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THERMOGRAFIX consulting corporation

November 23rd , 2012

British Columbia Utilities Commission
Sixth Floor, 900 Howe Street, Box 250
Vancouver, BC, V6Z 2N3
Attn: Erica Hamilton, Commission Secretary
commission.secretarv@bcuc.com

Re: FortisBC Inc. (FBC), Application for a Certificate of Public Convenience and Necessity (CPCN) for the Advanced Metering Infrastructure (AMI) Project
Project No. 698682; Order G-1 05-12

Dear Madam:

Please find below my IR2 for Fortis Application:

1. Does FortisBC agree that humans are controlled by electricity—human bodies are made up of a vast network of interactive electrical components that surely surpass in intricacy those of any supercomputer? Electrical signals are used throughout the nervous system to activate muscles, cells and our consciousness; basically the electrical system in the human body is responsible for all thinking and movement? If FortisBC does not agree with this premise, please explain.

2. Does FortisBC agree that the human body is conductive and that exposure to:
   - electric fields
   - magnetic fields
   - electro–magnetic radiation (such as from smart meters, cell phones, cell phone transmitter towers, wireless household gadgets etc.)

   induces currents in human bodies which, in turn, create an internal alternating body–voltage? If not, please provide any corrections and clarifications.

3. Does external electromagnetic radiation induce changes in cellular functions in human bodies? If yes, please explain briefly.

4. Please state the recommended threshold of induced AC body–voltage for humans and cite your reference.

5. Please state the minimum radio wave/microwave electromagnetic energy exposure (in µ watts/cm2) at which excitable human biological tissue can be stimulated.

6. Please name the guideline and out of there provide the value for the recommended maximum allowable radio wave/microwave electromagnetic stimulation of human biological tissue.

7. X–ray exposures have cumulative biological effects. Please state your position on whether radio wave/microwave radiation exposure also has cumulative effects. Please provide references for your position.

8. Does FortisBC agree that biological effects are associated with radio wave/microwave energy radiation below the US and Canada regulatory limit as stated in the studies in Biological Effects Of Microwave Below U.S. & Canada's Regulatory Limit in the link http://citizensforsafetechnology.org/Biological–effects–of–microwaves–below–US–and–Canadas–regulatory–limit,8,1195
If you do not agree, please state why not.

9. Is FortisBC aware and do you agree that the Royal Panel's report "Review of the Potential Health Risks of Radiofrequency Fields from Wireless Telecommunication Devices" http://www.rsc.ca/documents/RFreport–en.pdf admits that Safety Code 6 (SC6) does not apply to non–thermal biological effect protection?
If not, please state where and how SC6 does, indeed, take into account non–thermal effect protection.

10. Does FortisBC agree that "Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz - Safety Code 6 (2009)" (SC6) is only addressing thermal biological effects and not the non–thermal effects due to persistent radio wave/microwave radiation, such as from cell phones, cell phone transmitter stations, and wireless smart meters?

11.1. Please state, whether SC6 or any other guidelines or safety standards for pulsed radio wave/microwave radiation (please name these) are in place in Canada that do protect the electro–sensitive population (as per medical diagnosis/prescription), or are addressing the risk for many chronic diseases like cancer, autoimmune diseases, semen quality, birth defects, miscarriages, etc.

11.2. Please state whether in Canada and In the US the guidelines or safety standards are <u>enforced by law</u> or governmental regulation, if yes, please state which ones and by whom enforced.

12. Is FortisBC aware of any scientific data addressing safe radio wave/microwave exposure levels with regards to their non–thermal effects? If so, please state.

13. Please state whether Health Canada SC6 is a safety guideline or a safety standard, and please explain the difference of both in terms of mandatory and/or recommended practices.

14. Please state whether the May, 2011, World Health Organization/International Agency for Research on Cancer's Class 2B possible carcinogen classification of radio frequency radiation is considered in SC6, or is a review of SC6 to be expected in near future because of this recent classification?
    If not, please inquire whether Provincial Health Officer, Dr. Perry Kendall [PHO], plans to apply for an SC6 review with regard to the Class 2B classification of radio frequency radiation by Health Canada as soon as possible and inform about.

15. What is FortisBC position regarding the radio wave/microwave Class 2B possible carcinogen classification in the Work Safe B.C., Workers Compensation Act Occupational Health and Safety Regulation 5.57(1) which says: *"If a substance identified as any of the following is present in the workplace, the employer must replace it, if practicable, with material which reduces the risk to workers: (a)…2B carcinogens."* How does the Class 2B carcinogen classification of radio wave/microwaves differ from the classification given to DDT, lead, diesel fumes, Etc.?
    If FortisBC and/or PHO determines that it is safe that workers can be exposed to this kind of class 2B carcinogen (radio wave/microwave radiation,) on what grounds can FortisBC and/or PHO Kendall make this determination based on FortisBC's /PHO's experience or training to dispute the judgment of 31 IARC experts?

16. Does FortisBC agree that there is a certain percentage of our population which is/might be electro–sensitive? If so, please state the percentage as far as it is generally known to be and provide information sources.
    If FortisBC does not agree, please state why not?

17. Is FortisBC aware that in Sweden electro–hyper–sensitivity (EHS) is an officially recognized functional impairment; that in the U.S., EHS afflicted people are protected under the U.S. Disability Act, and that in Canada EHS afflicted people are recognized by the Canadian Human Rights Commission?
    If FortisBC are aware, how will FortisBC and/or PHO make sure that those recognized EHS people in British Columbia will be given an option not to be involuntarily and chronically cumulatively exposed to persistent wireless smart meter radio microwave radiation?

18. Qualified medical doctors and scientists around the globe are calling for stricter regulations and/or a moratorium on wireless technology.
    Please state FortisBC position, as to which ones, and why, FortisBC would not recognise/consider/support any of the resolutions/appeals/reports below:

Vienna Resolution 1998
Salzburg Resolution 2000
Declaration of Alcalá 2002
Catania Resolution 2002
Freiburger Appeal 2002 & 2012
Bamberger Appeal 2004

Maintaler Appeal 2004
Coburger Appeal 2005
Stockacher Appeal 2005
Oberammergauer Appeal 2005
Haibacher Appeal 2005
Pfarrkirchener Appeal 2005
Freienbacher Appeal 2005
Lichtenfelser Appeal 2005
Hofer Appeal 2005
Helsinki Appeal 2005
Parish Kirchner Appeal 2005
Saarlander Appeal 2005
Benevento Resolution 2006
Allgaeuer Appeal 2006
WiMax Appeal 2006
Brussels Appeal 2007
Bioinitiative Report, 2007
Schlüchterner appeal
Venice Resolution 2008
Berlin Appeal 2008
Paris Appeal 2009
London Resolution 2009
Porto Alegre Resolution 2009
European Parliament EMF Resolution 2009
Dutch Appeal 2009
Behind Interphone, August 7, 2009
Int'l Appeal of Würzburg 2010
Cellphones and Brain Tumors: 15 Reasons for Concern, Science, Spin and the Truth
An examination of the potential Health Impacts of Radiofrequency Electromagnetic Radiation, 2010 (House of Commons: Report of the Standing Committee on Health)
Council of Europe: “Remove wireless from schools” 2011
Sage Report 2011
Report of The Standing Committee on Health, County of Santa Cruz 2011
Board of American Academy of Environmental Medicine’s Resolution against wireless smart meters, American Academy of Environmental Medicine, January 19, 2012

19. Please state (with references) radio/microwave exposure limits/guidelines for:
   – Canada
   – USA
   – any other country and their exposure limits that FortisBC are aware of and provide links.

If these countries have different exposure limits which are lower than Canada’s, please explain why Canada should not also adopt much stricter guidelines.

20.1. Please confirm :

*"….The **precautionary principle** or precautionary approach states if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is harmful, the burden of proof that it is not harmful falls on those taking the action.*

This principle allows policy makers to make discretionary decisions in situations where there is the possibility of harm from taking a particular course or making a certain decision when extensive scientific knowledge on the matter is lacking. The principle implies that there is a social responsibility to protect the public from exposure to harm, when scientific investigation has found a plausible risk. These protections can be relaxed only if further scientific findings emerge that provide sound evidence that no harm will result.

In some legal systems, as in the law of the European Union, the application of the precautionary principle has been made a statutory requirement…"[source: http://en.wikipedia.org/wiki/Precautionary_principle]

20.2. Please state whether in Canada and/or British Columbia the Precautionary Principle with regard to the smart meter project has been considered. If so, please state how; if not, why not.

21. Please confirm that there possibly will be naturally many cases where children and/or frail older people would be sleeping with their head 2 - 3 feet away from the planned installed wireless smart meters on the other side of the bedroom's wall.

22. FortisBC as well BC Hydro depend upon PHO for confirmation of the adequacy of Health Canada's Safety Code 6, and the WHO/IARC EMR safety guidelines. If, on **medical advice and prescription**, somebody who is electro-sensitive/electro–hyper-sensitive (ES/EHS) and who must avoid electro–magnetic radiation (EMR) as much as possible, and who lives, so far, in a prior, chosen EMR–harmless environment, and if this ES/ EHS afflicted person were to be no longer free from radio wave/microwave radiation once a wireless smart meter was installed, please advise as to how this ES/EHS afflicted person might be legally able to avoid having the microwave emitting smart meter installed and be allowed to retain his/her present analog meter and whether FortisBC will cooperate to mitigate the wireless radiation.

23. Please inquire by the PHO, whether he is willing to assure an ES/EHS afflicted person and his/her medical doctor in writing that the wireless smart meters, that PHO is instrumental in approving to be affixed to homes, are biologically harmless for ES/EHS and any other persons **beyond a reasonable doubt?**
As FortisBC and PHO must be aware, "***Beyond a reasonable doubt***" is an accepted scientific measure in bio–safety. Does FortisBC /PHO agree that no less a determination should apply in this instance?

24. Please inquire by PHO, whether he would order FortisBC and/or B.C. Hydro that, upon a customer's request with a medical doctor's advice and prescription, that the customer be allowed to retain the present analog meter or, in the case of a smart meter, to be connected via a hard–wired (non–radio wave frequency/non–microwave frequency emitting) smart meter or leave the existing previous non-wireless analog or digital meter? This would probably involve only 1–3 % (+/-) of BC households? If PHO would not make this recommendation, please inquire with him why not?

25. Obviously, for PHO's role as a consultant to FortisBC and B.C. Hydro with respect to the safety of wireless smart meters, PHO must have accredited expertise in the EMR subject. Please provide any peer–reviewed studies or papers on this subject that PHO has reviewed or published on this technology.

26. *"…epigenetics [is] the study of how changes in the expression of genes can occur without changes in the underlying DNA). Richard Stein, a post doctorate in molecular biology at Princeton… [i]n a just published essay in the Journal of Epidemiology and Community Health, Stein writes: "For a long time, it was assumed that chemicals are able to cause cancer only by mutating the DNA. However, a growing body of scientific evidence reveals that this 'carcinogenesis equals mutagenesis' paradigm is not accurate." (This applies equally to radiation as well as chemicals.)…"* [Cited from Microwave News, Short Takes, http://www.microwavenews.com/ http://jech.bmj.com/content/early/2011/10/31/jech.2010.130690.abstract]

Please provide FortisBC's and/or PHO's position on the possibility for epigenetics being a mechanism for cancer with regards to the ever–increasing wireless radiation, including smart meters.

27. On what basis is FortisBC or B.C. Hydro allowed to put something that is emitting a Class 2B possible carcinogen on/in homes and buildings? This is the first time it has been known that governments are forcing their citizens to use something that is dangerous. Is it FortisBC's and PHO's position that this is acceptable?

28.1 Please state **all** frequencies of electromagnetic radiation that will be emitted by wireless smart meters.

28.2 Please state how often the transmitters in the smart meters are transmitting, not just data but to also keep in touch with the smart meter network, as well how often - at the possible maximum - a neighborhood "collector"smart meter (actual smart meter installed at a residential home) is transmitting (not only for the purpose of data/detection).

29. 1 Please confirm, if not explain why not: Radiofrequency (RF) and microwave (MW) radiation are electromagnetic radiation in the frequency ranges 3 kilohertz (kHz) - 300 Megahertz (MHz), and 300 MHz - 300 gigahertz (GHz), respectively. Research continues on possible biological effects of exposure to RF/MW radiation from wireless smart meters, radios, cellular phones, baby monitors, the processing and cooking of foods, heat sealers, vinyl welders, high frequency welders, induction heaters, flow solder machines, communications transmitters, radar transmitters, ion implant equipment, microwave drying equipment, …etc.

29.2. Please confirm, if not, explain why not: the effects of electro-pollution and the wireless smart meters radiating emissions are similar in many respects to X-ray radiation. Both physical

forces are invisible, odorless, tasteless and silent. The forces are transmitted by radiating energies that travel varying frequencies, strength and distances and are capable of passing through the bodies of humans, animals and plants and recent research confirms these effects are associated with biological positive and negative biological effects, meaning they also can be harmful. These forces can pass through objects as well and induce electrical currents on conductive objects, including human bodies.

29.3. Please confirm, if not, explain why not:

Wireless gadgets' (including smart meters') electro-magnetic radiation contain energy, and the strength of that energy is measured i.e. watt/m2, dBm, etc. However the actual energy causing mechanism are **photons**, see also below wiki definition:

http://en.wikipedia.org/wiki/Electromagnetic_radiation cited here:

> *…/ EMR carries energy—sometimes called radiant energy—through space continuously away from the source (this is not true of the near-field part of the EM field). EMR also carries both momentum and angular momentum. These properties may all be imparted to matter with which it interacts. EMR is produced from other types of energy when created, and it is converted to other types of energy when it is destroyed. The photon is the quantum of the electromagnetic interaction, and is the basic "unit" or constituent of all forms of EMR. The quantum nature of light becomes more apparent at high frequencies (or high photon energy). Such photons behave more like particles than lower-frequency photons do…./*

29.4 Please take notice and confirm, if not, explain why the points below do not refer to wireless smart meter radiation:

Source Dr. Robert Kane "Cellular Telephone Russian Roulette, A Historical And Scientific Perspective", page 215 - 217 http://www.icems.eu/docs/Robert_C_Kane.pdf

> *"…Some reporters and magazine feature writers, confused on the physics of radiofrequency radiation, have erroneously reported that we need not be concerned about energy radiated from cellular telephones because it is low-energy radiation. Such statements, clearly, reflect the reporters' reliance on industry scientists to provide them with explanations, and those explanations are wrong. Certainly X rays, photon for photon, are more energetic than RF photons. But the issue here is not that of the energy of single photons. The industry representatives are confident in their belief that few non-scientific persons will understand the distinction in what they falsely represent. The fact of the matter does not lie with the energy of a single photon but, rather, with the total numbers of photons.*
>
> *To put it more clearly, the energy radiated from the antenna of a portable cellular telephone typically is comprised of 1.7 x 10 high23 photons each second. Written in standard form this becomes 170,000,000,000,000,000,000,000 photons each second. Now it can be seen how differently the argument shapes up when we look at the real radiation from a cellular telephone antenna instead of the misrepresentations to which the comparison of photon energies lends.*

Let's take it another step further. We know that X rays penetrate tissue and can cause tissue damage through cell destruction and damage. We need about 1 million microwave photons at cellular telephone frequencies to provide the same energy as an X-ray photon. So, we see that the typical radiation from a portable cellular telephone antenna is equivalent in magnitude to about 1.7 x 10high17 (170,000,000,000,000,000) X-ray photons per second.
Since the radiofrequency and microwave photons each carry a smaller packet of energy than do X-ray photons, the absorption results in a different mechanism leading to cell damage. Nevertheless, the results are the same. The end result is that the absorbed energy, whether from X-ray or radiofrequency radiation, will lead to tissue damage if the energy density is high enough. In the past the industry's often—stated "belief" was that radiofrequency radiation was not energetic enough to cause DNA or chromosomal damage. Now, faced with contradictory research findings coming from all points of the earth—the industry has changed its defense by claiming that no research is available at exactly the cellular transmit frequencies. Well, if that's true then there is also an absence of safety-related research.
During 1998 J. L. Phillips189 reported research that was conducted at the cellular telephone transmit frequencies. His research did employ human cells. His research was conducted at very low power levels—low enough to rule out any heating effects. Phillips essentially replicated the DNA damage studies of Lai/Singh.
His results are the same. Exposure to low levels of radiofrequency radiation causes DNA damage…"

29.5. Please confirm, if not, explain why not:
Conductive materials (including human / animal bodies and plants) absorb electromagnetic radiation and the absorbed energy is in some degree amplified in those materials.
The whole electrical wiring in homes and any buildings do receive any kind of outside electromagnetic radiation, thus in turn do radiate amplified into the home, in addition to the homes inside and outside transmitting gadgets.
29.6 With what is stated in section 29.5. does FortisBC agree that house wiring in walls near and around sleeping persons are exposed to some degree to radiation that originate from outside radiation pollution?
30. **Smart metes' legal issues**: Please take note and confirm, if not, explain why not:
In consideration of the statements in sections 29.1. -29.4 and of the constitutional, common/civil law rights of affected persons and parties, the energy carrying photons of the wireless smart meter radiation into the environment do encroach on private property, thereby damaging property.

This encroachment constitutes a taking of property by way of trespass, nuisance and assault and affects all property owners living adjacent to electric power lines.
The intent of the word “damage” in the Constitution was to grant relief to property owners who have been substantially damaged by the creation of public improvements abutting their lands, but whose land has not been physically taken by government. Our Constitution states that private property shall not be taken or damaged for public or private use without just compensation.
Even if the transmission carried out by wireless smart meters was for the purpose of providing remote/ convenient meter reading and trouble detection, physical forces (photon energetic radiation) from wireless gadgets, including smart meters, are by law, restricted to the right-of-way and **cannot invade/assault private property in the form of nuisance and trespass without a property owner's permission.** In order to obtain permission from a property owner who may or may not be aware of and/or may or may not agree to endure such assault/trespass/nuisance, the power company would have to obtain the property owner's signature on an **Informed Consent Agreement** prior to such a trespass.
Without such Informed Consent, the property owner's right to live in peace and enjoy his/her home are violated. This property owner then becomes a victim of assault, trespass and nuisance due to the noise, the EMR consisting photons entering upon and through the land, and the home. Furthermore, these energetic radiating forces invade the human tissue of the property owner, his/her family, and anyone setting foot on such property, thereby causing bodily harm.
EMR are tangible intrusions that can be measured. In fact, power companies themselves know the levels of the fields at any distance, and power companies also know well that all EMR from any transmitters (smart meters, telecommunication transmitters, wireless laptops, routers, baby monitors , cordless phones etc.) that each and every transmission is adding up thus increasing the pollution in the environment.
The action these high frequency (including ELF modulated) energy radiation constitutes an "intentional invasion" of the rights of all property owners living in close proximities of any transmitters (incl. smart meters) and unreasonably interferes with humans rights to use and enjoy their properties, thereby "damaging personal property." The personal rights of these affected people are violated, some additional legal terms that do apply with the EMR issue are: civil assault, civil battery, negligence, assault, bodily harm, intimidation, mischief, common nuisance, criminal negligence, causing bodily harm by criminal negligence.
Comparatively, under criminal law, if someone intentionally/knowingly hits a person, that is an assault and does bodily harm to that person. Either one of the mentioned electric forces can be a force, a component of simple assault, and are most likely a weapon, an element of some more serious assault charges, such as causing bodily harm.
The impact of encroachment of smart meter radiation on the environment past a utilities’ right-of-way, is synonymous with a physical attack. In other words, encroachment upon private property by smart meter radiation constitutes assault, which causes bodily injury. Smart meter’s radiation induce currents in conductive materials, including human bodies, animals and plants that is, in effect, “a physical attack”.
Smart meter radiation exposure have **not** yet scientifically conclusive been declared safe. This extreme exposure constitutes a violation of the personal property rights and common law rights of the affected persons by way of personal injury, trespass, civil assault, civil battery and a

taking of their property rights whether such exposure is permitted out of ignorance or inflicted arbitrarily, wantonly and willfully and without due process of law.
Electric utility companies, including FortisBC, do not have the right to assault affected property owners and residents with their electric forces' emissions. The elements of civil assault to FortisBC and the effected persons are/will be as follows:
a) FortisBC acts with the intent of making contact with the person (with their smart meter radiation emissions).
b) These affected people are placed in apprehension of imminent contact with their persons by conduct of FortisBC.
c) Such contact is or appears to be harmful of offensive.
d) Negligence and/or nuisance would apply as well to electric forces' emissions.
The movement of electro-magnetic forces (photons) from the lawful utility corridor to lands outside of that corridor constitutes trespass or nuisance - both are torts. Having the right to transmit power within a given corridor does not carry with it permission or the right to transmit something dangerous or capable of harm beyond the perimeter of that corridor.
The September/October issue 2001 of "Microwave News" indicates that the World Health Organization (WHO) is recommending "prudent avoidance." In the case of persons living in close proximity to smart meters, it is "impossible" to "avoid" exposures to these not harmless radiation. Obviously, persons living in such situations, in fact, have to endure "an unavoidable trespass".

31. Please take note and confirm, if not, explain why not:
There is an established and useful definition of safety. It is the WHO IARC's own invention.
If a toxicant or toxic exposure is studied by IARC for potential carcinogenicity, and classified as a
4 - Not A Carcinogen - this is the closest definition to 'studied and safe' that we have Studied. Safe. Decided.

If the IARC listing is anything between **2A or 2B listing**, it is by definition, to some degree, 'not-safe' (i.e., a listed probable or possible carcinogen), and

If it is a **1A listing**, it is a known carcinogen.

Does FortisBC agree that this obviously an answer to 'proof of safety' argument. And, provides a legitimate answer for those who dismiss the scientific evidence because "you can't prove the null or negative". Of course one can - IARC does it.

32. Please confirm that FortisBC has read and taken notice of attached extensive list of studies, which includes those ones with biological effects and please provide FortisBC's position on those studies that do prove harmful biological effects association that go along with electromagnetic radiation, such as those from wireless smart meter as well.
Respectfully submitted,

33. What are the voltages, frequencies and electrical information of biology hit by the frequencies in the coverage areas.

34. Are the frequencies in the coverage areas hitting people to any degree in the coverage areas? Does that stimulate tissue?

35. What were the voltage changes with frequency interaction with biology within the coverage areas, please provide references.

Sincerely,

Curtis Bennett
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