of the UCA requires a public utility such as FEI to include in its long term resource plan, among other things, a plan of how it intends to reduce energy demand by taking cost-effective demand-side measures, and an explanation of why the demand for energy to be served by any proposed facilities is not planned to be replaced by DSM.

Mr. Grevatt's evidence is that an understanding of the maximum achievable savings would place any proposed savings levels by FEI in a useful context. The Commission has general powers to require the utility provide desired information, e.g. 43(1) “A public utility must, for the purposes of this Act, (a) answer specifically all questions of the commission ...”

³Exhibit B-1, Appendix C-1, British Columbia Conservation Potential Review, Section 5 Market Potential, p.15. (pdf 503)

**4.0 Reference: Reference Case DSM Savings Trajectory
Exhibit C2-7, pages 10, 11, 13
Definition of Optimized Program Design**

On page 10 of Exhibit C2-7, Mr. Grevatt states:

All energy efficiency potential studies, including the BC CPR Market Potential Forecast, include numerous assumptions. Many of these assumptions materially impact the estimates of potential and may not reflect best practices for pursuing all cost effective energy savings. [...] Even though this framing implies that the Market Potential forecast represents all cost effective savings, it clearly does not. Further, it is equally true and important to note that actual C&EM programs that are designed to maximize the amount of cost effective DSM savings captured may produce significantly more savings than is suggested by the Market Potential Forecast.

On page 11 of Exhibit C2-7, Mr. Grevatt states:

[...] developing program outreach and messaging so as to maximize savings, coupled with an easy and effective participation process, can lead to increased savings by increasing customers' willingness to adopt high efficiency measures. However, such a delivery/incentive scenario is not presented in the LTGRP.

On page 13 of Exhibit C2-7, Mr. Grevatt states:

When a conservation potential study underestimates the amount of cost effective savings that are available, either by failing to appropriately quantify certain measures, i.e., omitting opportunities outright, or by assuming non-optimized program designs [emphasis added] that are calibrated to past performance, the record of a proceeding may be insufficient to support a well-informed decision.

4.1 Please provide a list of objective criteria for determining, before program deployment, whether program design is optimized.

RESPONSE:

Mr. Grevatt's professional view is that an appropriate checklist of criteria for optimized program design would ensure that the following questions can be answered affirmatively:

- **Is the technology sufficiently validated to ensure that savings will be achieved, and customers will be satisfied with its performance?**
- **Do the program goals reflect a significant portion of the available savings, and is the program strategy designed to achieve them?**
- **Will the incentive strategy be sufficient to attract desired levels of participation?**

- **Are participation requirements crystal clear, and not burdensome, so that the program reduces barriers to participation rather than creating new barriers?**
- **Is the delivery infrastructure adequate for meeting desired levels of participation?**
- **Do key players in the delivery infrastructure have the information and resources required to succeed in delivering the program?**
- **Will the Outreach and Marketing/Information strategy engage enough potential participants to ensure desired participation levels can be met?**
- **Will these criteria be achieved cost-efficiently, meaning without the expenditure of unnecessary funds?**
- **Will the program design meet jurisdictional cost-effectiveness requirements?**

4.2 Please describe the media, key messages and processes for outreach and messaging that Mr. Grevatt feels would maximize savings.

4.2.1 What is the approximate cost to produce this level of outreach and messaging?

RESPONSE:

In the cited passage, Mr. Grevatt makes the point that how messaging is approached will have a material impact on participation levels. Key messages and processes for outreach will vary depending on the specific measures and the target customer group. In assuming past performance as a benchmark, the CPR tacitly assumed FEI would do what it had done before, without assessing whether the program was optimized or if participation could be increased by changing outreach and messaging strategies.

Given the general nature of this question, and the fact that Mr. Grevatt's expertise is not in developing marketing and outreach budgets, it is not possible for Mr. Grevatt to suggest cost parameters in response to 4.2.1.

4.3 Please provide a list of objective criteria for determining, before program deployment, whether a program provides an "easy and effective participation process".

RESPONSE:

In Mr. Grevatt's professional view, an "easy and effective participation process" is one that obtains from the participating customer data that are necessary for program implementation and EM&V, that will result in favorable customer satisfaction ratings, and that will not drive potential participants away due to the perception that the "hassle factor" is too great relative to the value gained through participation. Mr. Grevatt has not reviewed, and takes no position on,

whether FEI's past DSM programs provided an easy and effective participation process. Mr. Grevatt's point, on this topic, is that by using past practice as a benchmark, the CPR neglected the opportunity to assess whether optimization of participation processes could increase participation and savings.

**5.0 Reference: Reference Case DSM Savings Trajectory
Exhibit C2-7, pages 11-12**

**Prevalence and Achievement of Maximum Achievable
Potential in Conservation Potential Studies**

On page 11 of Exhibit C2-7, Mr. Grevatt states:

[...] unlike the BC CPR, many potential studies include an assessment of maximum achievable savings, which is generally understood to represent an upper bound to the amount of savings that programs that are designed with the intention of capturing all cost effective savings will achieve with high incentives and wide-reaching marketing and outreach campaigns.

Mr. Grevatt further provides the Assessment of Iowa's Energy Efficiency Potential as an example of such a practice.

5.1 How many North American jurisdictions prepare long-term (i.e. time horizon of ten years or more) conservation potential studies?

RESPONSE:

Mr. Grevatt does not know how many jurisdictions include assessments of maximum achievable potentials in long-term conservation potential studies. Nevertheless, Mr. Grevatt believes it should help the regulator to assess the adequacy of a utility's DSM plan to have that information.

5.1.1 Please list the subset of these jurisdictions that include assessments of maximum achievable savings in their long-term conservation potential studies and persistently achieve such maximum achievable savings across their entire DSM portfolios in their program actuals?

RESPONSE:

Mr. Grevatt does not have information on the jurisdictions that persistently pursue maximum achievable savings. However, it is reasonable to assume that those

states that are achieving over 1.0% gas savings as a percent of sales are likely to be pursuing maximum achievable savings or at least a relatively large fraction of maximum achievable. Looking at the achievements of those states and at an analysis of maximum achievable for FEI would help the regulator by informing a decision on the adequacy of a DSM plan.

- 5.1.2 Please list the subset of these jurisdictions that use individually optimized delivery and marketing mechanisms for each of their identified energy conservation measures as one of the inputs into maximum achievable savings?

RESPONSE:

Please see Mr. Grevatt's response to 5.1.1.

- 5.1.3 On average, what incentive levels as a proportion of measure incremental cost and what marketing/outreach budget per expected DSM participant do these studies use to develop their maximum achievable potential?

RESPONSE:

In general, analysis of maximum achievable potential does not impose limits on incentive levels or marketing and outreach budgets so long as the potential is cost-effective.

- 5.2 Please describe the key design features that, prior to program deployment, define a "wide-reaching marketing and outreach campaign" versus an ordinary marketing and outreach campaign.

RESPONSE:

Please see the response to IR 4.2.

- 6.0 Reference: Reference Case DSM Savings Trajectory
Exhibit C2-7, pages 12 and 13 & Appendix B;
Testimony to Colorado Public Utilities Commission**

On page 13 of Exhibit C2-7, Mr. Grevatt states:

In its final decision, the Colorado PUC rejected PSCo's proposed reduced savings goals based on PSCo's potential study, and declined to approve a non-unanimous settlement proposal of 400 GWh/year annual savings.

- 6.1 Please confirm that Mr. Grevatt's expert testimony to the Colorado Public Utilities Commission does not directly discuss natural gas energy savings potential.

RESPONSE:

Confirmed.

- 6.2 Please confirm that Mr. Grevatt's expert testimony to the Colorado Public Utilities Commission does not include any information on how Colorado's Demand Side Management regulatory framework compares to British Columbia's framework.

RESPONSE:

Confirmed.

- 7.0 Reference: Reference Case DSM Savings Trajectory
Exhibit C2-7, pages 15-16
2017 ACEEE State Energy Efficiency Scorecard**

Mr. Grevatt states:

Reproduced below for convenience is Table 11 from ACEEE's State Energy Efficiency Scorecard, showing that for 2016 there were 14 U.S. states that achieved a greater percentage of natural gas savings than the 0.52% savings as a percent of sales that FEI expects to achieve in 2018.

Table 11, which Mr. Grevatt reproduced for convenience, displays 54 jurisdictions.

- 7.1 Please confirm that FEI's estimated 0.52% savings as a percent of sales falls within the top 30 percent of the 54 jurisdictions displayed in Table 11.

RESPONSE:

Confirmed. Of the 54 jurisdictions shown in Table 11, 18 show "0" gas savings, suggesting that in these jurisdictions there are no policies in place to require energy efficiency programs. Of the 36 jurisdictions that do show gas savings, FEI is in the top 40%.

- 7.2 Please confirm that the 2017 ACEEE State Scorecard which is the basis for the natural gas conservation information in the United States does not provide data or information on the cost effectiveness of the natural gas savings reported.

RESPONSE:

Confirmed. The Scorecard explains its rationale for this as follows:

“We did not attempt to include program cost effectiveness or level of spending per unit of energy savings. All states have cost-effectiveness requirements for energy efficiency programs. However the wide diversity of measurement approaches across states makes comparison less than straightforward. Also, several states require program administrators to pursue all cost-effective efficiency. Although some states have prioritized low acquisition costs and encouraged maximizing the degree of cost effectiveness, promoting larger amounts of marginally cost-effective energy savings is another valid approach.”⁴

- 7.3 Please confirm that the 2017 ACEEE State Scorecard which is the basis for the natural gas conservation information in the United States does not provide data or information on the space heating minimum energy performance standards in the jurisdictions of the reported natural gas savings.

RESPONSE:

Confirmed.

⁴ ACEEE 2017 State Scorecard, p.21.