6.0 Reference: Exhibit C9-8 – Comments from Timothy Schoechle

6.1 Please confirm or explain otherwise that Dr. Schoechle's academic degrees are in Journalism and Telecommunications related to consumer and public policy.

Not confirmed. PhD is in Communication, not Journalism. MS is in Telecommunications (Interdisciplinary Telecommunications Program) College of Engineering and Applied Science (including engineering, political science, economics, business, and computer science).

6.1 Please confirm that Dr. Schoechle does not have any academic qualifications or degrees in the fields of engineering, medicine or the health sciences.

Not confirmed. PhD is in Communication, not Journalism. MS is in Telecommunications (Interdisciplinary Telecommunications Program) College of Engineering and Applied Science (including engineering, political science, economics, business, and computer science).

6.2 Please confirm that Dr. Schoechle is not a physician and has never had any clinical experience with patients.

Confirmed.

6.3 Please confirm that Dr. Schoechle has never testified (whether in written or oral form) as an expert witness before a court or regulatory tribunal in the fields of:

6.3.1 engineering;

Not confirmed. See patent litigation below.

2008-01-24 to 2008-05-01
Howrey, L.L.P.
On behalf of U.S. Philips Corporation
U.S. Philips Corporation, Inc. v. LG Electronics, Inc., Konica Minolta Photo Imaging U.S.A., Inc., et al
U.S. Philips Corporation, Inc. v. Pantech Wireless, Inc., et al
U.S. District Court for the Southern District of New York

2006-07-27 to 2007-01-31
Finnegan, Henderson, Farabow, Garrett, & Dunner, L.L.P.
On behalf of Telcordia Technologies, Inc.
Telcordia Technologies, Inc. v. Alcatel USA, Inc.
U.S. District Court for the District of Delaware

6.3.2 wireless technologies;

Not confirmed. See patent litigation below.

2002-12-16 to 2003-07-28
Cooley Godward, LLP
On behalf of Kyocera Wireless Corporation
Nortel Networks, Inc. v. Kyocera Wireless Corporation
U.S. District Court for the Northern District of Texas, Dallas Division

2006-07-27 to 2007-01-31
Finnegan, Henderson, Farabow, Garrett, & Dunner, L.L.P.
On behalf of Telcordia Technologies, Inc.
Telcordia Technologies, Inc. v. Alcatel USA, Inc.
U.S. District Court for the District of Delaware

6.3.3 the costs and capabilities of "smart grid technologies" generally;

Confirmed.

6.3.4 application and network communication protocols, including metering protocols;

Confirmed.

6.3.5 metering;

Confirmed.

6.3.6 industrial control and automation systems; or

Confirmed

6.3.7 applied cryptography.

Confirmed

6.4 If in any respect the confirmation requested in 6.1 to 6.3 cannot be provided, please detail in what respect the statements are in error

See above.

6.5 Has Dr. Schoechle previously submitted evidence and/or testified in relation to potential health effects of RF before courts or regulatory tribunals in Canada or the United States? If so, please submit a list that includes the date the evidence was submitted, the name of the matter/docket under which the evidence was submitted, and the name of the court/regulatory tribunal.

No.

6.6 Has Dr. Schoechle ever previously been disqualified from acting as an expert witness before courts or regulatory tribunals in Canada or the United States? If so,

please submit a list that includes the date the evidence was submitted, the name of the matter/docket under which the evidence was submitted, and the name of the court/regulatory tribunal.

No.

6.7 Has Dr. Schoechle conducted any research specific to Canadian utilities or Canadian regulation of advanced meters? If so, please provide copies of any published or unpublished research.

No.

6.8 Has Dr. Schoechle conducted any research specific to B.C. utilities or B.C. regulation of advanced meters? If so, please provide copies of any published or unpublished research.

No.

6.9 Please confirm that Dr. Schoechle's expertise and training is limited to: "Research, education, and consulting in standardization, innovation, and intellectual property rights—utilizing my unique international background in both technology and in public policy. Development of advanced consumer broadband and communication network technologies, standards, equipment, and systems. Innovation and Entrepreneurship" and does not include the health sciences or economics.

Confirmed that expertise and training does not include health sciences.

6.10 Dr. Schoechle's report is entitled '*Getting Smarter About the Smart Grid: Why are federal government stimulus programs underwriting billions of dollars of 'dumb' smart meters for utility companies – with taxpayer dollars – meters that will soon be obsolete and not integrate with, or enable, the 'smart grid' of the future on which U.S. energy sustainability depends?*'

6.10.1 Please confirm that the federal government stimulus programs referred to are U.S. programs which benefit U.S. utility companies and are not available to FortisBC.

Not confirmed. No information available about what is available to FortisBC.

6.11 Dr. Schoechle states (p. 2): "*Data to be collected by the smart meters, including intimate personal details of citizens' lives, is not necessary to the basic purpose of the smart grid – supply/demand balancing, demand response (DR), dynamic pricing, renewable integration, or local generation and storage – as promoters of the meters, and uninformed parties, routinely claim.*"

6.11.1 Please specify and detail the intimate personal details of citizens' lives which Dr. Schoechle claims will be collected by advanced meters.

The section on "privacy reasons" beginning on page 21 summarizes this information, including Figure 2 (p. 22) as described in the literature cited. Specifically see Quinn testimony before the Colorado Public Utilities Commission: Quinn, Elias (2009). "Smart Metering & Privacy: Existing Law and Competing Policies", Spring. available at <http://www.dora.state.co.us/puc/DocketsDecisions/DocketFilings/09I-593EG/09I-593EG_Spring2009Report-Smart GridPrivacy.pdf>.

6.11.2 Please review pp. 43-46 of the Application and confirm that information collected by FortisBC from advanced meters will be limited to hourly consumption information and high-priority operational data, such as outage information. Customers will also have the option to purchase IHD units which will provide customers with near real-time information on electricity usage and rates.

Can not confirm. No information available.

6.12 Dr. Schoechle states (p. 2): "*The allocation of stimulus dollars to subsidize smart meters has also been a net job destroyer, eliminating meter readers and creating manufacturing jobs overseas, while being an egregious waste of federal resources that only supports corporate interests and delays the needed transformation of the energy grid.*"

6.12.1 Please confirm that the stimulus dollars and federal resources referred to are U.S. programs which benefit U.S. utility companies and are not available to FortisBC.

Can not confirm. No information available.

6.13 Dr. Schoechle states (p. 13): "*Finally, serious questions have been raised concerning the proper role of utilities in dealing with users' personal data – reaching into consumers' homes to extract meter data and to exercise control over their appliances and their lives...*"

6.13.1 Please review p. 45 of the application and confirm that it states the following:

> The widespread deployment of ZigBee-based HANs by utilities throughout North America is expected to result in a variety of new products and applications that will help customers manage their electricity usage. Products are in development that will enable customers, should they wish to do so, to optionally connect appliances such as washers, dryers, furnaces and air conditioners and with technology emerging today in home automation, control these devices from their home network. For clarity, the visibility, automation and control of these devices will reside solely in the hands of the customer, and not with the utility.

Can not confirm. No information available.

6.13.2 Please specify how advanced meters would enable FortisBC to exercise control over its ratepayers' appliances and their lives.

No information available. Many metering systems allow or facilitate such control as described throughout the Report.

6.14 Dr. Schoechle states (p. 14):

> In November of 2011, Xcel Energy told the Colorado PUC that the company's projected 7-year demand had dramatically dropped by 994 megawatts (a drop equal to the total output of Xcel's new $1 billion Comanche unit 3 coal plant in Pueblo just completed last year) and that Xcel does not anticipate the need for more renewable until 2028 (Jaffe, 2011). Then, within two weeks, Xcel asked the PUC for a $142 million rate increase that would raise the average household electricity bill by $4 (Jaffe, 2011a).
>
> In a contemporaneous case, Duke Energy announced that the company would take a $220 million charge against earnings[29] to cover some of the massive cost of building its new marquee "clean coal" plant at Edwardsport, Indiana. Duke now projects the plant's cost at $3 billion - $1 billion more that originally forecast (Smith, 2011). The Indiana Utility Regulatory Commission has allowed the utility to charge customers $2.35 billion so far, and probably will allow more such charges before the plant is completed. The $220 million charge (loss) follows a $44 million third quarter charge taken by Duke (and its shareholders) on the plant the previous year.

6.14.1 Please confirm whether the Xcel Energy demand projections and rate increase request were related in any way to installation of advanced meters.

Confirmed. Xcel rate cases included requests for $44 million recovery of costs associated with the SmartGridCity™ project in Boulder, Colorado. This matter is still pending before the Colorado Public Commission. This rate recovery on assets throughout the entire utility industry is a of major importance in the context of the Report.

6.14.2 Please submit Mark Jaffe's follow-up article published in the Denver Post on October 28, 2012 (http://www.denverpost.com/business/ci_21871552).

6.14.3 Please confirm that according to Mr. Jaffe's follow-up article, Xcel Energy used both fiber optic and Broadband over Power Lines (BPL) technology.

Confirmed in regard to the SmartGridCity™ project. However, other technologies for meter reading, including wireless, are employed by Xcel both in Boulder as well as throughout its service territory.

6.14.4 Please explain why the costs related to BPL and associated fiber optic for longer ranges would be relevant to FortisBC's Application?

Because they demonstrate a history of poor planning and chronic cost escalation typical of utilities in general.

6.14.5 Please confirm whether the Duke Energy clean coal plant project and rate charges were related in any way to installation of advanced meters.

Can not confirm. No information available. It would seem that the specific Duke coal plant cost problems are in addition to its other rate recovery requests related to metering elsewhere in its system.

6.15 Dr. Schoechle states (p. 19): "*Smart meters... do not reduce electric bills but may actually increase them (due to introduction of dynamic pricing schemes, rate recover of deployment costs, etc.)*"

6.15.1 Please review the Application pp. 103-104 and provide evidence that dynamic pricing schemes, in the context of FortisBC's application, will raise electric bills.

Can not confirm. No information available.

6.15.2 Please confirm that if benefits exceed costs, rates will be lower than they otherwise would have been.

Can not confirm. Generally "benefits" cannot be clearly defined or quantified, and in any case are not passed on to ratepayers. The Report identifies some benefits of various aspects of smart grid (p. 12, and footnote 24) and cites the findings of the EnerNex Report. See EnerNex (2010). "Collaborative Report." Illinois Statewide Smart Grid Collaborative. Compiled by EnerNex Corporation. September, 30 <http://www.ilgridplan.org/Shared Documents/ISSGC Collaborative Report.pdf/. The weak and dubious benefits of smart meters are discussed on p. 61 of the EnerNex Report.

6.15.3 Please confirm that dynamic pricing schemes are meant to reduce aggregate costs, putting downward pressure on rates.

Can not confirm. No information available. It is a major point of the Report that dynamic pricing schemes are primarily meant to benefit the utility by flattening daily load demand curves to allow more reliance on baseload generation (and thus making renewable integration more difficult). Such economic efficiency benefits from dynamic rates are not likely to be passed on to ratepayers. To be truly effective and benefit consumers, dynamic rate schemes need to work with

automated premises energy management devices (for example, "transactive control strategies"). Such capabilities are not (or poorly) enabled by smart meters.

6.16 Please confirm that Dr. Schoechle based his discussion of radiofrequency fields and health largely on sources which are not peer-reviewed, including media articles (Dellorto, 2011, Cheng 2011), comments, videos, and abstracts posted on the internet (Cherry, 2011; Hirsch, 2010; Hirsch 2011; ElectomagneticHealth.org, 2011, 2011a; KSBW.com, 2011; Morgan, 2010; Sage, 2011a); on statements from other witnesses in this case (Blank, Maret, Jamieson); and on some authors of the Bioinitiative report (Blank, Carlberg, Carpenter, Sage, and Johansson).

Not confirmed. The cited references include a range of relevant material including both news media reports and peer-reviewed academic papers.

6.17 Please confirm that to the extent Dr. Schoechle based his discussion of radiofrequency fields and health on peer-reviewed sources published in scientific journals, he did not conduct a full survey of all such sources available.

Not confirmed. It is not clear what would constitute a "full survey". The Report made a concerted effort to provide a comprehensive treatment of the subject and the current literature within its scope and context. The reader is provided links to the literature and invited to make their own judgements.

6.18 Dr. Schoechle states (p. 24):

Radio noise pollution and interference

Even utility grid operators recognize a certain level of risk associated with EMFs. With the growing use of devices such as cardiac pacemakers and defibrillators, power companies have become concerned about the potential for electromagnetic interference in the workplace. To address this concern, the Electric Power Research Institute (EPRI) has developed a personal electromagnetic field monitor for utility workers who wear implanted medical devices on the job (EPRI, 2011).

6.18.1 Please confirm that the electromagnetic field monitor developed by EPRI for utility workers is designed to monitor electric and magnetic fields in the extremely-low-frequency (ELF) range, that is, 60 Hz fields and not radiofrequency fields, as is clear from the article excerpted below from the source you cited "(EPRI (2011). State of the Technology 2011. Report 1023459, Electric Power Research Institute. Palo Alto www.epri.com"

Confirmed that the specific EPRI device referred to is for low frequencies. However, some of the scientific literature concludes that biological effects or potential health risks may not be related to frequency (e.g., Blank and Goodman).

See Blank, Martin, and Reba Goodman (2011). "DNA is a fractal antenna in electromagnetic fields." *International Journal of Radiation Biology*. Vol. 87, pp. 409-15

See Blank, Martin, and Reba Goodman (2012). "Electromagnetic fields and health: DNA-based dosimetry." Electromagnetic Biology and Medicine. Early Online: 1–7, 2011 Copyright Q Informa Healthcare USA, Inc. ISSN: 1536-8378 print / 1536-8386 online DOI: 10.3109/15368378.2011.624662

As part of their everyday work, electric utility workers can encounter electric fields in excess of 1 kilovolt per meter and magnetic fields in excess of 1 Gauss. With the growing use of implanted medical devices such as cardiac pacemakers and defibrillators, electric power companies have become concerned about the potential for electromagnetic interference in the workplace. To address this, EPRI is developing a prototype personal electromagnetic field monitor for utility workers with implanted medical devices to wear on the job. The device would alert workers if electric and magnetic fields reached levels that approach interference thresholds. This device will be an important component of a comprehensive safety program. The two-year research project aims to develop a prototype personal electric and magnetic field exposure meter and accompanying software and documentation. The goal is a compact device capable of measuring electric and magnetic fields, yet light enough to be easily worn by utility workers. The EPRI team also aims to make the monitor's electric and magnetic field thresholds programmable. The American Conference of Governmental Industrial Hygienists issued guidelines for electromagnetic field exposure for workers with implantable devices, but some utilities may want to set the thresholds lower. When the electric or magnetic fields reach the programmed threshold, the monitor will alert the worker that he or she is entering an area with fields approaching the interference threshold. This project will produce working prototypes for testing in the workplace. These tests will ensure that workers can wear the units comfortably and that the unit provides an alert signal that informs the worker without startling. Following the research supported under this project, the units will be manufactured for delivery to consumers. EPRI expects to begin testing prototypes in 2012. (p. 24) [Emphasis added]

7.0 Reference: Exhibit C9-8 – Comments from Margaret Sears

7.1 Has Dr. Sears previously submitted evidence and/or testified before courts or regulatory tribunals in Canada or the United States? If so, please submit a list that includes the date the evidence was submitted, the name of the matter/docket under which the evidence was submitted, and the name of the court/regulatory tribunal.

7.2 Did Dr. Sears submit evidence in 2008 to the New Brunswick Court of Queen's Bench in *Bryson* v. *Canada (Attorney General)*, 2009 NBQB 204 in relation to potential health effects of herbicides and pesticides?

7.2.1 Please confirm that S.J. McNally, Justice of the New Brunswick Court of Queen's Bench held the following with respect to Dr. Sears:

"¶ 16 By her affidavits, Dr. Sears purports to offer expert opinion evidence relating to the fields of epidemiology, toxicology, immunology and endocrinology. Dr. Sears has a Ph.D. in chemical engineering which she acquired in 1985. The evidence filed on this motion establishes that Dr. Sears:

a. has acquired no academic qualifications or degrees in the fields of epidemiology, toxicology, immunology or endocrinology;

b. does not have a degree in medicine;

c. did no work or study in the fields of epidemiology, toxicology, immunology or endocrinology as part of her undergraduate or graduate studies;

d. has not taken any academic course in oncology, immunology or endocrinology;

e. advised a Senate Standing Committee in December 2002 that she was not an expert in toxicology;

f. has published no articles on the subjects of oncology, immunology or endocrinology in a peer reviewed academic journal.

¶ 17 Dr. Sears did conduct research and produced copies of various articles and papers prepared by other authors that related to these medical or scientific fields and she attached them to her affidavits filed in these proceedings. Dr. Sears has significant experience in this type of work and has conducted medical research in the past in conjunction with or under the direction of medical professionals. However, she has no specific expertise in the fields of epidemiology, toxicology, immunology and

> endocrinology. Upon review of the materials filed in this motion, neither Dr. Sears nor the plaintiffs have established that she possesses the requisite knowledge or qualifications to adopt or comment on the views expressed in the articles and publications of the other researchers or authors that she has attached to her affidavits. In such circumstances, her affidavits and opinions do not meet the test of admissibility for expert opinion evidence. Accordingly, they are not admissible in these proceedings and are struck from the record."

7.3 Did Dr. Sears submit evidence in 2009 to the Queen's Bench for Saskatchewan in *R. v. Canada*, 2009 SKQB 509 in relation to potential health effects of herbicides and pesticides?

7.3.1 Please confirm that Zarzeczny J., Justice of the Queen's Bench for Saskatchewan held the following with respect to Dr. Sears:

> ¶ 55 Dr.Sears, except for the latter qualification, does not have any academic qualifications or degrees in these various fields nor a general or specialist degree in medicine.
>
> ...
>
> ¶ 57 As one of the respondents observed, Dr. Sears' affidavit, although it reflects a noble effort at objectivity, nevertheless frequently reflects opinions, if not of Dr. Sears herself, those of others who have authored these studies, etc. Although some of these might well be qualified as experts to provide opinion evidence as expressed in the reports, studies and papers which they have authored or in which they have participated as referred to by Dr. Sears, — Dr. Sears cannot be so qualified. I agree.

7.4 Other than as described in CSTS IR 7.2 and 7.3, has Dr. Sears ever been disqualified from acting as an expert witness before courts or regulatory tribunals in Canada or the United States? If so, please submit a list that includes the date of the disqualification, the name of the matter/docket under which the evidence was submitted, and the name of the court/regulatory tribunal.

7.5 Please confirm that Dr. Sears' academic degrees are in chemical engineering.

7.5.1 Please confirm what department of McGill University granted Dr. Sear's degrees in chemical engineering and her Ph.D.

7.5.2 Please confirm that Dr. Sears has acquired no academic qualifications or degrees in the fields of medicine.

7.5.3 Please confirm that Dr. Sears is not a physician and has never had clinical experience with patients.

7.6 On p. 3 of Dr. Sears' report at Exhibit C9-8 Attachment 7B ("Dr. Sears' Report") she says the 3 GHz Zigbee "in-home feature has in some jurisdictions become mandatory". Please provide a list of the jurisdictions that have made this feature mandatory.

7.7 At p. 4 of her report, Dr. Sears states:

> "It is worth considering the exemption for pulsed signals in Safety Code 6 (page 18), 'For exposures to pulsed RF fields in the range of 0.1 to 300,000 MHz, peak pulse power densities are limited by the use of time averaging and the limit on peak electric field, with one exception: the total incident energy density during any one-tenth second period within the averaging time shall not exceed one-fifth of the total energy density permitted during the entire averaging time for a continuous field[(9)].' With this criterion, peak power is not averaged over extensive quiet periods, and duty cycle is irrelevant."

Does peak power from the "total incident energy density during any one-tenth second period within the averaging time" from the advanced meter "exceed one-fifth of the total energy density permitted during the entire averaging time for a continuous field"?

7.7.1 If not, how does peak RF power from the FortisBC advanced meter compare to the limit by the use of time averaging?

7.8 On p. 4 of her report, Dr. Sears states:

> "In this letter, I am attempting to maintain focus on frequencies closer to the emissions from the proposed Itron meters."

Based on what scientific evidence does Dr. Sears exclude RF fields at other frequencies from the analysis?

7.9 On p. 4 of her report, Dr. Sears states:

> "Regarding data reliability, it is concerning that measurements of Itron emissions do not fall off according to the inverse square law - a fundamental law of physics. Scientific procedures for thorough baseline characterization, minimization of interference, replication, and calculation of statistical variation were not presented. When simple, standard measurements do not conform to a fundamental law of physics, it is more probable that the measurements or assumptions are at fault than physics. The explanation regarding background noise is a weak explanation of the observations closest to the meters."

Please confirm if Dr. Sears is aware of different propagation models, such as those that describe RF signal propagation near reflecting surfaces.

7.9.1 If Dr. Sears is aware of different propagation models, could these explain the results?

7.10 On p. 4 of her report, Dr. Sears states:

> "Indeed, the comparisons showing that the transmissions are vanishingly low power might leave one wondering how the equipment could work at all – i.e. be "heard" by receivers."

Please confirm if Dr. Sears is familiar with the information and communication theory.

7.10.1 What is the signal gain after frequency hopping and/or direct sequence spread spectrum demodulation?

7.10.2 What is the noise gain after similar demodulation?

7.11 On p. 4 of her report, Dr. Sears states:

> "For example, while everything at a temperature above absolute zero emits blackbody radiation (e.g. the earth and people), predominately of interest in this regard is higher frequency infra-red radiation, as seen using "night vision" goggles; for lower radiofrequencies we are of appropriate size to act as an antenna, as is well known by those who have been frustrated while adjusting a "bunny-ears" antenna for television reception."

What is the RF component (300 GHz or lower) of blackbody radiation?

7.12 On pp. 20-21 of her report, Dr. Sears states:

> "If, however, bursts of radiofrequency radiation with complex wave forms have other biological effects, this averaging would be obscuring a hazard."

If absolutely no averaging is used, what does the electric and magnetic field look like as a function of time at the surface of the body?

7.12.1 How many times per second does the electric field magnitude change from 0 to a positive value and back?

7.12.2 How many times per second does the power density at the surface body change from 0 to a positive value and back?

7.12.3 If averaging should be used to "smooth" 900 million power density oscillations per second, what scientific basis for averaging time does Dr. Sears propose as an alternative?

7.13 On p. 10 of her report, Dr. Sears states:

> "The scientific consensus alluded to in the Exponent report is not reflected in exposure limits in various jurisdictions. According to a compilation for the Israeli government (referenced by Planetworks), Canada is among the least protective countries (Table 1)."

Does the exposure from the FortisBC advanced meters exceed the exposure limits in the listed jurisdictions?

7.13.1 What are averaging times assumed in these exposure limits?

7.13.2 Please provide the comprehensive reviews or RF research that support each standard cited in the above compilation that has exposure limits below Safety Code 6.

7.14 On p. 13 of Dr. Sears' Report she says that "when modulated or discontinuous signals, or cell phones that are transmitting speech, are compared with continuous radiation, effects are generally more pronounced with the irregular signals than with unmodulated radiation". Please confirm if Dr. Sears' position is that the "brief microwave pulses or 'packets'" emitted by the FortisBC advanced meters are comparable to either modulated or unmodulated radiation?

7.15 On p. 13 of Dr. Sears' Report she says that there are "many examples" of modulated radiation having more pronounced effects than unmodulated radiation. Please provide a list of studies that demonstrate that modulated radiation has more pronounced effects than unmodulated radiation.

7.16 On p. 14 of her report, Dr. Sears states:

> "DNA damage, measured as single-strand or double-strand breaks, or with assays such as comet assay, have clear implications for cancer. A recent review of this area identifies DNA as a "fractal antenna" that has potential to be the basis of new standards for radiation exposure."

What is the conductivity of DNA?

7.16.1 What is the contrast in conductivity between DNA and surrounding media?

7.16.2 Please confirm if Dr. Sears is familiar with the Chu-Wheeler theory.

7.16.3 What is the minimum Q of the antenna of the DNA molecule?

7.16.4 For such values of Q, what would be the expected bandwidth of the fractal antenna?

7.16.5 What tuning circuitry is available to DNA molecules to shift the resonance frequency to react to different exposure frequencies?

7.17 On p. 20 of Dr. Sears' Report she summarises her comments on Safety Code 6 and Health Canada. Is Dr. Sears suggesting by those statements that Health Canada has not considered the research on possible health effects of RF not related to tissue heating? If so, please fully explain the basis for suggesting what information Health Canada has or has not considered in setting its Safety Code 6 limits for exposure to RF.

7.17.1 Please review and submit a copy of Health Canada's document *Research on Radiofrequency Energy and Health*. The document is available at: http://www.hc-sc.gc.ca/ewh-semt/radiation/cons/radiofreq/research-recherche-eng.php

7.17.2 Please confirm Health Canada states the following in that document:

> "For more than two decades, Health Canada has conducted its own research on the biological effects of radiofrequency (RF) energy. This research has increased the scientific knowledge regarding the intensity of RF energy in our environment and has helped to establish the human exposure threshold where potentially adverse health effects can occur. This important information, along with other Canadian and international studies, form the basis for establishing safety standards for RF energy that protects the health of Canadians." (Reference: paragraph 1)

7.17.3 A copy of Health Canada's response dated June 19, 2008 to a petition filed by Dr. M. Havas *Request that first generation DECT phones be banned in Canada* has been requested in IR 1.9.3 to Dr. Maret. The document is available at http://www.oag-bvg.gc.ca/internet/english/pet_253_e_31629.html.

In that document Health Canada provides insight into its processes for on-going study of RF fields and its continuous program of literature surveillance. Had Dr. Sears reviewed that document before making the statements in her report regarding Safety Code 6 and its authors?

7.17.4 Dr. Sears suggests that Health Canada has followed an approach that is counter to the precautionary principles. Please confirm that in its response to the petition by Dr. M. Havas, Health Canada states the following:

"All science-based EMF guidelines, including Safety Code 6, intrinsically use the precautionary principle in the design of exposure limits, in that the uncertainties in measurements and application of safety margins are incorporated in their specification. Safety Code 6 is based upon a review of all relevant scientific studies utilizing a weight-of-evidence basis." (Reference: Answer to Questions 1 & 3)

7.17.5 Please confirm that in Safety Code 6 (2009), Health Canada states at p. 7:

"The exposure limits specified in Safety Code 6 have been established based upon a thorough evaluation of the scientific literature related to the thermal and possible non-thermal effects of RF energy on biological systems. Health Canada scientists consider all peer-reviewed scientific studies, on an ongoing basis, and employ a weight-of-evidence approach when evaluating the possible health risks of RF energy."

7.17.6 Please confirm that in Safety Code 6 (2009), Health Canada states at p. 9:

"The scientific literature with respect to possible biological effects of RF energy has been monitored by Health Canada scientists on an ongoing basis since the last version of Safety Code 6 was published in 1999. <u>During this time, a significant number of new studies have evaluated the potential for acute and chronic RF energy exposures to elicit possible effects on a wide range of biological endpoints</u> including: human cancers (epidemiology); rodent lifetime mortality; tumor initiation, promotion and co-promotion; mutagenicity and DNA damage; EEG activity; memory, behaviour and cognitive functions; gene and protein expression; cardiovascular function; immune response; reproductive outcomes; and perceived electromagnetic hypersensitivity (EHS) among others. Numerous authoritative reviews have summarized this literature.

<u>Despite the advent of thousands of additional research studies on RF energy and health, the predominant adverse health effects associated with RF energy exposures in the frequency range from 3 kHz to 300 GHz still relate to the occurrence of tissue heating and excitable tissue stimulation from short-term (acute) exposures</u>. At present, there is no scientific basis for the premise of chronic and/or cumulative health risks from RF energy at levels below the limits outlined in Safety Code 6. <u>Proposed effects from RF energy exposures in the frequency range between 100 kHz and 300 GHz, at levels below the threshold to produce thermal</u>

> effects, have been reviewed. At present, these effects have not been scientifically established, nor are their implications for human health sufficiently well understood. Additionally, a lack of evidence of causality, biological plausibility and reproducibility greatly weaken the support for the hypothesis for such effects. Thus, these proposed outcomes do not provide a credible foundation for making science-based recommendations for limiting human exposures to low-intensity RF energy." (underlining added)

7.17.7 Please confirm that the text quoted above from Health Canada's Safety Code 6 indicates that Health Canada has in fact considered the research studies on possible RF bio-effects unrelated to tissue heating, and has concluded that such effects have not been scientifically established and that the studies do not provide a credible foundation for making science-based recommendations to reduce the Safety Code 6 exposure limits. If not confirmed, please explain.

7.18 Please confirm which of the works referenced in Dr. Sears Report involve studies of the effects of exposure to advanced meters.

7.19 On p. 6 of Dr. Sears' Report, she refers to the BioInitiative Report (2012). Please refer to the Public Utility Commission of Texas (PUCT) staff *Report on Health and Radiofrequency Electromagnetic Fields from Advanced Meters* dated December 12, 2012. The report may be found at http://www.puc.texas.gov/industry/electric/reports/smartmeter/SmartMeter_RF_EMF_Health_12-14-2012.pdf. Please confirm that the PUCT staff report states the following on p. 17:

> "The 'BioInitiative Report' is an example of a report that received notoriety despite being viewed negatively by the research community. …
>
> The report is often cited by opponents of wireless technology, but it was widely criticized by government research agencies and subject matter experts in Australia, Belgium, the European Commission, France, Germany, and the Netherlands. It was also criticized by EPRI and the IEEE. The overall opinion of these institutions was that the report had many shortcomings. Some of the stated criticisms were that the report:
>
> - Provided views that were not consistent with the consensus of science;
> - Recommended safety limits that were not supported by the weight of scientific evidence;
> - Included selection bias in several research areas;

- Lacked objectivity and balance; and
- Suffered from uneven editing quality."

7.20 At pp. 6-7 of her report, Dr. Sears says that "Epidemiological studies are unlikely to find a correlation between ongoing radiofrequency exposure and symptoms of electromagnetic hypersensitivity because people with sensitivities avoid exposures that provoke symptoms" and criticizes "Cohort study on the effects of everyday life radio frequency electromagnetic field exposure on non-specific systems and tinnitus" by Frei, Mohler, Braun-Fahrlander, Frohlich, Neubauer and Roosli (abstract available at http://www.ncbi.nlm.nih.gov/pubmed/21982030). Please confirm that this study took into account exposure to both far-field exposure (which would be unavoidable) and reports of near-field exposure in reaching the conclusion.

7.21 At p. 13 of her report, Dr. Sears says: "There are many examples, but this was recently demonstrated as more pronounced effects on slow-wave and rapid-eye-movement sleep in rats exposed to 900 MHz modulated signals, compared with unmodulated, or sham exposures". She cites "Non-thermal continuous and modulated electromagnetic radiation fields effects on sleep EEG of rats" by Mohammed, Frahmy, Radwan and Elsayed (available at www.sciencedirect.com/science/article/pii/S2090123212000343). Please confirm that this study actually concluded that there was no significant effect on slow-wave sleep:

> "In the present study the exposure of the animals to 900 MHz RFR <u>either continuous or modulated at 8 and 16 Hz resulted in non-significant changes</u> of all EEG bands during SWS. However, significant changes have been recorded during REM sleep especially with modulated electromagnetic radiation fields. This result denotes that the REM sleep is more sensitive to changes due to electromagnetic radiation exposure than SWS"

7.22 At p. 14 of her report, Dr. Sears says that the study "Effects of cellular phone emissions on sperm motility in rats" by Yan, Agresti, Bruce, Granlund, and Matloub, exposed rats to "3 hours daily cell phone exposure" (abstract available at http://www.ncbi.nlm.nih.gov/pubmed/17628553). Please confirm that the study exposed rats to six hours of daily exposure, not three.

7.23 At p. 14 of her report, Dr. Sears says that the study "The effects of microwave emitted by cellular phones on ovarian follicles in rats" by Gul, Celebi and Ugras (abstract available at http://www.ncbi.nlm.nih.gov/pubmed/19241083) exposed rats to "cell phone radiation 15 minutes daily". Please confirm that the study actually exposed rats to cell phone radiation for 24 hours per day, with the phone being in "talk" mode twice daily for 15 minutes each time.

7.24 At p. 15 of her report, Dr. Sears states that the study "Mobile phone emission modulates event-related desynchronization of alpha rhythms and cognitive-motor performance in health humans" by Vecchio, Buffo, Sergio, Iacoviello, Rossini and Babiloni (abstract available at http://www.ncbi.nlm.nih.gov/pubmed/21873111) found

"decreased cortical activity and decreased reaction time in healthy volunteers". Please confirm that:

7.24.1 the study found enhanced cortical neural effects and faster reaction times; and

7.24.2 the study found that the results occurred only in the "acutely exposed brain hemisphere".

7.24.3 the study at footnote 55 found only that the "localized" area of the brain exposed to the radiation was effected.

7.25 Please provide any evidence that proves that FortisBC's advanced meters do not comply with Health Canada Safety Code 6 (2009).

8.0 Reference: Exhibit C9-10-1 – Comments from Isaac Jamieson

8.1 Has Dr. Jamieson previously submitted evidence to and/or testified before courts or regulatory tribunals in Canada or the United States in relation to any of the following: the potential health effects of non-ionising radio frequency emission ("RF"), medicine, health sciences, engineering, wireless technologies, the costs and capabilities of "smart grid technologies" generally, applications and network communication protocols, including metering protocols, industrial control and automation systems, or applied cryptography? If so, please submit a list that includes the date the evidence was submitted, the name of the matter/docket under which the evidence was submitted, and the name of the court/regulatory tribunal.

8.2 Has Dr. Jamieson ever previously been disqualified from acting as an expert witness before courts or regulatory tribunals in Canada, the United States, or the United Kingdom? If so, please submit a list that includes the date of disqualification, the name of the matter/docket under which the evidence was submitted, and the name of the court/regulatory tribunal.

8.3 Please confirm or explain otherwise that Dr. Jamieson's academic degrees are in architecture and environmental science related to indoor environments.

8.3.1 Other than the approximately one year period working as a research associate in the Department of Epidemiology & Public Health, Imperial College London, please confirm that Dr. Jamieson has acquired no academic qualifications or degrees in the fields of epidemiology or medicine.

8.3.2 Please confirm that Dr. Jamieson is not a physician.

8.3.3 Please confirm that Dr. Jamieson has never had clinical experience with patients.

8.3.4 Please confirm that Dr. Jamieson does not have a university degree in engineering.

8.3.5 Is Dr. Jamieson aware that Measurement Canada is responsible for assessing electoral electrical measurement accuracy?

8.3.6 Please explain why Dr. Jamieson is in a better position than Measurement Canada to assess electrical measurement accuracy.

8.4 If in any respect the confirmation requested in 8.3.1 to 8.3.4 cannot be provided, please detail in what respect the statements are in error.

8.5 Please confirm that Dr. Jamieson is not the author of any of the studies cited in his report except for the six documents cited in Appendix A.

8.6 At p. 162 of Dr. Jamieson's report at Exhibit C9-10-1 ("Dr. Jamieson's Report"), he suggests that in British Columbia "there were 196 monthly minimum extreme temperatures less than or equal to -40C". Please confirm that:

8.6.1 any such events did not occur in FortisBC's service territory;

8.6.2 Non-advanced digital meters would be affected by cold weather.

8.7 At pp. 163-171 of Dr. Jamieson's Report, he refers to extreme space weather. Please confirm that existing non-advanced digital meters would be vulnerable to such events.

8.8 At pp. 172-173 of Dr. Jamieson's Report, he refers to electromagnetic pulses. Please confirm that existing non-advanced digital meters would be vulnerable to such events.

8.9 At p. 173 of Dr. Jamieson's Report, he refers to power surges. Please confirm that existing non-advanced digital meters would be vulnerable to such events.

8.10 At pp. 175-178 of Dr. Jamieson's Report, he refers to cyber-attacks. Please confirm that existing non-advanced digital meters would be vulnerable to such events.

8.11 At p. 77 of Dr. Jamieson's Report, he recommends adoption of a "Precautionary Principle". Please review Health Canada's response dated June 19, 2008 to a petition filed by Dr. M. Havas *Request that first generation DECT phones be banned in Canada*, a copy of which has been requested in CSTS IR 1.9.3 to Dr. Maret. The document is available at http://www.oag-bvg.gc.ca/internet/english/pet_253_e_31629.html. Please confirm that in its response to the petition by Dr. M. Havas, Health Canada states the following:

> "All science-based EMF guidelines, including Safety Code 6, intrinsically use the precautionary principle in the design of exposure limits, in that the uncertainties in measurements and application of safety margins are incorporated in their specification. Safety Code 6 is based upon a review of all relevant scientific studies utilizing a weight-of-evidence basis." (Reference: Answer to Questions 1 & 3)

8.12 At p. 72 of Dr. Jamieson's Report he states "there is much evidence documenting biological effects at non-thermal levels." Please confirm that in Safety Code 6 (2009), Health Canada states at p. 7:

> "The exposure limits specified in Safety Code 6 have been established based upon a <u>thorough evaluation of the scientific literature related to the thermal and possible non-thermal effects of RF energy on biological systems</u>. <u>Health Canada scientists consider all peer-reviewed scientific studies, on an ongoing basis</u>,

and employ a weight-of-evidence approach when evaluating the possible health risks of RF energy." (underlining added)

8.12.1 Please confirm that in Safety Code 6 (2009), Health Canada states at p. 9:

"The scientific literature with respect to possible biological effects of RF energy has been monitored by Health Canada scientists on an ongoing basis since the last version of Safety Code 6 was published in 1999. <u>During this time, a significant number of new studies have evaluated the potential for acute and chronic RF energy exposures to elicit possible effects on a wide range of biological endpoints</u> including: human cancers (epidemiology); rodent lifetime mortality; tumor initiation, promotion and co-promotion; mutagenicity and DNA damage; EEG activity; memory, behaviour and cognitive functions; gene and protein expression; cardiovascular function; immune response; reproductive outcomes; and perceived electromagnetic hypersensitivity (EHS) among others. Numerous authoritative reviews have summarized this literature.

<u>Despite the advent of thousands of additional research studies on RF energy and health, the predominant adverse health effects associated with RF energy exposures in the frequency range from 3 kHz to 300 GHz still relate to the occurrence of tissue heating and excitable tissue stimulation from short-term (acute) exposures</u>. At present, there is no scientific basis for the premise of chronic and/or cumulative health risks from RF energy at levels below the limits outlined in Safety Code 6. <u>Proposed effects from RF energy exposures in the frequency range between 100 kHz and 300 GHz, at levels below the threshold to produce thermal effects, have been reviewed</u>. At present, these effects have not been scientifically established, nor are their implications for human health sufficiently well understood. Additionally, <u>a lack of evidence of causality, biological plausibility and reproducibility greatly weaken the support for the hypothesis for such effects</u>. <u>Thus, these proposed outcomes do not provide a credible foundation for making science-based recommendations for limiting human exposures to low-intensity RF energy</u>." (underlining added)

8.12.2 Please confirm that the text quoted above from Health Canada's Safety Code 6 indicates that Health Canada has in fact considered the research studies on possible RF effects unrelated to tissue heating, and has concluded that such effects have not been scientifically established and that the studies do not provide a credible foundation for making science-based recommendations to reduce the Safety Code 6 exposure limits. If not confirmed, please explain.

8.13 On p. 48 of Dr. Jamieson's Report he states that the peak power density from ZigBee radio is 31 μW/cm^2. Please provide the definition of peak power density used, and how it relates to the metric used by Health Canada Safety Code 6.

8.14 On p. 49 of Dr. Jamieson's Report he states that "Acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz that may have adverse consequences on health," citing the World Health Organization (WHO 2007). Please confirm that Dr. Jamieson's reference to "WHO 2007" above is to the following document and that the quoted extract is from the document's conclusion (section 12.6, p. 355): http://www.who.int/peh-emf/publications/Chapter%2012.pdf.

8.14.1 Please confirm that immediately after the quoted extract above, the same "WHO 2007" document states the following:

> "Therefore, exposure limits are needed. International guidelines exist that have addressed this issue. Compliance with these guidelines provides adequate protection."

8.14.2 Does Dr. Jamieson consider that including the statement "acute biological effects have been established for exposure to ELF electric and magnetic fields in the frequency range up to 100 kHz that may have adverse consequences on health" in his report without the immediately following statements that compliance with existing guidelines provides adequate protection provides a fair, balanced and unbiased assessment of the issue?

8.15 On pages 79-81 of Dr. Jamieson's Report he refers to the WHO / IARC classification of RF as Group 2B: the agent is *possibly carcinogenic to humans*. Why in Dr. Jamieson's opinion would the WHO / IARC classify RF as Group 2B: the agent is *possibly carcinogenic to humans* (i.e., there is *inadequate evidence of carcinogenicity* in humans) and not classify RF as either Group 2A: the agent is *probably carcinogenic to humans* (i.e., there is *limited evidence of carcinogenicity* in humans) or a more probable classification?

8.15.1 Does Dr. Jamieson agree that the WHO / IARC has made it clear that the primary reason for classifying RF as Group 2B relates to uncertainty regarding long term heavy cell phone use close to the ear and certain rare brain cancers. If Dr. Jamieson does not agree, please explain why not? (Reference: http://www.iarc.fr/en/media-centre/iarcnews/2011/IARC_Mobiles_QA.php)

8.15.2 Was Dr. Jamieson aware when he completed his report submitted in this proceeding that subsequent to the IARC Monographs meeting that resulted in the Group 2B classification, a Danish cohort study that was printed in the British Medical Journal, October 2011, found:

> "(the Danish cohort) study showed no link between mobile phone use, including longer term use of more than 10 years, and the risk of glioma and any other brain tumour. These are new results that were not available at the time of the IARC Monographs meeting."

8.16 On p. 71, Table 2.2, of Dr. Jamieson's Report he provides RF guidelines from other countries/cities as well as the International Commission on Non-Ionizing Radiation Protection (ICNIRP) levels. A total of 10 countries, 1 state and 2 cities are listed in Dr. Jamieson's Table 2.2. Why has Dr. Jamieson chosen to show only 10 countries, 1 state and 3 cities in his Table 2.2?

8.16.1 Is Table 2.2 intended to show all of the countries and cities throughout the world that to Dr. Jamieson's knowledge have lower RF exposure limits than the ICNIRP limits?

8.16.2 Should one conclude from this evidence that only 10 countries, 1 state and 3 cities throughout the world have lower RF exposure guidelines than the ICNIRP limits?

8.16.3 In Table 2.2 of Dr. Jamieson's Report he has included Salzburg, an Austrian state. Please confirm that the Austrian constitution has assigned sole authority to the federal parliament for matters related to limits for exposure of radio frequency and that the enforcement of these laws are also exclusive to their federal government.

8.16.4 Please confirm that Austria's binding federal limit for RF exposure limit matches the ICNIRP limits.

8.16.5 Please confirm that in Safety Code 6 (2009), Health Canada states at p. 7:

> "It must be stressed that Safety Code 6 is based upon scientifically-established health hazards and should be distinguished from some municipal and/or national guidelines that are based on socio-political considerations."

8.16.6 Please submit any specific, credible evidence Dr. Jamieson has that demonstrates the 10 countries, 1 state and 3 cities shown in Dr. Jamieson's Table 2.2 set their RF exposure standards based upon scientifically-established health hazards and not based on other considerations such as socio-political considerations.

8.16.7 Does Dr. Jamieson agree that the radio power density of the FortisBC advanced meter is less than 0.5 per cent of Health Canada Safety Code 6 at a distance of one wavelength away from the meter, approximately 20 to 30 centimeters (Reference: Attachment BCH 2.2 to FortisBC's response to BC Hydro IR 2.2.2)? Further, are these levels significantly less than the limits set by the ICNIRP?

8.17 On p. 70 of Dr. Jamieson's Report he suggests it would be to the benefit of all parties if a comprehensive presentation of available scientific evidence on health effects noted at the frequencies FortisBC intends to use and "anecdotal" evidence of adverse health were presented to the Provincial Health Officer. Dr. Jamieson appears to be suggesting that British Columbia's Provincial Health agency is not aware of available evidence on potential health effects of RF. Please review the Statement of the Chief Medial Health Officer, Vancouver Coastal Health, dated June 2011. The document is Attachment BCH 2.1 to FortisBC's response to BC Hydro IR 2.1 in this proceeding. Please confirm the Chief Medical Officer states the following in that document:

> "In 2005, in response to community concerns and after reviewing the evidence, the Vancouver Coastal Health Chief Medical Health Officer concluded that the installation of cellular antennae in the community did not create health risks for the public, and that Health Canada's Safety Code 6 provided an appropriate level of protection. At that time, the Chief Medical Health Officer also committed to undertake periodic reviews of the evidence and to provide public updates as necessary. The Chief Medical Health Officer provides the following updated evidence review and associated conclusions:
>
> The scientific consensus remains unchanged: radiation from cellular base stations is far too low to cause adverse health effects in the community. The current Canadian (Safety Code 6 revised 2009) and international standards such as ICNIRP provide significant safety margins for public exposure to RF." (underlining added)

8.18 Dr. Jamieson states at p. 39 of his report:

> "Reference is made by the present author to the reported case of severe die off of a bush that was reported after the installation of wireless smart meters. It was reported that none of the other plants or trees in the area (further away from the units) were affected. which appears to suggest that the emissions from smart meters. in this case a bank of meters may be biologically active. Refer also to the Chapter on 'Environmental Concerns.'"

Has Dr. Jamieson considered other factors that could have led to this die off?

8.18.1 Have there been observations of other bushes that have perished near the advanced meter installations?

8.18.2 Would Dr. Jamieson have expected more of such observations if this die off was the result of an advanced meter installation?

8.18.3 Can Dr. Jamieson explain why there is no wide-spread decay of vegetation in North America given that over 50 million RF advanced meters were installed and in operation as of mid-2012?

8.19 Dr. Jamieson references a study at p. 39 of his report:

> "Gustavs (2012a) reports that in EMF surveys she has undertaken in individual bedrooms where there is a wireless smart meter attached to the exterior wall behind which someone tries to sleep, peak microwave power density exposure levels across the bed may range from 0.01 to 0.15 μW/cm^2. She notes that ..... the EMF Working Group of the Austrian Medical Association recommends to keep peak levels of radio-frequency radiation in bedrooms below 0.001 μW/cm^2, preferably below 0.001 μW/cm^2"

Please note that the letter cited does not purport to have done measurements on advanced meters. Were there any measurements performed?

8.19.1 If so, how were measurements by Gustavs performed?

8.19.2 Were other sources of exposure excluded?

8.20 Dr. Jamieson states at p. 41 of his report that:

> "A number of effects have been scientifically established, and the implications of these have led to a number of scientists, and foreign health agencies, advocating the need for the adoption of more onerous standards. The permitted exposure levels in the Canada are substantially higher than those permitted in many other countries, including China, Bulgaria, Italy, Poland, Switzerland and Russia."

What exposures are prescribed by the other jurisdictions referenced?

8.20.1 Please confirm that the average exposure from the FortisBC advanced meters is below the levels prescribed in these other jurisdictions, when this exposure is measured in accordance with the procedures in each jurisdiction.

8.21 In section 3.1 of Dr. Jamieson's Report, he refers to the impact of EMF on pollinating insects and birds. Please refer to the article by Robert W. Currie, Stephen F. Pernal and Ernesto Guzmán-Novoa, "Honey bee colony losses in Canada" (2010) 49 Journal of Apicultural Research 104 (available at http://uoguelph.ca/canpolin/Publications/Currie,%20Pernal%20and%20Guzman%202010%20Honeybee%20colony%20loses%20in%20Canada.pdf) Please confirm that it provides: "Increased rates of winter colony losses in Canada are probably the result of regional differences in weather patterns that affected forage availability for bees, fall feeding management, mite and bee population growth, V. destructor treatment timing,

the presence of Nosema spp., viruses and other diseases and the spring build-up of colonies. These stressors interacting in combination with each other affected colony survival, but direct and indirect effects associated with acaricide resistance and the failure to control V. destructor mites are believed to be the most important factors related to colony loss in Canada."

8.22 Is Dr. Jamieson aware of a concept of blackbody radiation. If so:

8.22.1 Is blackbody radiation natural?

8.22.2 What is the RF exposure from blackbody radiation?

8.22.3 What is the overall exposure from blackbody radiation?

8.23 Dr. Jamieson states at p. 43 of his report:

> "The switched mode power supply (SMPS) of smart meters can create high-frequency voltage transients (HFVT), in the 4-60 kHz range, on indoor wiring. Tests have shown that frequencies in this range, at intensities lesser than those measured on the wiring, can cause adverse health effects. This is discussed in detail elsewhere in this present section."

What is the drop in exposure with distance?

8.23.1 What is the exposure from an advanced meter mounted on the utility pole away from the residence?

8.24 Would Dr. Jamieson agree that his statement below (from p. 49 of Dr. Jamieson's Report) would also apply to advanced meters and, if not, why not?

> Many radiofrequency and microwave frequency signals can be excluded from the environments that individuals occupy through shielding, the types of building materials used, and the choice of using non RF/microwave emitting technologies. Biological effects have been observed with both natural and manmade fields.

8.25 Does Dr. Jamieson know if the measurements in the source he cites below (p. 49 of Dr. Jamieson's Report) utilized precautions to exclude non-advanced meter induced transients on the power lines?

> "Extensive measurements have demonstrated that all of the [smart] meters measured so far...emit noise on the customer's electric wiring in the form of high frequency voltage spikes, typically with an amplitude of 2 volts, but a frequency anywhere from 4,000 Hertz, up to 60,000 Hz. The actual frequency of the phenomena is influenced by the devices that are plugged into the customer's power. Some houses are much worse than others,

> and this observation has been confirmed by...installers that have talked to us," – quote by engineer (Brangan & Heddle 2011).

8.26 Would Dr. Jamieson expect based on his statement below (p. 61 of Dr. Jamieson's Report) that the metal of the meter panel would also block and degrade wireless signals from the advanced meter and, if not, why not?

> **Signals from wireless HAN can be blocked or degraded by the presence of some types of building materials.** <u>In particular signals can often be blocked by foil-backed plasterboard (used in many buildings) and some types of foil-backed high thermal insulation.</u> Wire mesh used in some old buildings for plaster and lath work also blocks signals. Concrete and some dense building materials too can compromise signals. Signals can also be deliberately blocked by the use of particular materials and finishes by electrosensitives who attempt to screen themselves and their homes from RF/microwaves which they say can often make them feel unwell.

8.27 Please provide any evidence that proves that FortisBC's advanced meters do not comply with Health Canada Safety Code 6 (2009).