BRITISH COLUMBIA UTILITIES COMMISSION

Project No.3698896, FortisBC Inc. 2016 Long Term Electric Resource Plan (LTERP) and Long Term Demand Side Management Plan (LT DSM Plan)

British Columbia Sustainable Energy Association and Sierra Club British Columbia

Response to BC Old Age Pensioners, *et al* (BCOAPO, *et al*) IR [Exhibit C8-5] on BCSEA-SCBC Evidence [Exhibit C5-5]

June 29, 2017

1.0 Reference: Exhibit C5-5, page 4

1.1 How many states reported net savings of less than 1% for 2015?

RESPONSE:

Including the District of Columbia, ACEEE determined that 35 states reported net savings under 1.0%.

1.2 How many states reported net savings of less than 0.8% for 2015?

RESPONSE:

Including the District of Columbia, ACEEE determined that 32 states reported net savings under 0.8%.

1.3 Do the savings estimates relate just to the impacts of efficiency programs, or do they also include the impact of codes and standards?

RESPONSE:

This level of detail is not available in the ACEEE report, and it would be beyond the scope of EFG's resources for this project to conduct the research necessary to precisely respond to the question. However, the practice of claiming savings for Codes and Standards initiatives is not yet common in the U.S. Utilities in several states, including California, Massachusetts, Rhode Island, Arizona and Oregon do currently include Codes and Standards programs in their savings reports. Others may as well.

1.4 Please clarify whether the savings reported in the 2016 ACEEE State Scorecard are targets or actual results and provide supporting references.

RESPONSE:

Mr. Grevatt confirmed through personal communications with Weston Berg, the lead author of the 2016 Scorecard, that actual results rather than targets were used. Mr. Berg referenced the following text in the 2016 Scorecard:

"We report 2015 statewide net energy efficiency savings as a percentage of 2015 retail electricity sales and scored the states on a scale of 0 to 7. We awarded up to 6 points last year. Our intention in boosting the number of points for energy savings is to increase our emphasis on actual performance. We relied primarily on states to provide these data. Forty-four states and the District of Columbia completed some or all of our data request form. Where no data for 2015 were available, we used the most recent savings data available, whether from state-reported 2014 savings from the 2015 State Scorecard or from EIA (2016a, 2016b)."[1]

1.5 If the values are "targets," is there any information as to how actual savings for 2015 compared to planned savings for the year 2015, particularly in those states where the planned value is not legislated?

RESPONSE:

See response to 1.4.

1.6 Are there particular DSM measures that those states with high savings percentages in the 2016 ACEEE State Scorecard commonly offer and which are not offered by FortisBC? If so, please outline and indicate if they would be applicable to FortisBC, in particular its low income customer segment.

RESPONSE:

Mr. Grevatt has not done such an analysis, and it would be beyond his resources on this project to do so. See BCSEA response to CEC IR 1.4.

1.7 Are there particular tools for enhancing customers' participation that those states with high savings percentages in the 2016 ACEEE State Scorecard generally employ and which are not utilized by FortisBC? If so, please outline and indicate if the would be applicable to FortisBC, in particular its low income customer segment.

RESPONSE:

A review of FBC's specific DSM programs would be more suitable in a DSM expenditure schedule proceeding. It would be beyond the resources available to Mr. Grevatt to do so in this project.

1.8 Does Mr. Grevatt have any specific suggestions, based on his experience, as to additional DSM measures or tools to increase customer participation that FortisBC should explore, particularly for low income customers?

RESPONSE:

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[1] Berg, Weston, et al. The 2016 State Energy Efficiency Scorecard, p.26. ACEEE, September, 2016, http://aceee.org/node/3078?id=5254.

Please see the response to IR 1.7.

2.0 Reference: Exhibit C5-5, page 5

2.1 It is stated that "there is ample evidence that even Fortis' proposed Max scenario is well below the level that effective programs can be expected to achieve." What is this "ample evidence"?

RESPONSE:

As noted in BCSEA's response to 1.4 above, the ACEEE Scorecard is based on reported (not projected) net savings of customer-funded energy efficiency programs in the U.S. While the Scorecard is a single source, "ample evidence" is provided by the year over year reported savings upon which the annual Scorecard is based, including those of multiple states (16 in the 2016 Scorecard) that are achieving more than 1.0% net annual savings.

3.0 Reference: Exhibit C5-5, page 7

3.1 Does Hydro-Quebec rely on interruptible contracts just to manage supply and demand in the short-term, or does it also rely on interruptible contracts for long-term planning purposes?

RESPONSE:

Mr. Grevatt is not personally involved in Hydro- Québec's planning process. However, the following table from its PLAN D'APPROVISIONNEMENT 2011-2020 RÉSEAU INTÉGRÉ[2] indicates that Hydro- Québec does indeed rely on interruptible contracts for long-term planning purposes:

[2] Hydro-Quebec Plan D'Approvisionnement 2011-2020 Reseau Integre, 2010-11-01, p.38: http://publicsde.regie-energie.qc.ca/projets/12/DocPrj/R-3748-2010-B-0004-DEMANDE-PIECE-2010_11_09.pdf.

TABLEAU 4.2-2
BILAN EN PUISSANCE APRÈS DÉPLOIEMENT DES MOYENS DE GESTION EXISTANTS
(EN MW)

	2010 - 2011	2011 - 2012	2012 - 2013	2013 - 2014	2014 - 2015	2015- 2016	2016- 2017	2017- 2018	2018- 2019	2019- 2020
Besoins à la pointe visés par le Plan	**36 625**	**37 232**	**37 613**	**37 976**	**38 566**	**39 298**	**39 565**	**39 740**	**39 880**	**39 949**
+ Réserve requise pour respecter le critère de fiabilité	3 466	3 672	3 920	4 154	4 218	4 298	4 382	4 401	4 417	4 424
= Puissance requise	**40 091**	**40 904**	**41 533**	**42 130**	**42 784**	**43 596**	**43 947**	**44 141**	**44 297**	**44 373**
– Électricité patrimoniale (incluant réserve)	37 442	37 442	37 442	37 442	37 442	37 442	37 442	37 442	37 442	37 442
= Puissance requise au-delà de l'électricité patrimoniale	**2 649**	**3 462**	**4 091**	**4 688**	**5 342**	**6 154**	**6 505**	**6 699**	**6 855**	**6 931**
– Approvisionnements non patrimoniaux	**2 431**	**2 484**	**2 751**	**3 011**	**3 187**	**3 329**	**3 876**	**3 876**	**3 876**	**3 876**
• TCE	-	-	-	-	-	-	547	547	547	547
• HQP - Base et cyclable	1 150	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Dont : Puissance rappelée garantie	*550*	*400*	*400*	*400*	*400*	*400*	*400*	*400*	*400*	*400*
• Contrats de biomasse (incluant Tembec)	24	24	24	24	24	24	24	24	24	24
• Éolien (3 344 MW) (1)	156	337	549	726	861	1 003	1 003	1 003	1 003	1 003
• Biomasse II (125 MW)	-	-	51	52	52	52	52	52	52	52
• Petite hydraulique (150 MW)	-	23	27	109	150	150	150	150	150	150
• Électricité interruptible	850	850	850	850	850	850	850	850	850	850
• Abaissement de tension	250	250	250	250	250	250	250	250	250	250
= Puissance additionnelle requise	**220**	**980**	**1 340**	**1 680**	**2 160**	**2 830**	**2 630**	**2 820**	**2 980**	**3 060**
– Contribution des marchés de court terme	220	980	1 100	1 100	1 100	1 100	1 100	1 100	1 100	1 100
= Puissance additionnelle requise *(besoins arrondis)*	**-**	**-**	**240**	**580**	**1 060**	**1 730**	**1 530**	**1 720**	**1 880**	**1 960**

Note (1) : Le contrat de Les Méchins (150MW) est exclus.
Jusqu'au 31 décembre 2011, la contribution en puissance est de 35%, soit celle de l'entente d'intégration avec HQP.
À compter de 2012, la contribution est restreinte à celle des éoliennes, soit 30%.

3.2 If the latter, please provide a substantiating reference and indicate if such contracts are relied on just as an alternative to generation resources or also for transmission network savings.

RESPONSE:

Please see response to 3.1. Mr. Grevatt is not sufficiently familiar with Hydro- Québec's planning processes to be in a position to indicate if such contracts are relied on just as an alternative to generation resources or also for transmission network savings.

4.0 Reference: Exhibit C5-5, page 9

4.1 It is stated that "experience in other jurisdictions demonstrates that DSM can reliably defer infrastructure upgrades." Please provide more details about jurisdictions where DSM has reliably deferred infrastructure upgrades.

RESPONSE:

DSM has been used to reliably defer infrastructure upgrades in at least the following

jurisdictions:

- **BPA, San Juan Islands,**
- **California PG&E,**
- **Maine,**
- **New York,**
- **Vermont.**

Details about these projects, as well as other T & D deferral projects that are pending or in-progress, can be found in *Energy Efficiency as a T&D Resource: Lessons from Recent U.S. Efforts to Use Geographically Targeted Efficiency Programs to Defer T&D Investments.*[3]

5.0 Reference: Exhibit C5-5, page 11

5.1 If FortisBC were to include environmental values in the modified TRC test, what should be the basis of such values?

RESPONSE:

Fortis implies in its response to BCSEA-SCBC IR 12.1[4] that it has already developed environmental values for the modified TRC, therefore it may not be necessary for such values to be developed. *The National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources*[5] provides guidance on how various non-energy benefits should be considered in the development of cost-effectiveness tests.

6.0 Reference: Exhibit C5-5, page 12

6.1 Would the value (%) used for line losses have to vary by efficiency measure based on the extent to which each measure's savings occurred during high use periods?

RESPONSE:

No, line losses could be established for the portfolio by demand period based on

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[3] Neme, Chris and Grevatt, Jim: Energy Efficiency as a T&D Resource: Lessons from Recent U.S. Efforts to Use Geographically Targeted Efficiency Programs to Defer T&D Investments. Northeast Energy Efficiency Partnerships. 2015. P. 63. http://www.neep.org/sites/default/files/products/EMV-Forum-Geo-Targeting_Final_2015-01-20.pdf.

[4] Exhibit B-4, FortisBC response to BCSEA-SCBC IR 12.1, pdf p.33.

[5] *The National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources,* prepared by the National Efficiency Screening Project, May, 2017. https://nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf

analysis of the different periods. These same values would be applied to all measures, but in proportion to the percentage of savings that each measure would be expected to achieve in each demand period. Each measure (or end use) for which savings were to be claimed would have an associated load shape indicating those percentages, and this would indeed vary by measure or end use.

Alternatively, Fortis could take a simplified approach to developing a weighted average value for marginal line losses that it could use in place of the current average line loss value. Such an approach would be similar to the approach that Fortis presumably uses now with average line losses, but would use a weighted average load shape for the portfolio as a proxy to estimate how much of the savings occur in each load period with its associated marginal line losses. This would certainly underestimate the value that certain measures provide and overestimate others, but would still be a better reflection of capacity benefits than is the current practice of using average line losses.

6.2 Please indicate how the 44% generating capacity benefit was determined.

RESPONSE:

The following is reproduced from the referenced RAP report: [6]

Efficiency Reduces System Generating Reserve Requirements

Utilities must provide reserves of generating facilities in order to ensure that service is not interrupted if (and when) generating units fail to operate as planned. Generating reserve requirements in the United States range from as low as 7% on hydro-rich utilities to as much as 25% for isolated small utilities in Alaska and Hawaii. Ten to fifteen percent is typical for large thermal-based systems. Efficiency investments reduce loads at the customer's meter, and, as we have seen, provide even larger reductions at the generation level during system peak periods when losses skyrocket and capacity/reserve requirements are greatest. Since the reserve requirement is tied to the amount of generation required to serve load, efficiency reduces the reserve requirement not only by a percentage of the savings that customers enjoy, but also by a percentage of the incremental peak losses on the transmission and distribution system that reduce the utility's generation requirements. The reserve requirement is measured against the amount of generation needed – including that needed to cover line losses. Therefore, the avoided reserves resulting from efficiency investments are increased in value by the avoided marginal line losses. The table below looks at the capacity savings during an off-peak period and an on-peak period for two hypothetical resources, one with a low coincidence factor relative to the system peak (efficient lighting), and one with a high coincidence factor, efficient air conditioning. The table shows that after considering the coincidence of different loads to the system peak, the marginal line losses, and the avoided reserve requirement, the

[6]Lazar, Jim and Baldwin, Xavier: *Valuing the Contribution of Energy Efficiency to Avoided Marginal Line Losses and Reserve Requirements*. Regulatory Assistance Project, August, 2011., pp 6-7. http://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-eeandlinelosses-2011-08-17.pdf

capacity benefit of energy efficiency measures increases significantly from that measured at the customer's meter. As is evident, the total capacity benefit of each of these measures is 1.44 times the capacity savings at the customer's meter, because of the value of the marginal line losses and avoided reserves during peak periods (line 8 divided by line 3). Thus the generation capital cost savings are significantly higher than if only average line losses were used and if the reserves benefits were not included.

Figure 5:

Peak Capacity Savings from Energy Efficiency Investments

Line		Lighting	Air Conditioning
1	kW Savings at Customer Meter	10	10
2	Coincidence Factor	0.25	0.75
3	kW Savings at Customer Meter at Peak (1 X 2)	2.5	7.5
4	Marginal Line Losses At Peak @ 20% (3 / (1 - 20%) -3)	0.625	1.875
5	kW Savings at Busbar (3 + 4)	3.125	9.375
6	Reserve Margin Requirement	15%	15%
7	Avoided Reserve Capacity (@ 15%)	0.47	1.41
8	kW Savings At Generation Level (5 + 7)	3.59	10.78