



FortisBC Inc. (FortisBC or the Company) Application for a Certificate of Public Convenience and Necessity for the Advanced Metering Infrastructure Project	Submission Date: February 7, 2012
Information Request No. 1 to Citizens for Safe Technology (CSTS) Evidence (Exhibit C9-8)	Page 13

1   **3.0 Reference: Exhibit C9-8 – Comments from Girish Kumar**

2   3.1   Has Dr. Kumar previously and submitted evidence /or testified in relation to  
3   potential health effects of RF before courts or regulatory tribunals in Canada or the  
4   United States? If so, please submit a list that includes the date the evidence was  
5   submitted, the name of the matter/docket under which the evidence was submitted, and  
6   the name of the court/regulatory tribunal.

7   I have recently submitted evidence /or testified in relation to potential health effects of  
8   Smart Meters at Portland, Maine, USA

9   3.2   Has Dr. Kumar ever previously been disqualified from acting as an expert  
10   witness before any courts or regulatory tribunals in Canada or the United States? If so,  
11   please submit a list of the date Dr. Blank was disqualified, the matter/docket under which  
12   the evidence was submitted, and the name of the court/regulatory tribunal. **No.**

13   3.3   Please confirm that Dr. Kumar's degrees are in Electrical Engineering. **Yes.**

14   3.3.1 Please confirm that Dr. Kumar has acquired no academic qualifications or  
15   degrees in the fields of medicine or the health sciences. **No.**

16   3.3.2 Please confirm that Dr. Kumar is not a physician and has never had  
17   clinical experience with patients. **No.**

18   Dr. Kumar attaches a document a document entitled "Report on Cell Tower Radiation",  
19   that was authored by Dr. Kumar in December 2010. Please confirm that Dr. Kumar is  
20   not submitting the sections of this report on biological effects (pp. 13-25) and adverse  
21   effects on birds, animals and the environment (pp. 25-29) as an expert report prepared  
22   by a biological or health scientist. **I am not expert as a biological or health scientist but I**  
23   **can read English and acquired knowledge by going through several hundreds of**  
24   **scientific/technical papers, and references of nearly 200 papers have been given.**  
25   **Please question the competence of all these researchers who wrote these papers and**  
26   **also question the competence of all journals/conferences, who published them.**

27   3.4   Dr. Kumar attaches a document entitled "Report on Possible Impacts of  
28   Communication Towers on Wildlife Including Birds and Bees" prepared by the Indian  
29   Ministry on the Environment and Forest (the "Wildlife Report"). Please confirm that Dr.  
30   Kumar is not an author of the Wildlife Report. **I am not an author of the Wildlife Report.**

31   3.4.1 Please confirm that Dr. Kumar has not personally reviewed or evaluated  
32   any of the claims contained in the Wildlife Report relating to biological  
33   effects and health. **I have gone through the Wildlife Report after it was**  
34   **published as a concerned citizen.**

35   3.4.2 If Dr. Kumar has personally reviewed or evaluated the claims in the  
36   Wildlife Report, please explain the context in which he has done so. **I**

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1                                    have gone through the Wildlife Report after it was published as a  
2                                    concerned citizen and researcher.

3                                    3.4.3 Please refer to the August 30, 2012 article by the Hindu Times, entitled  
4                                    “Communication towers: expert committee report plagiarised” available at  
5                                    <http://www.thehindu.com/sci-tech/science/article3836318.ece>. Please  
6                                    confirm if Dr. Kumar is aware that the Hindu Times and other news  
7                                    sources have reported that the Wildlife Report was plagiarized.

8                                    (a) Does Dr. Kumar have any evidence to contradict these reports? India  
9                                    is a free country and people can write their opinion. The report is a  
10                                    compilation of 919 papers and it does not claim that they have done  
11                                    original research.

12                                    3.5 If Dr. Kumar is an author of or has otherwise personally reviewed or evaluated  
13                                    any of the claims in the Wildlife Report or CSTS otherwise purports to rely on the Wildlife  
14                                    Report, please answer the following questions.

15                                    3.5.1 On p. 3 of the Wildlife Report, it states, “The review of existing literature  
16                                    shows that the Electro Magnetic Radiations (EMRs) are interfering with  
17                                    the biological systems in more ways than one.” Are the EMRs in the  
18                                    studies that the Wildlife Report claims “are interfering with the biological  
19                                    systems” equivalent and thereby comparable in both intensity and  
20                                    duration as RFs emitted by advanced meters?

21                                    (a) Did the studies cited in the Wildlife Report experimentally control for  
22                                    the wide range of potentially confounding risk factors associated with  
23                                    urbanization?

24                                    3.5.2 On p. 3 of the Wildlife Report, it states: “In case of bees, many recent  
25                                    studies have linked the electromagnetic radiations with an unusual  
26                                    phenomenon known as ‘Colony Collapse Disorder’”. Please provide a list  
27                                    of what studies are being referred to here.

28                                    (a) Please confirm if there are also “many recent studies” that have linked  
29                                    Colony Collapse Disorder (CCD) to numerous other variables that  
30                                    having nothing whatsoever to do with RFs.

31                                    (b) Please refer to the article by Robert W. Currie, Stephen F. Pernal and  
32                                    Ernesto Guzmán-Novoa, “Honey bee colony losses in Canada” (2010)  
33                                    49 Journal of Apicultural Research 104 (available at  
34                                    <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  
35                                    colony losses in Canada are probably the result of regional differences  
36                                    in weather patterns that affected forage availability for bees, fall  
37                                    feeding management, mite and bee population growth, V. destructor  
38                                    treatment timing, the presence of Nosema spp., viruses and other  
39                                    and  
40                                    other

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- 1 diseases and the spring build-up of colonies. These stressors  
 2 interacting in combination with each other affected colony survival, but  
 3 direct and indirect effects associated with acaricide resistance and the  
 4 failure to control V. destructor mites are believed to be the most  
 5 important factors related to colony loss in Canada.”.
- 6 (c) Is Dr. Kumar aware of any studies on bees that have sufficiently  
 7 controlled for confounding risk factors in way that linked CCD  
 8 conclusively to RFs? If so, please provide a list of these studies.
- 9 3.5.3 On p. 3, the Wildlife Report states that, “A vast majority of scientific  
 10 literature published across the world indicate deleterious effects of EMFs  
 11 in various other species too”. Please provide Dr. Kumar’s scientific basis  
 12 for concluding that “deleterious effects” are causally related to EMFs  
 13 rather than the many other variables associated with urbanization.
- 14 3.5.4 On p. 5, the Wildlife Report states that, “electro-magnetic radiations  
 15 (EMR) are not readily perceivable to human sense organs and hence not  
 16 easily detectable. However, their impacts are likely to be insidious and  
 17 chronic in nature”. Please provide a list of scientific studies that have  
 18 experimentally isolated EMR and determined that they alone, in the  
 19 absence of confounding variables, are having impacts that are “insidious  
 20 and chronic in nature on wildlife including birds and bees”.
- 21 3.5.5 On p. 5, the Wildlife Report states, “Because the EMR pollution being  
 22 relatively recent in origin and lately being recognized as a pollutant  
 23 coupled with its expected long-term impacts and lack of data on its effect  
 24 on organisms, the real impacts of these pollutants are not yet fully  
 25 documented in the scientific literature”. Yet on p. 3, the Wildlife Report  
 26 states that, “A vast majority of scientific literature published across the  
 27 world indicate deleterious effects of EMFs in various other species too”.  
 28 Please confirm which of these two statements is correct: are deleterious  
 29 effects not yet fully documented in the scientific literature or is a vast  
 30 scientific literature published across the world that shows deleterious  
 31 effects?
- 32 3.5.6 On p. 6, the Wildlife Report says, “Other wildlife such as amphibians and  
 33 reptiles also appear to be at high risk with possible interference of EMF”,  
 34 and p. 7 provides citations from unpublished sources. Please confirm if  
 35 this conclusion has been established in any published sources.
- 36 3.5.7 Please confirm if Dr. Kumar believes that the sources cited in the Wildlife  
 37 Report are scientifically sufficient for a biological scientist to conclude that  
 38 amphibians and reptiles are at “high risk” from EMF.
- 39 3.5.8 On p. 11, the Wildlife Report has a section entitled, “An Analysis of  
 40 Results of Literature Survey”. Please confirm in how many of the cited  
 41 studies regarding birds and bees involved radiofrequency fields

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- 1                                    equivalent in both intensity and duration to those emitted by advanced  
 2                                    meters. Please provide a list of these studies.
- 3                                    3.5.9 In Table 3 (on p. 11), Figure 2 (p. 12) and Figure 3 (p. 13) the Wildlife  
 4                                    Report uses the terms “Impact, No Impact or Neutral/ Inconclusive”.  
 5                                    Please confirm what the authors’ definition is for each of these terms.
- 6                                    (a)     Please confirm if it is the authors’ opinion that all studies in the Impact  
 7                                    group completely controlled for any and all confounding variables.
- 8                                    (b)     Please confirm if it is not true that any study in the Impact group that  
 9                                    did not completely control for confounding variables ought to have  
 10                                    been put in the Neutral/ Inconclusive group.
- 11                                    3.5.10 On p. 13 of the Wildlife Report, in the section entitled “Effect on Birds”,  
 12                                    please confirm which of the cited studies demonstrably controlled for any  
 13                                    and all confounding variables such that radiofrequency exposure  
 14                                    equivalent to those emitted by advanced meters were experimentally  
 15                                    isolated.
- 16                                    3.5.11 On p. 14 of the Wildlife Report, in the section entitled, “Effect on House  
 17                                    Sparrows”, please confirm which of the cited studies demonstrably  
 18                                    controlled for any and all confounding variables associated with the urban  
 19                                    areas in which they were conducted such that radiofrequencies  
 20                                    equivalent to those emitted by advanced meters were experimentally  
 21                                    isolated.
- 22                                    3.5.12 On p. 15 of the Wildlife Report, in the section entitled “Effect of Mobile  
 23                                    Radiation on Honey Bees,” please confirm which of the cited studies  
 24                                    demonstrably controlled for any and all confounding variables such that  
 25                                    only RFs equivalent to those emitted by advanced meters were  
 26                                    experimentally isolated.
- 27                                    3.5.13 On p. 15, the Wildlife Report states “In India, studies conducted by  
 28                                    Sainudeen (2011) have proved experimentally that once mobile phones in  
 29                                    working condition with frequency of 900 MHz for 10 minutes were kept in  
 30                                    the beehives, the worker bees stopped coming to the hives after ten  
 31                                    days”. Please confirm that in his experimental design Sainudeen (2011)  
 32                                    only tested three hives.
- 33                                    (a)     Please confirm if Dr. Kumar believes that three hives is a sufficient  
 34                                    sample size to reach a scientifically sound conclusion.
- 35                                    (b)     Please confirm that in his experimental design Sainudeen (2011) failed  
 36                                    to place dummy cell phones (powered on but not emitting RFs) into his  
 37                                    control colonies.

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1 (c) Please confirm why, in spite of these experimental shortcomings, does  
 2 the Wildlife Report consider Sainudeen findings after ten days to “have  
 3 proved experimentally” that working cell phones harmed bees.

4 Answer to Section 3.5: The report is a compilation of 919 papers. Out  
 5 of which 593 papers mentioned there is Impact, 130 papers mentioned  
 6 No Impact, and 196 papers were Neutral/ Inconclusive. Report does  
 7 not claim that they have done original research. Please question the  
 8 competence of all the researchers who wrote listed 593 papers  
 9 mentioning there is an adverse impact of radiation and also question  
 10 the competence of all these researchers who wrote listed 130 papers  
 11 mentioning there is no impact of radiation. Also, please question the  
 12 competence of all journals/conferences, who published them.

13 3.6 Dr. Kumar’s Report appends slides in which he poses the question “Have you  
 14 ever seen a bird near cell towers” and suggests that radiation interferes with navigation  
 15 and reproduction in birds and bees. Please refer to a study entitled “The Potential  
 16 Conservation Value of Unmowed Powerline Strips for Native Bees”, published in  
 17 Biological Conservation 124 (2005) 133-148, or alternatively to the abstract at  
 18 <http://pubs.er.usgs.gov/publication/5224419>. Please confirm that this study suggests  
 19 that powerline strips have the potential to provide five million acres of bee-friendly  
 20 habitat in the US if utilities more generally adopt appropriate management practices.  
 21 Saw the paper, it refers to 60 Hz overhead transmission line and hence wavelength is  
 22 very large as compared to wavelength at 900 MHz. Thus, comparison is not correct. Let  
 23 me ask the learned people again "Have you ever seen a bird near cell towers especially  
 24 in the main beam of radiation from cell tower antennas"? Answer will be NO.

25 3.7 Dr. Kumar suggests that the ICNIRP guideline amount of exposure is the  
 26 equivalent of a human body being in a microwave oven for 19 minutes per day. What is  
 27 the equivalent plane wave power density inside the microwave oven (assume 1 kW  
 28 power microwave)?

29 3.7.1 How does that compare to the ICNIRP1998 limits based on 6 minute  
 30 average power density?

31 3.7.2 How does it compare to the peak power density limits in ICNIRP1998?

32 3.7.3 How does it compare to the exposure from FortisBC advanced meters?

33 I have given the detailed calculations showing exposure of 24x7 ICNIRP  
 34 guideline amount is equivalent of a human body being in a microwave  
 35 oven for 19 minutes per day. I am glad that the point has been brought  
 36 out that ICNIRP1998 limits is based on 6 minute average power density.  
 37 Unfortunately, India and many other countries had adopted it for 24 hours  
 38 exposure. From Sep. 1, 2012, India has adopted 1/10 of ICNIRP limits  
 39 for 24 hours exposure, which is still very high. Safe limit should be less  
 40 than 0.1 milliwatts/m<sup>2</sup> for 24x7 exposure.

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3.8 On p. 1 of Dr. Kumar’s Report, he refers to guidelines for RF exposure provided by the Building Biology Institute, Germany. Please explain what is the Building Biology Institute (a.k.a. International Institute for Bau-biologie & Ecology). Is the Building Biology Institute a governmental health authority with jurisdiction to set binding RF exposure standards? If not, please identify the agency responsible for setting RF exposure standards in Germany and identify the current safety standards (in  $\mu\text{W}/\text{m}^2$ ) applicable in Germany at the 900 MHz frequency range.

3.8.1 Please confirm that in Safety Code 6, 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”.

3.8.2 Please confirm that Dr. Kumar’s recommended RF exposure guidelines based in whole or in part on considerations other than scientifically-established health hazards.

Building Biology Institute has mentioned that radiation density greater than  $1000 \mu\text{W}/\text{m}^2$  is of extreme concern and it is not based on socio-political considerations but based on scientifically-established health hazards. Bio-Initiative Report 2007 has recommended radiation density less than  $100 \mu\text{W}/\text{m}^2$  for continuous exposure. Bio-Initiative Report 2012 has given 1800 references. We have to then question the competence of all these researchers who wrote these papers and also question the competence of all journals/conferences, who published them. It is recommended that all over the world, these safe guidelines must be implemented. WHO has recognized cell phone radiation as possibly carcinogen on May 31, 2011.

3.9 Please confirm that Dr. Kumar’s recommendation, as set out on pp. 44-45 of the presentation materials attached to Dr. Kumar’s Report, is that if the power density of a cellular tower’s transmission is  $>100\text{-}1,000 \mu\text{W}/\text{m}^2$  measured where people live, then the tower should be relocated, the height of the tower should be increased, or the direction of the antenna should be changed.

3.9.1 Does Dr. Kumar agree that the radio power density of the subject Itron OpenWay 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)?

3.9.2 Further, are these levels significantly less than the limits set by the ICNIRP?

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1                                    **ICNIRP1998 limits is based on 6 minute average power density. Value of**  
2                                    **0.5% of Health Canada Safety Code 6 is still higher than 100  $\mu$ W/m<sup>2</sup> for**  
3                                    **continuous exposure.**

4                    3.10    On pp. 18 and 23-24 of the presentation materials attached to Dr. Kumar's  
5                    Report, Dr. Kumar makes reference to the GSM900 signal. Please describe the time  
6                    dependence of GSM900 signal.

7                                    3.10.1 Please confirm if GSM900 use time division multiplexing.

8                                    3.10.2 Please describe what happens to the RF signal from a GSM900 phone  
9                                    when the phone needs to give up the time slot to another phone.

10                                  3.10.3 Please describe during a 3 minute call on a GSM phone how many times  
11                                  does it need to cease transmission to allow for TDMA sharing.

12                                  3.10.4 Please confirm at what distance from a cell phone would exposures be  
13                                  below the levels cited in Dr. Kumar's letter to David M. Aaron, dated  
14                                  January 20, 2013 ("Dr. Kumar's Letter")?

15                                  3.10.5 Please confirm what would be the peak exposure from a cell phone and  
16                                  the peak exposure from the FortisBC advanced meter, at the same  
17                                  distance from the body.

18                                  3.10.6 Please confirm whether the FortisBC advanced meters meet the  
19                                  proposed 1/10th of ICNIRP India limits.

20                                    **Radiation from FortisBC advanced meters is within India's adopted 1/10**  
21                                    **of ICNIRP limits for 24 hours exposure, which is still very high. Safe limit**  
22                                    **should be less than 0.1 milliwatts/m<sup>2</sup> for 24x7 exposure.**

23

24                    3.11    In Dr. Kumar's letter he states that "my comments on the document,  
25                    "UNDERSTANDING RADIO FREQUENCY AND BC HYDRO'S SMART METERS" are  
26                    given below:"

27                                    "BC Hydro's Smart Meter radiation density of 2  $\mu$ W/cm<sup>2</sup> is well  
28                                    within Canada Health Safety Code 6 but is too high from health  
29                                    point of view as mentioned above."

30                    Has Dr. Kumar evaluated the FortisBC advanced meters?

31                                    **I made the statement after going through the Specs, "BC Hydro's Smart Meter**  
32                                    **radiation density of 2  $\mu$ W/cm<sup>2</sup> = 20 mW/m<sup>2</sup> is well within Canada Health Safety**  
33                                    **Code 6 but is too high from health point of view as mentioned in 3.8."**



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- 1           3.12   In Dr. Kumar's Letter, he states that "ultimately, everything is related to Energy".  
2           Please provide Dr. Kumar's basis for this conclusion.
- 3                   3.12.1 If "ultimately, everything is related to Energy", please confirm if that  
4                   implies that the waveform of the signal (and modulation) does not matter.
- 5                   3.12.2 If modulation does matter, please confirm how the modulation of GSM900  
6                   cell phone signal compares to the FortisBC advanced meter signal.
- 7                   Energy depends upon waveform of the signal and modulation. In the  
8                   FortisBC specs., it is mentioned that BC Hydro's Smart Meter radiation  
9                   density of 2  $\mu\text{W}/\text{cm}^2$  is well within Canada Health Safety Code 6. My  
10                  statement is that this value is still too high from health point of view