STATE OF MAINE
PUBLIC UTILITIES COMMISSION

Docket No. 2011-00262
January 24, 2014

ED FRIEDMAN, ET AL.
Request For Commission Investigation
Into Smart Meters And Smart Meter Opt-Out

Reply Brief

Of Intervenor Dianne Wilkins

1/24/2014

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I. CMP's reliance on the Maine CDC's (MCDC) report of November 8, 2010 – *Review of Health Issues Related to Smart Meter*, [1] and other organizations is erroneous and reports from these organizations should not be relied upon by the Maine PUC for a decision in this case.

First, contrary to CMP's assertion that "For the PUC to find that CMP's smart meters are somehow unsafe would be irreconcilable with the MCDC's determination ," [2] the MCDC did not determine that the smart meters were "safe" but specifically and publicly denied having made this determination as stated in the MCDC internal e-mail correspondence, therefore an "unsafe" determination by the Maine PUC would not be irreconcilable with their determination:

> …Unfortunately, the headlines yesterday were a misquote. I never said "smart meters are safe, and I've been emailing my exact point to opponents who have been sending upset emails. Dora[3]

Second, serious adverse health effects have been shown at the estimated levels of customer exposure to radiofrequency radiation (RFR) provided in the MCDC report at distances of 2, 5, 12, and 36 inches from smart meters respectively, i.e., [4]

7.9 mW/cm^2
.8771 mW/cm^2
.2193 mW/cm^2 and
.0244 mW/cm^2

All 67 peer-reviewed, published scientific studies listed in the most comprehensive review of evidence to date, the BioInitiative 2012,[5] along with the abundant evidence submitted to the

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[1] Maine CDC Executive Summary of Review of Health Issues Related to Smart Meters (November 8, 2010)
[2] Maine PUC Docket 2011-00262, CMP Post Hearing Brief of 12-13-13, p. 7
[3] *vide*, Maine PUC Docket 2010-345, Supplement to Complainants' Response to CMP's Request for Dismissal, filed December 30, 2010, attachment of e-mail from Dora Mills to Chris Zukas-Lessard dated October 13, 2010
[4] Maine CDC, *Eight Leading Questions/Concerns of Maine CDC's Approach to and Report on Smart Meters*, November 29, 2010, see table on p.3-4 http://www.maine.gov/dhhs/mecdc/environmental-health/documents/smart-meters-faq.pdf
[5] *vide*, BioInitiative 2012, charts of Biological Effects; also see Maine PUC Docket 2011-00262, Intervenor Dianne Wilkins' post hearing Brief filed 12-12-13, Exhibit B chart - Reported Biological Effects from RF Radiation at Low-Intensity Exposure in Each of the 67 Studies Referenced in the "BioInitiative 2012" Report

record of this case, shows serious adverse health effects and/or increased incidences of the following effects at the exposure levels listed in the MCDC report, i.e.,

> Brain tumors, brain cancer, and permeability of the blood-brain barrier
> Adverse cardiac, heart muscle, blood-pressure, and vascular effects
> Adverse effects on sperm, reproduction, and fertility
> Adverse changes in EEG, memory, learning & behavior
> Calcium metabolism disrupted,
> DNA Oxidative damage/ROS/DNA damage and DNA repair failure
> Sleep problems,
> Adverse increased and changes to stress proteins, HSP, disrupted immune function

Third, the MCDC acknowledged in their report that there is a recognized general consensus of serious research and knowledge gaps regarding RFR exposures that need to be addressed, i.e. "the lack of long term studies and the lack of studies involving exposure in childhood."[6] The MCDC's acknowledgement of these serious gaps in research and knowledge is in agreement with the evidence filed in this case, the Complainant's expert witness testimony, the World Health Organization, the US National Research Council, and many other health organizations,[7] that show our children are now being subjected to RFR exposures that have not been studied or proven to be safe for them. Rationally, this fact prohibits any conclusion that smart meters are "reasonably" safe for children or pregnant women.

In addition, the MCDC report should not be relied on as a basis for the determination of "safe " from adverse health effects, as proposed by CMP in their post hearing Brief,[8] due to the fatal flaws contained in this report that render its conclusions unreliable, above and discussed further below.

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[6] *ibidem supra,* reference no. 4, p. 2
[7] *vide* Maine PUC Docket 2011-00262, filed **Item No. 192**, National Research Council 2008 Report, Identification of Research Needs Relating to Potential Biological or Adverse Health Effects of Wireless Communication Devices http://www.nap.edu/catalog/12036.html ; **Item No. 244**, Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) 2009 Report, Research Needs And Methodology To Address The Remaining Knowledge Gaps on the Potential Health Effects of EMF- Section 4.1.1.2. Health effects of RF fields from wireless communication in children http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_024.pdf; **Item No. 245**, World Health Organization (2010), WHO Research Agenda for Radiofrequency Fields. http://whqlibdoc.who.int/publications/2010/9789241599948_eng.pdf
[8] Maine PUC Docket 2011-00262, CMP Post Hearing Brief of 12-13-13, p. 17

As stated by CMP in their post hearing Brief, the MCDC reviewed the following to reach their conclusions in their cursory six page report:

> World Health Organization (WHO),
> U.S. Federal Communications Commission (FCC),
> National Cancer Institute (NCI) in the National Institutes of Health (NIH),
> Health Canada (Canada's public health agency),
> Health Protection Agency of the United Kingdom (U.K.'s public health agency),
> International Commission on Non-Ionizing Radiation Protection (ICNIRP),
> Institute of Electrical and Electronics Engineers (IEEE),
> University of Ottawa's McLaughlin Centre for Population Health Risk Assessment,
> Ontario Agency for Health Protection and Promotion,
> Swedish Radiation Protection Authority, and
> Australian Radiation Protection and Nuclear Safety Agency. [9]

It should be noted that five of the eleven organizations relied on by the MCDC (FCC,[10] IEEE,[11] ICNIRP,[12] Ontario Agency,[13] Ottawa McLaughlin Centre[14]) for their conclusion regarding health effects, are not government linked health organizations that conduct research to determine the health effects from exposure to RFR as depicted by the MCDC, and several are regulatory bodies that completely depend on health effect determinations relayed to them by government authorized health organizations tasked with this job. Regulatory bodies whose mandate is to draft technical guidelines using health information derived solely from others should not be primary sources for information on health effects. The MCDC & CMP's reliance on these organizations regarding the evidence of health effects from RFR exposures is

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[9] *ibid*, p. 14

[10] *vide*, FCC website: "The Federal Communications Commission **regulates** interstate and international communications by radio, television, wire, satellite and cable in all 50 states, the District of Columbia and U.S. territories. An independent U.S. government agency overseen by Congress, the commission is the United States' primary authority for communications law, regulation and technological innovation." http://www.fcc.gov/what-we-do

[11] *vide*, IEEE web site, "is the world's largest professional association dedicated to advancing technological innovation…" http://www.ieee.org/about/today/at_a_glance.html

[12] *vide*, ICNIRP website under the tab *Main Commission*; "In carrying out their voluntary work for the Commission they do not represent either their countries of origin or their institutes." "ICNIRP's main Commission members are elected by the Commission under the rules of its Charter…Members of the Commission are elected upon nomination by the members of the Commission, the Executive Council of the International Radioprotection Association (IRPA), or the IRPA Associate Societies." http://www.icnirp.net/commission.htm and http://www.icnirp.net/what.htm

[13] *vide*, web site for Ontario Agency for Health Protection and Promotion is a "…is a Crown corporation" http://www.publichealthontario.ca/en/About/Pages/Organization.aspx#.UtmUJbQo670

[14] *vide*, web site for University of Ottawa Institute of Population Health, http://www.iph.uottawa.ca/eng/about/index.html

inappropriate and the opinions regarding the quality, quantity, or weight of the health effects evidence from these organizations should be wholly disregarded.

Also as re-iterated by CMP in their brief, and shown below, a six member team of the MCDC claimed to approach the issue of determining if there were any adverse health effects from RFR exposures from smart meters "…by reviewing the analyses of the literature conducted by federal and international agencies such as the U.S. CDC, NIH, and WHO." But then they deviate from their normal procedure by deciding to also review other alleged "government affiliated organizations." The MCDC also claimed to rely mainly on the opinions of the FCC and the NIH's National Cancer Institute for their opinion.

> The six members of Maine CDC's Smart Meters Team, after reviewing the many documents sent to us in October about smart meters, acknowledged that a full review of all the literature on the subject matter of radiofrequency (RF) and health was beyond the scope of a small state's public health agency. The Maine CDC is not an agency with the amount of resources for reviews and analyses such as are done by the U.S. CDC, National Institutes of Health (NIH), or the World Health Organization (WHO). We also could not find any other state health department's recent review of the literature on this subject or expressions of health concerns about smart meters, including from states with smart meters already installed.
>
> Therefore, we approached this issue as we often do on a subject matter (such as RF and health) that has thousands of articles, studies, and research published on it – by reviewing the analyses of the literature conducted by federal and international agencies (such as the U.S. CDC, NIH, and WHO). We commonly rely on such authorities to conduct reviews and analyses since they have the depth and breadth of expertise and resources to do so, and are generally considered impartial. Maine CDC often focuses on U.S. federal resources for such reviews, but for the one on smart meters/wireless technologies we decided to include the work of some well reputed international government affiliated organizations such as the World Health Organization (WHO), the International Commission on Non-Ionizing Radiation Protection (ICNIRP), Health Canada, the Health Protection Agency of the United Kingdom, the Swedish Radiation Protection Authority, the Australian Radiation Protection and Nuclear Safety Agency, and others. For U.S. federal agencies, we mainly focused on the information published by the Federal Communications Commission (FCC) and the National Institutes of Health (NIH). (The FCC's work is in turn informed by the U.S. Department of Health and Human Services.)[15]

[15]Maine PUC Docket 2011-00262, CMP Post Hearing Brief of 12-13-13, p. 16

Below is a discussion of the organizations CMP and/or the MCDC relied on in reaching their opinion of no evidence of adverse health effects from exposures to RFR and the reasons their reliance is inappropriate and/or erroneous.

A. National Cancer Institute (NCI) Fact Sheet

The MCDC's and CMP's reliance on the NIH's National Cancer Institute (NCI) fact sheet is unsound for several reasons. The conclusion reached by NCI, i.e. "… **no evidence** from studies of cells, animals, or humans that radiofrequency energy can cause cancer,"[16] is in direct conflict and contradictory to the very facts they list in their fact sheet. Below are several facts the NCI list on their fact sheet that show some evidence from cell, animal and human studies that RF can cause cancer:

> Some case-control studies in Sweden found statistically significant trends of increasing brain cancer risk for the total amount of cell phone use and the years of use among people who began using cell phones before age 20 (16).
>
> A limited number of studies have shown some evidence of statistical association of cell phone use and brain tumor risks, but most studies have found no association.
>
> The International Agency for Research on Cancer (IARC), a component of the World Health Organization, has recently classified radiofrequency fields as "possibly carcinogenic to humans," based **on limited evidence from human studies**, **limited evidence from studies of radiofrequency energy and cancer in rodents, and weak mechanistic evidence** (from studies of genotoxicity, effects on immune system function, gene and protein expression, cell signaling, oxidative stress, and apoptosis, along with studies of the possible effects of radiofrequency energy on the blood-brain barrier).

In addition, other facts listed provided evidence of other adverse health effects such as increases of noncancerous brain tumors (acoustic neuroma) that can have devastating health consequences such as loss of balance, loss of hearing, and interference with vital brain functions.

> The prospective Million Women Study in the United Kingdom…did find that the use of cell phones for more than 5 years was associated with an increased risk of acoustic neuroma, and that the risk of acoustic neuroma increased with increasing duration of cell phone use (14).

[16] National Cancer Institute (NCI). Cell Phones and Cancer Risk. June 18, 2012. *vide* Section No. 4. http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones

As shown and discussed further below, the National Cancer Institute (NCI) incorrectly interpreted the meanings of "limited," "not conclusive," and "not strong enough" evidence as was found by five health organizations it relied on (American Cancer Society, International Agency for Research (IARC), National Institute of Environmental Sciences (NIEHS), Food and Drug Administration (FDA), U.S. Center for Disease Control), as meaning "no evidence." Cleary, as will be discussed further in this brief, this was not the conclusion reached by any of these organizations.

Due to the facts depicted herein, the Maine CDC's and CMP's reliance on the faulty interpretation of the research and opinion of the National Cancer Institute and others is erroneous.

B. American Cancer Society and the World Health Organization's (WHO) International Agency for Research on Cancer (IARC)

Also, under Section No. 6, of the National Cancer Institute (NCI) fact sheet, they name the American Cancer Society and the World Health Organization's (WHO) International Agency for Research on Cancer (IARC) as two of the organizations relied on for its opinion but neglects to convey that the American Cancer Society readily admits it does not perform independent research but completely adopts the opinion of the World Health Organization's (WHO) International Agency for Research on Cancer (IARC) as acknowledged by their chief medical officer:

> The American Cancer Society does not independently judge the carcinogenicity of different exposures. Instead, we rely on IARC reviews of available evidence for our recommendations. [17]

And as further stated by the American Cancer Society regarding the WHO's IARC classification of RFR as 2B:

[17] American Cancer Society. Press Release of May 31, 2011. *Otis Brawley responds to IARC Classification of Cell Phones as Possible Carcinogenic* http://pressroom.cancer.org/index.php?o=25&s=43&year=2011

> This report comes from a very credible group, and reaches reasonable conclusions about electromagnetic radiation from cell phones and other devices. It is critical that its findings be interpreted with great care. The working group reviewed a large number of studies and concluded that **there was limited evidence that cell phones may cause glioma, a type of brain tumor** that starts in the brain or spine. A 2B classification means that there could be some risk, but that the evidence is not strong enough to be considered causal, and needs to be investigated further. The bottom line is the evidence is enough to warrant concern, but it is not conclusive.[18]

"Limited" evidence, as found by the WHO and the American Cancer Society, does not mean "no evidence" as was erroneously interpreted by NCI and the MCDC in their conclusion on the health effects from RFR.

Even further, the definition of the 2-B classification below by the WHO's IARC, states a causal interpretation of the positive association between RFR exposure and cancer is considered credible, if chance, bias or confounding can be ruled out with reasonable confidence.

> Limited evidence of carcinogenicity: A positive association has been observed between exposure to the agent and cancer **for which a causal interpretation is considered** by the working group to be **credible,** but chance, bias or confounding could not be ruled out with reasonable confidence. [19] [emphasis added]

The testimony of the Complainants witnesses and the evidence filed in this docket especially that of Dr. Lennart Hardell shown below, demonstrates that chance, bias and confounding can be ruled out with reasonable confidence concerning the positive association between RFR exposures and cancer; resulting in a credible interpretation of a causal relationship:

> I co-authored *Pooled analysis of case-control studies on acoustic neuroma diagnosed 1997-2003 and 2007-2009 and use of mobile and cordless phones,* published in International
> Journal of Oncology, 2013. *See* attached Exhibit A and *http://www.spandidos-publications.com/I 0.3892/ijo.2013.2025.* We present pooled results from two study periods (1997-2003 and 2007-2009) based on 316 participating cases and 3,530 controls.

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[18] *ibid.*

[19] *vide* Maine PUC Docket No. 2011-00262, Prefiled testimony of Dr. Leszczynski p. 7; Dr. Hardell p. 18, lines 17-19; IARC Monograph, 2004, Volume 84, page 24; and IARC Monograph, Non-Ionizing Radiation Part 2: Radiofrequency Electromagnetic Fields, 2013, Volume 102, p. 27

> This study confirmed previous results of an association between use of mobile and cordless phones and acoustic neuroma. The risk increased with time since first use. For both mobile and cordless phones the risk was highest in the longest latency group. Tumour volume increased per 100 h of cumulative use and years of latency for wireless phones. Using the meningioma cases as reference entity gave similar results as with population based controls indicating that the results could not be explained by recall or observational bias.[20]
>
> I co-authored *Hardell L, Carlberg M Using the Hill viewpoints from I 965 for evaluating strengths of evidence of the risk for brain tumors associated with use of mobile and cordless phones.* Rev Env Health 2013. DOI: 10.1515/reveh-2013-0006. *See* attached Exhibit D. All nine issues on causation according to Hill were evaluated to assess the causal association between long-term wireless phone use and brain tumours, specifically acoustic neuroma and glioma. Epidemiological studies of long-term use and laboratory studies and data on the incidence of brain tumors were considered. We concluded that based on the Hill criteria glioma and acoustic neuroma should be considered to be caused by RF-EMF emissions from wireless phones, which should be regarded as carcinogenic to humans.[21]
>
> Q. Do the studies and papers you reference alter any opinions or conclusions expressed in your February 1, 2013 testimony?
>
> They offer further support for my opinion that a causal association between low-level RF radiation and adverse health effects can be inferred from the science and that exposure to low level RF radiation, including at levels and frequencies transmitted by smart meters, poses risks to human health.[22]

Also, at the time the MCDC 2010 report was written the World Health Organization had not yet decided on its classification of RFR, since this determination was issued in 2011. Consequently, the MCDC again relied on outdated information in the formation of their viewpoint that there exists a broad consensus of no causal relationship between RFR and adverse health effects.

The WHO's opinion alone represents a broad consensus, since its membership consists of 194 countries from around the world.[23] WHO "is the directing and coordinating authority for health within the United Nations system. It is responsible for

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[20] MPUC Docket No. 2011-00262, Supplemental Pre-Filed Testimony of Lennart Hardell MD, PhD, October 15, 2013, p. 1, lines 7-17
[21] *ibid,* p. 3 lines 11-19
[22] *ibid,* p. 4 lines 18-23
[23] *vide* their web site http://www.who.int/about/en/ under "Countries" pull down tab, p. 1

providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends."[24] The current opinion representing the consensus of the 194 member countries of the WHO is conveyed in the IARC monograph that has classified RFR as a possible human carcinogen. Comparatively speaking, this is substantially more of a consensus than the alleged consensus of the five country organizations presented in the MCDC's six page report.

C. National Institute of Environmental Sciences (NIEHS) and the Food and Drug Administration (FDA)

The MCDC relied on the NCI who also list the National Institute of Environmental Sciences (NIEHS) and the Food and Drug Administration (FDA) as the third and fourth of the six expert organizations they relied on for their opinion.

The NIEHS discusses their National Toxicology group's (NTP) current study that was requested by the FDA to conduct research on health effects from RFR exposures and provides a link to a statement to the U.S. Senate by the toxicology group which says:

> The Food and Drug Administration (FDA) nominated cell phone radiofrequency radiation emissions to the NTP for toxicology and carcinogenicity testing. The FDA nomination was based on the following concerns:
>
> - There is widespread human exposure;
> - Current exposure guidelines are based on protection from acute injury from thermal effects;
> - Little is known about the potential for health effects of long-term exposure; and
> - Sufficient data from human studies to definitively answer these questions may not be available for many years.[25]

[24] *ibid,* under the "About WHO" pull down tab

[25] Statement for the Subcommittee on Labor, Health and Human Services, Education, and Related Agencies Committee on Appropriations United States Senate September 14, 2009. Hearing on The Health Effects of Cell Phone Use. Statement of John R. Bucher, Ph.D. Associate Director of the National Toxicology Program National Institute of Environmental Health Sciences National Institutes of Health U.S. Department of Health and Human Services http://www.niehs.nih.gov/health/assets/docs_f_o/ntp_associate_directors_statement.pdf

The NIEHS found that the evidence at this point, without having the benefit of the conclusions from the not-yet-completed study by the NTP, was not conclusive; which does not mean "no evidence" of adverse effects, as was again misinterpreted by the MCDC. [26]

As also indicated by the NTP statement above, the FDA, who is one of the federal health agencies designated to determine the health effects from RFR, believes that the current exposure guidelines only offer protection from short term thermal harm from RFR and not from long term, non-thermal effects, like the kind from smart meter exposures.

D. U.S. Center for Disease Control (U.S. CDC)

The fifth expert organization relied on by the MCDC, as it is also listed in the NCI's fact sheet, is the U.S. Center for Disease Control (CDC). The NCI references the CDC's *Frequently Asked Questions about Cell Phones and Your Health* and then completely misrepresents what this document conveys as "although some studies have raised concerns about the possible risks of cell phone use, scientific research as a whole does not support a statistically significant association between cell phone use and health effects," when in fact the referenced CDC document states the following:

> **Does using a cell phone cause health problems? Can using one cause cancer?** In the last 15 years, hundreds of new research studies have investigated whether health problems can be linked to cell phone use. Some of these studies have suggested the possibility that long-term, high cell phone use may be linked to certain types of brain cancer. These studies do not establish this link definitively.
>
> **How likely is it that a cell phone user will develop a glioma or acoustic neuroma?** The recent studies suggest a possible link between these tumors and radiofrequency from cell phones. More research is needed to establish this link conclusively and to quantify these potential health risks.[27]

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[26] National Institute of Environmental Health Sciences
http://www.niehs.nih.gov/health/topics/agents/cellphones/index.cfm
[27] U. S. CDC, *Frequently Asked Questions about Cell Phones and Your Health*
http://www.cdc.gov/nceh/radiation/cell_phones._FAQ.html or
http://www.cdc.gov/nceh/radiation/factsheets/224613_FAQ_Cell%20Phones%20and%20Your%20Health.pdf

The U.S. CDC concludes that there is evidence that suggests the possibility of a link to tumors and cancer, but it is not yet conclusive, so once more the NCI and MCDC should not have interpreted this agencies' conclusion as "no evidence."

E. The Federal Communication Commission (FCC)

CMP and the MCDC relied on the FCC guideline which is the sixth and last organization listed and relied on by the NCI. The FCC is not a health agency and depends on the U.S. federal health agencies for determination of health effects of RFR exposure, so their reliance on this organization for an assessment of health evidence is misplaced.

The fact the FCC has recently recognized that their current safety guidelines need to be revised in order to take into consideration almost 30 years of scientific research on the health effects of RFR exposure and have opened the federal process to update these guidelines, calls into question the ability of these currently outdated guidelines to provide the protection proclaimed within. From the standpoint of the state's legal liability to provide "safe" smart meters, it would be prudent not to ignore this apparent fact and to prohibit wireless smart meters now; at least until the presumption of thermal safety is re-confirmed by completion of the guideline update. It would be negligent and irresponsible to rely on the admittedly outdated health data of the current guidelines to ensure the safety of the RF smart meters.

F. Health Canada

The MCDC also relied on Health Canada's 2010 report entitled *Electric and Magnetic Fields at Power Frequencies* and summarized the \ Health Canada report as follows:

- The current evidence relating to averaged magnetic field exposures greater than 0.4 μT and leukemia in children suggests, but does not prove, a causal relationship.
- Studies of workers occupationally exposed to high levels of electric and magnetic fields also suggests an association between high level ELF EMF exposure and an increased risk of cancer, specifically acute non-lymphocytic leukemia.

- There is inadequate evidence that residential exposures to electric or magnetic fields are associated with increased cancer risks for adults.[28]

As Health Canada states above, there is evidence that suggests a causal relationship between exposure to extremely low fields of electromagnetic radiation from power lines and childhood Leukemia in children along with an association with increased risk of non-lymphocytic leukemia. The MCDC completely mischaracterizes Health Canada's opinion of a suggested causal relationship of electromagnetic fields with serious adverse health effects as one of the viewpoints of the "government-affiliated assessments" that helped them reach the conclusion of a "broad consensus that studies to date give no consistent or convincing evidence of a causal relation." Clearly, even the MCDC's own summation above indicates that the Canada Health 2010 report should not be part of this broad consensus as alleged by MCDC, since it exactly states that there is evidence that suggest a causal relationship.

In addition as stated below, CMP also relied on online articles published by Health Canada in 2011 and in 2012 for their opinions regarding health effects from smart meters:

> A review from Health Canada (2012) specifically addressed Smart Meters and assessed the nature and amount of likely human exposure. Health Canada states, **"[b]ased on this information, Health Canada has concluded that exposure to RF energy from cell phones or smart meters does not pose a public health risk."** [29] [emphasis added]

CMP's quote above from this article neglects to include the prior sentence which indicates that the reason Health Canada concluded smart meters did not pose a health risk was based on measurements they took in the field that showed the specific brands and models of smart meters used in Canada complied with the Canadian thermal exposure guidelines.

> **Furthermore, indoor and outdoor survey measurements of RF energy from smart meters during transmission bursts were found to be far below the human exposure limits specified in Health Canada's Safety Code 6.** Based on this information, Health

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[28] Maine CDC Executive Summary of Review of Health Issues Related to Smart Meters (November 8, 2010); supplement attachment, *Government Or Government-Affiliated Resources Reviewed On The Health Effects Of Non-Ionizing Radiation By The Maine CDC November, 2010*, p. 57 and 58

[29] Maine PUC Docket 2011-262. CMP Post Hearing Brief of 12-13-13, p. 30; and Exponent Direct Testimony, September 19, 2012. p. 20, lines 6-10; referencing Health Canada, *It's Your Health – Smart Meters,* December 2011, updated 2012. http://www.hc-sc.gc.ca/hl-vs/alt_formats/pdf/iyh-vsv/prod/meters-compteurs-eng.pdf

> Canada has concluded that exposure to RF energy from smart meters does not pose a public health risk.[30] [emphasis added]

There is no indication in the Health Canada articles of exactly which radio frequency, models, or brand of smart meters were tested in the field by them to reach their opinion. The smart meters used in the field exposure testing in Canada may have been completely different brands and models emitting different levels of RFR exposures, than the smart meters used in Maine, therefore Health Canada's reports should not be relied upon to predict the health risk posed by the smart meters used in Maine:

As we have argued in our post hearing Brief for the subject case, there are no reliable exposure measurements taken in the field during actual transmission scenarios that could even be used for comparison or that prove CMP's smart meter's compliance with the FCC guidelines.

In addition, compliance with thermal based guidelines such as Canada's Safety Code 6[31] and the FCC guidelines does not protect people from the known or suspected serious adverse health effects or from the acknowledged needs to address serious gaps in knowledge regarding adverse non-thermal based health effects.

G. Health Protection Agency of the United Kingdom (HPA) and the Advisory Group on Non-ionising Radiation (AGNIR)

CMP and the MCDC, [32] both relied on the opinion of the Health Protection Agency which in turn based its opinion regarding health effects of RFR exposure on the most recent review of evidence provided by the alleged independent Advisory Group on Non-ionizing Radiation (AGNIR), whose reviews have not undergone the rigorous peer review process of, or publication

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[30] Health Canada, *It's Your Health – Smart Meters,* December 2011, updated 2012, p. 1. http://www.hc-sc.gc.ca/hl-vs/alt_formats/pdf/iyh-vsv/prod/meters-compteurs-eng.pdf

[31] *Id,* reference as No. 18, p. 65 "There is general agreement that the exposure limits in Health Canada's Safety Code 6 are protective against effects produced through tissue heating. Consistent evidence on the level at which this occurs is available and exposure limits can be set on the basis of this well-established effect and use of safety factors selected by the standard setting organization."

[32] Maine PUC Docket 2011-00262; Maine CDC Executive Summary of Review of Health Issues Related to Smart Meters (November 8, 2010); supplement attachment, *Government Or Government-Affiliated Resources Reviewed On The Health Effects Of Non-Ionizing Radiation By The Maine CDC November, 2010*, p. 47

by a recognized, reputable scientific publication. As previously argued in this Intervenor's post hearing Brief, the AGNIR's faulty review process, contents of reports, and trustworthiness has been credibly criticized by the Complainant's many expert witnesses and other reviewing scientific organizations.

Just as important, as stated by the HPA below, the AGNIR conclusion is not a definitive judgment of "safe," which is the necessary determination that must be made by the MPUC in the subject case therefore this non-definitive judgment cannot be relied on by the MPUC as support for a determination of "safe."

> The AGNIR published its most recent report on radiofrequency (RF) fields in April 2012. The report concluded that the quantity, and in general quality, of research published has increased substantially since the 2003 report. **There are still limitations to the published research that preclude a definitive judgment…** [33] [emphasis added]

In addition the AGNIR conclusions are based solely on short term exposures and the absence of any excessive heating of body tissue in compliance with current guidelines. Non thermal effects being claimed in this case, which do not cause excessive heating of body tissue and cannot be regulated by guidelines placing limitations on the adverse heating of body tissue, like the ICNIRP, Code 6, and the FCC guidelines therefore this alleged compliance is immaterial to this case.[34]

For the reasons given above and previously argued in the post hearing Briefs, the HPA /AGNIR opinions should not be given any weight in the Maine PUC's decision.

H. Swedish Radiation Safety Authority (SSM) and the International Independent Expert Group (IEG) Reports

[33]Maine PUC Docket 2011-00262; Health Protection Agency of the United Kingdom http://www.hpa.org.uk/web/HPAweb&Page&HPAwebAutoListName/Page/1207821636407
[34]Maine PUC Docket 2011-00262; CMP Post Hearing Brief of 12-13-13, p. 32-33; and Exponent Direct Testimony, September 19, 2012, p. 11-14

The MCDC and CMP also relied on the 2009 and 2010 reports prepared by the IEG for the Swedish Radiation Protection Authority.[35] These reports are outdated and may not represent the views of Sweden as a whole, since it is a member country of the World Health Organization which declared RFR as a 2B possible carcinogen in 2011.

In addition the IEG specified that their opinion regarding brain cancer was only for exposures for duration of up to 10 years and not for long term exposures, other cancers, children, or adolescents.

> For longer duration of use, for specific subtypes of cancer, and for children and adolescents data are sparse or non-existing, and conclusions are less certain.[36]

Since the current case before the PUC concerns lifetime exposures from RFR, to children and adolescents as well as adults, the IEG's opinion leaves out crucial elements that precludes it's applicability to this case.

Another factor that weighs in to discount any reliance on these reports is the fact that 6 of the 8 members of the IEG committee have serious conflicts of interest that prevent an unbiased independent opinion from this group. As argued in this Intervenor's post hearing Brief, the evidence in the record and the testimony of several of Complainants expert witnesses, shows that Anders Ahlbom, who is the chairmen of the IEC, has conflicts of interest, serious enough for the World Health Organization to have removed him from the international committee that reviewed the RFR scientific studies which decided the classification of RFR as a 2B carcinogen. [37]

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[35]Maine PUC Docket 2011-00262; Maine CDC Executive Summary of Review of Health Issues Related to Smart Meters (November 8, 2010); supplement attachment, *Government Or Government-Affiliated Resources Reviewed On The Health Effects Of Non-Ionizing Radiation By The Maine CDC November, 2010*, p. 66-68, see http://www.stralsakerhetsmyndigheten.se/Global/Publikationer/Rapport/Stralskydd/2009/SSM-Rapport-2009-36.pdf and Exponent Testimony of 9-19-12, p. 49, lines 6-26 and p. 50, lines 1-14, see http://www.stralsakerhetsmyndigheten.se/Global/Publikationer/Rapport/Stralskydd/2010/SSM-Rapport-2010-44.pdf

[36] Swedish Radiation Safety Authority (SSM). Recent Research of EMF and Health Risk. Seventh Annual Report from SSM's Independent Expert Group on Electromagnetic Fields, 2010. Stockholm: SSM, 2010. http://www.stralsakerhetsmyndigheten.se/Publikationer/Rapport/Stralskydd/2010/201044/ , p. 4

[37] *Ibid*, p. 3

Three others members of the IEG have had much of their research regarding RFR funded by the Mobile Manufacturing Forum (MMF), [38] an international association of radio communications equipment manufacturers, the GSM Association (GSMA), a global trade association representing more than 750 GSM mobile phone operators across 218 countries and territories of the world[39] and/or the Swiss Research Foundation on Mobile Communication (FSM) which is funded by three mobile phone companies, Orange, Sunrise, and Swisscom[40] (i.e., Roosli,[41] Veyret[42] and Feychting[43]).

Plainly, the International Independent Expert Group (IEG) Reports completed for the Swedish Radiation Safety Authority (SSM) are consciously or sub-consciously affected by funding bias that make them unreliable so should be disregarded for this decision.

II. Conclusion

There is a single word which accurately describes CMP's brief: DOGMA. Not reality, not good science, but a parroting of the dogma being adhered to by the FCC, IEEE and the power companies and dutifully repeated by numerous government and international agencies heavily influenced by the power companies: "There are no effects of RFR on living cells other than bulk heating of tissue at high levels of exposure." To biologists and physicians in the know who have read the literature, experienced electrical sensitivity directly themselves or have seen hundreds of patients with electrical sensitivity, such a "no effect" statement is absurd. Not simply a propaganda statement made out of ignorance and wishful thinking, but an outright lie. What does one say when someone claims something of the equivalent of the earth is flat or the

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[38] Mobile Manufacturing Forum (MMF) http://www.mmfai.org/public/publications.cfm?PublicationType=Other
[39] www.gsmworld.com/health
[40] http://www.emf.ethz.ch/archive/english/portrait_e.htm ; http://www.orange.ch/; http://www1.sunrise.ch/ ; http://www.swisscom.ch/en/residential.html
[41] *vide* FSA website http://www.emf.ethz.ch/archive/english/publikationen_e.htm which lists their funded studies in which Roosili was an author, i.e., Aydin, 2011a; Aydin 2011b Neubauer, 2010; Regal, 2006; Roosili, 2011; Roosli, 2006; Neubauer, 2005
[42] *ibid,* see Overview of Animal Cancer Studies - October 2005 (PDF) and EMF-NET Initiative - March 2006 (PDF) funded by MMF; and *vide* FSA website http://www.emf.ethz.ch/archive/english/publikationen_e.htm which lists their funded studies in which Veyret was an author, i.e., Lagroye, 2007a; Lagroye 2007b;
[43] *ibid,* see EMF-NET Initiative - March 2006 (PDF) funded by the MMF and *vide* FSA website http://www.emf.ethz.ch/archive/english/publikationen_e.htm which lists their funded studies in which Feychting was an author, i.e., Aydin, 2011a; Aydin, 2011b; Roosli, 2006, Feychting, 2006; Neubauer, 2005

holocaust never happened? At first it seems hardly worth the effort of a response, except that hundreds of millions of people are being deliberately mislead. Where does one start? Errors in knowledge are difficult to correct when those who lie just come back with more, in this case, junk science to support their claims.

This dogma is stubbornly defended by automatically discounting all evidence to the contrary without honest consideration or scientifically valid rebuttal. This may have begun as blind ignorance, but now, now that they have been fully informed of facts, it is outright dishonesty. A litany in service of power and profit. They adhere to and defend their absurd dogma vehemently in spite of scientific logic based on truth. Remember, they feel it is their duty and obligation to increase profits for themselves and their shareholders. They think that they cannot afford to even consider that there are real health effects for fear it will bring their house of cards tumbling down. Do not let them mislead you. All of their arguments are based on fear and hollow logic, and devoid of the actual reality of the situation.

There have been many dogmas in past history which millions of persons have adhered to. The earth was flat for hundreds of years. The Sun and everything else in the Universe circled the Earth for hundreds of years. The supposedly subhuman nature of Blacks that allowed slavery to thrive for hundreds of years; the supposedly subhuman nature of Jews that fostered the Holocaust; there are no possible harmful effects of RFR if the intensity is too low to cause a rise in temperature of bulk tissue. All of these dogmas were or are supported and reinforced by authorities, “experts” and governments. Do not be fooled.

Remember the “harmless” X-ray machines in every shoe store? Then there was DDT that “only affects insects”, malathion “drinkable”, asbestos “no effect on humans”, thalidomide “no significant side effects”, tobacco “doesn’t cause cancer”, estrogenic plasticizers “parts per billion can’t hurt anyone” - the list goes on and on. What a track record. Please learn from those experiences and make decisions accordingly.

It is ignorant to think of the body as being only muscles and skeleton covered by skin. As complex as the internal anatomy of organs, circulatory systems and nerves is, even this pales in comparison to the complexity and sophistication of molecular structures and biochemistry at the sub cellular level. Because of the high levels of organization of metabolite and hormone level sensing and feedback control, the sophistication of information processing message/signal amplification/gain and communication at the molecular level, the usual thermodynamic modeling assumptions are not valid. Especially not the homogeneous media of a SAR dummy apparatus.

This case before the MPUC has turned out to be an endless push-pull between "experts" who are hired guns for telecom (and other industries) whose priority is profit, and persons who are experts by virtue of having conducted research on RFR (not funded by industry) and/or who have direct experience with EHS (the only experts on EHS that exist) whose sole priority is health. **Who do you believe? Those whose priority is profit or those who want to avoid doing harm to human beings?**

This case was supposed to be about health. In actuality it is turning out to be all about money. The CMP's experts are not expert in health effects of RFR, but are expert and experienced in defending "tobacco science." This is not a debate between two sides with different opinions, it is a battle between vested interests who bend reality via "experts" who are being paid to distort and obfuscate facts, vs. those who are real experts in the reality of harm from low levels of RFR; it is a battle between those who ignore evidence of health effects because it would interfere with their current plans for profit, and those who are trying to prevent harm to human beings.

"Weight of evidence" tests must use only the weight of ***honest*** evidence. Junk science should not count. Who is the fair and honest umpire here? Who will point out the difference between what is straight and what is misleading, between actual facts and distortions or outright lies, between objective honest logic and defensive hype, between real evidence and denial? Any astute and honest person who has some scientific training or background in biology should be

able to sort this out. But unfortunately, the powers that be may decide that the hype best suits their agenda.

Something drastic should be done: request that briefs be thrown out or testimony not allowed on grounds of dishonesty; analogous to what the Italian judge did on grounds that the testimony relied on junk science funded by industry.[44] It is unfortunate that suppression of truth and refusal to consider evidence is not the criminal offense that suppression of evidence is. Or is it?

Smart meters as a "necessary" catch-all solution to the very real problem of global climate change is nonsense - an illusion trumped up by industry propaganda. Smart meters are a prime example of a technological "solution" that creates far more problems than it solves. They do more harm than good, and they do not address the root causes of global climate change.

The government and international agencies that have looked into smart meters are very political and strongly influenced by industry pressures. None have concluded that smart meters are unsafe, **but none are able to declare them to be safe either**. Many other groups have issued strong warnings that ***smart meters do appear to be unsafe***. There are thousands of animal and cellular studies showing adverse effects of low level RFR at the same frequency as emitted by smart meters. Aside from a number of surveys that showed ill effects, there have been no studies on the safety of smart meters for humans. Nor is there any on-going scientific or medical monitoring of health effects of smart meters. **If the smart meter roll-out plan had been submitted as a proposal for an experiment on human beings, which it undeniably is, any Institutional Review Board, including the division of the NIH that handles such experiments on humans, would have rejected it outright.** Millions of persons world-wide are being used as guinea pigs without their permission. The smart meter roll-out violates Nuremberg principles.

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[44] Levis AG, Gennaro V, Garbisa S. *Business bias as usual: the case of electromagnetic pollution.* In Elsner W, Frigato P, Ramazzotti P eds: "Social Costs Today. Institutional Analyses of the Present Crises". Routledge (Taylor&Francis Group), London and New York 2012: 225-68 (www.routledge.com).

Many red flags have been raised concerning the smart meter mesh systems as currently deployed. Industry objects to them all because they get in the way of current plans for profit. The few red flags that industry quietly admits to (because they are so well validated in humans, such as changes in brain waves and sleep patterns) they discard as being of no significance. Do you also think that changes in brain waves and quality of sleep are insignificant? But these are only a drop in the bucket of many detrimental effects, which include undeniable effects on DNA and on sperm.

Smart meter systems are a large-scale implementation of untested infrastructure that does harm to taxpayers. It is foolhardy to throw taxpayer money into a system that taxpayers will come to object to and resent more and more in coming years as electrical sensitivity becomes widespread and an understanding of the effects of RF emissions increases.

Opting out is not a solution because whole neighborhoods will still be saturated with pulsing microwaves from neighbors' smart meters and the mesh networks. Mesh networks are an ill-conceived idea. They produce ongoing RF chatter even when they are not sending data.

To summarize, there are at least two smart meter health issues here, and **they occur whether or not the person is aware that a smart meter is present**:

1. very probable long term health effects on a significant percentage of the population (much more likely than not from the research on cell phones and cancer)

2. definite both immediate and long-term effects on persons susceptible to developing EHS (Electrical Hypersensitivity), and on those who already have EHS.

Whether or not EHS exists is not in question. People addicted to their computers, engineers who love and absolutely need their computers to work, would not and do not limit their computer use because they subscribe to any mass hysteria about RFR, RF or smart meters - such a hypothesis is irrational. They have to limit time spent on computers, cell phones and near Wi-Fi

because of painful and eventually disabling symptoms that they, against their wishes, have astutely correlated with RFR emissions from these devices. They live with this problem every day, and inadvertently do many experiments on this every week. They are the only experts on RFR sensitivity. **The fact that EHS is self-reported does not invalidate it at all, just as the reality of migraine headaches is not invalidated by the fact that the only evidence for migraines is self-reporting.**

If RFR does not affect you noticeably doesn't mean it does not affect other persons. Would you force a person seriously allergic to peanuts dust to breathe it because it has no effect on you? It would be unwise to throw out empirical evidence reported by thousands of people because it is outside of your direct personal experience and seems counterintuitive to you. Saying that these persons 'symptoms are not due to RFR exposure is absolute nonsense. Any mass hysteria hypothesis dissolves when one takes a close look at the facts. We have presented a massive amount of testimonial evidence and numerous surveys concerning EHS and RFR exposure in general, and EHS and smart meters. When confronted by this evidence, it would be extremely irresponsible - and therefore very poor judgment - on the part of any parties in charge of smart meter deployment decisions to simply forge ahead. **Smart meters violate the right of susceptible persons to live in a healthy environment.**

Even if you disregard the significance of long-term effects, the short-term effects on persons with EHS is undeniable. How many persons with EHS do smart meters have to disable before the roll-out of smart meters is halted and reversed? If you don't reverse the roll-out, how can you afford to relocate these persons, and where can you relocate them safely to? What is the constitutionality of forced relocation? What are the legal ramifications and liabilities of such disability-based discrimination?

In addition, there are likely **short-term subliminal health effects** on a large percentage of the population - effects on human biochemistry, well-being, sleep patterns, stress threshold and mental clarity. For all persons, smart meters violate the freedom of choice to apply the Precautionary Principle within their own living space on their own property, concerning a device

mandated on their homes which has not been properly tested for either short or long-term effects on humans. **There has already been enough research done on non-thermal effects, and enough testimonials collected on the reality of EHS and the serious impact of smart meters on the lives of those with EHS, for anyone of intelligence to see that smart meters are not safe.**

We hope you will not align yourselves with those who refused to look into Galileo's telescope; those who call us wrong without honestly and logically dealing with the evidence we have presented to you. **Don't let them fool you - there really are many valid and very red flags. Take heed and act accordingly, and right now. Otherwise in the near future you will wish you had acted more wisely, and many people will have been harmed. Act like real human beings, not like corporate machines. Don't indulge in or participate in denial. Do the right thing - make decisions that prevent harm to humans.**

Dated at Falmouth, Maine this twenty-fourth day of January, 2014.

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