

**STATE OF CONNECTICUT
SITING COUNCIL**

Petition No. 754

Re: 2006 Revision of the Electric and Magnetic Field October 26, 2006
Best Management Practices

**COMMENTS
of
THE CONNECTICUT LIGHT AND POWER COMPANY
and
THE UNITED ILLUMINATING COMPANY
on the
AUGUST 9 AND SEPTEMBER 29, 2006 DRAFTS
OF THE COUNCIL'S PROPOSED REVISED
ELECTRIC AND MAGNETIC FIELD
BEST MANAGEMENT PRACTICES**

SUMMARY

In its Docket 272, over a period of eighteen months, the Council considered extensive evidence concerning the claimed and possible health effects of human exposure to magnetic fields associated with electric power transmission, and the public policy measures appropriate in light of that evidence, and in light of the Connecticut statutes. At the conclusion of that proceeding, the Council rendered a decision that included a thoughtful and accurate evaluation of the scientific evidence, and evinced an understanding of the policy of "prudent avoidance," the policy developed in 1992 by Dr. Granger Morgan, a professor of Engineering and Public Policy

at Carnegie-Mellon University.¹

At the same time, the Council ordered the adoption of magnetic field mitigation measures for the overhead portions of 345- and 115-kV lines that were more extensive and expensive than any previous known application of the policy of “prudent avoidance” would justify.

Thereafter, the Council embarked on a lengthy proceeding to revise its Electric and Magnetic Field (“EMF”) Best Management Practices (“BMPs”), with the assistance of expert consultants. After a rigorous RFP process, the Council selected Gradient Corp. and Dr. Peter Valberg to perform this task. They produced a comprehensive and up-to-date survey of EMF health research (the “Gradient Report”) and assisted the Council in drafting proposed new BMPs. The proposed draft was the subject of extensive comments and a public hearing.

Now the Council is considering adopting a “screening level” of 10 mG or a target of reducing magnetic fields in many areas to a level “as low as possible.” Either formulation will prove onerous, impractical, and alarming to the public. Were the Council to adopt either

¹ See, Supplemental Testimony of Dr. Bailey Concerning Passive Regulatory Responses, Dkt. 272, *Companies’ Ex. 75*, and Attachment 1 thereto, an excerpt from Dr. Morgan’s seminal article, in which Dr. Morgan explains: “By avoidance we mean taking steps to keep people out of fields, both by re-routing facilities and by redesigning electrical systems and appliances. By prudence we mean undertaking only those avoidance activities which carry modest costs. When, as individuals we think a risk may exist but we are not sure, we exercise prudence. For example, broccoli and cauliflower may contain anticarcinogens. Dietary fiber may help to reduce the risk of certain cancers. Conversely chargrilled meats may carry increased risks of cancer. The evidence on these things is suggestive but inconclusive. As a matter of prudence many people have tried to increase the frequency with which they eat cauliform vegetables, increase their fiber intake, and reduce the amount of chargrilled meat they eat. But reasonable people do not rent a helicopter to fly high fiber bread in to them when they spend a week at a mountain ski resort which serves only regular bread. Families who eat meat would not buy lobster for their kids every night for a week at that same ski resort if it is the only meat on the menu that is not charbroiled. Nor do reasonable people rent their own refrigerated truck to supply them with broccoli and cauliflower when they travel in places where these foods are not available. Such steps go beyond prudence. At the least they would be foolishly expensive, at the worst, signs of serious paranoia.”

approach, it would be acting contrary to the advice of its own consultant, and would be turning its back on its own painstaking work in Docket 272.

FACTS

The Council's Study of EMF Science and Policy in Docket 272

The Council considered a truly massive amount of evidence with respect to the health science and public policy considerations of transmission line magnetic fields in Docket 272. By way of reminder, Exhibit A to this submission lists, no doubt incompletely, the pre-filed testimony, hearing testimony, scientific studies, peer-group reviews of studies, reviews of reviews, policy documents, fact sheets, and web sites that the Council took into account in that proceeding. In particular, the Council considered comments submitted by the Connecticut Department of Public Health, and heard testimony from its representative, Dr. Gary Ginsberg, on seven separate hearing days. This was in part because Dr. Ginsberg was asked back on multiple occasions to “clarify” his testimony.

In addition to this evidence from the Connecticut Department of Public Health, the Council also considered recommendations from health agencies that had studied the EMF issue in far greater depth than the CT DPH, including the National Institute for Environmental Health Sciences (“NIEHS”), the World Health Organization (“WHO”), the Health Council of the Netherlands, and the Vermont Department of Public Health. *See*, Ex. A, B hereto. The Council pithily summed up its conclusions based on this evidence in Section XIII of its Opinion (Ex. B hereto).

The Council’s description in its Opinion in Docket 272 of the doctrine of “prudent avoidance” which it considered to be embodied in its then-existing BMPs, was essentially

consistent with Dr. Morgan's formulation and with the advice the Council would later receive from Gradient:

- a. **Prudent Avoidance.** The Council's BMPs adopted a cautious approach also known as "prudent avoidance" and specifically identifies low-EMF design such as compact spacing, optimum phasing of conductors and applying new field management technologies. In addition, the World Health Organization explains that prudent avoidance "does not imply setting exposure limits at an arbitrarily low level and requiring that they be achieved regardless of cost, but rather adopting measures to reduce public exposure to EMF at modest cost". The Council determines that this facility, as approved, complies with our BMPs and the Applicants will be ordered to comply with the Council's BMPs in the construction of the facility. The Applicants presented low-EMF designed structures and techniques at a reasonable cost. These mitigating measures include use of compact spacing and optimum phasing; and adjusting pole height and placement in the vicinity of statutory facilities. Therefore the Council will order the design of prudent avoidance configurations, as shown in Appendix B of the Findings of Fact, and permit the municipalities directly affected by the project to comment on the proposed design.

(Dkt. 272, Opinion, p. 13)

In fashioning this approach of "prudent avoidance," the Council rejected suggestions that it should adopt guidelines that would limit magnetic fields at the edge of a right-of-way ("ROW") to very low levels, such as milligauss levels in the single digits. The Council evaluated the submissions of the CT DPH and the extensive testimony of Dr. Ginsberg, upon which these suggestions were based in part, as follows:

- b. **Department of Public Health.** The Connecticut Department of Public Health (DPH) participated in this proceeding at the request of the Council. DPH representative Dr. Gary Ginsberg provided comments and testimony on EMF. Dr. Ginsberg, a toxicologist, although not an expert on EMF matters, stated distance is the best mitigating tool to abate EMFs. Based on his understanding of EMF studies, Dr. Ginsberg advocated milligauss (mG) measurements to determine exposure level and testified levels below 3 mG, using time-weighted values, are within the realm of background EMF levels. Time weighted values between 3 mG and 6 mG can reasonably be anticipated not to present an increased public health risk; however, time-weighted EMF levels above 6 mG have a larger public health concern. As Dr. Ginsberg emphasized, the DPH is a risk assessor not a risk manager and does not set or recommend standards; in fact, the DPH

Comprehensive Public Health Plan is silent on EMF. Lastly, prudent avoidance, as defined by the DPH, means that magnetic field exposure should be avoided under circumstances that one can normally take within one's power and control, without consideration of economic investment. The Council agrees with the DPH that prudent avoidance is a worthwhile policy; however the Council does consider cost in its evaluation of prudent avoidance.

Notwithstanding its recognition that only expenditures of "modest cost" would be "prudent" within the context of prudent avoidance, the Council ordered the implementation of measures to lower magnetic fields associated with the overhead portions of the Docket 272 lines that were estimated to cost \$68 million to \$80 million, increasing the estimated cost of the overhead portions of the lines by approximately 20%. (Dkt. 272, April 7, 2005 Decision: Findings of Fact, ¶ 706, Appendix B; Opinion, p. 13; Decision & Order, Conditions 4, 11.) This is almost certainly the largest expenditure that has been made to lower magnetic fields from transmission lines, whether expressed as an absolute dollar amount or as a percentage of the project cost. As the Council learned during the Docket 272 proceeding, when California, in 1993, adopted a policy requiring low-cost measures to reduce magnetic fields from new lines, it defined the "benchmark" for "low-cost" to be within 4% of the total project cost. CPUC Decision 93-11-013, Sec. 3.3.2, p. 10; *See*, Public Utilities Commission of the State of California, *Draft Order Instituting Rulemaking 04-07*, July 8, 2004, p. 2 (Ex. B to Applicants' Brief Concerning Revision of the Council's Best Management Practices, dated 9/1/04.)²

The magnetic field reduction strategies employed in Docket 272, at an estimated cost of \$68 – 80 million, reduced the magnetic fields in many locations along the line, but not always to

² Coincidentally, the California DPUC adopted its "prudent avoidance" policy at essentially the same time as the Council adopted its initial Best Management Practices; and the California commission has revisited its policy as the Council has been revisiting its own. In 2006, the CDPUC re-affirmed its existing no-cost and low-cost precautionary-based EMF policy, "as defined by a 4% benchmark of total project cost," which it expected would achieve magnetic field reductions of "15% or greater at the utility ROW." CPUC Decision 06-01-042, p. 7, 10;

the 10-mG “screening level” contemplated by the Council’s August 9, 2006 Draft. Nor could it be said that these fields had been reduced “to the greatest extent possible” as contemplated by the September 28, 2006 “compromise” draft. (Greater reductions, through higher structure heights or more “heroic” measures, will almost always be “possible.”) The Council should recall that the construction it has approved in Docket 272 (as set forth in Appendix B to its Finding of Facts), even with the use of low magnetic field designs, is anticipated to result in edge-of-right-of-way magnetic field levels, assuming typical loads, as follows:

Cross Section	MF at One Edge of ROW (mG)
1 (Scovill Rock S/S to Chestnut Jct.)	28.8
2 (Oxbow Jct. to Beseck S/S)	12.2
3 (Black Pond Jct. to E. Meriden S/S)	12.9
4 (E. Meriden S/S to Beseck S/S)	11.5
5 (Beseck S/S to E. Wallingford Jct.)	21.2
6 E (East Wallingford Jct. To North Haven Jct.)	9.4
6W (North Haven Jct. to Wallingford Jct.)	12.4
7 (Wallingford Jct. to Cheshire Town Line)	11.9
7B (Cheshire Town Line to Cook Hill Jct.)	17.9
8N (Cheshire/Hamden Town Line to Glen Lake Jct.0	15.7
8M (Glen Lake Jct. to CL&P Clark Rd. Property	15.7
8 S (Rt. 15 to West Haven/Orange) (Except where split-phased in Woodbridge)	16.0

The magnetic field levels listed above were modeled assuming a “typical” future load, not the average peak-day load contemplated by the new BMPs now under consideration. So it is

reasonable to expect that the levels on which the decision-making in the Docket was based would be higher, if calculated according to the methodology the Council now proposes.

Moreover, as the Council knows from recent proceedings, magnetic field levels associated with existing transmission lines are commonly higher than those that will be associated with the new Docket 272 lines. For instance, the magnetic fields associated with the **existing** lines that will be replaced by the Middletown to Norwalk Project range up to more than 60 mG under average loading (Dkt. 272, *Companies' Ex. 35*, Letter Updating Magnetic Field Calculations, 3/15/04); and the edge-of-right-of-way magnetic fields estimated for the Bethel to Norwalk 115-kV lines before their reconstruction were estimated to be as high as 39.4 mG under average loads. (Dkt. 217 FOF ¶ 256, *Council Administrative Notice Item 15* in Dkt. 272) The fields estimated for the proposed new Bethel to Norwalk combined 115-kV / 345-kV overhead lines, under average loads, were estimated to range up to 22 mG at the time that the Council approved the new construction. (Dkt. 217, Applicant's response to Interrogatory CSC-04, Q. CSC-010-SPO). Finally, magnetic field levels at one edge of the Manchester-Hopewell right of way, both before and after the reconstruction approved in Petition 737 earlier this year, were estimated to range up to 38.88 mG under average loads (Petition 737, section E of CL&P's revised Petition Report, May 2, 2006)

The Revision of the BMPs Following the Council's Decision in Docket 272

The Council has proceeded with deliberation in its effort to revise the BMPs to assure that they reflect the latest science and sound policy developments. The Council issued a Request for Proposals seeking an expert consultant, contracted with the successful bidder, opened a declaratory ruling proceeding, received and distributed a new review of the health science, and

developed a proposed new set of BMPs, the novel feature of which was a 100-mG edge-of-ROW “screening level” for consideration of significant investment in design and siting measures to lower magnetic fields associated with new lines. The Council solicited and received comments on this draft; conducted a hearing on April 20, 2006; and on May 5, 2006 issued a refined draft that responded to comments submitted before and during the hearing. On May 31, 2006, CT DPH for the first time submitted comments in this proceeding.

Since then, the Council has distributed the alternative drafts of August 9, 2006 and September 29, 2006. According to August 9, 2006 Draft the 100-mG “screening level” would be lowered from 100 mG to 10 mG wherever lines are adjacent to any of the statutory facilities (including “residential areas”) identified in Public Act 04-246. On the other hand, the September 29, 2006 “compromise” draft would not establish a lower numerical edge-of-right-of-way “screening level” less than 100 mG, but would establish a policy by which “the Council will examine the feasibility of reducing MF exposure to the greatest extent possible in the aforementioned areas, even if MF values are below 100 mG at the edge of the ROW.”

Comments of Dr. Repacholi

In order to provide the Council with the perspective of another health authority – one that has for several years been developing magnetic field exposure policy recommendations for world wide application – the Companies provided copies of the various draft BMPs and the Gradient Report to Dr. Michael Repacholi, who until his recent retirement was the lead for the World Health Organization’s work in the development of international public policy recommendations concerning transmission line magnetic fields. The Companies solicited Dr. Repacholi’s comments on the drafts, and are now filing these comments with the Council (“Repacholi

Comments”). The Repacholi Comments include as an “Annex” the current discussion draft of WHO’s “Framework” for “guiding public health policy options in areas of scientific uncertainty.” In summary, Dr. Repacholi advises:

“The 100 mG edge of right of way (RoW) screening level contemplated by the BMPs is extremely conservative and very highly protective of the public, including children and...there is no scientific reason to indicate that this level should be any lower than 100 mG.”

and

“There are no scientific or sound policy reasons that support :

- establishing a lower screening level at selected locations along the RoW or making substantial investments to lower the predicted field levels below 100 mG at selected locations.”

Repacholi Comments, pp. 1, 2

DISCUSSION

Adoption of either the 10-mG or the “anything lower than 100-mG” screening levels would be unsound public policy. Either action would, it seems, be based on deference to the suggestion (or approval) of CT DPH. After investing its own time and resources and obtaining the benefit of expert counsel, the Council should not simply default to CT DPH for the design of its BMPs, but should critically evaluate the input of CT DPH in light of other sources of information and advice, as it did in Docket 272. It is the Council that the legislature has designated as the agency that is to adopt the BMPs. The assistance that the Council has obtained from Gradient and Dr. Valberg, and the advice that has now been provided by Dr. Repacholi, reinforce the validity of the approach that the Council took in Docket 272 and should fortify the Council in resisting the invitation of CT DPH to disregard cost consideration and adopt and implement the very low “screening levels” under consideration.

While CT DPH has resources that the Council does not, it is also true that these resources do not include an understanding of electric transmission, of EMF source characteristics, or of the practical implications of adopting the policy that it urges. For instance, CT DPH in its comments criticizes Gradient's reliance on animal studies in which the animals were exposed only to pure 60-Hz sine-wave magnetic fields, which did not contain transients and harmonics, and therefore did not "simulate real world human exposures." DPH Comments, 5/31/06, p.3. The DPH bases this statement on a quotation from an NTP study which contrasts "residential and occupational exposures" to magnetic fields, which may contain harmonics and impure wave forms, with "power line magnetic field exposures," which are "predominantly sine-wave fields." *Id.* In other words, while the criticism might conceivably be valid to the extent it is directed to exposure to fields from appliances or home wiring, it does not apply to MF from all "power lines," as the DPH wrongly understands the NTP to say. (CT DPH comments, p. 4) As the NTP recognizes in the quotation itself, transmission line magnetic fields are very close to pure sine-wave forms.

Further, as Dr. Ginsberg testified in Docket 272, CT DPH is not concerned about the "prudence" of making large investments to achieve "target" exposure levels. The Council, on the other hand, has recognized that the term "prudent avoidance" refers to making only "prudent" (i.e., low-cost and no-cost" or "modest") investments to achieve "avoidance" (that is, reduction of exposure³) in the absence of an established risk. It is highly unlikely that values below 10 mG can consistently be achieved without such very significant investments. And the

³ For instance, the California PUC considers a 15% reduction in field levels to constitute "avoidance" sufficient to justify incremental expenditures of 15% of total project cost. CPUC Decision 06-01-042, p. 7, 10

formulation “as low as possible” where “feasible” seems to do away with the notion of limiting expense altogether.

What is equally unsettling about the suggestion of a 10-mG or anything-less-than 100-mG “screening level” is the misleading and alarming signals that it would send to the public. CT DPH lays emphasis on the fact that “these target levels are not enforceable, regulatory criteria,” and “agrees ...that the evidence does not support the development of such firm and enforceable targets.” (DPH Comment, p. 12) However, as a practical matter, that distinction will be lost on the public when the Council enshrines a numerical value in its BMPs.⁴ Experience teaches that the public will embrace the simplicity of a “safe” exposure level, and ignore any qualifications concerning it being only a “target” and not “firm regulatory criteria.” An example of this phenomenon is close at hand.

CT DPH’s “Fact Sheet” on EMF, which was introduced in evidence in Docket 272,⁵ states: “At a distance of 300 feet and at times of average electricity demand, the magnetic fields from many lines can be similar to typical background levels found in most homes.” *Id.* This statement is a simplification of an explanation in an NIEHS brochure, which illustrates fields from three types of transmission lines (including a 500-kV line) with distances measured from

⁴ The same is true, of course, of the 100-mG screening level recommended by Gradient and contemplated by the Council’s initial drafts. The 100-mG level, the 10-mG level, and those in between are “levels that bear no relationship to the established hazards or have inappropriate arbitrary adjustments to the limit values to account for the extent of scientific uncertainty” and are thus inconsistent with the policy recommendations of the World Health Organization. “World Health Organization “Backgrounder” on Electromagnetic Fields and Public Health Cautionary Policies (2000), p. 6 (Dkt. 272, *Woodbridge Organizations’ Ex. 1*, Attachment 1); WHO draft Framework, Annex 1 to Repacholi Comments, p. 14; Repacholi Comments, p. 10. However, the 100-mG level at least is “consistent with the principle of requiring only no-cost and low-cost measures to reduce exposures where risk is unproven and the relevant characteristic of the exposure, if any, is unknown.” Repacholi Comments, p. 10

⁵ Connecticut Department of Public Health. Division of environmental Epidemiology & Occupational Health. Electromagnetic fields (EMF): Health Concerns. Fact Sheet. January 2004., Item 4, Appendix to Pre-filed Testimony of Drs. Bell, Rabinowitz, Baum, Gerber and Carpenter (*WJO Ex. 1*)

the line center. In January 2005, CL&P pointed out this simplification to CT DPH and explained that, in Connecticut (where there are no 500-kV lines) “this dimension is for many power lines less than 150 feet.” (Correspondence from R. Carberry to E. Blaschinski, CT CPH, 01/05/05), Ex. C hereto.) CT DPH responded that it “is well aware that the distance at which power-line EMF levels reach background will differ for different types of lines,” but explained that it sought to “provide the public with an easy to understand, screening guideline...” and that “we believe that 300 feet is an easy to understand screening level...” ...” (E. Blashinski to R. Carberry, 02/02/05, Ex. C hereto.)

As the Council should be well aware from its participation in the appeal from the Docket 272 Decision by the Town of Woodbridge, et al., the 300-foot distance has taken on a talismanic significance for many members of the public concerned about magnetic field exposure, to the point that they will not credit any evidence concerning the exposures that will be associated with any specific line configurations or loads, and will not accept that new construction would be safe unless 300-foot distance they understand to be “recommended” by CT DPH is achieved. Moreover, based on the DPH Fact Sheet, they understand this distance to be measured from the nearest conductor, not from the center of the line.

CT DPH asserts that its view of the limited significance of animal studies “is consistent with the position taken by the California Department of Health Services (2002) and other bodies which have labeled EMF as a possible human carcinogen (IARC, 2002; NIEHS, 1999).” (DPH Comments, p. 10). In fact, the “position” of these agencies and their states or parent organizations may be discerned from their policy recommendations, which do not support CT DPH’s recommendation of a 10-mG screening level for regulatory attention. In the “Policy


Options” Document referenced by CT DPH, the California Health Department made no recommendations concerning EMF Policy (CT DPH Comments p. 10; Postings Concerning Electric and Magnetic Fields on State Agency Websites, Item 1, Dkt. 272, *Companies’ Administrative Notice Item 17*, p. 9, l. 26, 27); and, as we have seen, the California Department of Public Utility Control has very recently re-affirmed its “prudent avoidance” policy of limiting expenditures on magnetic field reduction strategies to a benchmark of 4% of project cost. IARC [the International Agency for Research on Cancer] is, of course, a constituent organization of the World Health Organization, which has recommended a public exposure standard of 833 mG, and recommends against the adoption of quantitative chronic exposure limits. *See*, Dkt. 272, Opinion, p. 13 (Ex. B hereto); Repacholi Comments, p. 7, fn 4, supra. Finally, in the document referenced by CT DPH, the NIEHS recommends against **any** “aggressive regulatory actions” to reduce EMF exposures. (CT DPH Comments, p. 10; NIEHS Report on Health Effects from Exposure to Power Line Frequency Electric and Magnetic Fields, NIH Pub. No. 99-4483, Dkt. 272, *Council Administrative Notice Item 4*, pp. 37, 38 and Transmittal Letter of NIEHS Director Olden).

The Council should be guided by these agencies, who have considered EMF Policy in depth; by its own study of the issue; and by Dr. Repacholi’s informative comments. Meanwhile, the Companies are more than willing to engage in continuing consultations with CT DPH, which may prove educational for all parties, and which could influence submissions to the Council in future Dockets.

CONCLUSION

If the Council adopts a quantitative value as a “screening level,” it should do so knowing that this level will be regarded by the public as the “safe” level, however the Council may characterize it. It should not adopt a value that will be interpreted (wrongly, but inevitably) as meaning that significant numbers of people living near existing transmission lines, and the many more people living near existing distribution lines, are exposed to unsafe conditions. Nor should it establish a principle that significant investments are warranted to keep magnetic fields “as low as possible.” As the California and American Medical Associations have said, “There can only be harm to society when uncorroborated, inaccurate and/or unproven beliefs which fuel public fear become institutionalized in court rulings,” or, for that matter, in administrative guidelines, no matter how well intentioned. *See*, Vermont Public Service Board Decision, p. 77 (Dkt. 272, *Companies’ Administrative Notice Item 29*, quoting the CMA and AMA.) If the Council is going to reject the recommendation of its own consultant, it should do away with the notion of a quantitative “screening level” altogether and revert to the qualitative approach it applied in Docket 272. Alternatively, it should adopt the 100-mG level recommended by Gradient, which will not sow undue alarm or require huge investments for no clear benefit.

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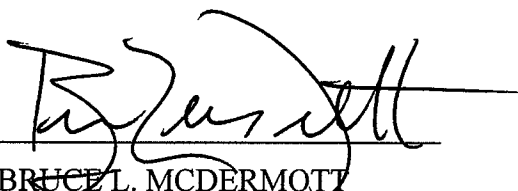
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Exhibit A to Comments on Draft EMF Best Management Practices

**List of Materials Concerning
Magnetic Field Health Research
and
Transmission Line Magnetic Field Policy
Considered by The Connecticut Siting Council
in its
Docket No. 272**

1. National Institute of Environmental Health Sciences and U.S. Department of Energy, Questions and Answers About EMF Electric and Magnetic Fields Associated with the Use of Electric Power, United States Government Printing Office, Washington D.C., June 2002
(Council Administrative Notice Item 2)
2. National Institute of Environmental Health Sciences of the National Institutes of Health, NIEHS Working Group Report, Assessment of Health Effects from Exposure to Power-line Frequency Electric and Magnetic Fields, NIH Publication No.98-3981, August 1998. (“NIEHS Working Group Report”)
(Council Administrative Notice Item 3)
3. National Institute of Environmental Health Sciences of the National Institutes of Health, Health Effects from Exposure to Power-line Frequency Electric and Magnetic Fields, NIEHS Publication No. 99-4493, May 1999
(Council Administrative Notice Item 4)
4. International EMF Standards reported by R. Mercier, Jan. 18, 2005
(Council Administrative Notice Item)
5. Testimony of Gary Ginsberg, Ph., D., Toxicologist, dated May 6, 2004.
(Council Ex. 5)
6. Supplemental Testimony Regarding Potential Health Effects of EMF Submitted to the Connecticut Siting Council, June 17, 2004, by Gary Ginsberg, Ph.D. Toxicologist.
(Council Ex. 6)
7. Supplemental Testimony of Robert E. Carberry and Kathleen M. Shanley Concerning State Policies with Respect to 60-Hz Electric and Magnetic Fields, dated May 3, 2004;
(Companies’ Ex. 74) and references:

1.	“Electric and Magnetic Fields Fact Sheet,” dated January, 1990; published by, the State Department of Health Services’ Division of Environmental Epidemiology and Occupational Health. (Attachment 3 to 1992 Interagency Task Force Report.)
2.	Public Act 91-317 and Public Act 92-169, formally establishing and re-authorizing an Interagency Task Force (“ITF”) to “study electric and magnetic fields” and “determine the appropriate role of the state in addressing the potential problems associated with electric and magnetic fields.”
3.	ITF “Report to the Connecticut Legislature by the Task Force Studying Electric and Magnetic Fields,” dated February 1, 1992.

4.	"Response" of the Connecticut Academy of Science and Engineering to the "Inquiry" submitted by the Department of Health Services on behalf of the ITF, dated April 1, 1992.
5.	Electric and Magnetic Field Best Management Practices, adopted by the Connecticut Siting Council on February 11, 1993. (Companies' Administrative Notice Item 1 in this Docket)
6.	ITF "Connecticut 1993 Report on Task Force Activities to evaluate Health Effects from Electric and Magnetic Fields, March 1993."
7.	ITF "Report on Task Force Activities to Evaluate Health Effects from Electric and Magnetic Fields," dated January, 1994.
8.	ITF "Connecticut 1995 Report on Task Force Activities to Evaluate Health Effects From Electric and Magnetic Fields," dated January, 1995.
9.	ITF "Connecticut 1998 Report on Task Force activities to Evaluate Health Effects From Electric and Magnetic Fields," dated January, 1998.
10.	Connecticut Department of Health "Fact Sheet." (Attachment to Department of Public Health Comments, March 15, 2004.)

8. Supplemental Testimony of Dr. William H. Bailey Concerning Passive Regulatory Responses with Respect to 60-Hz Electric and Magnetic Fields, dated May 3, 2004; Attachment 1 – Dr. Granger Morgan's Prudent Avoidance Policy; Attachment 2 – EMF Information on States' Department of Health Web Sites; Attachment 3 – Public Service Commission of Wisconsin Findings of Fact, Conclusions of Law, and Phase II Order Re Advance Plans for Construction of Facilities
(Companies' Ex. 75)
9. Applicants' Response to Council's Interrogatory Concerning "Buffer Zone" Determination Pursuant to Public Act 04-246, dated July 19, 2004
(Companies' Ex. 128)
10. Supplemental Testimony III of Dr. William H. Bailey Concerning Magnetic Field Exposure Policy, dated October 12, 2004,
Ex. 1: Linet et al: "Interpreting epidemiological Research: Lessons from Studies of Childhood Cancer, Pediatrics," Vol. 112, No. 1, July 2003.
(Companies' Ex. 169)
11. Supplemental testimony of Drs. William Bailey and Philip Cole dated January 24, 2005.
(Companies' Ex. 183)
 1. Appendix
 2. National Radiation Protection Board (Great Britain)
 3. N.R.P.B. Proposals for Limiting Exposure to electromagnetic fields (0 to 300 GHz)
(May 2003)
 4. N.R.P.B. Responses from NRPB (June 2004)
12. Ex. B to Applicants' Brief Concerning Revision of the Council's Best Management Practices, dated 9/1/04, Draft Order Instituting Rulemaking 04-07, Public Utilities Commission of the State of California, July 8, 2004
13. Testimony of Dr. Stuart Aaronson, March 16, 2004, pp. 5-6
(Companies' Ex. 41)

14. Bailey et al. "Electric and Magnetic Field Assessment: Middletown-Norwalk Transmission Reinforcement)
(Companies' Ex. 1)(Application, Vol. 6)
15. Testimony of Dr. Philip Cole et al., March 16, 2004, and additional information dated April 8, 2004
(Companies' Ex. 40)
16. Order of Vermont Public Service Board in Dkt. No. 6860
(Companies' Administrative Notice Item 29)
17. "Position Paper on Electric and Magnetic Power Frequency Fields and The Velco Northwest Vermont Reliability Project," prepared by the Vermont Department of Health, Division of Health Protection, December 15, 2003 (<http://www.state.vt.us/psd/Menu/Dockets/6860.htm>)
(Companies' Administrative Notice Item 15)
18. State Policies with Respect to 60-Hz Electric and Magnetic Fields
(Companies' Administrative Notice Item 16)
19. Postings Concerning Electric and Magnetic Fields on State Agency Websites
(Companies' Administrative Notice Item 17)

Ex.	State	Last Updated	EMF Web Site Posting
1.	CA	Published 6/02 Published 4/01	California EMF Program homepage: http://www.dhs.ca.gov/ps/deodc/ehib/emf/about.html Executive Summary from: An Evaluation of the Possible Risks From Electric and Magnetic Fields (EMFs) From Power Lines, Internal Wiring, Electrical Occupations and Appliances http://www.dhs.ca.gov/ps/deodc/ehib/emf/RiskEvaluation/riskeval.html Policy Options: http://www.dhs.ca.gov/ps/deodc/ehib/emf/RiskEvaluation/Old%20Draft%203%20Docs/policy.pdf California Public Utilities Commission: http://www.cpuc.ca.gov/static/industry/environment/electromagnetic+fields/
2.	CT	Posted 1/04	Department of Health Fact Sheet: http://www.dph.state.ct.us/Publications/BCH/EEOH/emf_2004.pdf
3.	FL	Published 12/11/03	Florida Department of Environmental Protection, 2003 Annual Report on EMF Research http://www.dep.state.fl.us/siting/Programs/electric_magnetic_rpt_2003.pdf

4.	MD	<p>Published in 2001¹</p> <p>Published in 1998</p> <p>Published in 1995</p>	<p>Power Plant Research Program, Reports printed by Maryland Department of Natural Resources:</p> <p>Status report on investigations of potential human health effects associated with power frequency electric and magnetic fields (EMF): reporting period, September 1998-June 2001. Hill, Doreen, Maryland Power Plant Research Program, Maryland Dept of Natural Resources, Patty, Sandra S., Public Service Commission of Maryland. Maryland Power Plant Research Program, Dept. of Natural Resources.</p> <p>Status report on investigations of potential human health effects associated with power frequency electric and magnetic fields. Patty, Sandra S. Maryland Department of Natural Resources, Power Plant Research Program Found at: http://www.vims.edu/GreyLit/MDNR/ppse-t-42</p> <p>Status report on investigations of potential human health effects associated with power frequency electric and magnetic fields. Reporting period: June 1994 - October 1995. Patty, Sandra S. Maryland Department of Natural Resources, Power Plant Research Program. Found at: http://www.vims.edu/GreyLit/MDNR/ppse-t-40</p>
5.	MN	<p>In the process of updating the site at this time²</p> <p>Published 9/02</p>	<p>Page dedicated to EMF http://www.health.state.mn.us/divs/eh/radiation/emf/index.html</p> <p>Minnesota White Paper on EMF, Found at: http://www.health.state.mn.us/divs/eh/radiation/emf/emfrepo.pdf</p>
6.	NJ	<p>Created in 1996 updated 3/1/04</p>	<p>New Jersey Department of Environmental Protection, 60 Hz Electrical Power http://www.nj.gov/dep/rpp/nrs/powlines.htm</p>
7.	NY	<p>Created in early 1990s³</p>	<p>Powerlines Project Q&A http://www.health.state.ny.us/nysdoh/consumer/enviro/power.htm</p>
8.	UT	<p>Published 12/10/93</p>	<p>Utah Radiation Control Board Position Statement - Found at: http://radiationcontrol.utah.gov/BOARD/emf_pos.htm</p>

¹ This report was not available on line; obtained directly from MDNR.

² Email correspondence with George Johns of the MN DOH 4/7/04.

³ Information about NYSDOH web site was obtained through telephone conversation with Mark Virgil, Associate Radiological Health Specialist, Bureau of Environmental Radiation Protection, on 3/25/04 and written correspondence between Attorney General Richard Blumenthal and Mr. Virgil on 4/16/04 previously distributed to the service list.

9.	VT	Published 12/15/03	Vermont Department of Health's ("VDH") Position Paper ("VDH Position Paper") on Electric and Magnetic Fields ("EMF"), Found at: http://www.state.vt.us/psd/Menu/Dockets/6860_files/6860-VDH-Exhibit3.pdf
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11.	WI	Revised 11/00 No Date	EMF Fact Sheet, Found at: http://dhfs.wisconsin.gov/eh/Air/fs/EMF.htm Wisconsin Public Service Commission: http://psc.wi.gov/consumer/brochure/ind_broch.htm EMF: Electric and Magnetic Fields: http://psc.wi.gov/consumer/brochure/document/electric/6002b.pdf

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(Companies' Administrative Notice Item 28)
27. IEEE paper, entitled "Five Years of Magnetic Field Management," dated 1994
(Companies' Administrative Notice Item 29)
28. Pre-filed Testimony of Drs. Bell, Rabinowitz, Baum, Gerber and Carpenter
(WJO Ex. 1)

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4.	Connecticut Department of Public Health. Division of environmental Epidemiology & Occupational Health. Electromagnetic fields (EMF): Health Concerns. Fact Sheet. January 2004.
5.	Linet M et al. Journal of the National Cancer Institute. 199;91:1051-8
6.	Altshuler et al. OCHP Paper Series on Children's Health and the Environment, Paper 2003-1, February, 2003.
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Dr. Philip Cole, Dr. Stuart Aaronson, Dr. William H. Bailey, Dr. Gary Ginsberg (CT DPH)
- May 12, 2004
Dr. Aaronson, Dr. Bailey, Dr. Cole, Dr. Ginsberg
- May 13, 2004
Dr. Bailey, Dr. Cole, Dr. Ginsberg, Dr. Leonard Bell, Dr. Peter Rabinowitz, Dr. Carl Baum, Dr. Alan Gerber
- June 16, 2004
Dr. Ginsberg, Dr. Bell, Dr. Rabinowitz
- June 17, 2004
Dr. Ginsberg
- July 27, 2004
Dr. Bailey
- July 28, 2004
Dr. Bell, Dr. Rabinowitz
- July 29, 2004
Dr. Ginsberg
- September 29, 2004
Dr. Bailey
- October 14, 2004
Dr. Ginsberg, Dr. Bailey
- January 2, 2005
Dr. Cole, Dr. Bell, Dr. Rabinowitz
- January 5, 2005
Dr. Bailey
- February 2, 2005
Dr. Bailey

DOCKET NO. 272 - The Connecticut Light and Power Company and The United Illuminating Company Application for a Certificate of Environmental Compatibility and Public Need for the Construction of a New 345-kV Electric Transmission Line and Associated Facilities Between Scovill Rock Switching Station in Middletown and Norwalk Substation in Norwalk, Connecticut Including the Reconstruction of Portions of Existing 115-kV and 345-kV Electric Transmission Lines, the Construction of the Beseck Switching Station in Wallingford, East Devon Substation in Milford, and Singer Substation in Bridgeport, Modifications at Scovill Rock Switching Station and Norwalk Substation and the Reconfiguration of Certain Interconnections	} } } } } } } } }	Connecticut Siting Council April 7, 2005
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Opinion

I. Introduction

On October 9, 2003, the Connecticut Light and Power Company (CL&P) and The United Illuminating Company (UI) [collectively referred to as the "Applicants" hereafter] applied to the Connecticut Siting Council (Council) for the construction of a new 345-kV electric transmission line and associated facilities between Scovill Rock Switching Station in Middletown and Norwalk Substation in Norwalk, Connecticut including the reconstruction of portions of existing 115-kV and 345-kV electric transmission lines, the construction of the Beseck Switching Station in Wallingford, East Devon Substation in Milford, and Singer Substation in Bridgeport, including modifications at Scovill Rock Switching Station and Norwalk Substation and the reconfiguration of certain other minor interconnections.

At the time the application was filed, Connecticut General Status (CGS) Section 16-50p required that the Council, in deciding this application, must consider and balance the proposed 345-kV transmission line and reconstruction of a 115-kV line as a public benefit, which is defined as necessary for the reliability of the electric power supply of the state or for a competitive market for electricity versus the probable environmental impacts created by construction and operation of these facilities. Also, the Council shall consider feasible and prudent alternatives by any party or intervenor that would address the same public need. Specifically, the Council should determine what part if any of the proposed facility should be located overhead; that the facility conforms to the long range plan for expansion of the electric power grid of the electric systems serving the state and interconnected utility systems and would serve the interests of the electric system economy and reliability; and that the overhead portions of the facility are cost effective and the most appropriate alternative including underground alternatives based on a life-cycle cost analyses. Moreover, the Council shall determine the location of the proposed line would not pose an undue hazard to persons or property to areas traversed by a transmission facility. The Council may not grant a Certificate if it finds insufficient need for the facilities, unmitigated effects to the environment, undue health effects, and/or is in conflict with state policies.

II. Effect of Public Act 04-246

In the last legislative session the General Assembly enacted Public Act (P.A.) 04-246- *An Act Concerning Electric Transmission Line Siting Criteria* effective June 3, 2004. This Act is

The Council adopted Electric and Magnetic Field Best Management Practices (EMF BMP) on February 11, 1993 on its own initiative. The Council believes that this version of the EMF BMP is sufficient for deciding this docket. All parties and intervenors had the full opportunity to present any witnesses regarding EMF issues, any documentary evidence, including, but not limited to, published medical and scientific studies, the full opportunity to present any EMF measurements, and the full opportunity to advocate that the Council apply any particular standard desired by that party. During our extensive hearings, the Council had, in addition to the 1993 EMF BMP, "the latest completed and ongoing scientific and medical research on electromagnetic fields" and had extensive evidence on all technologies considered for EMF mitigation and undergrounding. The Council has thus complied with Conn. Gen. Stat. § 16-50t in this regard.

Although scientific knowledge does not at this time permit firm judgments about possible health effects of 60 hertz electric and electromagnetic field (EMF) exposures from transmission facilities, the Connecticut Siting Council has adopted a cautious approach to the issue by adopting BMPs. These practices are intended to recognize the latest information as well as effective technologies and management techniques on a project-specific basis to protect public health and safety and maximize the efficiency of the transmission industry. The Council finds that the new lines will be contained within a buffer zone adequate to protect public health and safety, and will not pose an undue hazard to persons and property along the location traversed by the line.

XIII. EMF Considerations

In this proceeding electric and electromagnetic fields (EMF) became an important issue as expressed through participants in the hearing process and statements received from the public. The Council appreciates the in-depth testimony on EMF. The scope and breadth of EMF studies exposures to humans and animals have been conducted world-wide and peer-reviewed by national and international organizations. Most have concluded that no association between EMF exposure from power lines and an increased risk to public health exist, with the exception of a possible weak link to childhood leukemia. It is for this reason that the National Institute of Environmental Health Sciences (NIEHS) and International Agency on Research on Cancer (IARC) has classified EMF as "possibly carcinogenic," but has not been classified it as "carcinogenic." Some epidemiological studies have suggested that EMF exposure may be linked to an increase in childhood leukemia rates. Most health organizations believe that this link is unsubstantiated due to the failure to find a process to explain health effects and the negative results from animal testing.

The NIEHS suggests that the level and strength of evidence supporting ELF-EMF exposure as a human health hazard are insufficient to warrant aggressive regulatory actions; thus, they do not recommend actions such as stringent standards on electric appliances and a national program to bury all transmission and distribution lines. Instead, the evidence suggests passive measures such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. The NIEHS suggests that the power industry continue its current practice of siting power lines to reduce exposures and continue to explore ways to reduce the creation of magnetic fields around transmission and distribution lines without creating new hazards. The NIEHS encourages technologies that lower exposures from neighborhood distribution lines provided that they do not increase other risks, such as those from accidental electrocution or fire.

This Council heard conflicting testimony on the potential implications EMF may have on human health. The NIEHS, IARC, and World Health Organization (WHO) are not able to definitively

state that electric and magnetic fields do not cause cancer, even though the preponderance of evidence leans toward no impact to health. Because of this uncertainty, a prudent avoidance policy is shared by these organizations and others. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has established a health-based standard of 833 mG for the 60 hertz frequency. This standard is recognized by much of the European Union and many other countries world wide. Other standards include: New York, with a standard of 250 mG at maximum load at edge of ROW; Florida, with ranges between 150-250 mG at maximum load at edge of ROW; and the goal values identified by the Commonwealth of Massachusetts which observes a threshold of 85 mG at the edge of the ROW. Italy has a goal of 25 mG in areas where children congregate for more than four hours and Poland has established a level of 251 mG for exposures longer than eight hours.

a. Department of Public Health. The Connecticut Department of Public Health (DPH) participated in this proceeding at the request of the Council. DPH representative Dr. Gary Ginsberg provided comments and testimony on EMF. Dr. Ginsberg, a toxicologist, although not an expert on EMF matters, stated distance is the best mitigating tool to abate EMFs. Based on his understanding of EMF studies, Dr. Ginsberg advocated milligauss (mG) measurements to determine exposure level and testified levels below 3 mG, using time-weighted values, are within the realm of background EMF levels. Time weighted values between 3mG and 6 mG can reasonably be anticipated not to present an increased public health risk; however, time-weighted EMF levels above 6 mG have a larger public health concern. As Dr. Ginsberg emphasized, the DPH is a risk assessor not a risk manager and does not set or recommend standards; in fact, the DPH Comprehensive Public Health Plan is silent on EMF. Lastly, prudent avoidance, as defined by the DPH, means that magnetic field exposure should be avoided under circumstances that one can normally take within one's power and control, without consideration of economic investment. The Council agrees with the DPH that prudent avoidance is a worthwhile policy; however the Council does consider cost in its evaluation of prudent avoidance.

b. Prudent Avoidance. The Council's BMPs adopted a cautious approach also known as "prudent avoidance" and specifically identifies low-EMF design such as compact spacing, optimum phasing of conductors and applying new field management technologies. In addition, the World Health Organization explains that prudent avoidance "does not imply setting exposure limits at an arbitrarily low level and requiring that they be achieved regardless of cost, but rather adopting measures to reduce public exposure to EMF at modest cost". The Council determines that this facility, as approved, complies with our BMPs and the Applicants will be ordered to comply with the Council's BMPs in the construction of the facility.

The Applicants presented low-EMF designed structures and techniques at a reasonable cost. These mitigating measures include use of compact spacing and optimum phasing; and adjusting pole height and placement in the vicinity of statutory facilities. Therefore the Council will order the design of prudent avoidance configurations, as shown in Appendix B of the Findings of Fact, and permit the municipalities directly affected by the project to comment on the proposed design.

XIV. Buffer Zones

Public Act 04-246 protects the public health and safety of people, not places, with special emphasis on protecting the health and safety of children. For some parts of the proposed facility, the General Assembly requires the establishment of "a buffer zone that *protects the public health and safety*, as determined by the council." (*Italics added.*) Public Act 04-246 requires that the Council, in "establishing such buffer zone" "take into consideration" certain facilities. The Council believes that the purpose of the buffer zones is, to protect "public health and safety". Because the perceived threat to public health and safety is mainly potential EMF effects on children, the legislature accordingly required the Council to take into consideration those facilities where children are likely to congregate for a significant period of time.

The Council notes that the General Assembly gave the Council the responsibility to establish the buffer zone, but did not give the Council powers to even prohibit future building within it. The Council hereby establishes the buffer zone as the width of the right-of-way; however, it is within the duty of the utilities and municipal planning and zoning commissions to regulate the buffer zone as it relates to existing facilities and the prohibition of present and future building within the buffer zone. Because the Act and its legislative history indicate a concern with the health of children exposed to long term electric and magnetic fields from electric transmission lines, the establishment of a buffer zone should have no effect on roads or railroads crossing such zones, or facilities not typically frequented by children, such as golf courses, most commercial establishments, factories, and the like.

XV. Residential Area

Today development and housing expansion have been placed much closer to most rights-of-way, and electric transmission lines are no exception. Typical rights-of-way (i.e. for highways, gas pipelines, electric transmission lines and railways) traverse areas of open space, cross residential areas, and serve some commercial/industrial parks. Most of the existing electric transmission line rights-of-way were established between 40 to 80 years ago in areas where population density and development of suburban and rural areas was low.

The Connecticut legislature lists areas of concern in Public Act 04-246 as "residential areas, public and private schools, licensed child day care facilities, licensed youth camps or public playgrounds" and requires that 345-kV lines be installed underground unless "technologically infeasible", harming the reliability of the electric system.

The provisions of the Act that concern "residential areas" are intended to protect "public health and safety", and not economic or other interests. We also note that the Act uses the term "residential areas" to be considered, along with facilities where children tend to congregate for a significant period of time, such as schools, day care facilities and the like, and does not use the term "residences", suggesting that the legislature meant by "residential area" what is commonly called a neighborhood. The crucial aim of the legislature was to protect people, particularly children, and not individual buildings. Thus, the Council will define "residential areas" as being areas where people actually live, neighborhoods, not places they might live in the future.



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Robert E. Carberry
Manager - Transmission Siting

January 5, 2005

Ms. Ellen Blaschinski, MBA, RS
Director, Division of Environmental Health
Connecticut Department of Public Health
410 Capitol Avenue - MS# 51 EHS
P.O. Box 340308
Hartford, CT 06134

Dear Director Blaschinski:

It came to my attention some months ago that the Connecticut Department of Public Health ("CDPH") revised and re-issued in January 2004 a "Health Concerns Fact Sheet" on power-frequency electric and magnetic fields ("EMF"). I was surprised to learn of this development because the two previous versions of this Fact Sheet had been prepared in the 1990's by CDPH in consultation with the legislatively-established Connecticut Interagency EMF Task Force and its Advisory Group. I served as a member of the Advisory Group and contributed comments on drafts of previous revisions with regard to technical accuracy and writing.

As a leader of the Northeast Utilities EMF Task Force for many years, I directed that we include the CDPH EMF Fact Sheet among the materials we routinely provided to our Connecticut customers who call CL&P to ask questions about EMF. However, we ceased doing so upon learning of the publication of this January 2004 revision because it contains several technical and terminology errors. To avoid misunderstandings, it is critical to your public communications efforts on this topic that the information and use of terms in this Fact Sheet be accurate. So that we might again include the CDPH EMF Health Concerns Fact Sheet among our public handout materials, I am requesting that the CDPH undertake a revision of the January 2004 EMF Health Concerns Fact Sheet in order to address the following matters:

1. All uses of the word "electromagnetic" should be replaced with either "electric and magnetic fields" or "magnetic fields," depending upon the context.
2. Virtually all existing uses of the acronym "EMF" in the Fact Sheet should be replaced with "MF", or the words "magnetic fields."
3. The section entitled "What Are Electromagnetic Fields?" should be revised to describe both electric and magnetic fields. The phrase "waves of energy" and the word "radiate" do not belong in any description of power-frequency EMF. Electric and magnetic fields at power frequencies are induction fields, independent of one another, and non-propagating. Their field characteristics are distinctly different than those of electromagnetic waves or electromagnetic radiation. (Please see Chapter 1 of Reference 1 attached.)
4. Because "milliGauss" is a standard measurement unit for "magnetic flux density" and not "magnetic field strength", the Fact Sheet should replace uses of field "strength" with field "levels." Please also note that there are several other characteristics of magnetic fields not addressed in the Fact Sheet that should be taken into account.
5. A statement on page 2 of the Fact Sheet says, "Most power lines in neighborhoods are low voltage and not an important source of EMF (sic) exposure." On the contrary, while some power lines in neighborhoods are low voltage, the primary distribution lines found

in most neighborhoods are "high voltage." The threshold of "high voltage" is 1,000 volts, and primary distribution lines in Connecticut commonly operate at voltages of 4,800 volts to 27,600 volts. Additionally, grounding networks associated with low voltage lines in neighborhoods and homes are recognized as a significant source of typical in-home exposure to MF.

6. On pages 2 and 3 of the Fact Sheet are statements that MF levels at "approximately 300 feet away" from power lines are similar to background levels within most homes. CDPH's source for these statements appears to be the June 2002 Question & Answer Brochure prepared by the National Institute of Environmental Health Sciences ("NIEHS") (page 35) which says, "At a distance of 300 feet and at times of average electricity demand, the magnetic fields from many lines can be similar to typical background levels found in most homes."

However, the Fact Sheet author failed to recognize the significance of the next sentence:
 "The distance at which the magnetic field from the line becomes indistinguishable from typical background levels differs for different types of lines."

An illustration of this point is found on page 37 of the NIEHS brochure for three types of transmission lines, with distances measured from the line center. The distance to background levels is in fact, often less than 300 feet, even for transmission lines, a key point included in the NIEHS brochure but omitted in the CDPH Fact Sheet. In Connecticut, depending upon the range of current the power line carries and the spacing between its wires, this dimension is for many power lines less than 150 feet, including many transmission lines.

As you may know, on December 21, 2004 the Connecticut Siting Council adopted new "Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut." This Council document references and relies on CDPH's 2004 EMF Health Concerns Fact Sheet, which the Council received via your correspondence dated March 15, 2004. Because of the major transmission issues currently facing Connecticut, I believe it is imperative that the Fact Sheet be revised as soon as possible to make it technically accurate, as previous versions were. I would be pleased to assist your staff in making revisions to the EMF Health Concerns Fact Sheet, and I will call you very soon to follow up on this letter. You may also contact me at 860-665-6774.

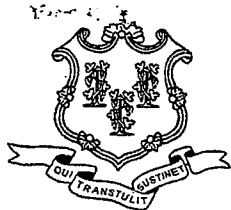
Sincerely,

Robert E. Carberry
 Manager-Transmission Siting

cc: J. Robert Galvin, Commissioner, CDPH
 Norma Gayle, Deputy Commissioner, CDPH

Reference attachments:

- 1) "Electric and Magnetic Fields Associated with the Use of Electric Power, Questions and Answers", National Institute of Environmental Health Sciences, June 2002.
- 2) Excerpt from "Magnetic Field Management of Overhead Transmission Lines: A Primer", Electric Power Research Institute, December 1994.



STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

February 2, 2005

Mr. Robert E. Carberry
Manager-Transmission Siting
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270

Dear Mr. Carberry:

Thank you for your comments (letter dated January 5, 2005) on the CT Department of Public Health (CT DPH) fact sheet entitled Electromagnetic Fields (EMF): Health Concerns. We appreciate your continued interest in this matter. As you are aware, CT DPH's current EMF fact sheet (published in March 2004) replaces a much earlier fact sheet published in 1994. CT DPH's decision to revise its fact sheet was not driven by any major changes in the science surrounding EMF exposure and health effects, but rather a desire to update the fact sheet and make it simpler and therefore, more useful to the general public.

In your letter, you raise a concern that CT DPH revised its EMF fact sheet without consulting with the Interagency EMF Task Force or its advisory committee. As I am sure you already know, the EMF Interagency Task Force issued its final report to the legislature in 1998. With this report, the Task Force fulfilled its legislative mandate. As for the advisory committee, its last official actions were in 1997, in preparation for the final Task Force report of 1998. Given that the fact sheet is merely a simplification of the previous fact sheet, it was clearly not practical or necessary for CT DPH to consult with the Task Force or advisory committee, which have been inactive for so many years. Instead, the fact sheet underwent a thorough internal technical review process that all fact sheets within the Environmental and Occupational Health Assessment Program are subject to.

Your letter also presented a number of specific comments on the fact sheet. Responses to each of your comments are provided below.

Response to Comments #1 and #2: CT DPH understands that at electric power frequencies, electric and magnetic fields are not related to each other in the same way they are at higher frequencies. CT DPH also acknowledges that it is technically more accurate to differentiate between electric and magnetic fields. In the fact sheet, CT DPH chose to use the term electromagnetic fields and the acronym EMF to refer to both electric and magnetic fields because they are commonly used terms and provide a simple way to communicate the complex concepts of electric and magnetic fields. Most importantly, this simplification does not impact the underlying health messages in the fact sheet. It should be noted that EMF fact sheets from other agencies (e.g. Wisconsin Division of Public Health, World Health Organization) also use the term electromagnetic fields. When the CT DPH reprints the EMF fact sheet, we will consider changing the term "electromagnetic" fields to "electric and magnetic" fields.



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Mr. Robert E. Carberry
Page 2
February 2, 2005

Response to Comment #3: CT DPH's primary goal in revising the fact sheet was to make it more understandable to the general public. In order to do this, the fact sheet must be written at approximately an 8th grade reading level. CT DPH decided not to include separate definitions of electric fields and magnetic fields because it would have added complexity to the fact sheet which may have hindered communication of the basic public health messages. In your comment, you also object to CT DPH's use of the phrases "waves of energy" and "radiate" to describe power-frequency EMF. CT DPH understands that it is technically more accurate to describe power-frequency EMF as induction fields. In the fact sheet, we chose to use simpler concepts of wave and energy to describe EMF. We do not believe that this simplification has any effect on the basic public health messages in the fact sheet. When the fact sheet is reprinted, we will consider changing the terms used to describe EMF.

Response to Comment #4: When CT DPH reprints the EMF fact sheet, we will consider replacing the use of field "strength" with field "levels." With regard to other characteristics of magnetic fields not addressed in the fact sheet, it was not a goal of the fact sheet to provide a comprehensive explanation of the principles of electric and magnetic fields. The fact sheet refers the reader to additional sources of information (including the NIEHS booklet) for more detailed information.

Response to Comment #5: Through its many years of communicating with the general public on EMF issues, CT DPH has learned that the phrase "high voltage lines" is understood by the general public to refer to large tower transmission power lines with higher voltage (230 kV or higher) than the lines they see in their neighborhoods bringing power to individual homes. In the next revision of the fact sheet, CT DPH will consider clarifying this point.

Response to Comment #6: CT DPH is well aware that the distance at which power line EMF levels reach background will differ for different types of lines. The goal of the fact sheet is to provide the public with an easy to understand, screening guideline regarding when they may want to consider obtaining EMF measurements in their yard and when it is unlikely that a power line will significantly increase the EMF exposure they would ordinarily receive through daily life. Based on CT DPH's understanding of the scientific literature, we believe that 300 feet is an easy to understand screening level: if you are beyond this distance, there is no need to worry; if you are closer than this distance, you may want to consider obtaining EMF measurements. CT DPH will address variability in power line EMF levels in the next revision of the fact sheet.

Again, I thank you for your comments and your continued interest in this issue. If you have any questions or would like to discuss this further, please contact me at 860-509-7293 or Meg Harvey of my staff at 860-509-7740.

Sincerely,



Ellen Blaschinski, MBA, RS
Director, Division of Environmental Health

EB/MG/sm