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ED FRIEDMAN, ET AL,
Request for Commission Investigation into
Smart Meters and Smart Meter Opt-Out

Docket No. 2011-00262

COMPLAINANTS' EXCEPTIONS TO EXAMINERS' REPORT

The Examiners' Report should be rejected by the Commission for several reasons. Most fundamentally, the Report fails to decide the discrete issue the Maine Law Court directed the Commission to resolve, whether CMP's smart meters pose a credible risk of harm. The Report thereby fails to satisfy the Commission's statutory mandate to ensure safety. Instead of responding to the Law Court's directive, the Report offers the Examiners' determination of whether the technology is "safe, reasonable and adequate." By reformulating the question, the Examiners have introduced irrelevant factors into the analysis, relying on information that is not in the record. The Examiners treat the statutory mandate to ensure all utility facilities be "safe, reasonable and adequate" as one requirement instead of three, allowing the three requirements to be balanced or traded off in a collective determination of compliance, thereby avoiding a determination about

safety as a separate and independent requirement. The Report also applies the wrong standard of proof and does so in a manner that effectively shifts the burden of proof to Complainants. To the extent the Report evaluates record evidence on the question of safety, it discusses primarily whether Complainants have produced sufficient evidence to prove causation of harm, as opposed to whether CMP has produced sufficient evidence to prove there is no credible threat of harm. And finally, the findings and conclusions about non-thermal effects of RF radiation are not adequately supported by the record evidence – the Report misstates and/or confuses evidence in the Record, relies on the conclusions of other agencies without considering any indicia of reliability of the agency conclusions, and disregards, or dismisses without legitimate justification, unrebutted evidence in the Record. And, the Report misstates or misreads the evidence on the question of whether there is evidence of adverse non-thermal effects occurring at radio frequency ("RF") radiation levels comparable to smart meter exposure levels.

For these reasons, which are more fully developed below, Complainants urge the Commission to determine that adopting the Examiners' analysis would result in reversible errors of law and fact. When all the evidence is properly considered and assessed, applying the proper standards, we are confident the Commissioners will be compelled to conclude: 1) CMP has failed to prove there is no credible threat of harm from its smart meter technology; and 2) safety cannot be ensured without remedial measures, the scope of which may need to be determined in a separate proceeding.

I. The Examiners' Report answers the wrong question and applies the wrong legal standard.

The Maine Law Court remanded this matter to the Commission to address the health and safety issues raised in the Complaint. *Friedman v. PUC,* 2012 ME 90, 48 A.3d 794, 802. The Court articulated the question as whether "smart meter technology is not a credible threat to the health and safety of CMP's customers." *Id.,* P10, 48 A.3d at 800. There is nothing in the Law Court's Decision suggesting that the health and safety issue is to be considered or analyzed in the broader context of the additional statutory requirements of reasonableness and adequacy. To the contrary, it is abundantly clear that the Law Court directed the Commission to address safety as a discrete issue.

> Yet, nowhere . . . did the Commission conclude that smart meter technology is not a credible threat to the health and safety of CMP's customers. In fact, the Commission explicitly declined to decide *this* issue . . ." *Id.* P. 10 (emphasis added).
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> The Commission's previous decisions demonstrate that it may have *considered*, to a limited extent, the health and safety issues Friedman raised, but it did not *resolve* those issues. *Id.,* P. 11 (emphasis in original).

The Law Court and the Legislature require the Commission to ensure CMP's smart meters are safe. By avoiding a determination on the discrete question of safety, independent of other statutory requirements, the Examiners' Report fails the mandates of both the Law Court and the Legislature. CMP's customers deserve to know their safety from smart meter radiation is ensured. They deserve a specific answer to the discrete question of whether smart meter technology poses a credible threat to their health and

safety. The Law Court could not have been more clear on this point. If the Commissioners have not listened to the questions and comments made by the Justices at oral argument about the Commission's duty on this point, we urge them to do so. The Justices conveyed a clear message -- the Commission has a duty to make a determination upon which CMP's customers can rely to know whether CMP's meter technology is threatening their health and safety.

The investigation itself has been focused on evidence about health and safety to the exclusion of all other issues.[1] Inexplicably, however, the Examiners have now chosen to expand the focus of the question to be decided on remand, introducing information that is irrelevant to safety and that was not entered into the record of the investigation.

> Therefore, our role is to resolve the question as to whether CMP's installation and operation of wireless smart meters and the associated mesh network constitutes a safe, reasonable and adequate utility service. In making this determination, we must review and give weight to all of the scientific and health information contained in the record before us. However, we must also review the matter in a *broader context* that includes an examination of the compliance of CMP's smart meters with *all applicable federal or state regulations*; determinations and conclusions by other state, federal, and international agencies on RF emissions generally and smart meters specifically; *promotion of State and federal energy policies*; the *pervasiveness of RF emitting devices in the environment*; and *consistency with generally accepted utility practice*. *Exm. Rept.*, p. 34 (emphasis added).

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[1] The Examiners were quite restrictive about the scope of this investigation, stating that only evidence about health and safety related to RF radiation exposure would be admitted, even to the exclusion of evidence related to security and privacy issues that could threaten safety (*e.g.* breaches of security leading to home invasions, identity theft and or burglary), and at least initially, to the exclusion of evidence related to smart meter fires. *See, 8/2/2012 Tr.* p. 39, ll. 17-22.

The implication of this reformulation of the operative question is that, if there is strong evidence of reasonableness and adequacy, the utility's burden to prove safety is reduced. This is clear error. "Safe, reasonable, and adequate" is not a conglomerate concept that can be meaningfully discussed free of its constituent elements. Unsafe is by definition unreasonable and inadequate. If a practice or service is unsafe, finding it otherwise reasonable or adequate will not make it safe; considering information relevant to adequacy or reasonableness should not in any way alter the assessment of safety. While prevailing policies and practices relating to energy management may aid the Commission in determining the adequacy and reasonableness of a service, where the question may involve balancing efficiencies with quality or reliability, they will not aid the Commission in determining safety. Once a determination on safety is made, such policies and practices may be relevant to the secondary question of how to address or remedy the safety risk. The Examiners, however, have inappropriately introduced factors relevant only to this secondary question into the primary question of determining whether there is a safety risk.

It is also error to consider these factors because they are based on information that is not in the record. At pages 59-61 of the Report, the Examiners make the following assertions without any record evidence to support them: 1) smart meter technology is consistent with energy policies, 2) it has potential benefits for CMP consumers, and 3) it is consistent with general utility practices. Evidence to support these assertions was never made part of the record. Complainants were never given an opportunity to submit

evidence that could refute the alleged benefits, the alleged consistency with good energy policy, or the alleged consistency with good utility practice. Adopting the Examiners' Report would violate Complainants' due process rights and the Commission's own rule, which prohibits basing a decision on information not in the record. PUC Rule Ch. 110, Section 8(H)(4).

While introducing factors irrelevant to determining safety, the Examiners chose to disregard other factors relevant to the assessment of safety risks. The Examiners dismiss the significance of the setting in which customers are exposed, the pervasiveness of the exposure, and the monetary constraints on the "choice" that customers have to avoid exposure. Exposure to RF radiation from CMP's smart meters and other AMI devices is occurring *every* day. Every man, woman and child within CMP's 11,000 square mile territory is being exposed on a daily basis. This includes pregnant women, frail elderly shut in their homes, and people with severely compromised immune systems and other medical conditions making them more vulnerable to RF radiation. These customers are being exposed within their own home environments where their rights to seek protection from exposure should be most respected and protected. Yet, the Examiners disregard these considerations.

While it is correct to say these circumstances, like the energy policy considerations, are relevant to the secondary question of determining an appropriate remedy for the safety risk, they are also important considerations when assessing the evidence to determine whether CMP has proven there is no credible risk of harm. To

satisfy the Legislature's mandate to ensure safety, CMP must be held to a meaningful evidentiary standard that requires proof of safety for all of its customers, including the most vulnerable, not just some customers who can be characterized as "average" or "typical" in some respects. The assessment of the evidence must take into consideration worst case scenarios of exposure, not typical or average exposures.

The assessment must also take into consideration the credible threat of harm posed by cumulative and incremental exposures, and the importance of the home environment as a potential respite from exposures in public spaces, particularly for CMP customers seeking to minimize their exposure due to their vulnerabilities. The Examiners correctly point out that RF exposure is becoming more and more ubiquitous in public places, which is why those who are vulnerable struggle every day attempting to avoid exposure in public places, and take extraordinary measures to make their homes as free of exposure as possible. Instead of respecting these efforts, the Examiners appear to use the ubiquity of involuntary exposure in public places as a justification for compelling smart meter exposures in the private homes of CMP customers. *Exm. Rept.,* p. 65.

The Examiners also disregard the effect of requiring perpetual payments to avoid exposure by saying that (apparently unlike the issue of alleged smart meter benefits), "the issue of whether customers should have to pay to opt-out is not before us in this proceeding." *Id.,* n. 37. The "opt-out" may not be directly at issue, but the effect of an opt-out fee is very much an issue for customers attempting to avoid smart meter radiation. The Examiners say safety is "a relative and contextual term." It is not a

relative term for customers who experience the adverse effects of RF radiation. It may be a contextual term, but the Examiners have selectively drawn the context in a manner that inappropriately favors CMP and disadvantages its customers.

II. The Examiners' Report applied the wrong standard of proof and did so in a manner that shifts the burden of proof to Complainants.

The Examiners state that CMP should not be held to a zero risk standard or be required to prove a negative.

> It is simply impossible for CMP or anyone else to "prove" with the degree of certainty apparently advocated by Mr. Friedman, Ms. Wilkins, and Ms Foley-Ferguson- that low-level RF emissions have no potential to cause harm under all circumstances. Science simply cannot prove a negative. *Exm. Rept.* at 36.

The Examiners overstate the evidentiary concern of proving a negative. Whatever difficulties may be posed by its burden of proof, CMP is not excused from satisfying the statutory mandates to provide safe facilities and to ensure safety. Instead of holding CMP to its burden of proving safety, the Examiners reformulate the question and resort to the consideration of irrelevant factors justified by the "relative and contextual" nature of the problem.

> The Legislature in its charge to the Commission to ensure "safe, reasonable and adequate" service could not have intended that the Commission ensure absolute safety with zero risk of harm; this is particularly true with regard to electricity which, by its very nature, has inherent safety risks. Safety is a relative and contextual term, determined not only by an understanding of the scientific evidence and potential risks, but also by a policy judgment as to the acceptability of those risks given the benefits of the technology. *Id.* at 35.

The Commission cannot determine the acceptability of the risk without having first assessed the evidence to determine the level of risk. The Examiners provide some discussion of the scientific evidence, but make no mention of CMP's burden of proof in this discussion. Instead of assessing whether CMP's evidence shows there is no credible risk of harm, they assess whether Complainants' evidence shows causation of harm to a scientific certainty. This is fundamental error.

Complainants' burden is limited to presenting their complaint and establishing the Commission's jurisdiction to investigate. *Hogan v. Hampden Telephone Co.,* 36 PUR 4th 485 (Me. PUC 1980). Complainants are "not required to demonstrate the validity of their claims by 'affirmative evidence.'" *MacMaster v. Gardiner Water Dist.,* 1998 Me. PUC Lexis 697 (Me. PUC 1998). Complainants have far exceeded this burden. They have presented credible and compelling complaints of people reporting they have suffered debilitating conditions and even homelessness as a result of smart meter radiation. This testimony is akin to the testimony of customers in *Hogan* alleging their phone service was inadequate or faulty. The Commission did not require the customers in *Hogan* or *MacMaster* prove their claims. The utility had the burden "to prove the conditions or practices complained of do not exist or that, if they do exist, they do not constitute inadequate [or unsafe][2] service." *Hogan,* at 488 (brackets added). CMP has made no effort to prove the symptoms experienced by Complainants' witnesses do not

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[2] The issue in Hogan was the adequacy of service, not safety, but the allocation of the burden applies to all 10-person complaints.

exist, or that the symptoms they experienced are not related to the installation of smart meters in their homes. CMP has made no attempt to challenge the credibility or reliability of these witnesses. Neither CMP nor the Commission made any attempt to investigate the circumstances relating to witness complaints, or to interview or cross-exam these witnesses about their symptoms or the circumstances relating to their smart meter exposures. The credibility and reliability of their testimony is unchallenged in the record and must be taken at face value. *State v. Fenderson*, 449 A.2d 381, 383 (Me. 1982)(unrebutted evidence was sufficient to prove guilt beyond a reasonable doubt).

CMP's only response to this testimony is to offer the opinion of its experts that the symptoms experienced by these witnesses may, by some unknown mechanism, have a psychological cause. These experts did not question or interview the witnesses or investigate their symptoms or the circumstances of their complaints nor are they qualified to make psychological determinations. The witness testimony includes specific circumstances that cannot be explained by the generalized testimony of CMP's experts about potential psychological causes. Many witnesses testified that they experienced their adverse health symptoms for the first time immediately or not long after the smart meters were installed, but before they were aware of the installation, and for many, before they were even aware of concerns about smart meters. *E.g. Tupper Test.,* p. 3, ll. 6-21; *Knoll Test.*, p. 1, ll. 14-20; *Brust Test.,* p. 1, ll. 5-11; *Renaud Test.,* p. 2, l. 6 - p. 3, l. 9; *Smith Test.,* p. 1, ll. 5- p. 2 l. 10. *See also, Rea Test.,* p. 7; *Conrad Test.,* p. 10-12; *Hart Test.,* p. 2, ll. 21-23. These circumstances cannot be explained by a psychological

cause, and CMP offers no evidence to contradict or explain these circumstances. CMP has failed to meet its burden of proving the unrebutted complaints of adverse health effects do not exist and were not caused by or related to smart meter radiation. *See, Hogan,* 36 P.U.R. 4th at 488.

In addition to presenting credible evidence of actual harm suffered by individual witnesses, Complainants further exceeded their burden by presenting exhaustive scientific evidence supporting the conclusion there is a credible threat of harm. Expert testimony and scientific studies were submitted, providing objective evidence of physiological effects that may be associated with EHS symptoms. *Leszczynski Test.,* p. 4-5; *Karinen, et al,* 2008; *Carpenter Test.,* pp. 10-14 (citing *McCarty et al,* 1991; *Abel in, et al,* 2005; *Hutter, et al,* 2006; *Eliyahu, et al,* 2006; *Altpeter, et al,* 2006; *Volkow, et al,* 2011; *Bio initiative Report 2012,* Section 9; *Bioinitiative Report 2007,* Section 8). Extensive testimony and scientific studies were provided demonstrating substantial evidence of other adverse health effects from low-level RF radiation, including cancer and other disease related effects. *See Complainants' Brief,* pp. 49-71. Dr. Hardell, one of the most highly qualified experts in the world, testified to his opinion that there is sufficient evidence to conclude a causal relationship between low-level RF exposure and certain forms of brain cancer. *Hardell Sup. Test*, p. 3 and Exhibit D; *10/30/2013 Tr.*, p. 11, ll. 18-21.

The Examiners' limited findings about the scientific evidence plainly demonstrate their application of the wrong standard of proof -- specific causation, not credible threat

of harm – and their improper reallocation of the burden of proof to Complainants. Their first finding about the scientific evidence is that it is "inconclusive." *Exm. Rpt.,* p. 2. This cannot support the Examiners' conclusion that smart meters are safe ("safe, reasonable and adequate"). Suggesting that a finding of inconclusive evidence supports a determination of safety inappropriately assigns the burden of resolving uncertainties to Complainants. This finding supports the conclusion that CMP has failed to sufficiently resolve the uncertainties to reliably conclude there is no credible risk of harm. Put another way, the Examiners cannot meet the legislative mandate to "ensure safety" based on "inconclusive" evidence.

The Examiners' next finding further demonstrates their shift of the burden. They find there are no "peer-reviewed scientific studies in the record that demonstrate, or even purport to demonstrate a direct human health risk *specifically from smart meter RF emissions*." *Exm. Rept.,* p. 2 (emphasis added).[3] It is CMP's burden to show that smart meters have been tested and studied to confirm they do not pose a credible threat of adverse health consequences. Yet, CMP did not submit even one document reporting about tests or studies of the health effects specifically related to smart meter radiation. It is remarkable that no such studies have been undertaken by the government or the utility industry in response to the extensive reports of harm experienced by customers around

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[3] The Examiners repeat this point in their Conclusion stating that no scientific studies "even purport to demonstrate a direct human health risk specifically associated with RF emissions from smart meters." It is clear error to cite the lack of studies testing the safety of smart meters as a reason for concluding safety has been ensured. Not, when the Legislature has taken steps to protect consumers by mandating that the utility with monopoly powers must provide safe facilities, by mandating the Commission ensure safety, and by assigning the burden of proof to the utility.

the country. The Examiners' finding of no such studies further compels the conclusion CMP has failed to meet its burden, but it is evident the Examiners weigh this finding against Complainants.

We briefly review other statements in the Examiners' Report evidencing the shift in the burden and the use of a standard requiring proof of causation instead of proof of no credible threat of harm. They acknowledge evidence of non-thermal, biological effects from low-level RF radiation, but suggest this is insufficient because "a causal relationship to RF exposure has not been established." *Exm. Rept.,* p. 21. They state: "There is currently insufficient conclusive scientific evidence to would [sic] support a causal relationship between RF emissions and negative health effects." *Exm. Rept.,* p. 44. And, discussing the evidence of cancer risks from cell phone exposure, the Examiners emphasize "there is no scientific consensus that this exposure is causal to harmful effects." *Id.,* p. 50. Elsewhere, the Examiners discuss the precautionary principle, which they acknowledge is a legitimate public policy methodology for preventing harm "before there is strong proof of harm." *Exm. Rept.*, p. 46. However, the Examiners reject its use here saying "there is no conclusive scientific evidence" for applying it. *Id.*, p. 47. The whole purpose of the principle is to avoid or prevent harm while waiting for science to develop the conclusive scientific evidence.[4]

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[4] The Examiners also reject application of the precautionary principle based on their assertion that "Mr. Friedman and Ms. Wilkins state that the only appropriate [precautionary] remedy is the complete removal of all smart meters and related components." *Exm. Rept.*, p. 46 (citing Friedman Brief at 72; Wilkins Brief at 73). Why the Examiners feel constrained to consider only those remedies recommended by Complainants and Intervenors is not apparent. More importantly, the Examiners have misrepresented Complainants' statement about the remedies, which was

In their Post-Hearing Brief, Complainants discussed at length the "Hill criteria" and the risk assessment process employed by the World Health Organization ("WHO") as useful methodologies to consider for determining the risk or threat of harm when the science has not developed to the point where it can be stated with certainty that causation has been established or not. *Complainants' Brief,* pp. 26-29.[5] The Hill criteria were developed by Professor Hill to provide guidance when assessing evidence of a risk before there is scientifically conclusive evidence of causation. "Before deducing 'causation' and taking action we shall not invariably have to sit around awaiting the results of decisive research." *Hill 1965*, p. 296. The WHO employs the Hill criteria in its cancer risk analysis and uses four categories to measure the relative strength of the evidence. The four categories are: 1) evidence suggesting lack of carcinogenicity, 2) inadequate evidence of carcinogenicity, 3) limited evidence of carcinogenicity, and 4) sufficient evidence of carcinogenicity. *IARC Monograph,* Vol. 102, p. 27-28. Within this framework, "a judgement is made concerning the strength of evidence that the agent in question is carcinogenic to humans." *Id.,* p. 19. Only the fourth category ("sufficient evidence") requires proof that "a causal relationship has been established between exposure to the agent and human cancer." *Id.,* p. 27.

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unrelated to the precautionary principle. Complainants made a reference to remedies only in response to the Examiners' request for comments, and only to make the limited point that resolving the question of remedies will require further proceedings. *Complainants' Brief*, p. 72.

[5] *See also,* Identification of Research Needs Relating to Potential Biological or Adverse Health Effects of Wireless Communication (U.S. NRC, 2008, p. 38, last paragraph). *Wilkins Brief*, p. 40

The Examiners make no reference to the Hill criteria or the WHO categories of evidence, and their discussion of the WHO report classifying low-level RF as a 2B carcinogen, demonstrates the Examiners' rejection of any standard other than scientific proof of causation. The WHO 2B classification represents the consensus of a highly-qualified group of independent scientists that a causal association between low-level RF and cancer *is credible*. *Leszczynski Test.,* p. 7. In other words, there is credible evidence that low-level RF may cause cancer. Applying the Hill criteria and the WHO categorization of evidence to assess the risk is consistent with the Law Court's directive to determine whether there is a "credible threat of harm." Instead of considering the WHO report as evidence of a "credible threat of harm," which CMP must now disprove, the Examiners dismiss the WHO conclusion by characterizing it as "only a suggestion of a possible causal relationship with carcinogenic effects." *Exm. Rept.,* p. 52. In other words, there must be full proof of a causal relationship in the record, before the Examiners will conclude there is a credible threat of harm. This approach to the evidence not only shifts the burden, it turns it on its head.

The Examiners also attempt to dismiss the importance of the WHO Report by saying it is based "on studies involving wireless phones, not smart meters." It is undisputed in the Record that there is no distinction between cell phone and smart meter radiation in terms of the quality and nature of the radiation. *5/23/2013 Tr.* p. 31, l. 8. The authors of the WHO Report have repeatedly stated that the conclusions in their report

are not limited to cell phone radiation and are inclusive of all low-level RF including that emitted by smart meters. *Hardell Test.,* p. 24.

The Examiners also rely on other agency reports that expressly or implicitly employ a causation standard. They quote a Texas PUC report as follows: "There are no known non-thermal effects from exposure to RF/EMF." *Exm. Rept.,* p. 44 (quoting Texas PUC Staff Report, p. 62).[6] What the Texas PUC staff meant by "no known non-thermal effects" is that such effects have not been proven to a scientific certainty; "no known non-thermal effects" means there are no "proven or unambiguous biological effects." *Tex. Staff Rept.*, p. 62. The Examiners quote the British Columbia utility commission report as follows: "the scientific evidence did not persuade the BCUC that there is a causal connection between RF emissions and the symptoms of electromagnetic hypersensitivity." *Exm. Rept.,* p. 58. They cite the CCST report stating: "neither the scientific literature nor CCST's expert consultations support that there is a causal link between RF emissions and non-thermal health impacts." *Id.* at 8. This not only demonstrates application of the causation standard, it misstates the CCST report. CCST did not conclude there is no support in the science for a causal link. It said: "No clear causal relationship between RF emissions and non-thermal human health impacts has been *scientifically established.*" *CCST Report,* p. 62(emphasis added). The Examiners' reliance on other utility commission reports, whose conclusions are based on the failure

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[6] The Texas Staff Report was authored by one Texas Commission staff person whose qualifications, knowledge, education, and experience are not disclosed in the report.

to prove causation to a scientific certainty, is a subtle, but unmistakable, means of shifting the burden of proof in this case. More importantly as discussed in Section IV below, it is error for the Examiners' to give more weight to reports by other commissions and agencies than is given to the direct record evidence received in this proceeding, particularly when the other reports are based on evidence of unknown quantity and quality, and are authored by other commission or agency staff of unknown competence.

III. The Examiners' findings related to evidence of potential harm from RF radiation at smart meter levels of exposure are not supported by the record evidence.

Most of the evidence in this case pertains to the threat of non-thermal effects of RF radiation, yet the Examiners and the reports they rely upon, focus most of their analysis on compliance with standards governing thermal effects. The Examiners correctly conclude the Federal Communication Commission ("FCC") guidelines do not protect CMP's customers from non-thermal effects. *Exm. Rept.,* p. 44. It necessarily follows that compliance with the FCC guidelines is not material to the question of whether there is a credible threat of harm from non-thermal effects. It also necessarily follows that the Examiners' reliance on other commission and agency reports that are based on compliance with FCC and similar standards are not material. And, despite having decided that this investigation is not preempted by FCC guidelines, the Examiners indicate some hesitation about making a safety determination, because the Commission might be preempted from adopting state-specific RF emission standards for RF emitting devices. *Id.* p. 45. Complying with the Law Court's directive to determine whether

safety can be ensured in this circumstance does not require the promulgation of generally applicable exposure standards for RF emitting devices.

The Examiners also correctly conclude Complainants have submitted scientific evidence showing RF radiation can cause adverse non-thermal effects. It necessarily follows that CMP must prove this evidence of adverse non-thermal effects does not demonstrate a credible threat of harm from smart meters. The Examiners appear to conclude CMP has met this burden by showing smart meter exposure levels are far below the levels for which there is scientific evidence of non-thermal effects.

> The studies that have been presented in the record to demonstrate the risk to human health from exposure to RF-emitting devices are based on exposure to substantially higher levels of RF emissions than smart meters. *Exm. Rept.,* p. 2.

Elsewhere they state:

> The exposure levels in the animal studies submitted by Mr. Friedman, Ms. Wilkins, and Ms. Foley-Ferguson are much greater, in many cases several orders of magnitude greater, than the RF exposure levels associated with CMP smart meters, even emissions measured in extremely close proximity to the smart meter. *Id.*, pp. 49-50.

And:

> While many of these [animal] studies suggest potential adverse impacts of RF emissions, EMF, or microwaves on animals at certain frequencies and power levels, none of these studies address the potential impact of RF of the frequency and power levels emitted by CMP's smart meters. *Id.,* p. 49.

It is not clear why these findings and statements refer only to studies, as opposed to all of the evidence in the record, including the testimony of Complainants' experts and lay witnesses. The lay witnesses provide direct evidence of adverse health effects related to

smart meter radiation. Complainants' experts provided extensive testimony about studies showing adverse non-thermal harm at smart meter radiation levels. Complainants object to the extent the Examiners have based their findings on a subset of the record evidence.[7]

The Examiners do not state what levels of RF exposure from smart meters they are using for comparison to the scientific evidence. Elsewhere in the Report, however, they calculate peak exposures from CMP's meters to be 0.45 mW/cm2 at a distance of 20 cm. (7/78 inches) and 0.0213 mW/cm2 at 3 feet. *Exm. Rept.*, p. 37. The accuracy of these calculated values is in question because the exposure at 3 feet is than the calculated peak exposure reported by CMP's own witness (Exponent) of 0.031 mW/cm2 at 3 feet. *D.R. Fr.* 03-08; *Exponent Test.* 11/16/2010, p. 29. The Examiners calculate the averaged exposures using the maximum 10% duty cycle to be between 0.0096 mW/cm2 at 17 inches and 0.00213 mW/cm2 at 3 feet. *Id.,* p. 44 and p. 38, n. 24.[8] Again, this is less than the 10% averaged exposure reported by Exponent -- 0.99 mW/cm2 at 2 inches, 0.028 mW/cm2 at 1 foot, and 0.00306 at 3 feet. *Oral Data Request*, 01-06 (Supp.), Att. 1, p.5.

Complainants object to the use of averaged exposures to assess the risk of adverse non-thermal health effects. The FCC's use of averaged exposures is based on the body's homeostasis response to thermal effects. *Exponent Test.* 11/16/2010, p. 24, l. 10-12;

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[7] It is also not clear whether the Examiners have limited their assessment to the studies identified in their Appendix A, which does not include all the studies submitted by Complainants or all the studies referenced and relied upon by Complainants' expert witnesses.

[8] The examiners calculate two sets of values based on two different CMP smart meter models. We refer only to the greater of the two exposure values.

12/5/2012 Tr. p. 49, l. 18-25. CMP has provided no evidence that averaging is relevant to the body's response to non-thermal effects, and Dr. Hardell testified to there being no such evidence. *Id.* p. 52-53; *Hardell Test.,* p. 26, 1. 3-4. Accordingly, the averaged values, even at the maximum 10% duty cycle, must be disregarded.

Nevertheless, even if we use averaged exposure values and even if we use the Examiners' averaged values, which are lower than the evidence provided by Exponent, the Examiners' finding of no scientific evidence showing adverse non-thermal effects at these exposure levels is still contrary to the evidence. The Examiners' calculated values present a range from 0.45 mW/cm2 (peak at 20 cm.) to 0.00213 mW/cm2 (10% duty cycle averaged at 3 feet). The Examiners acknowledge that some governmental agencies and groups have set or proposed maximum exposure standards that are close to these smart meter exposures. They report a maximum exposure of 0.01 mW/cm2 in Bulgaria, Italy (certain instances), Lithuania, Poland, and Russia. *Exm. Rept.,* p. 21. This is below the peak smart meter exposure even at 3 feet away (0.0213 mW/cm2) and only slightly above the averaged exposure at 17 inches away (0.0096 mW/cm2).

The Examiners' report a recommended standard of 0.001 mW/cm2 by the ECOLOG-Institut. *Id.* This is below even the Examiners' averaged smart meter exposure at 3 feet away (0.00213 mW/cm2). The ECOLOG Institut recommendation was made in a 2000 report commissioned by T-Mobile. The Institut scientists made this recommendation based on their extensive findings of adverse non-thermal effects from low-level RF radiation, including genotoxicity, disruption of cellular processes,

disruption of cell transformation and cell proliferation, evidence of pathological effects on the immune system, the blood-brain barrier, neurotransmitters, cognitive functions, stress hormones, and carcinogenesis. The Examiners report other proposed standards by Seletun Statement (0.00017 mW/cm2) and BioInitiative (2012)(0.0000003 mW/cm2 – 0.0000006 mW/cm2) that are far below the reported smart meter exposure levels based on peak values or 10% duty cycle averaged values.

One of Complainants' experts provided a list of studies showing adverse non-thermal effects reported at very low RF exposure levels between 0.002 and 6.0 μ W/cm2, well below the smart meter exposure levels calculated by the Examiners, whether based on peak values or 10% duty cycle averaged values. *Complainant Brief*, p. 68 (citing *Morgan Test.,* Exhibit F). Another expert provided a list of 123 studies provided in the 2012 Bionitiative Report. Most of these studies report adverse effects well below the Examiners' smart meter exposure levels based on peak values or 10% duty cycle averaged values. *Id.,* (citing *Carpenter Test.,* Exhibit B ("Reported Biological Effects from Radiofrequency Radiation at Low Intensity Exposure (Cell Tower, Wi-Fi, Wireless Laptop and "Smart" Meter RF intensities")).[9] The text of many, but not all, of the studies listed in these Exhibits were submitted into evidence. The fact that the full text of some of these studies was not submitted into the record does not mean the Commission can

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[9] *See also, Wilkins Brief,* Exhibit B (showing in graphic format a chart showing 67 studies of biological effects at levels below that of smart meter exposures).

disregard them. Complainants' experts have referenced them, testified to their significance, and relied upon them in rendering their opinions.

Other studies in the record reporting adverse effects at smart meter exposure levels include the recent study by *Shahin et al*, 2013, reporting effects at 0.033549 mW/cm2. As Dr. Hardell testified, Shahin reports oxidative stress responses in mice after an exposure to 2.4 GHz RF radiation at a power density of 0.033549 mW/cm2. *Hardell Test.*, p 20. The oxidative stress caused by this exposure affected the process of egg implantation and pregnancy. *Shahin,* 2013. The authors noted that "pregnant women and children are exposed to this low-level MW radiation (especially by microwaves, mobile phones, and WiFi signals)." *Id.* The exposure was also the same frequency (2.4Ghz) as CMP's smart meters with an exposure level only slightly greater than the Examiners' calculations of peak exposure at 3 feet away and averaged exposure at 17 inches.

CMP's primary challenge to all of this evidence is to contend that smart meter exposures are actually far below the exposure levels discussed above. CMP cannot dispute the calculated peak and 10% duty cycle exposure levels. Instead, they rely on averaged exposures that are either calculated or "measured" based on the duty cycle of an alleged "typical" meter. As explained at length in Complainants' Post Hearing Briefs, this evidence is unreliable and not material to the assessment of worst case scenario exposures. *See Complainants' Brief,* pp. 34-40. It is beyond dispute that the data used to determine the "typical" smart meter duty cycle is not statistically significant or representative of CMP's 600,000 plus meters. And, the Examiners acknowledge there are

legitimate concerns about the reliability of CMP's measurements of such typical smart meters. Nevertheless, they conclude without explanation that the "measurements" "are informative in that they provide support for the conclusion that the RF emissions from CMP's smart meters are far below the FCC limits." *Exm. Rept.,* p. 40. However, the Examiners have not found, and cannot find on the evidence, that either CMP's measurements or their calculations of "typical" smart meters provide a reliable basis for concluding smart meter exposures are below the exposures measured in numerous studies reporting adverse non-thermal health effects.

The industry-funded ECOLOG Institut report alone serves as competent evidence compelling a contrary conclusion to the Examiners' statement that smart meter exposures are far below any competent studies reporting adverse effects. CMP has offered no evidence to challenge the reliability of this report. CMP has also not provided convincing evidence challenging the reliability of the over 100 studies cited by Complainants' experts, which stand as competent evidence demonstrating a credible risk of harm from exposure to RF radiation at smart meter exposure levels. Examiners conclusion to the contrary is not supported by the evidence.

IV. Other agency reports (CDC, CCST, Texas PUC, BCUC, Health Canada, and Vt. Dept. of Health) do not offer evidence of greater probative value than the direct testimony and other evidence submitted in this case.

Complainants addressed the limited value of these reports at some length in their post-hearing reply brief. *Complainants' Reply Brief,* pp. 18-27. As discussed above, these reports focus on compliance with FCC standards, which are protective against

thermal effects only, and the reports require proof of causation to a scientific certainty to establish a risk of non-thermal effects. As such, they are not probative of the question of whether CMP has met its burden of showing there is no credible threat of non-thermal effects. In addition, the quality and quantity of evidence submitted in this case far exceeds the evidence reviewed in those reports. The evidence is also more current, including many studies that had not yet been published when those reports were issued. It cannot be disputed that the agencies relied on by the Examiners did not have the opportunity to hear sworn testimony from expert witnesses with qualifications and expertise on the subject matter comparable to Complainants' experts, in particular Dr. Hardell, Dr. Leszczynski, and Dr. Phillips. It is also highly unlikely that the studies reviewed by these other agencies comprised more than a fraction of the studies entered into the Record in this proceeding. When the Commission first considered and approved the installation of CMP's meters it had insufficient evidence to adequately assess safety. The Commission cannot now, after this lengthy and extensive investigation, rely on other agency decisions that are based on incomplete evidence to support the Commission's original authorization that was based on incomplete evidence.

The Examiners make no mention of the limitations of other agency reports and appear to adopt their findings without any critical evaluation. For instance, the Examiners failed to acknowledge statements by the Maine CDC staff declaring their lack of expertise on the subject and the minimal scope of the CDC review of the science, which was limited to a few agency reviews of scientific reviews. "We are not experts on

this . . ." Andy Smith 10/02/2010 e-mail, Exhibit A, p. 2. "[A] full review of all the literature on . . . (RF) and health was beyond the scope of a small state's public health agency." *MCDC 10/29/2010 Eight Leading Question/Concerns of the Maine CDC's Approach to and Report on Smart Meters.*[10] If for no other reason, the CDC Report should be disregarded because the CDC declined to be involved in this investigation, foregoing the opportunity to review the extensive and more recent evidence submitted in this proceeding, as well as the opportunity to testify and be cross-examined.

Instead of critically assessing and weighing the sworn testimony of the highly-qualified experts in this proceeding, the Examiners have chosen to rely on the reports and conclusions of other agencies, most of which have no more expertise than the Commission and whose authors were not available for cross-examination in this proceeding. Relying on the conclusions of the Texas PUC staff and other similarly unqualified authors, instead of the sworn testimony of experts in this proceeding is error as a matter of law. The legal conclusions of other adjudicative bodies are not "adjudicative facts" and, the individual fact findings made by these bodies are not sufficiently reliable for this Commission to adopt or rely upon them. *See Complainants' Brief,* pp. 29-30. CMP must be held to its burden of proof based on an assessment of all the evidence presented in this case. They have not done so and to the extent the Examiners' Report concludes otherwise, it is based on errors of law and fact.

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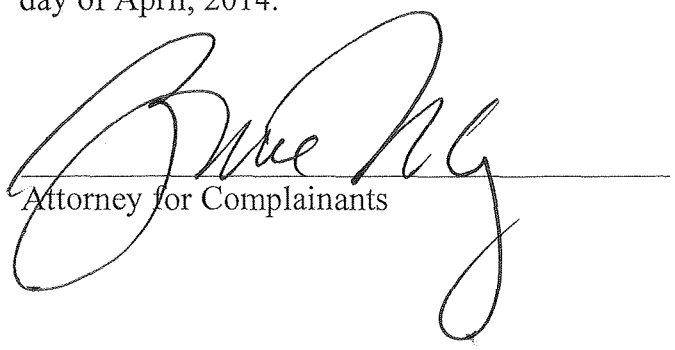
[10] The Examiners do mention the statement by the CDC Director, Dr. Mills, in which she disavows any assertion that smart meters are "safe." *Exm. Rept.*, p. 54, n. 29. They dismiss her statement saying that everyone knows "it is impossible to scientifically prove absolute safety." Those are the Examiners' words, not Dr. Mills'

CONCLUSION

For the foregoing reasons, Complainants take exception to the Examiners' Report and urge the Commission to determine: 1) CMP has failed to prove there is no credible threat of harm from its smart meter technology; and 2) safety cannot be ensured without remedial measures, the scope of which may need to be determined in a separate proceeding.

Dated at Portland, Maine this 11th day of April, 2014.



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