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February 7, 2013

VIA ELECTRONIC MAIL

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Erica M. Hamilton, Commission Secretary

Dear Sirs/Mesdames:

Re: FortisBC Inc. Application for a Certificate of Public Convenience and Necessity for the Advanced Metering Infrastructure Project ~ Project No. 3698682

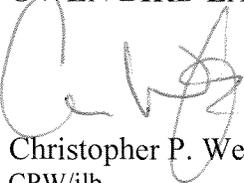
We are counsel for the Commercial Energy Consumers Association of British Columbia (CEC). Attached please find the CEC's Information Requests on the filed evidence of Margaret E. Sears pertaining to the above-noted matter.

A copy of this letter and attached Information Requests has also been forwarded to FortisBC and registered interveners by e-mail.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

OWEN BIRD LAW CORPORATION



Christopher P. Weafer
CPW/jlb
cc: CEC
cc: FortisBC Inc.
cc: Registered Intervenors

Commercial Energy Consumers Association of BC

Information Request #1

For Margaret E. Sears (M. Eng., PhD)

1. Exhibit C9-8, 7C –Margaret Sears CV

Research, assess and write scientific literature in a variety of fields including health and medicine, epidemiology and toxicology, chemistry, ecology, biology and chemical engineering. This includes large scientific reports, involving literature searches, data extraction, analysis and review, writing, editing, managing references and maintaining version control; both of my own work and with groups of co-authors.

Prepare and review scientific journal articles.

Lecture at the Universities of Ottawa and Toronto, and Lakehead University, and make public presentations regarding environmental health.

Conducted consultations among citizens' groups, made government committee and tribunal submissions.

Diverse laboratory and field experience in chemical engineering and applied chemistry, including occupational health and safety, and now work with a broad network of scientific experts, physicians and others on topics related to environment and health.

Medical journal guest editor.

1.1. Please provide a list of topics in environmental health on which Margaret Sears has made public presentations and peer reviewed studies over the last two years.

1.1.1. Please provide a list of the Titles of presentations and peer reviewed studies relating directly to electromagnetic radiation and the date and venue presented.

1.2. Please provide a complete list of the scientific journal articles professionally reviewed by Margaret Sears relating directly to health effects of electromagnetic radiation.

2. Exhibit C9-8, 7C – CV Margaret Sears pages 3 and 4

Sears, Margaret E., and Stephen J. Genuis. "Environmental Determinants of Chronic Disease and Medical Approaches: Recognition, Avoidance, Supportive Therapy, and Detoxification. *J Environ Public Health*. Article ID 356798 (2012): 1–15.

Healthy Children/Healthy Environment: Improving the Odds: Part 2

(authors in alphabetical order) Riina I. Bray, M. Janet Kasperski, Lynn M. Marshall, Margaret E. Sears. [March 31, 2011. Respectfully submitted on behalf of the Ontario College of Family Physicians to the Environmental Health Program, Health Canada.]

The Medical Perspective on Environmental Sensitivities

Margaret E. Sears

[February 2007 – prepared for the Canadian Human Rights Commission, in collaboration with the Ontario College of Family Physicians Environmental Health Committee, and other academics, physicians and architects]

Available at: [http://www.chrc-](http://www.chrc-ccdp.ca/research_program_recherche/esensitivities_hypersensibilitee/toc_tdm-en.asp?highlight=1)

[ccdp.ca/research_program_recherche/esensitivities_hypersensibilitee/toc_tdm-en.asp?highlight=1](http://www.chrc-ccdp.ca/research_program_recherche/esensitivities_hypersensibilitee/toc_tdm-en.asp?highlight=1)

2.1. Please provide a copy of each report.

3. Exhibit C9-8, 7B page 3 and page 4

(Bob.Johnson@L-3com.com) replied that, “The standard sampling rate of 5 Hz means an integration time of 270 msec. So the peak hold would be the peak obtained within that sample.” He further confirmed that would be the case for the measurements made by Planetworks. Thus with “packets” between 8 ms and 125 ms, assuming a square wave of emission as depicted in Itron literature, the peak power measurement of $4 \mu\text{W}/\text{cm}^2$ at 30 cm from the meter would translate into a true peak power between $8.6 \mu\text{W}/\text{cm}^2$ (over 125 ms) and $135 \mu\text{W}/\text{cm}^2$ (over 8 ms). This measurement at 30 cm would be consistent with the statement in CSTS IR1 question 57.7 indicating a level of peak power at an undisclosed distance (presumably measured at 20 cm as indicated by FCC):

900 MHz RF Mesh Radio: $227 \mu\text{W}/\text{cm}^2$
2.4 GHz ZigBee Radio: $31 \mu\text{W}/\text{cm}^2$

3.1. Please confirm that the above calculation being use is:

microwatts/cm² * (integration time/packet time)

- 3.1.1. Please confirm that the peak power calculation used above results in the calculated peak power density of each packet being added together.
- 3.1.2. Please confirm that each packet would not be transmitted simultaneously over the integration time, but would in fact be transmitted sequentially.
- 3.1.3. Please explain why the above calculation represents a ‘true’ peak power as compared to the average peak power calculated.
- 3.1.4. Please explain why Margaret Sears believes that each of peak and average energy are relevant.

4. Exhibit C9-8, 7B Margaret Sears page 4

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.

- 4.1. Would Margaret Sears agree that in the absence of background noise, smart meter emissions would be lower than Itron measured if the measurements were being conducted accurately?
- 4.2. Is Margaret Sears implying that Itron is claiming that the discrepancy lies with physics?
- 4.3. Does Margaret Sears agree that the ability to replicate studies is a key determinant in the validity of testing?

5. Exhibit C9-8 7B Margaret Sears page 5

I work with an internationally prominent group that conducts systematic reviews of medical literature. These reviews follow strict protocols to search the medical literature thoroughly, and to assess critically primary research studies, in order to answer carefully-refined research questions. Researchers, writers and medical journal editors are eager to improve design and reporting of research in order to improve reliability, transparency and ultimately patient and public health. The Enhancing the Quality and Transparency of Health Research (EQUATOR) Network facilitates development and provides access to reporting guidelines (<http://www.equator-network.org>).

5.1. Please confirm that the group with which Margaret Sears works is the EQUATOR Network referenced two sentences below.

5.1.1. If not, please identify the group being referenced.

5.1.2. Does EQUATOR or the group being referenced have a code of conduct or similar professional obligations to which Margaret Sears is bound?

5.1.2.1. If so, please provide a copy.

5.2. Please clarify the manner in which Margaret Sears works with the group referenced.

5.3. Please identify the relevant reporting guidelines for conducting systematic reviews of health literature related to electromagnetic radiation and provide a copy of each.

5.4. Is it fair to say that appropriate answers to research questions relating to weighing the validity of differing medical opinions requires: A) a thorough search of the medical literature, B) critical scientific assessment and C) accurate and representative reporting of all the relevant evidence without bias by the researcher, writer or medical journal editor?

5.4.1. If not, please explain why and give examples.

5.5. Is it fair to say that in assessing relevant literature, the critiquing of studies should be conducted equitably and the results reported evenly to produce unbiased answers?

5.5.1. If not, please explain why not and give examples.

5.6. Is it fair to say that a question regarding the weight of medical literature should appropriately expect an unbiased response from a professional experienced in conducting literature reviews?

6. Exhibit C-9-8 7B Margaret Sears Page 5

Work in environmental health as well as systematic reviews illuminates many potential pitfalls when assessing medical evidence, some of which are important to understanding the controversies regarding radiofrequency effects on health.

7. Does Margaret Sears consider herself an expert in identifying and estimating bias in analyzing individual medical and scientific reports?

- 7.1. If so, has Margaret Sears assessed each report she reviews for possible bias before relying upon the results.
- 7.2. Please provide a complete list of the reports Margaret Sears has reviewed and assessed for bias that are cited in her evidence.
- 7.3. Please identify the bias that Margaret Sears has noted in the evidence she has cited.

8. Exhibit C-9-8 7B Margaret Sears Page 5

Provocation studies of electromagnetic hypersensitivity have particular difficulties and limitations, recently reviewed by Tuengler et al. They recommended objective measures distinguishing electromagnetic hypersensitive participants from others.⁶

- 8.1. Please provide the report (reference 6) Tuengler A, Von Klitzing L. Hypothesis on how to measure electromagnetic hypersensitivity. Electromagnetic Biology and Medicine. 2013 Jan 9; 1301091306100007.

9. Exhibit C9-8 7B Margaret Sears Page 6

Biases may arise from definition of comparator groups. For example, Danish cell phone studies that post-date the International Agency for Research on Cancer (IARC) determination that radiofrequencies used in cell phone communication are a Type 2B (possible) human carcinogen, were referenced in the Exponent report and Planetworks materials. These studies did not overturn the IARC determination for a few reasons, including that a narrow and marginally relevant age range of cases were used in the research, that would result in exposure misclassification (Bioinitiative Report p 835).⁷

- 9.1. Please provide a copy of the BioInitiative Report and file with the commission.
- 9.2. Please specify the paragraph(s) to which Margaret Sears is referring and clarify if she is referencing the cohort study and the updates.
- 9.3. Please provide the context in which any individual study could have 'overturned' the IARC determination.
- 9.4. Please confirm if Margaret Sears is stating that the Danish report and updates are not valid reference material due to bias in comparator groups, and should therefore be discounted as to their credibility.
 - 9.4.1. If so, please provide a fulsome rationale for this determination.
 - 9.4.2. Please identify any opposing viewpoints on the validity of the Danish studies.
 - 9.4.3. In referencing the BioInitiative Report critique, is Margaret Sears implying that the BioInitiative Report provides a thorough and unbiased assessment of the validity of the Danish studies.

10. Exhibit C9-8 7B Margaret Sears Page 6

Electromagnetic hypersensitivity is under-recognized, and there are social and cognitive barriers to individuals recognizing it within themselves (indeed, the same is true for all environmental sensitivities). With no objective tests and infrequent application of allocation screening (e.g. a lengthy questionnaire, and medical examination and testing to rule out other diagnoses), many researchers depend upon self-report for group allocation. Studying headache associated with using cell phones, Hillert *et al.* noted, “The higher prevalence of headache in the non-symptom group towards the end of RF exposure justifies further investigation of possible physiological correlates. The current study indicates a need to better characterize study participants in mobile phone exposure studies and differences between symptom and non-symptom groups.”¹⁰

- 10.1. Is Margaret Sears stating as a scientific fact that ‘electromagnetic hypersensitivity is a physical condition, disease or syndrome’
 - 10.1.1. Please explain what medical condition ‘electromagnetic hypersensitivity’ references and provide the factual basis on which the statement is made.
- 10.2. Is Margaret Sears stating as a scientific fact that ‘electromagnetic hypersensitivity is under-recognized’?
 - 10.2.1. Please define ‘under-recognized’ and explain by whom ‘electromagnetic hypersensitivity is under-recognized.
- 10.3. Would Margaret Sears agree that objective tests are best method of determining the existence of a syndrome or disease?
- 10.4. Please provide the relevant studies for objectively verifying EHS.

11. Exhibit Exhibit C-9-8 7B Page 7

Another undeniable bias comes from vested interests. Huss *et al.* reported in 2007 that industry-funded studies into health effects of radiofrequency radiation should take sponsorship into account, as although most studies (68%) reported significant biological effects, studies solely funded by the industry were almost ten times more likely to report no significant problems.¹⁵ Funding bias had not changed substantially in 2010 when the

- 11.1. Could study size or quality be other possible causes for the contrasting ratio between reporting differences?
- 11.2. Is it possible for research bias to work in the opposite direction? Ie. Those studies without industry funding are pre-disposed for any reason to find biological effects where none exist?
 - 11.2.1. If not, please explain why not.
- 11.3. Please identify all other factors, other than bias, that could rationally account for the discrepancy cited.

12. Exhibit C9-8 7B Margaret Sears Page 10

Weight of Evidence: Thousands of scientific studies examine effects of electromagnetic phenomena on living creatures. Every study has strengths and weaknesses that are inherent to study design, arise from resource limitations, may be simply poor reporting of the research, or perhaps reflect ineptitude. It is not simple to apply all of these studies to real life complexities of human exposure to radiofrequency radiation; there is no single, perfect method to synthesize such diverse medical evidence. Various national and

- 12.1. Would Margaret Sears agree that assessing the weight of evidence is a very large undertaking that requires expertise, judgement, experience and resources to conduct appropriately?

13. Exhibit C9-8 7B Margaret Sears Page 12

BioInitiative2012⁷ (1479 pages) is a collection of chapters largely prepared by scientific researchers who have published in their respective fields of expertise. The basic thrust is that there is much greater certainty now than there was five years ago that radiofrequency radiation has adverse effects on health, and that prudent prevention is highly justified; indeed the authors contend over-due.

- 13.1. Please confirm that the scientific researchers included in BioInitiative 2012 are not necessarily representative of the broad base of quality scientific researchers studying in the field of electromagnetic radiation.
- 13.2. Please provide Margaret Sears' assessment of the credentials of Cindy Sage.
- 13.3. Has Margaret Sears assessed the BioInitiative Report for bias?
 - 13.3.1. If not, why not?

14. Exhibit C-9-8 7B Page 14

Hundreds of studies over decades have reported DNA damage, as well as other effects of various "non-thermal" electromagnetic exposures. With uncertainties in experimental and equipment design (poorly reported in publications) some findings were not replicated (often in ostensibly superior equipment), or ascribed to (micro-) thermal effects.¹⁸ Nevertheless, there are strong signals of significant effects.

- 14.1. Does Margaret Sears believe that the BioInitiative Report has none of these problems.

15. Exhibit C-9-8 7B page 16

The bottom line of the current research is that exposure to doses of the radiofrequencies to be used by the proposed meters at levels much lower than present guidelines, can have biological effects on multiple systems. Furthermore, the young and those with co-morbidities are at heightened risk. Although the proposed exposure levels are less than with other technologies such as cell phones, pulsed signals are not comparable to

16. Exhibit C9-8 7B page 18

Recognition of electromagnetic hypersensitivity as an important issue is reflected in many committed, hard working groups of individuals whose experiences have convinced them that this is an important issue, including interveners in this present proceeding. Although doubtless not a complete list, the following are some more examples.

- 16.1. Please provide a list of relevant health and other organizations that do not recognize electromagnetic hypersensitivity as an important issue.

17. Exhibit C9-8 7C, Margaret Sears CV

Lecture at the Universities of Ottawa and Toronto, and Lakehead University, and make public presentations regarding environmental health.

- 17.1. Please describe the state of Wi-Fi services at the Universities of Ottawa and Toronto and Lakehead University and whether or not they are expanding or being eliminated.
- 17.2. Please provide copies of any presentations Margaret Sears has made to the Universities regarding RF radiation on the campus.
- 17.3. Please indicate whether or not the offices in Margaret Sears departments have any wireless equipment installed in them.
- 17.4. Please indicate whether or not Margaret Sears has a cell phone and whether or not her colleagues in the department have cell phones.
- 17.5. Please indicate whether or not Margaret Sears has knowledge of any RF studies regarding the campus at the universities and please provide copies of any such studies if they exist.
- 17.6. Please provide a description of an activity Margaret Sears has participated in with respect to RF policy at the universities and or the provincial level