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May 30, 2013

BY EMAIL

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC V6Z 2N3

**Attention: Erica M. Hamilton,
Commission Secretary**

Dear Sirs/Mesdames:

**Re: FortisBC Inc. (FortisBC) – Application for a Certificate of
Public Convenience and Necessity for the Advanced
Metering Infrastructure Project**

We write further to the Commission's Order G-80-13, issued on May 15, 2013, and in reply to the Intervener submissions on the IARC Monograph.

FortisBC agrees with the BC Sustainable Energy Association and Sierra Club of British Columbia (May 16, 2013), the British Columbia Pensioners' and Seniors' Organization *et al.* (May 23, 2013), and the Consumer Energy Consumers Association of British Columbia (CEC) (May 23, 2013) that the IARC Monograph provides a more detailed basis for the classification set out in the summary that witnesses previously commented on in this proceeding. It does not change the classification.

As to relative weight between the IARC Working Group's findings and other health-related information before the Commission, the IARC Monograph reinforces the primacy that should be given to the conclusions of Canadian health authorities, and in particular Safety Code 6, in relation to safe exposure levels. The IARC Working Group acknowledges in the IARC Monograph the limited role it is to play. The IARC Working Group recognizes in the IARC Monograph (as quoted by CEC at page 5 of its Schedule "A") that its evaluations "represent only one part of the body of information on which public health decisions may be based" and do not constitute a recommendation with regard to regulation or legislation, "which are the responsibility of individual governments and other international organizations".

As to relative weight between, on the one hand, the views of Canadian authorities¹ (and Exponent) regarding the substance of IARC Working Group's conclusions and, on the other hand, the views of witnesses for the Citizens for Safe Technology Society (CSTS), the details in the IARC Monograph are more consistent with the views of Canadian authorities and Exponent. We note CEC's discussion on page 6 of its Schedule "A", for example, as well as the bulleted points set out below. The analysis in the IARC Monograph confirms that advanced meters should not be a cause for concern and that the measured reaction to the IARC findings by Canadian authorities (see paragraph 442 of FortisBC's main submission of March 28, 2013 and paragraphs 115-116 of FortisBC's reply of May 2, 2013) and Exponent has been appropriate.

In further reply to specific arguments advanced by particular Interveners, we note the following:

- With reference to the IARC Monograph, the CSTS revisits in its May 23, 2013 submission its criticisms of Safety Code 6 (on pages 4, 5 and 6). Page 5 of the IARC Monograph lists James McNamee (as an individual scientist, not on behalf of Health Canada) as one of the member participants in the IARC Working Group. This accords with his evidence in the Quebec proceeding and confirms that Health Canada is well aware of the conclusions and research considered by IARC.
- CSTS argues on page 1 of its submission that "[t]he relevance of the IARC study is not limited to mobile phone radiation. The IARC study is pertinent to [the] question of whether cancer is caused by RF radiation in general". CSTS proceeds to note on page 2, quoting from page 409 of the IARC Monograph (see also page 34), that:

The Working Group agreed to consider three categories of human exposure to RF radiation: (a) environmental sources such as mobile-phone base stations, broadcast antennae, smart meters, and medical applications; (b) occupational sources such as high-frequency dielectric and induction heaters, and high-power pulsed radars; and (c) the use of personal devices such as mobile phones, cordless phones, Bluetooth devices, and amateur radios.

Notably, as is evident from the above, the IARC Working Group placed smart meters in the category of "environmental sources", unlike mobile phones which it placed in the category of "use of personal devices". The Working Group did not find links between environmental exposures and cancer of the brain or leukaemia; the basis for the Group 2B classification rested on discussion of a different category – personal devices – and in particular wireless phones, in relation to glioma and acoustic neuroma (see pages 414, 421).

- On pages 6-7 of its submission, CSTS contends that FortisBC "is silent about the fact that DDT and lead are also included in the [2B] classification". Not only is this outside the permitted scope of Intervener submissions (the point is not in relation to the IARC Monograph *per se*), but CSTS'

¹ See paragraph 442 of FortisBC's main submission of March 28, 2013 and paragraphs 115-116 of its reply of May 2, 2013.

contention is also simply incorrect. FortisBC addressed these substances in paragraphs 89 and 110 of its reply submission of May 2, 2013.

- CSTS refers to exposure-related considerations on pages 3 and 6 of its submission. The IARC Monograph makes no recommendations regarding exposure levels.
- CSTS says at page 6 of its submission that no evidence exists with respect to the deliberations or reasoning of IEEE or ICNIRP regarding non-thermal effects. This is not the case. There are very substantial reports from each organization included in Exhibit B-15-1 (Appendix BCH IR2.12 and BCH IR2.13). In particular, the literature surveyed and the evaluation process followed by IEEE is described in a wholly transparent manner. The Working Group repeatedly cited the work of both ICNIRP and IEEE in the IARC Monograph, so presumably finds it to be of value (see, for example, pages 41-45, 87, 115-117, 287 and 409). The Working Group's references to ICNIRP's exposure guidelines confirm the weight which should be given to those guidelines and to ICNIRP's analysis generally.
- CSTS includes a quotation from page 409 of the IARC Monograph on pages 4-5 of its submission, in support of its statement that "the monograph recognizes that ICNIRP guidelines are thermally based". The quotation that CSTS includes is incomplete, and the Working Group's sentence did not end (as it does in CSTS' submission) with "designed to protect against adverse effects due to whole-body or partial body heating as a result of energy absorption above 100 kHz". The sentence in the IARC Monograph continues: "...and against nervous system effects at frequencies up to 10 MHz". This is not a thermal effect. ICNIRP's position regarding non-thermal (athermal) effects at higher frequencies states (at Exhibit B-15-1, Appendix BCH IR2 2.13, page 260):

Recent concern has been more with exposure to the lower level RF radiation characteristic of mobile phone use [than with heating mechanisms]. Whilst it is in principle impossible to disprove the possible existence of non-thermal interactions, the plausibility of various non-thermal mechanisms that have been proposed is very low.

- CSTS refers at pages 3-4 of its submission to two *in vitro* studies relating to duration of exposure conducted by Belyaev and others in 1992 and 1994. It further refers at page 5 of its submission to *in vitro* research on the activity of an enzyme ODC. The studies range in date from 1988 to 2009. These studies are not in evidence, although they were available to CSTS and its experts. They have not been put to witnesses. Further, we note the cautions of Dr. Bailey and others (including certain CSTS witnesses) on the limitations of *in vitro* studies generally, as noted at paragraph 152 of FortisBC's reply (of May 2, 2013). The IARC Working Group also does not suggest that any broader conclusions should be drawn from the research on ODC activity.
- On page 5 of its submission, CSTS quotes from page 385 of the IARC Monograph with regard to modulation of the carrier waves of RF radiation. The IARC Working Group mentions evidence that such modulation can cause changes in biological processes that do not occur when the waves are not modulated, citing two studies from 1975 and 1979. Dr. Bailey gave evidence that the type

of modulation does not result in any reliable or confirmed biological responses, a view supported by the findings of the Health Council of the Netherlands and by the IEEE, as noted in FortisBC’s reply (of May 2, 2013). The evidence previously cited by FortisBC in this regard is consistent with studies on modulation summarized by the IARC Working Group, as set out in the table below:

IARC Monograph Page Number	Study	Effect of Modulation?
353	“The Working Group noted that a small number of studies reported altered expression of HSPs in certain cell lines (Leszczynski et al., 2002; Tian et al., 2002; Miyakoshi et al., 2005; Lixia et al., 2006; Sanchez et al., 2006b). However, it was not clear whether these responses were specific to the cell line, the frequency, the modulation or model used, or were false-positives, e.g. artefacts caused by irregularities in the exposure system.”	Role of modulation unclear
360	Hirose et al. (2007)	No
361	Whitehead et al. (2006)	No [usefulness of findings criticized by Working Group]
376	Lantow et al. (2006a)	No
379	Capri et al. (2004b)	No
379	Hirose et al. (2006)	No
383-384	One laboratory reported differences between modulated and carrier wave exposures on ODC activity (Litovitz et al. (1993; Litovitz et al., 1997; Penafiel et al., 1997) but as noted by the IARC Working Group these findings could not be replicated (Desta et al., 2003; Höytö et al., 2006; Höytö et al., 2007; Höytö et al., 2007b; Billaudel et al., 2009a; Billaudel et al., 2009b).	Not replicated

- CSTS asserts at pages 5-6 of its submission that Safety Code 6 does not address modulation and overlooks power density windows. These assertions are not within the scope of the supplemental submission, but in any event CSTS is incorrect in its assertions. This has been previously canvassed in Dr. Bailey’s summary, provided at CSTS’s request, of studies cited in Safety Code 6 and ICNIRP which consider modulation and power density windows (Exhibit B-45).

- CSTS and Mr. Atamanenko, in alleging the sensitivity of children to radiofrequency emissions, provide a quotation taken out of its context: it is from a discussion of the high exposure levels from mobile phones held to the ear (at page 34 of the IARC Monograph):

The general population receives the highest exposure from transmitters close to the body, including hand-held devices such as mobile phones, which deposit most of the RF energy in the brain. Holding a mobile phone to the ear to make a voice call can result in high specific rates of absorption (SAR) of RF energy in the brain, depending on the design and position of the phone and its antenna in relation to the head, the anatomy of the head, and the quality of the connection with the base-station antenna: the better the connection, which is ensured by a dense network of base stations, the lower the energy output from the phone. In children using mobile phones, the average deposition of RF energy may be two times higher in the brain and up to ten times higher in the bone marrow of the skull than in adult users. The use of hands-free kits lowers exposure of the brain to less than 10% of the exposure from use at the ear, but it may increase exposure to other parts of the body.

- Mr. Atamanenko suggests on the second page of his May 23, 2013 submission that “[t]he Commission, in approving the FBC application, would have to completely dismiss” certain concerns expressed by the Working Group. This suggests that the Commission is or should be the first-line evaluator of the Working Group’s conclusions or how they should be applied, if accepted, within Canadian society. This is not the Commission’s role. Discussion of the Canadian authorities that have already scrutinized the IARC Working Group’s conclusions is found at paragraph 442 of FortisBC’s main submission (of March 28, 2013) and paragraphs 115-116 of FortisBC’s reply (of May 2, 2013).
- Mr. Atamanenko expresses concerns based on differences between worst-case levels of exposure used for compliance testing and actual real-life exposure. Taken with the next sentence in the IARC Monograph, it is clear that these differences arise as a result of testing protocols which tend to err on the side of caution. This is consistent with Dr. Shkolnikov’s evidence that even when testing based on peak rather than average values, the AMI meters comply with Safety Code 6, as noted at paragraph 431 of FortisBC’s main submission (of March 28, 2013). The IARC Monograph states (at page 96):

As mentioned before, the worst-case levels of exposure determined during compliance testing of, e.g. mobile phones or base stations are in many cases not representative of actual real-life and everyday exposure. The protocols for compliance testing are generally optimized to provide a conservative estimate of maximum exposure.

- In his May 23, 2013 submission, Mr. Bennett repeats arguments (as to allegedly “missing” science and alleged irradiation) that FortisBC addressed in its May 2, 2013 reply (at paragraphs 73 and 153). FortisBC reaffirms its earlier submissions in this regard. Further, as to Mr. Bennett’s comment that “Dr. Shkol[n]nikov says under cross examination it would be his duty to

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revise his opinion if electrical information were left out”, notably Dr. Shkolnikov has not revised his opinion and is thus clearly of the view that there is no reason to do so.

ALL OF WHICH IS RESPECTFULLY SUBMITTED.

Yours truly,

FARRIS, VAUGHAN, WILLS & MURPHY LLP

Per: 

Ludmila B. Herbst

LBH/JKY/lis

c.c.: Registered Interveners
Boughton Law Corporation – Attention: Gordon Fulton, Q.C.
FortisBC Inc. – Attention: Dennis Swanson