ORIGINAL

STATE OF CONNECTICUT

SITING COUNCIL

CONNECTICUT LIGHT & POWER COMPANY AND UNITED ILLUMINATING COMPANY	MAY 13, 2004 (10:50 A.M.)
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 THE SCOVILL ROCK SWITCHING STATION IN MIDDLETOWN AND THE NORWALK SUBSTATION IN NORWALK, CONNECTICUT	DOCKET NO. 272

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BEFORE: PAMELA B. KATZ, CHAIRMAN

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Fred O. Cunliffe, Siting Analyst
Robert L. Marconi, AAG

APPEARANCES:

FOR THE APPLICANT, CONNECTICUT LIGHT & POWER COMPANY:

CARMODY & TORRANCE, LLP
195 Church Street
P.O. Box 1950
New Haven, Connecticut
BY: ANTHONY M. FITZGERALD, ESQUIRE
BRIAN T. HENEBRY, ESQUIRE

FOR THE APPLICANT, UNITED ILLUMINATING COMPANY:

WIGGIN & DANA, LLP
One Century Tower
P.O. Box 1832
New Haven, Connecticut 06508-1832
BY: LINDA L. RANDELL, ATTORNEY
BRUCE L. McDERMOTT, ESQUIRE

FOR THE PARTY, THE CITY OF MERIDEN:

DEBORAH L. MOORE, ATTORNEY
142 East Main Street
Room 239
Meriden, Connecticut 06450

FOR THE PARTIES, THE TOWN OF WESTON AND THE TOWN OF WOODBRIDGE:

COHEN & WOLF
1115 Broad Street
Bridgeport, Connecticut 06604
BY: DAVID BALL, ESQUIRE

FOR THE PARTY, THE TOWN OF MILFORD:

HURWITZ & SAGARIN
147 North Broad Street
Box 112
Milford, Connecticut 06460
By: JULIE DONALDSON KOHLER, ATTORNEY

FOR THE PARTIES, THE TOWN OF WALLINGFORD AND THE TOWN OF DURHAM:

HALLORAN & SAGE
One Goodwin Square
225 Asylum Street
Hartford, Connecticut 06103
BY: PETER BOUCHER, ESQUIRE

FOR THE PARTY, THE TOWN OF ORANGE:

SOUSA, STONE & D'AGOSTO
375 Bridgeport Avenue
Box 805
Shelton, Connecticut 06084
BY: BRIAN M. STONE, ESQUIRE

FOR THE PARTY, THE TOWN OF WILTON:

COHEN & WOLF
158 Deer Hill Avenue
Danbury, Connecticut 06810
BY: MONTE E. FRANK, ESQUIRE

FOR THE PARTY, ATTORNEY GENERAL BLUMENTHAL:

MICHAEL WERTHEIMER
Assistant Attorney General
Ten Franklin Square
New Britain, Connecticut 06051

FOR THE PARTY, THE OFFICE OF CONSUMER COUNSEL:

BRUCE C. JOHNSON, ESQUIRE
Office of Consumer Counsel
Ten Franklin Square
New Britain, Connecticut 06051

FOR THE PARTY, THE TOWN OF NORTH HAVEN:

UPDIKE, KELLY & SPELLACY
One State Street
Box 231277
Hartford, Connecticut 06123
BY: BENJAMIN J. BERGER, ESQUIRE

FOR THE PARTY, THE WOODLANDS COALITION FOR RESPONSIBLE ENERGY:

PULLMAN & COMLEY
90 State House Square
Hartford, Connecticut 06103
BY: LAWRENCE J. GOLDEN, ESQUIRE

FOR THE PARTY, PSEG POWER CONNECTICUT LLC:

McCARTER & ENGLISH
Cityplace I
185 Asylum Street
Hartford, Connecticut 06103
BY: DAVID REIF, ESQUIRE
JANE K. WARREN, ATTORNEY
JOEL B. CASEY, ESQUIRE

FOR THE INTERVENOR, ISO NEW ENGLAND:

WHITMAN, BREED, ABBOTT & MORGAN
100 Field Point Road
Greenwich, Connecticut 06830
BY: ANTHONY MacLEOD, ESQUIRE

FOR THE INTERVENORS, EZRA ACADEMY, B'NAI JACOB, THE JEWISH COMMUNITY CENTER OF GREATER NEW HAVEN, THE DEPARTMENT OF JEWISH EDUCATION, AND THE JEWISH FEDERATION OF GREATER NEW HAVEN:

BRENNER, SALTZMAN & WALLMAN
271 Whitney Avenue
New Haven, Connecticut 06511
BY: DAVID R. SCHAEFER, ESQUIRE

FOR THE INTERVENOR CONNECTICUT BUSINESS & INDUSTRY ASSOCIATION:

ROBERT E. EARLEY, ESQUIRE
350 Church Street
Hartford, Connecticut 06103

FOR THE PARTY, THE CONNECTICUT DEPARTMENT OF TRANSPORTATION:

CHARLES W. WALSH, III, AAG
EILEEN MESKILL, AAG
Office of the Attorney General
55 Elm Street
Hartford, Connecticut 06106

FOR THE PARTY, THE TOWN OF WESTPORT:

WAKE, SEE, DIMES & BRYNICZKA
27 Imperial Avenue
Westport, Connecticut 06880
BY: EUGENE E. CEDERBAUM, ESQUIRE

FOR THE PARTY, SOUTH CENTRAL CONNECTICUT WATER AUTHORITY:

MURTHA CULLINA LLP
Cityplace I
185 Asylum Street
Hartford, Connecticut 06103
BY: ANDREW W. LORD, ESQUIRE

FOR THE PARTY, COMMUNITIES FOR RESPONSIBLE ENERGY:

PATRICIA BRADLEY, PRESIDENT
47 Ironwood Lane
Durham, Connecticut 06422

FOR THE PARTY, THE CITY OF NORWALK:
LOUIS CICCARELLO, ESQUIRE
Corp. Counsel

FOR THE PARTY, THE TOWN OF CHESHIRE:
RICHARD J. BURTURLA, ESQUIRE

FOR THE PARTY, THE CITY OF MIDDLETOWN:
TIMOTHY P. LYNCH, ESQUIRE

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BRANSE & WILLIS, LLC
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MELANIE J. HOWLETT, ESQUIRE

FOR THE PARTY, COMMUNITIES FOR RESPONSIBLE ENERGY:
TRISH BRADLEY

A PARTY, THE TOWN OF EASTON

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AN INTERVENOR, RAYMOND KALINOWSKI, STATE REP. 100th DISTRICT

AN INTERVENOR, THEMIS KLARIDES, STATE REP. 114th DISTRICT

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AN INTERVENOR, WILLIAM ANISKOVICH, STATE REP. 12th SEN. DISTRICT

AN INTERVENOR, JOSEPH CRISCO, JR., STATE REP. 17th SEN. DISTRICT

AN INTERVENOR, LEONARD FASANO, STATE REP. 34th SEN. DISTRICT

. . .Verbatim proceedings of a hearing before the State of Connecticut Siting Council in the matter of an application by Connecticut Light & Power Company and United Illuminating Company, held at Central Connecticut State University Institute of Technology & Business, 185 Main Street, New Britain, Connecticut, on May 13, 2004 at 10:50 a.m., at which time the parties were represented as hereinbefore set forth . . .

CHAIRMAN PAMELA B. KATZ: I'd like to call this continuation of Docket 272 hearing to order.

We're going to resume with cross-examination, but before we do that, Roger Zak is going to report briefly on a homework assignment. Mr. Zak.

MR. ROGER ZAKLUKIEWICZ: Roger Zaklukiewicz. The assignment as I recall was to identify in the New England capacity, energy loads and transmission forecast report, which I incorrectly identified as CELT, the acronym without spelling it out what it was. We had submitted as part of the overall filings the 2003 NEPOOL forecast and I incorrectly indicated the percentage increase of compounded growth rate of 1.2 to 2.0. In calculating it out, in 2003 the

number is 1.015 compounded each year. And recognize that last week the NEPOOL issued a 2004 CELT report which takes it one year further --

CHAIRMAN KATZ: And what's that acronym again?

MR. ZAKLUKIEWICZ: CELT, C-E-L-T, for capacity, energy loads and transmission --

CHAIRMAN KATZ: Thank you --

MR. ZAKLUKIEWICZ: -- forecast report. Each of the annual reports are for a 10-year period and they identify a number of columns, which basically identify the 50/50 probability of a load exceeding what they forecast, all the way to the point where they have a 10 and a 5 percent probability of occurring in future years. That is the peak load for -- in our case of New England, it's a summer time peak load period.

The question I believe that came up is what is the significance or what is the probability that we are going to exceed the 15-gigawatt case and the 27.7-gigawatt case. And just as a reminder, presently the 15-gigawatt case basically represents approximately, as I indicated I believe 48 percent of the time the load would be greater than, the medium of that number is approximately 14,500, the average is 14,800. So 50

percent of the hours in the year you are basically at that level or below that level for the currents that would be flowing on the transmission system into Southwest Connecticut.

The peak load condition that we were speaking of was 27.7 gigawatts. We've got to remember a couple of things here. No. 1, those one-hour per year typically that you reach that peak, okay, that is the peak average integrated load for a given hour as ISO New England records the load for that hour. So we're talking an extremely short interval to begin with.

And secondly, if you recall, we tested the system under extremely stressed conditions. And that was a question mark that came up during the hearings, why are you using, if you will Dispatch Scenario 2. And that is in the Southwest Connecticut report dated December 2002. And the reason we do that is because we wanted to reflect maximum flows on the transmission lines going into Southwest Connecticut.

And I need to -- if I can take 30 seconds -- in Dispatch 2 we do not have on on-line -- at this high load period we do not have the two Norwalk Harbor units on-line, we do not have the three Bridgeport Energy units on-line, we do not have Bridgeport Harbor No. 2 on-

line, we do not have the four gas turbines at Devon on-line, those would be Units No. 11, 12, 13, 14, nor do we have the five Wallingford units on-line, and each of those is 50 megawatts. So we -- we in turn when you look at Dispatch Scenario 2, I believe I've testified before our preliminary studies indicate the transfer limit into Southwest Connecticut would be somewheres between 3,200 and 3,400 megawatts. The transfer under this condition for 27.7 is approximately 3,126 megawatts. So we are pressing the system where we are almost at the max capability of the transfer into Southwest Connecticut when those were the numbers that we provided Dr. Bailey under all other scenarios where you have additional generation on, such as the Bridgeport Energy units, which in the bid process is low in the bid process today. I can't predict what they're going to be at in the future, but presently they are scheduled on more frequently than many other units in New England, those would all go to reducing the transfers on the transmission lines into Southwest Connecticut. So when I -- when we gave Dr. Bailey the numbers that would reflect a worse case stress scenario, that's exactly what we gave him. We were basically at the limit of the transfer into Southwest Connecticut and reflecting that the flows on the 345-kV

lines in particular were basically at the limits for that 3200 to 3400 transfer into Southwest Connecticut.

At the 15-gigawatt case, we basically used the dispatch that we typically see for those load levels where the peak load for the day is fifteen or fourteen-five or sixteen thousand megawatts or 16 gigawatts for New England reflecting back that for those days there's limited amount of generation on. And -- and so what we tried to reflect is what typically would you see on a normal -- on a normal weekday with loads of that magnitude.

What happens in the future when the loads go up into 10 or 15 or 20 years from now, recognize the existing generation in New England today is approximately 33,000 megawatts, so if you are going to try to serve a load of 28, 29, or 30,000 megawatts, you need additional generation in New England. You have to at any given time have your loss of the largest unit and 50 percent of the next largest unit, which in the summertime could be a 2400-megawatt requirement, and in the day-to-day process of scheduling generation you have to assume approximately 2100 to 2400 megawatts of unavailable generation out. There's no way New England can serve greater than 2800 megawatts with the existing 33,000 megawatts of

generation that is presently available today without additional generation being installed someplace in New England. Exactly where that will be, that is a market decision as to where that will be placed. I think what we were trying to do with this project was to make it such that additional generation could be installed in Southwest Connecticut such that those will in turn with additional generation being tied onto the 345 system will then reduce transfers into the area. So, I hope that clarifies it a little bit.

CHAIRMAN KATZ: Thank you. Is there any questions for Mr. Zak on this new information? Thank you very much.

At this point, Mr. Schaefer, we're going to have you continue cross-examination of the panel.

(Pause)

CHAIRMAN KATZ: Please proceed.

MR. DAVID SCHAEFER: Thank you. Is this on? Okay. I'd like to address a question to Mr. Zaklukiewicz.

COURT REPORTER: Sir, please put your name on the record.

MR. SCHAEFER: Sure. David Schaefer. Do you want to know who I'm representing or do you just need

a name? Representing Ezra Academy, B'Nai Jacob Synagogue, The Jewish Community Center of Greater New Haven, and The New Haven Jewish Federation.

Sir, can you just help me with the pronunciation of your last name?

MR. ZAKLUKIEWICZ: Zaklukiewicz.

MR. SCHAEFER: Okay. Mr. Zaklukiewicz, you just discussed the -- gave certain information with respect to the numbers that were used by Dr. Bailey in doing certain measurements based on a 15-gigawatt New England wide load, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: And a 27.7-gigawatt New England wide load at a peak period, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: And you mentioned that by your calculations the peak load was an hour period during the year where the load levels would reach that amount, the 27.7, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: And in what year was that projected for?

MR. ZAKLUKIEWICZ: A 50/50 probability, that is 2010. And with a 10 probability, that is in

2006. This is from the 2003 capacity, energy load and transmission report developed by NEPOOL.

MR. SCHAEFER: Alright. And as time goes forward would the amount of time during a year that the system would be operating at the 27.7-gigawatt load or greater increase?

MR. ZAKLUKIEWICZ: Can you repeat that question?

MR. SCHAEFER: Sure. As load levels and usages go forward, increase -- and you gave some numbers as an annual increase, would the consequence be that the number of hours per year that the system would likely be operating at 27.7 gigawatts or greater increase?

MR. ZAKLUKIEWICZ: Yes, it would.

MR. SCHAEFER: Okay. And I believe that there was some request, I thought by the commission for some calculations going forward, 10 years, 20 years, 30 years. Is that something you're still working on?

MR. ZAKLUKIEWICZ: All we were able to do from ISO was to obtain from them what their CELT report indicates. And it indicates that in the 2003 CELT report the compounded growth rate was 1.015 percent per year. And the 2004, which is not part of the record, which I would expect ISO to place in the record when they

testify, basically has a compounded growth rate of 1.013 percent.

MR. SCHAEFER: Okay. Now -- now my understanding of your testimony, and I'd like for you to correct me if I'm wrong, is that you took these average New England wide load levels from ISO New England, is that correct?

MR. ANTHONY M. FITZGERALD: Objection --

MR. ZAKLUKIEWICZ: Which -- which average -- which average numbers --

MR. SCHAEFER: The 15 -- the 15-gigawatt number, where did that come from?

MR. ZAKLUKIEWICZ: We took an hour-by-hour load level from New England for year 2002 and identified for every given hour which -- what was the New England load at that period.

MR. SCHAEFER: Okay, so you -- you performed that analysis, your people in your operation here?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: Alright. And your testimony is that in 50 percent of the time, the New England wide load would be 15 gigawatts or less, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: And for -- you said 48 percent of the time it would be more than 15 gigawatts?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: Alright. Now, once you did that calculation, then you did additional modeling in order to provide information to Dr. Bailey, is that correct?

MR. ZAKLUKIEWICZ: What we did was we looked at what the load would be in future years. And the Southwest Connecticut study group has identified a load of 27,700 to do all of the case work. And we used that load of 27,700 as the base. And what is more important is not the magnitude of the load, it's what generation is scheduled to be on-line because that determines what the flows are on the transmission lines. And what I testified to a little while ago was the fact that we used Dispatch Scenario 2, which extremely stresses the system. And the units I identified were that we had -- 2, 5, 9 -- we had 14 generating units not in operation within Southwest Connecticut. An extreme case for which you need to supply the load in Southwest Connecticut at the 27.7-gigawatt level by the transmission system.

MR. SCHAEFER: Okay, so --

MR. JOHN PRETE: Madam Chair --

MR. SCHAEFER: -- what I'm trying to understand --

MR. PRETE: Madam Chair --

MR. SCHAEFER: -- is once --

MR. PRETE: Excuse me one minute. I think if it would be helpful for the Council, we have copies of that generating dispatch. This is a very key point and Mr. Schaefer is obviously asking questions about it. And rather than throw a lot of numbers out, could I just hand this -- it's again Interrogatory Towns' 036. And having that in front of you might be helpful as we begin --

CHAIRMAN KATZ: Sure --

MR. PRETE: -- to answer these questions.

MR. PHILIP T. ASHTON: Mr. Schaefer, would it be helpful if I asked a few questions that may shed a little light on this load flow issue? Mr. Zaklukiewicz, a load flow is simply a --

MR. COLIN C. TAIT: Don't answer that.

MR. SCHAEFER: I know -- (laughter) --

MR. ASHTON: A load flow is simply a modeling technique to compute flows on transmission elements for a given set of generation available and a

given load level. Is that fair to say?

MR. ZAKLUKIEWICZ: Correct. It's a snapshot at one point --

MR. ASHTON: Right. And it's frequently used in the utility industry to determine how well a system responds to various stresses, that is loss of elements of the transmission system, unavailability of generation and the like, is that fair to say?

MR. ZAKLUKIEWICZ: That is correct.

MR. ASHTON: The 27-megawatt flows without the various units you listed was an attempt to determine the adequacy of the transmission and flows on it for loads at that level, that essentially system peak load level for -- in the given circumstance, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. ASHTON: At times -- so that would present in terms of the EMF picture very high loadings, and the largest EMF -- a level of EMF that would be likely to occur, is that fair to say?

MR. ZAKLUKIEWICZ: It is a case where stressing the system to that level, it should end up being one of the highest transfers on the 345 system that you would expect to see going into Southwest Connecticut on the proposed transmission line.

MR. ASHTON: And hence the EMF -- the resulting EMF would be maximized, is that fair to say?

MR. ZAKLUKIEWICZ: Directly proportional in some percentage to current flow, the answer would be yes.

MR. ASHTON: Okay. The -- the load is expected to grow slowly for the indefinite future at what percent levels yet to be -- history is yet to reveal. But the 20 -- the test that you have provided on the system, would that be a likely severe test for many years into the future absent major transmission or generation?

MR. ZAKLUKIEWICZ: The Scenario 2, the Dispatch 2 is an extremely stressed situation, very very unlikely to occur that you would have 14 generating units off-line at that load level in Southwest Connecticut.

MR. ASHTON: And would it be reasonable to expect that as time passes, presuming, presuming a 345-kV loop exists through Southwestern Connecticut, from New Milford to Norwalk to Devon, up through the center of the State, that with that loop in place, as the load grows there will be more encouragement for generators to be built in that area, which would, if available, tend to unload the transmission line, but absent the transmission line it can't really be built?

MR. ZAKLUKIEWICZ: That is correct.

MR. ASHTON: So that the pattern that you have portrayed is a pessimistic one. And the pattern with generation on-line, some identified, some not identified remaining for the future, is a probable picture of what will occur in Southwest Connecticut in the future?

MR. ZAKLUKIEWICZ: That is correct. And also recognize the transfer limits --

MR. ASHTON: Right --

MR. ZAKLUKIEWICZ: -- which I identified were right basically at the limits of the transmission system for reliable operation.

MR. ASHTON: Okay. I -- that's it, thank you.

CHAIRMAN KATZ: I'll put it more simply. Mr. Zak, isn't it true that under this scenario you're minimizing the local generation and you're maximizing the amount of electricity that has to be imported into Southwest Connecticut, and therefore you are doing a -- therefore, you are pushing more electricity through the bottleneck into Southwest Connecticut and therefore increasing the EMFs proportionally?

MR. ZAKLUKIEWICZ: That is correct.

CHAIRMAN KATZ: Thank you. Mr. Schaefer, back to you.

MR. SCHAEFER: Thank you. Sir, you testified before all the helpful questioning by the Council -- (laughter) -- that the -- the level of -- that the probability that the system would reach the 27.7-gigawatt level would increase over time, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: Okay. And the -- why does the probability that it's going to reach peak level increase over time?

MR. ZAKLUKIEWICZ: Why -- why does what reach peak level?

MR. SCHAEFER: My understanding of your testimony is the probability that the system is going to reach the 27.7 peak load. And the probability that that will occur increases from 2006 where it's 10 percent to 2010 when it's 50 percent, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: Why does that probability that it's going to reach peak load increase over time?

MR. ZAKLUKIEWICZ: Basically as I understand it, the New England CELT report has put together on taking into a number of factors, one is

economic and demographic factors within New England, one is historic data over previous usages, long and short-term energy forecasts, the relationship of system daily peaks to temperature and humidity. And lastly, the CELT report, as far as I'm aware, was based on the fact that electricity rates would remain fairly constant --

MR. SCHAEFER: Okay --

MR. ZAKLUKIEWICZ: -- based on that and all, we see an increase annually in the usage of electricity within New England.

MR. SCHAEFER: Okay. And what seems obviously from just your description, there are a lot of different variables that go into these kind of projections, isn't that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. SCHAEFER: Okay. And none of us can sit here and know what's going to happen in the future on most of these variables?

MR. ZAKLUKIEWICZ: Over the last number of years the percentages of loads within the Norwalk/Stamford area and within Southwest Connecticut has basically remained fairly constant to the percentage of New England loads, so the Southwest Connecticut load has ranged somewheres between 12.5 and 13 percent of the

New England load, and Southwest Connecticut has ranged somewheres between 4.5 -- I mean the Norwalk/Stamford area has ranged somewheres between 4.5 and 4.8 percent of the New England load, and that has been over the last five to ten years. So with some level of consistency we could predict, recognizing unless something dramatically changes in New England, what the percentage of the loads would be in Southwest Connecticut in the Norwalk/Stamford area based on New England load percentages.

MR. SCHAEFER: Alright, okay. And again, that could change based on what generation facilities are on-line, is that correct, both new and existing?

MR. FITZGERALD: Excuse me, objection. I don't know what the that refers to.

MR. SCHAEFER: Okay. The projections with respect to New England wide peak loads --

MR. ZAKLUKIEWICZ: If you're talking about what would be the flows on the transmission lines going --

MR. FITZGERALD: Mr. Zak, wait a minute. Just answer the question.

MR. ZAKLUKIEWICZ: I'm not certain what the that is.

MR. FITZGERALD: Well, let's -- just

listen, give him a chance.

CHAIRMAN KATZ: (Indiscernible) -- why don't you rephrase the question. And Mr. Zak, why don't you give a brief answer.

MR. SCHAEFER: Would the New England wide peak load be influenced by what generation facilities are on-line or not on-line?

MR. ZAKLUKIEWICZ: No.

MR. SCHAEFER: Okay. Would your calculation of the current flowing through the 345 line change based on what generation facilities are on-line or not on-line?

MR. ZAKLUKIEWICZ: Yes.

MR. SCHAEFER: Alright. And that -- and would it also change based on what other areas are being serviced by power from this line other than the areas being serviced at the present time? For example, if the line was used to provide power to other than Southwestern Connecticut, would that influence the current levels on the line?

MR. ZAKLUKIEWICZ: The answer is yes.

MR. SCHAEFER: Okay. Now, Mr. Bailey -- or Dr. Bailey, excuse me -- and you may bounce me right back to where I was, but I'm going to ask you the -- in

your modeling in measuring projected calculations of EMF levels, is one of the variables the frequency of change in the -- the frequency of current change over time in the line?

DR. WILLIAM BAILEY: No.

MR. SCHAEFER: Okay. So the fact that the current changes -- again, I'm way beyond my depth, but it's -- 60-hertz is the change in current frequency in the line?

DR. BAILEY: Sixty hertz is the fundamental frequency at which the electricity flows through the wires.

MR. SCHAEFER: Okay. And does it not -- are there changes in -- so you're saying there's no changes in the frequency of current over time?

DR. BAILEY: The -- the frequency -- the 60-hertz frequency has to be maintained within very tight limits by the utility for proper operation.

MR. SCHAEFER: Okay. But can there be a fluctuation of 10 to 20 percent on that?

MR. PRETE: No.

MR. ZAKLUKIEWICZ: No.

MR. SCHAEFER: Okay. And -- I don't doubt that I'm confused, so we'll -- okay -- okay, now in the

calculations you did of projected EMF levels at the Ezra Academy, B'Nai Jacob facility and the Jewish Community Center facility in Woodbridge, Connecticut, you were taking into account both the 115-kilovolt line as well as the 345, is that correct.

DR. BAILEY: All the analyses that were performed were either of the existing right-of-way or the right-of-way with various designs of 345-kV lines on that right-of-way.

MR. SCHAEFER: And that would include --

DR. BAILEY: Yes --

MR. SCHAEFER: That was a yes --

CHAIRMAN KATZ: Yes --

DR. BAILEY: -- they're both -- both considered.

MR. SCHAEFER: Well -- but in your calculation when you did your final split phase best scenario, that included a 115 line and a 345 line operating in the right-of-way?

DR. BAILEY: That's correct.

MR. SCHAEFER: Alright. And with respect to the -- and -- let me withdraw that. And the existence of the 115 line has an influence on your calculations?

DR. BAILEY: Yes.

MR. SCHAEFER: Okay. It contributes or detracts from the cancellation. But whatever, it's a part of the scenario you're looking at?

DR. BAILEY: Yes. And these lines are also the closest to the buildings.

MR. SCHAEFER: Fine. In other words in your scenario you would put the tower with the 115 line closer to the facility?

DR. BAILEY: That's where they're actually located today.

MR. SCHAEFER: And -- but you're going to replace the towers, aren't you? The Applicant is going to build new towers?

DR. BAILEY: As part of their design, yes.

MR. SCHAEFER: Okay. And the new design provides that the 115 line is, as you say, closest to the facility?

MR. PRETE: That is correct.

MR. SCHAEFER: Okay. Now, I can understand that with respect to one facility, the Ezra Academy, Jewish Community -- Ezra Academy, B'Nai Jacob. In fact, the Jewish Community Center has operations and facilities on both sides of the line, isn't that correct?

MR. PRETE: Yes, our understanding is that

there's a building on the side that you referred to with the 115 and ball fields and pools were built on the other side, which would be closer to the 345.

MR. SCHAEFER: And there's a building associated with the pool?

MR. PRETE: Yes, there is.

MR. SCHAEFER: Okay. So what you're talking about is the 115 line being closest to the largest building?

MR. PRETE: That's exactly correct.

MR. SCHAEFER: Alright. Now with respect to the 115 line, isn't it true that the direction of current flow in your model was different at the Jewish Community Center campus than at the B'Nai Jacob campus?

MR. PRETE: That's correct.

MR. SCHAEFER: Okay. And that has to do with the effects on the flow of the current because there's a substation between those two facilities even though they're less than a mile away from each other?

MR. PRETE: Yeah. We're good teachers after last Thursday.

MR. SCHAEFER: Okay. Well, I'm learning, I'm trying. (Laughter). And the -- and so part of doing this model is trying to project -- let me withdraw that.

Does the direction of the current flow have an impact on calculating EMF levels?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. So in addition to all the other variables we're talking about, someone -- and by Mr. Prete's testimony, am I to assume that the Applicants did a calculation of the current flows and directions in the 115 line?

MR. PRETE: Yes, the Applicants produced load flows based on a very aggressive case that the Council very well questioned to maximize the power through that corridor that you're talking about.

MR. SCHAEFER: Alright. Now both this morning and yesterday, Dr. Bailey, we talked about the different variables that go into doing the calculation. And I believe one of the Council members asked you about the fact that your reading for example is done 3.0. And I don't remember if you were specifically asked, but you might have been whether or not your level of confidence in the accuracy of the number goes to the one-tenth of a milligauss.

DR. BAILEY: Is that a question?

MR. SCHAEFER: Yeah.

DR. BAILEY: For a specific loading on the

lines of X number of amps on each one of the circuits and the physical configuration, those are essentially exact values.

MR. SCHAEFER: Alright. And so your testimony is that if you had those loadings on the line, that if the line was built and you went out and had that loading, that if someone went in reality and measured the EMF level, it would be the level that you projected to the tenth of a milligauss?

DR. BAILEY: Essentially. Because what would -- what would cause any major difference from that would be some other condition that had changed that was different from the conditions we had assumed in the model. The calculations in the model result in projected milligauss and electric field values that are based upon physics, so therefore it can be very exact for any set of input conditions.

MR. SCHAEFER: Okay. And you have no error rate or range of likelihood that the result will be within a certain amount of your projected number to a tenth of a milligauss because you believe that -- there's no question it's going to be exactly what you projected?

DR. BAILEY: As I testified yesterday, where engineers have gone out and measured the load on a

transmission line of various types and then calculated the fields at various distances from those transmission lines, the agreement between the calculated values and the measured values are -- the values are virtually superimposed on top of one another --

MR. SCHAEFER: Alright --

DR. BAILEY: -- so they're, you know a few percentage difference.

MR. SCHAEFER: You have a very high level of confidence in your calculations then?

DR. BAILEY: In -- in the method of calculating.

MR. SCHAEFER: Right. Alright. But it's of course all dependent on the -- all the many different assumptions and variables that went in, isn't that correct?

DR. BAILEY: It depends obviously upon the input values --

MR. SCHAEFER: Upon the input, alright. Now -- and our models presented calculations which you provided to the Council in your supplemental testimony of EMF readings which would be present at the edge of the right-of-ways near Ezra Academy's facility and the Jewish Community Center as well as the closest building location

to the right-of-way, is that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. And you've also done readings with respect to EMF levels at playgrounds and summer camps in the area?

MR. FITZGERALD: Excuse me. Do you mean to say readings -- (indiscernible) --

MR. SCHAEFER: I mean calculations. I apologize. Calculations with respect to the levels that would be at certain playgrounds or summer camps on the properties?

DR. BAILEY: In response to one of the data requests, yes.

MR. SCHAEFER: Alright. And you believe that the projections of your models are accurate, correct?

DR. BAILEY: Based upon the assumptions that we had for the input data, those results we believe give accurate calculations.

MR. SCHAEFER: And you, on behalf of the Applicant, are asking the Siting Council to make decisions based upon the EMF calculations which have been done with your model, isn't that correct?

DR. BAILEY: This information provided is

just one part of the overall information that the Council takes into place --

MR. SCHAEFER: Alright --

DR. BAILEY: -- we do not have a standard or other specific guidance. This is just one piece of information --

MR. SCHAEFER: Alright --

DR. BAILEY: -- about the fields associated with the operation of this existing and proposed line.

MR. SCHAEFER: Well are you confident enough in the accuracy of your predictions enough to recommend to the Siting Council that a provision of the approval of this 345 line be that if the EMF readings in actuality after the lines are built exceed your projections that the lines be shut down?

DR. BAILEY: It's not in my purview to make such a recommendation.

MR. SCHAEFER: Alright. Well if the -- in giving the Council guidance, if in fact the readings varied from your projections by 25 percent, would you believe it would be a reasonable action by the Council to take to provide that the lines be shut down if the operation is that far away from your projections?

DR. BAILEY: Sir, we understand from Roger's discussion of the 15-gigawatt and 27-gigawatt case is that those load flows will change and almost certainly there will be different values of EMF associated with different levels of loading on any particular day at any particular time.

MR. SCHAEFER: Okay. Now reference was made by someone on the panel, and I don't know if it was you or Mr. Prete, to the fact that there was a meeting that I and certain other representatives of my clients had with Mr. Prete and yourself and others to discuss your study of possible solutions to the situation near my clients' properties, is that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. And at that meeting you made a presentation where you described your proposal for split phasing of the lines near these facilities, is that correct?

DR. BAILEY: Yeah --

MR. FITZGERALD: Uh --

MR. SCHAEFER: Okay. And isn't it true that at that meeting -- and I don't want to say if you or the representatives of the utilities said that the Applicants were willing to implement your recommendations

of split phasing near the facilities that my clients -- that I represent?

MR. PRETE: That's not totally correct. I'd like to suggest to you what was said at that meeting. You're referring to a string of at least three to four meetings over the last three to four months. And what we were doing was trying to accommodate the concern that your client has with EMF levels and the mitigation thereof. So over those three meetings that we have had, we have produced what we feel are phenomenal steps to mitigate the EMF of not only the proposed line but what is existing. And at our most recent meeting that was last Thursday, and this is based on your request, we had yet another solution that was looked at. And at those meetings we had stated that if in the weighing of the Council that these are the appropriate steps for not only today's condition, which we know now is a bill, then from a technical point of view, absolutely we'd be willing to build it.

MR. SCHAEFER: Alright. And -- I obviously interpreted it differently, but let me ask you, so is -- is the recommendation of the Applicant that split phasing be used next to Congregation B'Nai Jacob and the Jewish Community Center in Woodbridge?

MR. PRETE: Based on today's environment where we know now the best management practice take into consideration the bill, which of course are sensitive areas, we believe that's a really prudent approach at those two locations.

MR. SCHAEFER: Alright.

DR. BAILEY: Can I just jump in here? That we had presented in response to your concerns a variety of designs. And that among them split phase was one of the designs. And you know, we're continuing to still look at other designs that might yield still more beneficial results. So these were a series of evaluations I would characterize them in response to your question of what kinds of things could be done to reduce fields rather than a specific recommendation of a specific design --

MR. SCHAEFER: Well, but what I'm trying to understand, and I assume the Council would want to know too, is based on your studies is it your recommendation that the design going by the B'Nai Jacob, Ezra facility and the Jewish Community Center facility be consistent with your latest split phase design?

COURT REPORTER: One moment please. (Pause). Thank you.

MR. PRETE: Again I'll reiterate at least from our understanding. What we're doing is presenting facts based on a passionate interest to mitigate EMF. And as such, as Dr. Bailey I think better pointed out, there are, what, six or seven proposals that we have talked about. Each have levels of EMF hopefully lower than the other ones, and there may be yet lower ones. So from that basis to the extent that again the Council feels that that's the right direction to go, as we said we're here to present facts --

MR. SCHAEFER: Well --

MR. PRETE: -- both from a technical and reliable point of view --

CHAIRMAN KATZ: Mr. Prete --

MR. PRETE: -- and we're doing that.

CHAIRMAN KATZ: Mr. Prete, the bottom line, if the Council orders you to do split phasing in the vicinity of the JCC and the Ezra Academy, B'Nai Jacob campus, would you be able to do it?

MR. PRETE: Absolutely.

MR. TAIT: Dr. Bailey, would this technique be available in other spots along the line, like Royal Oaks in Durham?

MR. PRETE: Yes, it would.

MR. TAIT: So this is not site specific, this technique could be used anywhere on the line where this problem arose?

MR. PRETE: Yes. And indeed, my colleague to the right has had conversations with the CEO of Durham --

MR. TAIT: I thought they might have had.

CHAIRMAN KATZ: Do we have in the record the calculations you did on the impact of doing split phase at Royal Oaks?

MS. ANNE BARTOSEWICZ: We do not.

CHAIRMAN KATZ: Can we get that in the record?

MS. BARTOSEWICZ: Yes, we can.

MS. LINDA RANDELL: Madam Chairman --

MR. ASHTON: Just as a -- in the interest of time, are the -- is the -- is the system in Durham likely to be materially -- or the levels of exposure in Durham likely to materially different from what's -- what has been shown for Woodbridge?

MS. BARTOSEWICZ: They are different. And we need to remember that when we look at a specific solution in any portion of the right-of-way, you'd have to consider that specific right-of-way --

MR. ASHTON: Yeah.

MS. BARTOSEWICZ: -- how wide it is, what's there today, and do the calculation. And we have done -- we have started it for other areas and we have a preliminary for Durham --

MR. TAIT: When will that be available?

MR. PRETE: I believe that our intentions, Madam Chair and colleague, that given -- in light of the bill that we impose a homework assignment on ourselves, that in June to come away with an aggressive approach on each of the cross-sections --

MR. TAIT: Good --

MR. PRETE: -- in the right-of-way, such that it would give you kind of the plans for each one and the various facts that surround that --

MR. TAIT: Yes --

MR. PRETE: -- and we'll be prepared to do that in June.

CHAIRMAN KATZ: Is that the first June session or the second June session?

MR. PRETE: At your liberty.

MR. FITZGERALD: Uh --

MR. PRETE: The second -- the second?

MS. RANDELL: We actually thought you

would probably want it in the first June session when we talk about Segments 1 and 2 --

CHAIRMAN KATZ: Yes, I think --

MS. RANDELL: -- it was our plan and concept that for site specific areas --

CHAIRMAN KATZ: Yes --

MS. RANDELL: -- we thought this homework assignment would come up, that we would address it and have it set for the June 1, 2, 3 series --

CHAIRMAN KATZ: Yes. And I think --

MR. TAIT: And that means prefiled by the 25th.

CHAIRMAN KATZ: May 25th --

MS. RANDELL: Indeed.

CHAIRMAN KATZ: We'll at least start it in June at the first June session. And if we have to continue it into the second June session, we'll --

MS. RANDELL: I'm looking the faces on the witness panel and we will --

MR. FITZGERALD: They hadn't heard about the 25th --

MS. RANDELL: -- we will endeavor to do that. There might be some that might come in later and we'll let you know at the time. It takes some period of

time to develop these --

CHAIRMAN KATZ: Yes --

MS. RANDELL: -- field work and then Dr. Bailey's people, project people and so on.

CHAIRMAN KATZ: Understood.

MS. BARTOSEWICZ: In essence, we're going to try to do site specific transmission line design, which is where the time and the effort comes in, and then Dr. Bailey has to do his calculations.

CHAIRMAN KATZ: And you're concentrating those efforts on residential and institutional areas that have been identified?

MS. BARTOSEWICZ: We're actually going to do this for you in a cross-section by cross-section. In Segments 1 and 2 there are essentially eight cross-sections --

CHAIRMAN KATZ: Okay --

MS. BARTOSEWICZ: -- so we will look at each cross-section and provide you with a range of choices on design and results.

CHAIRMAN KATZ: Thank you. Mr. Schaefer, back to you.

MR. SCHAEFER: Thank you. Dr. Bailey, I understand or I think I understand what the

representatives of the Applicant are saying, but I'd like to question you about your testimony that you provided on passive regulatory responses with respect to 60-hertz electric and magnetic fields. That's the testimony that was filed on May 3, 2004.

DR. BAILEY: Yes.

MR. SCHAEFER: Okay. And you swore to that testimony yesterday, isn't that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. Now in that testimony you appear to take the position, and maybe I'm wrong, that in light of the scientific information with respect to EMF, that no expenditure of funds is justifiable to change the design of the lines to reduce EMF. Am I reading your testimony correctly?

DR. BAILEY: I think you're drawing an implication from it perhaps. What I think my testimony states is that -- my position on the science that despite decades of research and looking to find firm evidence of there being a problem, we haven't discovered that in fact that EMF is a risk. However, we understand that there is on some members of the public a perception of a fear about potential health risks. And I think that the position that Granger Morgan pointed out that if people

are concerned and you have the opportunity at low or no costs for them to reduce their exposures, why shouldn't they do that, and if you make that information available to them, they can take those actions if they are concerned. And in Connecticut we have the best management practices, which essentially mandates that the companies in the building of projects take steps to design their facilities to reduce levels of magnetic fields. So, I think those are certainly reasonable steps. And I hope that my testimony conveyed that.

MR. SCHAEFER: Well, I -- the -- your testimony is that the only thing that would be justified based on the scientific evidence concerning EMF is a no cost or low cost criterion, isn't that correct?

DR. BAILEY: I --

MR. SCHAEFER: Sir, if you can answer that a yes or no?

DR. BAILEY: Yes.

MR. SCHAEFER: Okay. And that you would agree with me that providing slit -- split phasing along Phases 1 and 2 would be more than a no cost scenario? Can you answer that yes or no?

DR. BAILEY: I do not have the information to answer that --

MR. SCHAEFER: You have no idea --

DR. BAILEY: -- I don't know what the costs are associated with these various designs at this time.

MR. SCHAEFER: Okay. And in your analysis you suggest that the Council -- in your testimony you suggest that the Council should look at the cost being -- the cost -- the extra costs incurred measured by the dollars per each child that would be potentially protected from childhood leukemia, is that correct?

DR. BAILEY: I did not make that recommendation.

MR. SCHAEFER: Okay. Did you -- do you discuss that as --

DR. BAILEY: I discussed the proposition that Granger Morgan had made, which essentially says would we want to spend more to avoid a speculative risk than we would to avoid a known risk --

MR. SCHAEFER: Okay --

DR. BAILEY: -- and that was his analysis of how we might make judgments about how far to go in reducing exposures.

MR. SCHAEFER: Okay. And do you have a recommendation for the Council as to how much it would be

reasonable in dollars to spend to reduce the exposure for each of the 12 -- exposure to childhood leukemia for each of the 1200 children that are using the facilities of the organizations that I represent?

DR. BAILEY: No.

MR. SCHAEFER: Okay. But in -- if the Council chose to follow that analysis, they would have to do a calculation as to a dollar value per child exposed to the increased risk, is that correct?

MR. FITZGERALD: I object -- well --

DR. BAILEY: Or some other analysis.

MR. SCHAEFER: Okay.

MR. TAIT: Dr. Bailey, how many miles of 345 line does NU and United Illuminating have in the State of Connecticut?

MR. PRETE: A little over 400.

MR. TAIT: In addition to the ones we're talking about --

MR. PRETE: This would add an addition 45.

MR. TAIT: And I assume that some of those lines go past schools?

MR. ZAKLUKIEWICZ: That is correct.

MR. TAIT: Some go past playgrounds?

MR. ZAKLUKIEWICZ: That is correct.

MR. TAIT: Some go past community centers?

MR. ZAKLUKIEWICZ: That is correct.

MR. TAIT: Do you have any idea of how many of those are located within striking distance of the power line? (Laughter) --

A VOICE: Yeah, that's an interesting concept.

MR. FITZGERALD: If Mr. Schaefer had asked that, then I would object -- (laughter) --

MR. ZAKLUKIEWICZ: I do not know exactly the numbers --

MR. TAIT: Okay --

MR. ZAKLUKIEWICZ: -- in close proximity to the 345-kV transmission lines.

MR. TAIT: Dr. Bailey, under the rule of prudent avoidance, should the Council do anything about those lines?

DR. BAILEY: The -- the --

A VOICE: Like we don't have enough to do --

DR. BAILEY: The argument that --

MR. TAIT: Or is that a matter of costs, that the costs would be disproportionate to --

DR. BAILEY: I --

MR. TAIT: It seems to me all children are the same --

DR. BAILEY: Unfortunately, Granger Morgan has already answered this question for me, and it was his contention that taking steps to alter existing facilities would involve expenditures far out of proportion to the, you know, suspected or questioned magnitude of a potential risk.

MR. TAIT: Thank you.

MR. DANIEL P. LYNCH, JR.: And would that also hold true for the 115-kV lines that are near power lines -- I mean that are near schools and playgrounds?

DR. BAILEY: Yes. And of course -- I mean obviously transmission lines at 345-kV and at 115 are not the only source of magnetic fields and so then we have distribution facilities and wiring in homes and all other sources that would be of concern as well.

MR. LYNCH: And that -- excuse me, Dr. Bailey, one more time -- along with that you talk about in here -- distribution lines are in my opinion closer to residences and homes and playgrounds than anything. And I would think if we're going to look at prudent avoidance, we'd also have to look at distribution lines as well as transmission lines?

DR. BAILEY: To be consistent, one would have to do that.

MR. ASHTON: And that gets -- and that also is carried right through to the point of final utilization, the electric blanket. If we're going to ban EMF above a certain level, then we have to also -- would we not also have to look at specific utilization devices to cover the waterfront?

DR. BAILEY: For consistency, yes.

MR. ASHTON: Yeah.

CHAIRMAN KATZ: Okay, back to you, Mr. Schaefer.

MR. SCHAEFER: And Dr. Bailey, the EMF levels generated by a 345 line are significantly different than EMF levels generated by an electric blanket, aren't they?

DR. BAILEY: It depends upon the location. The fields -- one is in close proximity to an electric blanket for significant periods of time and the fields at the edge of the right-of-way are not, you know, where people spend time, so --

MR. SCHAEFER: But someone can choose whether to use an electric blanket or not, can't they?

DR. BAILEY: Absolutely.

MR. SCHAEFER: And the only way they can choose whether or not there's going to be EMF next to the school or community center they go to is to --

MR. TAIT: These are argumentative questions.

MR. SCHAEFER: You'd prefer I not finish the question?

MR. TAIT: No, it seems to me you're making the point rather than the witness --

MR. SCHAEFER: Okay --

MR. TAIT: -- and that's the opposite of what's suppose to be happening --

MR. SCHAEFER: Okay. Dr. Bailey, in the meetings you held with myself and representatives of the organizations I represent, you presented certain charts showing EMF readings, is that -- EMF calculations, isn't that right?

DR. BAILEY: Yes.

MR. SCHAEFER: And a number of those charts -- or most of them you've provided in your testimony to the Council, is that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: Okay. I'd like to show you two charts you presented to us that you didn't put in

your testimony and ask if you -- if I could ask him to identify them? (Pause). Dr. Bailey, I've handed --

A VOICE: (Indiscernible) -- a copy --

MR. SCHAEFER: Sure. (Pause). Dr. Bailey, one of the documents I've provided you purports to be a graph showing EMF levels at the north right-of-way location at B'Nai Jacob in the 15-gigawatt and 27-gigawatt examples, is that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: And is this accurate to the best of your knowledge?

DR. BAILEY: Yes.

MR. SCHAEFER: Okay. And the second chart provides comparable information with respect to the Jewish Community Center location, is that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. I'd ask that these be admitted as exhibits.

CHAIRMAN KATZ: Applicant?

MR. FITZGERALD: If I could just have a minute --

MR. PRETE: No problem --

MR. FITZGERALD: Uh --

CHAIRMAN KATZ: Mr. Prete --

MR. FITZGERALD: No objection --

CHAIRMAN KATZ: Mr. Prete, you have high paid talent that's suppose to say that -- (laughter) --

MR. PRETE: I get a discount when I can --

MR. FITZGERALD: No, I --

MS. RANDELL: We would just look over to them and --

MR. FITZGERALD: I just needed confirmation that this was something that we gave to them and would recognize.

COURT REPORTER: Madam Chair --

CHAIRMAN KATZ: Yeah. Mr. Fitzgerald, when you speak, you're going to have to grab mic.

MR. FITZGERALD: No objection.

CHAIRMAN KATZ: Okay. I think we need to verify that and give it an exhibit number. Can we do that?

MR. SCHAEFER: Yeah. What procedure do you want to follow on that?

A VOICE: Whose exhibit is it?

CHAIRMAN KATZ: Well first I'd like the members of the Council to have a copy. If you can give that to Mr. Cunliffe --

MR. ROBERT L. MARCONI: Did you ask if

anyone else --

CHAIRMAN KATZ: Does anyone else have an objection to -- well, no one else has seen it --

A VOICE: A trick question.

CHAIRMAN KATZ: Ms. Randell, can you have your --

MS. RANDELL: Certainly --

CHAIRMAN KATZ: Yes, can you verify this exhibit.

MS. RANDELL: Indeed. Dr. Bailey, are these two pieces of paper, which will be exhibit number -- some exhibit number for identification for Mr. Schaefer, are these -- do these contain information on magnetic fields that were prepared under your supervision?

DR. BAILEY: Yes.

MS. RANDELL: And they are in fact documents that came from your office?

DR. BAILEY: Yes.

MR. ASHTON: Are these going to be an Applicant exhibit --

CHAIRMAN KATZ: Yes, Mr. Cunliffe --

MR. ASHTON: -- or are they going to be a Schaefer exhibit?

CHAIRMAN KATZ: Mr. Cunliffe just indicated that it will be Applicants' 82 if that's satisfactory.

MS. RANDELL: Sure.

MR. ASHTON: 82A and B, or something like that?

MS. RANDELL: Sure.

CHAIRMAN KATZ: I'm sorry, proceed.

MS. RANDELL: 82A and B. Mr. McDermott asked if Mr. Schaefer will serve the service list with them.

CHAIRMAN KATZ: You can work that out.

MS. RANDELL: Dr. Bailey, are these true and correct to the best of your knowledge as you sit here today?

DR. BAILEY: Yes.

MS. RANDELL: We then suggest that they be full exhibits.

CHAIRMAN KATZ: Okay. Which one -- should we make B'Nai Jacob A and JCC B?

MS. RANDELL: That's fine.

CHAIRMAN KATZ: Okay. Please mark it accordingly. Any objection to making 82A and B full exhibits? Hearing none, they'll be full exhibits.

(Whereupon, Applicants' Exhibit No. 82A and 82B were received into evidence as full exhibits.)

CHAIRMAN KATZ: They are Dr. Bailey's product and I'm going to ask you to serve the list.

MS. RANDELL: Certainly. Could I just ask for clarification? Dr. Bailey, do you recall the timeframe where this was prepared?

DR. BAILEY: That's -- that's what I'm trying to determine --

MR. PRETE: Mr. Schaefer, was this the one handed out last Thursday or the meeting prior to that?

MR. SCHAEFER: I don't know which one it was.

MR. PRETE: You don't know?

MR. SCHAEFER: No, I don't remember which of the two meetings you gave it to us at.

MR. PRETE: Okay.

MR. SCHAEFER: They're only a week apart, I just don't recall.

MS. RANDELL: If we're able to determine that, we'll supplement the record with your okay, Madam Chairman.

CHAIRMAN KATZ: Yes. I'm -- am I reading this correctly, Dr. Bailey, on 82A, B'Nai Jacob north

right-of-way, the 27-gigawatt case, there's a significant shift --

MR. ASHTON: That's relocating the right-of-way --

CHAIRMAN KATZ: Oh, that's relocating the right-of-way --

DR. BAILEY: Right --

MR. PRETE: Right --

CHAIRMAN KATZ: Okay. And not just doing the split phase?

DR. BAILEY: Correct.

CHAIRMAN KATZ: Okay, thank you. Yes, go ahead, Mr. Schaefer.

MR. SCHAEFER: Yeah. And Dr. Bailey, along that line, the best way of reducing EMF exposure is distance, isn't it?

DR. BAILEY: I don't know what you mean by best, but it is certainly one of the ways.

MR. SCHAEFER: Okay. And if you'll take a look at what the Chairwoman just referenced, Applicants' 82A, that the -- by -- by a -- when you go a distance -- let's say in the 27-gigawatt case, when you're a distance of 300 feet from the line, the EMF level goes down to close to background levels, is that correct?

DR. BAILEY: Can you reference where that is? That 300 feet from the line, that distance -- if you look at the bottom of the access is distance from the edge of the right-of-way --

MR. SCHAEFER: Correct, I'm sorry --

DR. BAILEY: -- okay, so --

MR. SCHAEFER: Well --

DR. BAILEY: -- which -- which distance marked --

MR. SCHAEFER: Yeah -- well, I'm looking at the peak of the red line --

DR. BAILEY: Okay --

MR. SCHAEFER: -- on the 27-gigawatt, which is somewhere between 250 and 300 feet from the edge of the existing right-of-way, is that correct?

DR. BAILEY: Correct.

MR. SCHAEFER: Okay. And so over that distance the level of EMF goes down to -- and I know the scale is very difficult to see the levels when you get down to the small numbers, but it's -- it's essentially the background levels, correct?

DR. BAILEY: It would -- yes.

MR. SCHAEFER: Okay. But on the edge of the right-of-way the levels would be somewhere in the

range of 20 milligauss, correct?

DR. BAILEY: In that range.

MR. SCHAEFER: Okay. So distance makes a significant difference?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. And part of the scenario you came up with for the B'Nai Jacob facility was to move the existing right-of-way farther away from the school but still on my client's property, is that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. But you'll agree with me that that solution is not available at my other client's property, the Jewish Community Center, because they have facilities on both sides of the right-of-way?

DR. BAILEY: The same easy opportunity for shifting the right-of-way does not appear to be available, but as we discussed, we are looking into the possibility of making some kind of shift in the -- looking at what kind of alignment shift on your property would result in still lower fields.

MR. SCHAEFER: Okay. And again with the goal of creating distance between the line and the facilities being used?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. Now, the -- in the -- I believe yesterday you provided the Council with a corrected page with respect to -- I guess it was a replacement page 15 with respect to the calculations you had done attached to your April 30, 2004 testimony. Is that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: And the reading -- for example on the existing lines under the 27-gigawatt case, the reading on the edge of the right-of-way went up from 30 -- 13.8 milligauss to 30.8, is that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: And that change was a result of simply an error in data entry of one of the readings involved in your model?

DR. BAILEY: The error occurred when the analysis was being done of what the current flows were. And as I understand and was told by the company that the calculations were not completed as had and an error crept into it --

MR. SCHAEFER: Okay --

DR. BAILEY: -- and so when they -- when they found that error, they alerted us and we put in

those corrected values.

MR. SCHAEFER: Alright. But it gives you an example of the sensitivity of your calculations to an error or change in any of the variables, isn't that correct?

DR. BAILEY: Yes.

MR. SCHAEFER: Alright. Dr. Bailey, isn't it the prudent course for this Siting Council to follow, given the current scientific evidence with respect to the correlation between EMF and childhood leukemia, that the new power lines be placed in a location and in a configuration that minimizes the exposure of thousands of young children to EMF?

DR. BAILEY: I don't have a scientific basis to conclude that that would provide any public health benefit. But if the Council ordered the companies to take measures to reduce magnetic field exposures along the lines of the kinds of designs that we've explored, it seems to me understandable that that would be something that they would consider.

MR. SCHAEFER: I have no further questions, thank you.

CHAIRMAN KATZ: Thank you, Mr. Schaefer. Next on the list is -- hang on a second -- Representative

Al Adinolfi, do you have questions for the Applicant witness panel?

(Pause)

CHAIRMAN KATZ: For the record if you could identify yourself and spell your name.

REPRESENTATIVE AL ALDINOLFI: Al Adinolfi, I represent the 103rd District in Connecticut, Cheshire, Wallingford and Hamden.

I just have two questions that came to my mind when I was listening here. The 345-kV line I heard some mention of split phase basically in the -- down in the Woodbridge area near the Jewish Community Center and Ezra Academy, and I got concerned when I heard the word split phase. I know that helps reduce EMF, but the legislation that was recently passed says that in those areas that they shall go underground and prove otherwise, and if they had to go above ground, that the existing right-of-way was the minimum buffer zone. So you're talking about doing stuff within the existing right-of-way in that area and that was not the legislative intent of that legislation.

CHAIRMAN KATZ: You've got to ask a question.

REP. ALDINOLFI: So my question is why are

you considering split phase within that area? And why aren't we presenting plans outside the existing right-of-way in the areas of schools, playgrounds, and residential areas?

MR. PRETE: I apologize, I'm not sure what the question really is.

REP. ALDINOLFI: The question is -- we are answering questions that I've heard people here questioning you on about EMF fields and so on. And some of the best management practices that you had mentioned one way to reduce EMF is split phase. But we're talking everything in terms of the existing right-of-way in the areas of these schools and residential areas. That is not what the legislation intent was. So I ask -- my question is why aren't we assessing here underground and why are we even talking about aboveground?

CHAIRMAN KATZ: Well, Representative, they're answering the questions that are asked of them and Mr. Schaefer chose to ask questions about split phase and the Applicant rightly answered those questions.

REP. ALDINOLFI: Alright. Well then my question is when do you plan on submitting your underground plans going through those areas and the reason why you can't do that, and your alternate plans of

aboveground if you have to using split phase, whatever, outside the existing right-of-way, which is the minimum buffer zone?

MR. PRETE: We have put in testimony starting in December 16th an endeavor that the companies went on to try to find out the limits of underground. And as we have stated probably in six to a dozen documents, the 24 miles of underground that are proposed presently in Segments 3 and 4 as part of the project are at the limits. And I think that was echoed by the testimony given by ISO in the March testimony. So whereas the companies would love to put more underground in, physics do not allow it at this point in time. So our endeavor then is to try to work as best we can to mitigate the EMF levels in existing right-of-ways, and in fact at levels that are lower than they are today. And that's been our passion and endeavor as we've -- over the last six to eight weeks.

REP. ALDINOLFI: Well, let me rephrase my question. When will you submit the plans aboveground if you claim you can't go underground outside the minimum buffer zone which is established right now?

MR. PRETE: I guess I'm going to play a little naïve, I'm not sure what the buffer zone is. The

right-of-way -- and I don't think that has been established at this point in time. And I'm going to look to my attorney since I've been given that right to really talk about buffer zone and right-of-ways because I don't know if there's an actual answer to it at this point in time.

MR. TAIT: Mr. Fitzgerald, can you help us here --

MR. FITZGERALD: I can --

MR. TAIT: -- or help the witness.

MR. FITZGERALD: I can -- I can tell you of our understanding of the legislation and how we're approaching this.

MR. TAIT: With apologies to Mr. Johnson, then you can do so.

MR. FITZGERALD: The -- just focusing for a moment on the -- not on the under-grounding presumption, but on the portion of the bill that deals with overhead construction in the areas of the sensitive receptors or deemed to be sensitive, there is indeed a statement in the bill that the Council shall establish a buffer zone. Actually what it says -- it's not -- it doesn't look to establishing buffer zone regulations, but it's an amendment to the section of the act that governs

the findings that the Council needs to make when it certifies a line, and it says that among the findings that the Council must make is that the facilities will be within a buffer zone that is sufficient to protect the public health and safety and that the buffer zone shall be at least the existing right-of-way.

Now, it's -- it's our understanding that in order to make a determination as to what sort of a buffer is appropriate in a particular case, the Council is first going to want to look at what is being buffered against, what is the -- to the extent magnetic fields or EMF is relevant to this determination, the Council needs to look at what are the fields that are likely to be associated with the operation of the line before you start looking at what kind of distance is necessary. You also would want to look at what's there. So that necessarily one gets involved with all of these best management practices in order to see to what extent can they be employed to reduce fields that would otherwise be present on the right-of-way, and then you end up with some values that you can take into account in determining whether the right-of-way will in your judgment provide sufficient buffer or not.

And so in our -- to answer the question

about our plans, as we said earlier, and perhaps Senator Adinolfi wasn't here, but we did explain that we were taking an inventory of these receptors, developing strategies for dealing with them. First and foremost strategies that involve minimizing fields. In many cases, but not all, strategies such as those suggested in Woodbridge which would reduce the fields below those of the existing facilities, which would of course not happen if we didn't build the new facility there.

CHAIRMAN KATZ: We're getting into argument --

MR. FITZGERALD: Well -- and we're coming back in June with --

MR. TAIT: Yes --

CHAIRMAN KATZ: Yes. What I'd like to do to bring this -- Mr. Prete, would it be a fair question to ask you if you and your panel expect to be cross-examined extensively in June on the concept of how much under-grounding is technologically feasible in Segments 1 and 2?

MR. PRETE: I believe that's more appropriate as we begin to endeavor into the GE study since --

CHAIRMAN KATZ: Yes. In June and July, I

should be more exact.

MR. PRETE: July?

CHAIRMAN KATZ: June and July.

MR. ASHTON: It's going to be a long summer.

MR. PRETE: Oh, I didn't realize that the GE started in June. I thought because of what we talked about --

CHAIRMAN KATZ: We may -- we may be laying some groundwork in June.

MR. PRETE: If we know what dates that groundwork is anticipated --

CHAIRMAN KATZ: Yes --

MR. PRETE: -- we'd be happy to --

CHAIRMAN KATZ: Just in answer to Representative Adinolfi's concern, would you say it was a fair statement that upcoming attractions include cross-examination on how much under-grounding is technologically feasible?

MR. PRETE: Yes.

CHAIRMAN KATZ: And I invite all attorneys for closing briefs to give us your interpretation of what the Siting Council flexibility is under the new legislation with regard to the buffer zone and what are

our limitations. Any other questions?

REP. ALDINOLFI: I asked my questions. I don't think I got a satisfactory answer --

CHAIRMAN KATZ: Well, we --

REP. ALDINOLFI: -- but I'll leave it at that.

CHAIRMAN KATZ: We invite you back in June and perhaps you'll hear something that you'll --

REP. ALDINOLFI: My question was specifically when will you submit the plans outside the existing right-of-way with the buffer zone established by best management practices by the Siting Council? Maybe I --

CHAIRMAN KATZ: And I think their answer is they're not sure. Is that -- did I hear that correctly?

MR. PRETE: Well in the case of Ezra Academy, I think that because the two parties got together -- indeed in the last two conversations we were asked if there was any way to shift the right-of-way away from -- and those are the type of conversations and endeavors that we'd be happy to do, and we are. I mean, quite frankly, we didn't need a bill to do that.

REP. ALDINOLFI: Okay, thank you.

CHAIRMAN KATZ: Thank you. At this point we are going to adjourn for lunch. And we will resume promptly at 1:00 o'clock. And next is cross-examination by the Towns.

(Whereupon, a luncheon recess was taken.)

CHAIRMAN KATZ: Okay. Just before we resume cross-examination, we're very briefly going to have Dr. Ginsberg give a report on his homework assignments. Dr. Ginsberg.

DR. GARY GINSBERG: Thank you, Chairwoman. First there was a request for my resume or curriculum vitae. And I have that here for the record.

CHAIRMAN KATZ: Okay. How many copies -- do we have enough to share?

DR. GINSBERG: I only brought one copy.

CHAIRMAN KATZ: Okay. The Council will -- the Council will distribute it then since you're our witness.

DR. GINSBERG: Okay. There was the question about childhood leukemia rates in Connecticut and what I was able to get for my reports. I photocopied or printed out from our website the 2000 report, which is the latest summary, which shows that there's about 30 childhood leukemia cases reported in Connecticut for the

whole state in the year 2000.

CHAIRMAN KATZ: How many?

DR. GINSBERG: Thirty.

CHAIRMAN KATZ: Thirty.

DR. GINSBERG: For the -- I think the exact number is 31. For the five years prior to that, the summary showed that there were about 16 per year before that on average. So for some reason either 2000 is anomalously high, being 31 rather than the five-year average before that was 16 or 17, so we'd have to see the next five-year reporting period summarized to really see, you know, how that would -- whether that would wash out or whether there is some real increase.

CHAIRMAN KATZ: Okay. Or it could just be better reporting?

DR. GINSBERG: Uh --

CHAIRMAN KATZ: Is that a possibility?

DR. GINSBERG: There's always changes, you know, in reporting. That's always a possibility, but that -- I think that there's -- as I said yesterday, noise in the numbers. And 2000 could well be some noise in the reporting. So anyway, I have those reports that I could put on the record.

CHAIRMAN KATZ: Okay. So we'll make -- if

there's no objection, we'll make Dr. Ginsberg's resume a Council exhibit and we'll take administrative notice of the information from the Department of Health -- yes?

MS. RANDELL: Just a question of whether the rate that Dr. Ginsberg testified to yesterday is consistent with the actual numbers we've got?

DR. GINSBERG: Yes, exactly. That's where that one -- that roughly one per ten-thousand comes from. The number -- the whole number divided by the -- and the denominator is the number of children potentially -- in that age range that's potentially at risk, so that's -- that's where the number comes from.

CHAIRMAN KATZ: Did you have any other homework assignments?

DR. GINSBERG: Yeah. There were two other things that you asked me for specifically --

CHAIRMAN KATZ: Yeah --

DR. GINSBERG: -- well, actually one that Fred Cunliffe asked, and that was where our 300-foot advice comes from in terms of the distance. And that -- it does come from another place, but it's basically from the Bonneville Para Authority 1994 Report, and it's actually page 37 of this, which is already on the record --

CHAIRMAN KATZ: Can you just read that title for the record?

DR. GINSBERG: Yeah. It's EMF -- Electro and Magnetic Fields Associated with the Use of Electric Power by NIEHS. It's the EMF Rapid -- part of the EMF Rapid Program --

CHAIRMAN KATZ: Okay --

DR. GINSBERG: -- June 2002.

CHAIRMAN KATZ: And it's already in the record?

DR. GINSBERG: Page 37 of this. And it shows a chart of distance for different types of configurations and how far out you have to go --

CHAIRMAN KATZ: Okay --

DR. GINSBERG: -- to get back to background.

CHAIRMAN KATZ: So that's the origin from the State website where you got that from?

DR. GINSBERG: Right. And then the -- you asked a question about continuous versus intermittent exposure and whether there seems to be a difference in the literature for that. And I brought one paper with me. I don't know if -- again data dumping and loading trucks, you know, with a lot of medical data in it -- but

I brought one paper that shows fairly -- a fairly seminal paper that shows that continuous exposure in this experiment did not produce DNA strand breaks, but intermittent, actually five minutes on and ten minutes off produced the most, they had all sorts of permutations of that design. And this was cell culture -- which I know a question came up yesterday, the whole animal maybe having some problems and the cell culture maybe being more reliable -- well this is a cell culture experiment where they did see strand breaks and the intermittent was much more effective than the continuous --

CHAIRMAN KATZ: Okay --

DR. GINSBERG: -- and I have that if you want it.

CHAIRMAN KATZ: What I'll do is the Council will provide copies of that paper to everyone and then we'll get a chance to look at it, and then at a future session we'll take it in as an exhibit if there's no objection. So we'll provide that. That concludes everything?

DR. GINSBERG: There was one other thing that I brought. In response to something that Dr. Aaronson said yesterday about arsenic and not being an animal carcinogen, and I went back and looked through my

files and found again a fairly influential paper in our thinking about arsenic and animal carcinogenesis, which shows that for the testing that's been done, it's been negative, and that surprising it's paradoxical. I have that again if you'd like to see it.

CHAIRMAN KATZ: Yeah, that's further afield --

DR. GINSBERG: Right --

CHAIRMAN KATZ: -- than I think what we need to get into.

DR. GINSBERG: That's fine.

CHAIRMAN KATZ: Okay. Mr. Prete.

MR. PRETE: I was just wondering, the question regarding the leukemia, the 16 cases if you take that five-year average --

DR. GINSBERG: Right --

MR. PRETE: -- that then correlates to the one in ten-thousand that you'd given yesterday?

DR. GINSBERG: The one in ten-thousand would be more along the lines of the 30 -- the 30 number.

MR. PRETE: Okay. And --

DR. GINSBERG: So that -- that was a little bit lower for that five-year average.

MR. PRETE: And as far as comparisons to

other states and populace, do you have that or is that something that the website provides?

DR. GINSBERG: Our website does not cover tumor rates in other states.

CHAIRMAN KATZ: Okay, thank you. Mr. Marconi.

MR. MARCONI: Yes. Dr. Ginsberg, yesterday one individual -- one attorney had mentioned to me that he wasn't sure whether you were or were not a member of any of the plaintiff -- or not plaintiff organizations -- but intervenor organizations. Let me just clarify one thing. We had discussed this during the lunch break, my understanding is that you are not affiliated or a member at all of Ezra Academy, the Congregation B'Nai Jacob, the Jewish Community Center of Greater New Haven, or the Jewish Federation of Greater New Haven, isn't that correct?

DR. GINSBERG: That's correct. I live in West Hartford and have no affiliation with any of those organizations.

MR. MARCONI: Okay. I appreciate that. Sorry about that.

CHAIRMAN KATZ: Okay, any questions for Dr. Ginsberg on new information? Please come to a

microphone.

MR. SCHAEFER: Yeah. I would just indicate on behalf of myself and my clients how offensive I found the last set of questions. I assume the only basis for that was that his last name sounds Jewish and, therefore, am going to ask -- and we're going to ask other witnesses about their -- I found that offensive --

CHAIRMAN KATZ: No, we're not -- we're not going there.

MR. MARCONI: Attorney Schaefer, I was not the one who thought about asking that question, so my apologies on that.

CHAIRMAN KATZ: We're not going there. Okay, at this point we are ready to continue cross-examination by the Towns. Attorneys Kohler and Boucher, please proceed.

MS. JULIE DONALDSON KOHLER: Julie Donaldson Kohler for the City of Milford.

Someone on the panel, I'd refer you to the company's filing of March 15, 2004, which is Exhibit 35, this was a supplemental filing of the revised EMF calculations which replaced the calculations that were prepared by Exponent in Volume 6. I'll refer to these tables as revised tables so that we're clear.

COURT REPORTER: Attorney Kohler, could you move that microphone --

MS. KOHLER: Better? Revised Table A-3 of that Exhibit 35 shows the EMF -- the revised EMF calculations for the cross-sections. Milford is included in Cross-Section 8 -- 8B, which is shown as having a peak load of 31.4 milligauss or 54.8 milligauss in the east/south right-of-way and the west/north right-of-way respectively. We touched on this a bit yesterday, but can you explain how the cross-section numbers are prepared? Are they an average of various points in that cross-section?

MR. PRETE: I'd be happy to try to do that. As you know, Section 8 covers the distance between Cheshire and Milford, so it's roughly 22 miles. And as we then take what we call as typical, we take the distance span, which is average, and then we assume the conductor in such a manner that the sag of that conductor is as close to the ground as any of the C clearances allow. So to try to give a picture of not only reality but perhaps more of an aggressive case.

MS. KOHLER: So is it possible that using those cross-section values, that while there might be houses or residences or locations along that cross-

section, they could be lower than the loads that were indicated, that they also could be higher?

MR. PRETE: Yes.

MS. KOHLER: Okay. Now I'd refer you to the company's response to the City of Milford's interrogatory dated 4/12, it's Exhibit 80, it's the ones in which we had asked you several locations to provide EMF calculations from. Can -- can you just explain by what phenomenon the --

MS. BARTOSEWICZ: (Indiscernible) -- clarify --

MS. KOHLER: I'm sorry.

MS. BARTOSEWICZ: That's Milford Set 1, Question 2?

MS. KOHLER: Correct. It's a -- it's a chart of calculations and measurements at various points. Can you just explain by what phenomenon the west/north right-of-way seems to produce such significantly higher levels than the east/south right-of-way?

MR. PRETE: Under -- under what column?

MS. KOHLER: If you look under proposed, either average load or peak load, it's the -- the east/south is the first horizontal column -- the first horizontal row. For example, in Lexington Way under

average load it's .6 milligauss for the east/south right-of-way and for the west/north right-of-way it's 11.4. Under peak load it's 2.1 for east/south and it's almost 40, 39.5 for the west/north. And that phenomena seems to be consistent on all the points that were done in Milford. And I'm just interested in what is the phenomena that would make one portion of the right-of-way or one side of the right-of-way produce such significantly higher EMF levels?

MR. PRETE: If -- if I could turn to -- let's see, Cross-Section 8, which may be best viewed by Dr. Bailey's supplemental testimony, which is dated April 30, 2004, and if we were to turn to page 8 of that --

MS. KOHLER: Um-hmm.

MR. PRETE: -- which shows a drawing and it's meant to show a cross-section of Section 8, and as you can see in the drawing, if you folks have that, there are what we would consider two sets of structures. The ones in the background that are ghosted out are indeed the structures that are there today, which of course starting from right to left there is a lattice structure of about 80 feet and then there's two H-frames to the left of that. And the structures in the forefront, which are the proposed monopoles, the one on the left being a

double-circuit 115 and the one in the middle -- or the one on the right being the 345. As you had noted, I believe that the one side of the right-of-way is different from an EMF point of view, well indeed those are driven because the structures closest to the right-of-way are different. So if you were to take the example of the south/east, which indeed is the structures to the left, you'll see that the 115 located roughly 40 feet from the right-of-way would generate those fields, and indeed the 345, which is roughly 65 feet from the north/west right-of-way, or in this picture to the right, would generate different fields.

MS. KOHLER: So it would be the proximity to the right-of-way and not the actual -- it's not an electrical engineering phenomenon?

MR. PRETE: Well, it is the proximity of these particular lines to the right-of-way and the loading that would be on those lines on different assumptions of the 15 average case and the 27.7. So it's both the proximity and the loading.

MS. KOHLER: Okay, thank you. And finally, I'd just refer you to the company's filing May 7th, which is Exhibit 79, it's the -- it identifies the number of structures between 3 and 6 milligauss.

MR. PRETE: Okay.

MS. KOHLER: Were the magnetic field levels used to determine the number of structures within this 3 to 6 milligauss level based upon a cross-section or town specific or site specific basis?

MR. PRETE: They were based on, going back to your earlier conversation, the low levels and cross-sections in the updated table on the March 16th submittal.

MS. KOHLER: So if it was possible that in a cross-section there could be areas along the right-of-way that were actually higher -- higher levels of EMF than the estimate for the cross-section, is it possible that the number of structures that would fall into either the 3 milligauss category or the 6 milligauss category could increase?

MR. PRETE: Yes, increase or decrease.

MS. KOHLER: And the number of structures that were subjected to levels of at least 3 milligauss were completed using average load measurements?

MR. PRETE: Yes, both the -- both tables and the table -- the first table in that submittal is a 6 milligauss and the second table is indeed 3, were on the 15-gigawatt load level, which is an average load level.

MS. KOHLER: Given that at least in

Milford the EMF levels at peak load at least triple the EMF levels at average load, how do you expect the same calculation, the calculation being the number of houses receiving either 3 milligauss or 6 milligauss exposure, how do you expect that calculation at peak load to impact the total number of structures affected?

MR. PRETE: As we explained before, that peak, that 27.7 that could occur, although improbable for more than an hour or two, it would potentially go up.

MS. KOHLER: Thank you.

CHAIRMAN KATZ: Mr. Boucher.

COURT REPORTER: Mr. Boucher, would you just identify yourself --

MR. PETER BOUCHER: Good afternoon. I'm Peter Boucher and I'm representing the Towns of Durham and Wallingford. And I'll direct my questions to whoever feels most appropriate to respond.

I'd like to start by referencing the material on page 23 of Volume 6 of 12, which discusses the manner in which the calculated EMF data was prepared. Does everybody have it? There is a statement on the bottom paragraph at page 23 to the effect that the 15-gigawatt case conforms to an all New England average annual load of 15 gigawatts that can be expected in the

future. And my question is, is that to indicate that the New England wide load faithfully replicates what we can expect to happen in Southwest Connecticut or am I misreading that?

MR. ZAKLUKIEWICZ: The Southwest Connecticut load has basically been a consistent percentage of the New England load. So unless there's something dramatically -- dramatic that changes the circumstances, we would assume that during normal load conditions, we would see -- under lighter load conditions, we would see Southwest Connecticut somewheres around 12 to 12.3 percent of the New England load. During peak load conditions, that percentage increases to approximately 12.7, 12.8 to 13 percent.

MR. BOUCHER: So when Southwest Connecticut peaks, it's at the same time the New England area as a whole would peak?

MR. ZAKLUKIEWICZ: Within -- historically within one hour of each other both peak at the same time.

MR. BOUCHER: Okay. There is a statement on the following pages that refers to the 27-gigawatt case reflecting peak system loadings that might occur in a single hour. It's on the top of page 24.

MR. ZAKLUKIEWICZ: Okay.

MR. BOUCHER: And my question is, is that an indication that there is only a single hour in the year when the 27-gigawatt load would be experienced?

MR. ZAKLUKIEWICZ: Typically the peak each year is the single highest load in that year for a single hour --

MR. BOUCHER: Okay --

MR. ZAKLUKIEWICZ: -- on occasion that is repeated where the load is exactly the same. It's very very unusual that that would be the case, so it is the highest load averaged over a given 60-minute interval that ISO New England identifies as the peak load for New England for that given hour, integrated over the hour.

MR. BOUCHER: And when would that typically occur?

MR. ZAKLUKIEWICZ: That would occur typically during a weekday following a four or five-day period of extremely high temperatures, excluding the days of Friday, Saturday and Sunday. It would typically occur somewheres between 2:00 and 4:00 p.m.

MR. BOUCHER: So that would be a summer peak?

MR. ZAKLUKIEWICZ: That would be a summer peak.

MR. BOUCHER: And is the -- is the New England system dual peaking, does it also have a winter peak?

MR. ZAKLUKIEWICZ: It has a winter peak, but significantly lower than what the summer peak is. Referenced summer peak New England 25.4, winter peak New England 22.5, so approximately 3,000 megawatts or 3 gigawatts less than the summer peak.

MR. BOUCHER: Okay. But there are two -- there are two peaks that the system typically experiences, a summer and a winter peak?

MR. ZAKLUKIEWICZ: Typically when we say a peak, we're talking an annual peak load whether it be winter or summer. Connecticut moved out of the era when we used to be winter peak, the following summer, you would summer peak, the following winter, you would winter peak. Those were in the early 1980's. As air-conditioning units because more prevalent in residential and commercial areas, we are strictly, along with New England, a summer peaking electric entity.

MR. BOUCHER: In response to the Towns' 03-35, which was referred to earlier today, the statement is made that for the year 2002 New England experienced load in excess of 15 gigawatts for 4187 hours, almost 48

percent of the year, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. BOUCHER: Okay. What was the peak for the year 2000 in contrast with that --

MR. ZAKLUKIEWICZ: 2002?

MR. BOUCHER: Right, the same year that you've got the 15-gigawatt data for.

MR. ZAKLUKIEWICZ: 25,348 megawatts.

MR. BOUCHER: Okay. Could the company prepare a profile which would show the number of hours in each year for each level of load broken down by -- at increments of a gigawatt? In other words, you've got -- you've got 15 gigawatts and the number of hours of a year -- in the year that it's at or below that. Can you break it out for the full number of hours in a year to show --

MR. ZAKLUKIEWICZ: Are you asking for a curve which basically has, if you will, gigawatts in a vertical axis number of -- number of --

MR. BOUCHER: Number of hours --

MR. ZAKLUKIEWICZ: -- days or hours in a horizontal axis in a single curve?

MR. BOUCHER: That would be perfect, right, yeah.

MR. ZAKLUKIEWICZ: Can we provide that for

you?

MR. BOUCHER: Yes.

MR. ZAKLUKIEWICZ: For a year like 2002?

MR. BOUCHER: Certainly. That's what you've already reflected at least a piece of --

MR. ZAKLUKIEWICZ: We can -- we can provide that to you.

CHAIRMAN KATZ: Mr. Boucher, this is an EMF panel. Are you laying some groundwork for some EMF questions?

MR. BOUCHER: Yes.

CHAIRMAN KATZ: Okay.

MR. BOUCHER: Could we have that as an exhibit?

CHAIRMAN KATZ: Yes. I think they've indicated that they'll do that. Can we make that part of the May 25th? Is that doable?

MR. ZAKLUKIEWICZ: That is doable and we will try to get that as quickly as we can.

CHAIRMAN KATZ: Great, thank you.

MR. BOUCHER: Okay. I believe there was reference earlier today and I'm sure earlier than that about how the data utilized by the company or the companies in the preparation of the information here is

based upon the CELT report, is that correct?

MR. ZAKLUKIEWICZ: That is correct.

MR. BOUCHER: And for the record could you indicate who prepares the CELT report?

MR. ZAKLUKIEWICZ: ISO New England presently prepares the CELT report.

MR. BOUCHER: And where do they get their data from?

MR. ZAKLUKIEWICZ: To the best of my knowledge, they generate their own data, but I would -- I would leave that question to Mr. -- when Mr. Whitley and Mr. Kowalski are scheduled --

MR. BOUCHER: Okay --

MR. ZAKLUKIEWICZ: -- to return in June and ask them specifically. I'd prefer not to answer for another entity.

MR. BOUCHER: Okay. Well do you know if CL&P provides data to the preparer of the CELT report?

MR. ZAKLUKIEWICZ: We -- the utilities, Connecticut Light & Power and United Illuminating provide information on load to the Connecticut Siting Council annually as part of their requirements. I am not -- I do not believe that information goes back up to the ISO, but I would like to, subject to check, respond to that

question.

MR. BOUCHER: Okay. On page 24 again of Volume 6 of 12, the statement is made that what the companies are trying to provide is, quote, "a realistic comparison of the magnetic field along the proposed route both before and after the proposed line". Is that correct? The first --

MS. RANDELL: Mr. Boucher, I'm a little slow --

MR. BOUCHER: It's the --

MS. RANDELL: -- where should I look on page 24?

MR. BOUCHER: The first full sentence on page 24.

MS. RANDELL: Thank you.

MR. PRETE: That's correct.

MR. BOUCHER: Okay.

COURT REPORTER: Again please.

MR. PRETE: That's correct.

MR. BOUCHER: What I'd like to focus on is the before data.

MR. PRETE: Okay.

MR. BOUCHER: And I'd like to start by asking is any of the before data that the companies have

filed based on measurements, actual measurements of existing EMF?

DR. BAILEY: No.

MR. BOUCHER: I'm sorry?

DR. BAILEY: No.

MR. BOUCHER: No. And can we turn to Table 5, which appears on page 26 of Volume 6 of 12.

MR. PRETE: Mr. Boucher, if I may clarify that last answer. The reason you couldn't take real measurements in our before picture, it is assuming the line between Bethel and Norwalk in service. So since that hasn't been built yet, we thought appropriate that it better reflected future conditions.

MR. BOUCHER: Right. And we can get into that. My question, which I'd like to have clearly reflected in the response and clearly reflected in the record, deals with whether there's any before data that the company has filed that's based on actual measurements of EF -- EMF anywhere along the existing routes or proposed routes?

MR. PRETE: Not on that particular table that you're looking.

DR. BAILEY: Elsewhere in the application there are measurements that are made along the right-of-

way that reflect existing conditions.

MR. BOUCHER: Reflecting -- pardon --

DR. BAILEY: Existing conditions only.

MR. BOUCHER: Okay.

MR. ASHTON: Dr. Bailey -- Dr. Bailey, you said along the right-of-way. Just for the record would you be clear as to which right-of-way you're referring to?

DR. BAILEY: The proposed -- sections of the proposed overhead route, measurements were taken at various locations and --

MR. ASHTON: From where -- from where to where though, do you know? Is it from the East -- or Beseck Substation to East Devon?

DR. BAILEY: If you go to that report, you will -- going to figure -- just going to the list of figures, Figure 11 is a profile in Woodbridge, there's Figure 13 a profile in Orange, there's --

MR. ASHTON: Okay, it's on the Beseck to Devon right-of-way.

DR. BAILEY: Yeah. There are other cross-sections that were measured as well.

MR. BOUCHER: Could -- could you indicate what document you're referring to, what exhibit, or --

DR. BAILEY: That's Volume 6 of the application. The same one that you've been asking questions of.

MR. BOUCHER: Okay. The -- Table 5 of Volume 6, on Table 5 for each of the indicated cross-sections there's a table headed existing magnetic field and that's what I'd like to focus on. Are the numbers indicated for the east/south right-of-way, the first column, are those measurements or are those calculated numbers as to existing EMF levels?

DR. BAILEY: Those are calculated values.

MR. BOUCHER: Do you have measured EMF levels that would be corresponding to each of the data points for the cross-sections listed --

DR. BAILEY: No --

MR. BOUCHER: -- on Table 6?

DR. BAILEY: No, I do not.

MR. BOUCHER: Do you have any data points in section -- in Cross-Section 2 of measured EMF in the filings?

DR. BAILEY: I testified before data in Table 4 and Table 5 are all calculated values --

MR. BOUCHER: Right --

DR. BAILEY: -- for existing sections. If

you go into our report there is an area where we have taken measurements of the existing system, but those are not reflected in that table --

MR. BOUCHER: And my --

DR. BAILEY: -- they are --

MR. BOUCHER: And my --

DR. BAILEY: -- they are reflected separately --

MR. BOUCHER: Okay --

DR. BAILEY: -- for instance on page 15, a profile in Durham.

MR. BOUCHER: Okay. Would you indicate where Durham lies in terms of which cross-section on Table 5 --

A VOICE: Yes --

MR. BOUCHER: -- it is?

DR. BAILEY: Cross-Section 2.

MR. BOUCHER: Okay. And could someone also indicate where Wallingford would fall out in terms of the indicated cross-sections?

MS. BARTOSEWICZ: Wallingford -- Wallingford is several cross-sections, and they would include Cross-Sections 4, 5, 6, and 7.

CHAIRMAN KATZ: (Indiscernible) --

MR. BOUCHER: Thank you. Now, could you briefly indicate how the column headed Existing Magnetic Field Levels was prepared?

DR. BAILEY: The companies provided data to us on loadings on the lines, for the existing lines for a 15-gigawatt case and a 27-gigawatt case. And those current loadings were put into our model and led to calculations of the fields.

MR. BOUCHER: Is there -- what -- what explains the -- for example, the significant change in calculated EMF as one goes from Cross-Section 2 to 3 where it almost quadruples?

MR. PRETE: Thank you. A number of factors could explain that. No. 1, it would be the loading on the lines. And I'm not sure if you're referring to existing or proposed, but irrelevant, the loading on the lines would be a sufficient and very important factor, as well as the width of the right-of-way. And right-of-ways change considerably during the 45 miles in Segments 1 and 2. And that can be seen in Volume 10 of 12 quite clearly if we want to get more details on that.

MR. BOUCHER: Would the line loading vary as you go from Cross-Section 2 to Cross-Section 3 under

the existing line?

MS. BARTOSEWICZ: Yes.

MR. BOUCHER: Okay. I'd like to better understand why the existing magnetic EMF levels changed as they did when the companies submitted their filing dated March 15th where there's a new Table 5?

MR. PRETE: Yes. I'd like to refer to the March 15th letter from the companies to the Council --

MR. BOUCHER: Right --

MR. PRETE: -- would you like for me to go down that same explanation?

MR. BOUCHER: Well, I -- I have a couple of questions I'd like to ask --

MR. PRETE: Sure --

MR. BOUCHER: -- that would probably get us to the same place. I'd like to focus on Cross-Section 2, which on the original Table 5 had an existing EMF calculated at 3 milligauss. And on the March 15th filing, that tripled or more than tripled to 9.2 milligauss. And that's at the east/south right-of-way. The companies' letter submitted on March 15th gives four reasons why the table provided those changed levels, is that correct?

MR. PRETE: Yes, that's correct.

MR. BOUCHER: And I'd just like to

understand how each of those four events caused those changed EMF levels. The first event indicated on the companies' letter of March 15th, it's numbered paragraph 1, was the Council's decision in Docket 217. Is that correct?

MR. PRETE: That's what it states.

MR. BOUCHER: And could you explain how that decision caused the EMF levels to go up in Durham?

MR. PRETE: It's not necessarily the decision that caused it to go up, it is the impact of adding a new line to the network in New England such that it increased the -- or changed drastically the power flows that feed Southwest Connecticut.

MR. BOUCHER: So then when the Council approved Docket 217 and that line is introduced into the mix, that causes a projected increase in EMF levels in Cross-Section 2?

MR. PRETE: It produces changes in the flow of current from the sources to the load.

MR. BOUCHER: And did those changes contribute to a tripling of the calculated existing EMF levels in Durham?

MR. PRETE: It attributed to more loading on the line.

MR. BOUCHER: And therefore the increase in the estimated existing EMF levels?

MR. PRETE: In the dispatched scenarios that we looked at in stressing the system at those levels, it changed the loading on the lines throughout Connecticut.

MR. BOUCHER: I'm only asking about Cross-Section 2.

MR. PRETE: And I'm trying to give you an answer that incorporates Cross-Section 2 as well.

MR. BOUCHER: Right. Well, I'd just like to talk about Cross-Section 2 if I could.

MR. PRETE: We'll be happy to do that.

MR. BOUCHER: Alright. Just so the record is clear, you're indicating that the introduction of the additional line approved in Docket 217 has caused or contributed to the projected existing level of EMF in Cross-Section 2, is that correct?

MR. PRETE: All four factors did, correct.

MR. BOUCHER: I think I only listed one in my question.

MR. PRETE: Again, it could be very little or medium or high, and we'll have somebody chase that down exactly how much that one decision caused an impact

on that.

MR. BOUCHER: Alright, then we'll have to have that I think. You're saying it was one of the four -- you don't -- you're not prepared to indicate how much of the tripling in Cross-Section 2 is a result of the reflection of that line going into service?

MS. BARTOSEWICZ: We can tell you right now that Item No. 3 was the most significant contributor to the change in Durham.

CHAIRMAN KATZ: And Item No. 3 was?

MS. BARTOSEWICZ: Item No. 3 is a change in the import from Long Island. The original analysis included a flow of 200 megawatts import from Long Island. The revised data is zero import on the cables from Long Island.

CHAIRMAN KATZ: So the fact that your scenario did not include importing from Rhode Island changes the line loading?

MS. BARTOSEWICZ: The import from Long Island changes -- how much you assume coming across those cables changes the rest of the system configuration.

MR. EDWARD S. WILENSKY: Import -- I'm sorry, import from Long Island?

MS. BARTOSEWICZ: Correct, on the existing

cables between --

A VOICE: Northport --

MS. BARTOSEWICZ: -- Northport and Norwalk.

MR. WILENSKY: Okay.

CHAIRMAN KATZ: Do you want to follow up, Mr. Boucher.

MR. BOUCHER: Actually, Item No. 3 on page 2 of the letter refers to a finding of fact made by the Siting Council, is that correct?

MR. PRETE: That's exactly what it refers to, right.

MR. BOUCHER: Right. Now, it's obviously not a finding of fact that caused an up-tick in the projected existing level of EMF, isn't that correct, it's something else happened and the Council refers to it in its finding of fact, is that correct?

MR. PRETE: I'm not sure I understand, could you --

MR. BOUCHER: What's the physical --

MR. PRETE: -- perhaps rephrase --

MR. BOUCHER: What's the physical event that you're reflecting in Item No. 3 that caused the change in existing levels of EMF?

MR. PRETE: The assumptions changed, instead of importing 200 megawatts from Long Island into Southwest Connecticut, we, because of the findings, modeled it at zero.

MR. BOUCHER: Right. And what's -- what's the event -- what's happening out in the real world, aside from the Council making a finding of fact, that's causing the changed level of EMF?

MR. ZAKLUKIEWICZ: It would be the -- it would be the flow on the transmission lines, a decrease as a result of importing power on the Long Island cable. And if that power is not being imported, then the load in Southwest Connecticut has to be served from the transmission system, which means there's a change in the current flow on the existing transmission lines into Southwest Connecticut.

MR. BOUCHER: Okay. And -- and that also had the effect of increasing the calculated existing EMF levels in Cross-Section 2?

MR. PRETE: Yes. Mr. Boucher, it was brought to my attention that these four changes were put in place in the model and that's what produced the load flows in the tables that you're referring to in the March 16th -- so all four of those have -- I don't have any data

that says one was more than the other or what the impact was. So all four of those changed the loading and therefore the EMF on Section 2.

MR. BOUCHER: Could we have an exhibit which would show each of the four items in terms of how they contributed to the change? I'm only asking for Cross-Section 2 at this point.

MR. FITZGERALD: I object. I don't see how that is in any way useful to the decisions that the Council would have to make. And we have a very full plate of work right now.

CHAIRMAN KATZ: Mr. Boucher, can you indicate to us how you think that would be helpful to the Council?

MR. BOUCHER: The -- the cross-section that I'm focusing on in Durham had a triple increase, an increase by a multiple of three of the existing EMF, and I'm trying to understand and help the Council understand what caused that to happen. Part of the analysis here as pointed out by the company in the filing itself where it says you have to do a before and after, all of a sudden the before tripled in the case of Durham, and I think the Council should -- and the Town of Durham is entitled to understand why, before anything is even done, the

existing EMF levels have tripled from the time the application was filed.

CHAIRMAN KATZ: But didn't the Applicants give four reasons why it had tripled?

MR. BOUCHER: The Applicant is indicating there's four reasons and I'm trying to understand how much each of them in fact contributed to that increase.

MR. PRETE: Mr. Boucher, maybe this is helpful, it was brought to my attention that No. 3 by far was the majority -- had the majority impact of the four. Is that helpful?

MR. BOUCHER: It might be. Could you indicate whether each of the four positively influenced the upward adjustment to Cross-Section 2 or did any of them actually have a negative impact?

MR. PRETE: My -- (pause) --

MR. ASHTON: Mr. Boucher, while Mr. Prete is thinking about his answer, we've already had testimony concerning the fact that EMF is a product of a number of factors. It's a product of load level, it's a product of generation dispatch, it's a problem -- it's a product of inter-system transfers, and a variety of factors like that, not all of which would fall neatly on a load duration curve such as you asked Mr. Zaklukiewicz to

prepare, in fact it could well occur that the maximum loading and maximum EMF from the line occur in periods of light load depending again upon what the generation dispatch is. And so I'm a little puzzled as to try and understand where you're going with this given the non-linear nature of EMF, if you will, visa vie a variety of factors and what the relevance is. The fact that EMF exists and the fact that it runs between one value and another over a period of time would seem to bracket the issue. And whether it occurs at 8:00 a.m. or 8:00 p.m. or on a Thursday or a Sunday is -- I'm not sure I understand the significance of it. Maybe you can help me in that regard.

COURT REPORTER: One moment please. (Pause). Thank you.

MR. BOUCHER: Well, I think the Legislature has just indicated that they're concerned and why the Council could be concerned about the impact on the population of the EMF associated with such projects as this.

MR. ASHTON: That I understand --

MR. BOUCHER: Okay --

MR. ASHTON: -- but again I go to my point, it is not -- it's not a linear plannable, if you

will, type of reaction, it's a reaction that occurs through a whole host of independent events that are occurring on the electric transmission system and supply system.

CHAIRMAN KATZ: Well --

MS. RANDELL: Madam Chairman --

CHAIRMAN KATZ: Yes?

MS. RANDELL: -- could I add in that Mr. Boucher is inquiring about updates to a model to determine calculated fields --

CHAIRMAN KATZ: Yes.

MS. RANDELL: -- and it would be appropriate if Mr. Boucher chose to ask the companies why they updated the model, but the impact -- the individual impacts of those updates are totally irrelevant. The question should be is this the model, but he doesn't seem to -- he can ask those questions --

MR. BOUCHER: I'll let the company do its redirect on redirect.

MS. RANDELL: I'm not --

CHAIRMAN KATZ: Well --

MS. RANDELL: -- I'm just trying to move this along.

MR. ZAKLUKIEWICZ: Mr. Boucher, maybe I

can help a little bit.

CHAIRMAN KATZ: Mr. Zak, if you could do so, the Council would appreciate it.

MR. ZAKLUKIEWICZ: Item No. 2, recognize that Towantic was a legitimate generating facility up until the time it indicated to the ISO New England that it was no longer a viable project, we then turned around for Item No. 2 and removed it in the model and re-ran the load flows to reflect the fact that Towantic would not be operating.

No. 3 basically says a more realistic scenario is not to model the system as we originally did with the 200 megawatt import coming from Northport to Norwalk, recognizing that there's been significant testimony over the years that the transmission line basically floats, and that is the best position for the cable to be in for the State of Connecticut for emergency positions.

So taking those two factors into account -- and I would -- I am not the generator of this data, but my expert feeling is that accounts probably for 90 percent of the difference between the two. The fact that we have a couple of small generating units on or off is not going to change appreciably the numbers. And we're

talking current here and we're talking about current at 115-kV. Recognize that 100 megawatts is the equivalent of 500 amperes, so --

CHAIRMAN KATZ: Mr. Boucher, does -- is that helpful that -- knowing over the 90 percent of the reason for the changes?

MR. BOUCHER: That's helpful.

CHAIRMAN KATZ: Okay, thanks. Let's move on.

MR. BOUCHER: For Cross-Section 2 where the original existing EMF level was 3, as calculated could we have what was the measured EMF levels so we can compare that to what the calculated was?

MR. ASHTON: In answering that question, I think there needs to be a delineation as to what, if any, differences in system behavior there were at the time. If -- at the instant of a measurement there was no flow on the line and the calculation is based on a heavy flow on the line, the answers are a world apart.

DR. BAILEY: It's -- it's not specifically possible to go out and measure today that existing case for the reasons that the company had presented, that including in their modeling of the load flows they took into accounts conditions which are expected in the future

which may not yet have taken place as of today.

MR. BOUCHER: Well, I believe there was testimony to the effect that there are measured EMF levels that comport with each of the cross-sections that are reflected in Table 5. And so my question is could one of the witnesses indicate what the measured EMF level is for Cross-Section 2 as contrasted with the actual calculated levels?

MR. PRETE: If you go to -- page 15 has a profile --

MR. BOUCHER: Of?

MR. PRETE: Of Volume 6 of the application. At the top of the page it talks about Black Walnut Drive in Durham. That -- that is a plot of measured EMF values along the right-of-way.

MR. BOUCHER: And so those are all actual, taken off a meter?

MR. PRETE: Yes, sir.

A VOICE: Yes.

MR. BOUCHER: Okay. Thank you.

MR. PRETE: You're welcome.

MR. BOUCHER: There was a question and answer yesterday concerning split phasing, which seemed to indicate that that technology is already in place.

And there was a reference I think to the Farmington to Southington loop where the split phasing is done, but it's done as you go from tower to tower instead of all on one tower. Do the witnesses recall that exchange?

MR. FITZGERALD: I think I -- I know what Mr. Boucher is talking about, but he is not remembering the testimony as it was given, but Mr. Zak, who doesn't seem to be paying attention, is the one who --

CHAIRMAN KATZ: My memory of that was Mr. Ashton was just using that as a possible --

MR. FITZGERALD: Analogy --

CHAIRMAN KATZ: -- end point to end point analogy.

MR. FITZGERALD: Yeah.

CHAIRMAN KATZ: But as soon as Mr. Zak is back with us -- (pause) -- in yesterday's testimony your panel didn't testify that there was split phasing already on a line in the area of Southington, did they?

MR. ZAKLUKIEWICZ: That -- we -- we have never employed split phasing to reduce EMF levels on the CL&P system.

CHAIRMAN KATZ: Yeah.

MR. BOUCHER: I'm recalling an exchange where I think Councilperson Ashton indicated that from

Southington to Farmington a version of split phasing was in fact in place although not in order to reduce EMF but for --

MR. ZAKLUKIEWICZ: Through Durham today that circuit is basically on two separate structures, split such that the current does split on each of the two circuits going through Durham today. We -- we have that in a number of locations throughout the system, but those -- we have not in those cases prior to this time rolled the phases such as to minimize the EMF levels at the edge of the right-of-way where we have turned around and bundled -- the proper word would be bundled the circuits to increase the capacity from point A to point B. And in so doing most of those bundled circuits are on a single structure, whether it be a lattice steel tower or in some cases like through Durham they are on two separate H-frames.

MR. BOUCHER: So where that's done, it's not done to impact the EMF --

MR. ZAKLUKIEWICZ: It was done for thermal capability between points A and point B or between point A and point C to increase the transfer capability from one location to another.

MR. BOUCHER: Thank you. I have a couple

of questions on the April 30th supplemental testimony of Dr. Bailey. As I understand this testimony, this exploration of split phase technology was prompted by the Woodbridge concern over the EMF levels from the proposed project, is that correct?

MR. ZAKLUKIEWICZ: That is -- that is correct. It was one of a multiple numbers of solutions to attempt to reduce the EMF levels at the edge of the right-of-way and at structures in close proximity to the right-of-way.

MR. BOUCHER: Okay. And did I understand from this morning's testimony that the effort that was reflected in this filing is now going to be applied from -- throughout the course of the proposed line where it's aerial?

MR. PRETE: Yes. What we tried to articulate is by the June hearings we are going to examine each cross-section in such a manner as to provide options of various techniques to mitigate EMF at the edge of the right-of-way.

MR. BOUCHER: So in some cases the -- would in all cases the technique involve split phase technology?

MR. PRETE: Not necessarily. If there's

better ways to do things, we'd like to make sure that we examine those.

MR. BOUCHER: What might be some of the other techniques?

MR. PRETE: Do you want to --

DR. BAILEY: There are a variety of techniques that could involve where there's space to adjust the alignment of the proposed line. It could involve adjusting the phasing of the proposed and existing lines. It could involve compaction of the phase wires, bringing them closer together. It could involve attaching other conductors in the air that would -- on which a current would be induced and in turn create a magnetic field that would tend to cancel the field from existing lines. There are quite a number of potential designs that could be explored, which would have to be looked at on a cross-section by cross-section basis.

MR. BOUCHER: Are all of those techniques existing technologies as opposed for example to experimental?

DR. BAILEY: I think -- we would explore a range of potential options whether they were experimental or not. And the company would then determine which of those might be implementable in a particular case and

what kind of costs and benefits might be associated with them.

MR. BOUCHER: Was this effort --

MR. ASHTON: Dr. Bailey, in that regard would you consider any of those alternatives a shock, new frontier of technology in electric power, or is this simply an adaptation of commonly used methods in a slightly different way to achieve a desired end?

DR. BAILEY: I think the latter description would be more appropriate, that -- I mean the knowledge about the physics of currents and fields has been known for decades and decades, and it's been more of a question of whether there was a desire on the part of people to build a particular design rather than its technological feasibility.

MR. BOUCHER: So if I understand your response to the question just posed, all of these techniques could have been built into the application to begin with and could have been part of the application to begin with as mitigation technologies for the EMF issue?

MR. PRETE: We did -- we did indeed during the muni consultation have a number of structure designs within the right-of-way for every town. And during the open house we explained a variety of -- both the physical

nature of each of those designs and the relative impact of things like EMF. So we have had this in the open, you know, over a year. So this is not new whatsoever. The major impact that we heard loud and clear during the muni consultation was aesthetics. And as such, our endeavor was to try to lower them, to try to meet those. And as you know, in doing --

MR. FITZGERALD: Excuse me, Mr. Prete. Our endeavor was to lower them, you're referring to the height of the structures?

MR. PRETE: Yes, yes.

CHAIRMAN KATZ: So you're saying there's a tradeoff between some of these alternatives where you have higher structures but lower EMFs?

MR. PRETE: Yes, ma'am.

CHAIRMAN KATZ: Okay. And you chose -- in your application you chose one scenario and now we're discussing the other scenario?

MR. PRETE: We chose what we heard, we thought more as an issue --

CHAIRMAN KATZ: Right --

MR. PRETE: -- in the application. But we put in the application that we're willing to flexibly build it whatever the towns want us to do it if we can

technically do it.

CHAIRMAN KATZ: Which way the Council wants you to --

MR. PRETE: Well, that was then --

CHAIRMAN KATZ: With the --

MR. PRETE: Yes.

CHAIRMAN KATZ: Okay. So you're just saying you can build it either way if the Council orders you to do so?

MR. PRETE: Yes, ma'am.

CHAIRMAN KATZ: Yep.

MR. BOUCHER: So to return to Cross-Section 2 in the March 15th update of projected levels where on the east/south edge of the right-of-way for Cross-Section 2 the proposed EMF -- the EMFs associated with the proposed route and technology has 30.4 milligauss, my question is is that as low as you can get it?

MR. PRETE: No.

MR. BOUCHER: And how much lower can you get it?

MS. BARTOSEWICZ: Let me --

MR. FITZGERALD: (Indiscernible) -- stay tuned.

MR. PRETE: Well, that's -- I think that Miss Bartosewicz has testified that she has had conversations with the First Selectwoman of Durham in an attempt to bring the split phasing concept to her and I think she had conversations last week and indeed shared values. If -- if you want us to get into that, we can do that, but we thought that we -- again, as our attorneys say, stay tuned. Maybe there's better ways we could do it in Durham, we don't know yet.

CHAIRMAN KATZ: Okay, so you're saying the cross-sections will make that more clear to the Council?

MR. PRETE: In a total package, exactly, right.

MR. BOUCHER: Now, in fact, CL&P has provided Durham's CEO with an estimate of how the split phasing would impact that 30.4 milligauss level?

MS. BARTOSEWICZ: That's correct.

MR. BOUCHER: And what was the -- what's the reduced number?

MS. BARTOSEWICZ: Our preliminary look is it reduces it to 12.4.

MR. BOUCHER: 12.4?

MS. BARTOSEWICZ: Um-hmm.

MR. BOUCHER: And should the Council

understand that that's as low as that can go?

MS. BARTOSEWICZ: Not until --

MR. FITZGERALD: Objection. I mean -- I'm objecting mainly because I do want to get to my redirect this afternoon before Dr. Cole has to leave and I think this -- that's just been asked and answered --

CHAIRMAN KATZ: Mr. --

MR. FITZGERALD: -- he's just been told they're working on it.

CHAIRMAN KATZ: Right. Mr. Boucher, we're going to let you -- after we all get these cross-sections and we all get to look at them, we're going to let you come back to this, okay --

MR. BOUCHER: Okay --

CHAIRMAN KATZ: -- after you've got to look at it and we have. How about if we do it that way?

MR. BOUCHER: That's fine, that's fine. I have a couple of questions on the May 7th filing.

MR. PRETE: Which -- which one is that?

MR. BOUCHER: It's a -- it's a letter from Attorney Henebry submitting data reflecting the number of structures in which EMF levels at certain bracketed intervals are reflected. And my question refers to the chart which depicts 6 milligauss or greater. And my

question is could the company file an exhibit which would reflect the location of the 22 towers that are in Cross-Section 2 which are indicated to be at 6 milligauss or higher? I'm looking for the location of the towers as well as the actual -- or the calculated EMF above the 6 milligauss level?

MR. PRETE: You called them towers. I'm not sure what you're referring to.

MR. BOUCHER: I'm sorry. The number of structures on -- these are the number of -- I'm sorry --

CHAIRMAN KATZ: These are like houses, right?

MR. BOUCHER: These are the number of structures, I'm sorry.

MR. FITZGERALD: Structures are meant to indicate houses or --

MR. BOUCHER: Okay --

MR. FITZGERALD: -- other buildings.

MR. BOUCHER: Okay.

CHAIRMAN KATZ: Mr. Boucher, you weren't here when we asked them to sort of do this assignment for us, but we were actually looking for buildings and structures, that type of structures that might be exposed to 3 or 6 milligausses.

MR. BOUCHER: Okay. So I'm looking for the location of the 22 structures --

(Audio failure)

COURT REPORTER: One moment. You dropped --

MR. BOUCHER: Oops.

CHAIRMAN KATZ: Off the record.

(Off the record)

CHAIRMAN KATZ: Can you -- do you have a map showing the location?

MR. PRETE: We have a spread sheet that will show the location of that by parcel number, which is indicative of our 400 scale map. So it will show it by what map it's on and then what parcel is on that map that we --

CHAIRMAN KATZ: That's Volume 9?

MR. PRETE: Yes, ma'am.

CHAIRMAN KATZ: Yes.

MR. BOUCHER: Alright. In talking with counsel here, I think we may want to request a late filed exhibit that takes it from end to end, I'm not sure -- okay, there's going to be an interrogatory that is being prepared that is going to I believe seek to collect the relevant information on behalf of all the towns.

CHAIRMAN KATZ: So you want us to wait until you file this interrogatory?

MR. BOUCHER: That might be better.

CHAIRMAN KATZ: Okay.

MR. BOUCHER: That's all I have.

CHAIRMAN KATZ: Thank you.

MR. ZAKLUKIEWICZ: Mr. Boucher, I believe I have an answer for your question on Table 5. The original filing was performed with a current flow of 79.3 amperes. And in the revised filing, the flow on that transmission line is 282 amperes. Sorry we took so long.

MR. BOUCHER: Thank you.

MS. KOHLER: Just to clarify. I think -- our hope was that in order to not have each of the towns have to come up and ask the same questions and to expedite the process for the Council as well, that if we had a question about that particular chart, we could just ask it of the companies and they could provide the chart that they've mentioned.

CHAIRMAN KATZ: Okay. Which they've indicated is a spread sheet, which refers back to Volume 9 that shows the various parcels and it shows the parcels that are counted in the structures list. Is that correct, Mr. Prete?

MR. PRETE: Yes -- I guess what I'm hearing is that we need to supply a backup to this count by town by cross-section of every parcel and structure we counted all by May 25th in the homework assignment? That's -- we'll do our best to get it out.

CHAIRMAN KATZ: Thank you, Mr. Prete. Does that conclude the Towns' questions?

MR. BOUCHER: Yes, it does.

CHAIRMAN KATZ: Thank you. Next, the City of Meriden, Attorney Moore. Let the record show absent. Assistant Attorney General Michael Wertheimer. The last time you were here, Mr. Wertheimer, I gave you a promotion to the seventh floor. (Laughter).

MR. MICHAEL WERTHEIMER: (Indiscernible) --

COURT REPORTER: I'm sorry, give us your name please.

CHAIRMAN KATZ: Can you identify yourself for the record to start off.

MR. WERTHEIMER: Yes. Michael Wertheimer for the Office of the Attorney General. Good afternoon.

MR. MARCONI: And I take it that you are no relation to the Wertheimer study that we talked about earlier?

MR. WERTHEIMER: That's correct. We share the same spelling, but that's it. I should be very brief.

Dr. Bailey and Mr. Prete, there have been some testimony today about meetings that you've had with the Woodbridge Jewish Organizations, is that correct?

MR. PRETE: Yes.

DR. BAILEY: Yes.

MR. WERTHEIMER: And you stated that you've met with them on three or four occasions?

MR. PRETE: Yes. This year, yeah.

MR. WERTHEIMER: And you just mentioned to I believe Attorney Kohler and Boucher that you've met with representatives from Milford, is that true, or was that Durham?

MR. PRETE: Well actually both. We met with a delegation from Milford last week and provided them information in advance as to the preliminary look of something like split phasing through their town.

MR. WERTHEIMER: And you would be willing to have similar discussions with other parties that are -- that have any concerns about these matters with respect to the proposed transmission line, is that fair to say?

MR. PRETE: Very fair.

MR. WERTHEIMER: And that's regardless of whether they're active participants in these Siting Council proceedings or not?

MR. PRETE: Right.

MR. WERTHEIMER: It's not too late for someone to initiate such conversations with you if they so desired?

MR. PRETE: As long as it's within the next 45 minutes. (Laughter).

MR. WERTHEIMER: You mean that in gist, I hope.

MR. PRETE: Yes, I know.

MR. WERTHEIMER: Dr. Bailey, getting to your supplemental testimony on the split phasing, there's been a lot of discussion today about a homework assignment or more information that the companies are going to provide before the next set of hearings on this. And I'd like to ask a few questions about that and ask that that be either clarified or perhaps expanded, so the questions I have are just foundation. You just testified that there are a number of different options that are available for how you could -- one could configure lines to affect EMF levels, is that correct?

DR. BAILEY: Yes.

MR. WERTHEIMER: And while split phasing is one of those options, there are many others, is that --

DR. BAILEY: Yes.

MR. WERTHEIMER: Okay. Those other options are not described in your -- in the prefiled testimony that you provided, correct?

DR. BAILEY: No.

MR. WERTHEIMER: Okay. And -- are you aware of anywhere in the record in this proceeding where they are discussed?

DR. BAILEY: Not the entire range of things that we might consider.

MR. WERTHEIMER: There's a general description in the materials that's provided by the Applicants of the State websites filings on EMF. I believe Minnesota had a description, they dedicated a few pages to possible options.

DR. BAILEY: Yes, but those were not discussed in our prefiled testimony.

MR. WERTHEIMER: Okay. And it's also fair to say that certain options are available on certain cross-sections and perhaps not on others?

DR. BAILEY: That's correct.

MR. WERTHEIMER: Okay. And it would also be fair to say, Dr. Bailey, that the different options come with pros and cons?

DR. BAILEY: That's correct.

MR. WERTHEIMER: It might be higher -- more visibility, less visibility, more EMF, reduction, less, other things that I'm sure you're familiar with that I'm not, is that fair to say?

DR. BAILEY: Yes.

MR. WERTHEIMER: I'm not clear on your homework assignment. I think when it was discussed this morning, it was indicated that the companies would give their proposal for each cross-section. And just this afternoon you said that you could give a range of options. I'd respectfully request that the companies come back with something more along the line of a range of what the different options are by cross-section and have the Applicants describe their view of the pros and cons of the various options?

CHAIRMAN KATZ: Is that possible?

MR. PRETE: That's -- that's exactly what we were thinking --

CHAIRMAN KATZ: Okay --

MR. PRETE: -- thank you --

MR. WERTHEIMER: Okay --

CHAIRMAN KATZ: -- great.

MR. WERTHEIMER: -- then we're in sync. Could you also give, to the extent possible, for each of the options the level of EMF reductions for each one? And if you cannot do it with precise numbers, can you give an order of magnitude or someway to compare them among the pros and cons?

MR. PRETE: Yes. I --

A VOICE: Go ahead --

MR. PRETE: Yes, I think that's -- you turned me off -- (laughter) -- yes, I think among other things those are very variable and we'll be happy to do that as time permits and we'll work as many hours as possible to get it in that manner.

CHAIRMAN KATZ: And how many cross-sections are we getting again?

MR. PRETE: Well, there's eight. And we envision we'd have to attack each one since the right-of-ways are different, the structures are different --

CHAIRMAN KATZ: Okay --

MR. PRETE: -- a number of things are different --

CHAIRMAN KATZ: Okay --

MR. PRETE: -- so we'd have to attack each one separately.

CHAIRMAN KATZ: Approximately five miles then per cross-section or does it vary all over the place?

MR. PRETE: Well, Cross-Section 8 is actually 22 miles, almost half of the 45 --

CHAIRMAN KATZ: Okay --

MR. PRETE: -- so that leaves seven cross-sections that divvy up that other one --

CHAIRMAN KATZ: Okay --

MR. PRETE: -- so some are as much as five or as little as one.

CHAIRMAN KATZ: The long cross-section goes from where to where?

MR. PRETE: From the Cooke Hill area in Cheshire --

CHAIRMAN KATZ: Yes --

MR. PRETE: -- south to the East Devon Substation.

CHAIRMAN KATZ: Okay. And is there a reason why it's not broken up smaller?

MR. PRETE: Well, that cross-section is exactly the same. So if you look at it physically --

CHAIRMAN KATZ: Oh, okay.

MR. PRETE: If you look at it physically, it looks exactly the same.

CHAIRMAN KATZ: Okay. I guess my question is in this hypothetical scenario in June or July, the Council's under-grounding expert comes back to us and says, you know, you can't put the whole thing underground, but you can do X miles, and then we want to look at -- we want to be able to prioritize where we'd want to put those X miles if the under-grounding expert gave us some flexibility where the X miles could go, then we might want to look at where it did the most good EMF wise to put our X miles underground, and would we be able to tell that from these cross-sections?

MR. PRETE: Actually, thinking out loud, it would provide that because what we know today on each cross-section is two things, we know what the existing fields are for that average load case and we know what the proposed are, and we'll know all the options under the proposed. So for each cross-section let's say we have a number of known values. You can see from that each proposed option and the impact of the existing magnetic field. And you would also know that if you took that option away, you'd know what the existing is. So, I

guess thinking out loud, you'll have a lot of data to be able to do what you're suggesting, Chairman.

CHAIRMAN KATZ: Thank you. Back to you.

MR. WERTHEIMER: Thanks. Just to clarify one thing. When you defined the cross-sections, you defined them by the similarity of the type -- the nature of the structures in each one?

MR. PRETE: Correct.

MR. WERTHEIMER: So there's no variation within Cross-Section 1 through 8 -- within any one of those that would change this evaluation?

MR. PRETE: Well, actually there is --

MR. WERTHEIMER: Okay --

MR. PRETE: -- I mean if were to take Cross-Section 8, as I had said, physically speaking if you go to that right-of-way for all 22 miles, you'll see exactly the same, and that's what we just talked about, three structures across, two look like goal posts and one looks like lattice. However, built in the middle of this 22 miles are substations that are fed. So the 115 system would have different loadings ostensibly through that 22 miles. So whether it's 8, 8, and 7, or whatever the math is. And we have further refined our data such that we're going to be able to look at Cross-Section 8 with that

clarity.

MR. WERTHEIMER: Okay.

MR. PRETE: So even though physically it looks the same, electrically it would perform different, and we need to give in the options that data as well --

MR. WERTHEIMER: Okay --

MR. PRETE: -- and we will.

MR. WERTHEIMER: Thank you. That's all I have.

CHAIRMAN KATZ: Thank you, Mr. Wertheimer. Next on the list is Communities for Responsible Energy. Do you have questions for these witnesses?

A VOICE: (Indiscernible) --

CHAIRMAN KATZ: Okay, we'll let you pass. They said -- they indicated they were going to pass. We'll come back to them.

Next is ISO New England, absent. Connecticut DOT, absent. Is there any other party or intervenor that I have not called upon for cross-examining the Applicant's panel on EMF?

Okay, Miss Bradley, therefore we're back to you.

A VOICE: No, we pass.

CHAIRMAN KATZ: And they indicate they

have no questions.

A VOICE: (Indiscernible) --

CHAIRMAN KATZ: Are you a party, sir?

A VOICE: Yes, sir.

A VOICE: (Indiscernible) --

CHAIRMAN KATZ: Come up to the microphone then. Can you just identify yourself and what party you are?

MR. DOUGLAS VIZARD: Yes. I'm Doug Vizard, CRE II.

CHAIRMAN KATZ: Oh, okay. And you have a question -- well, why don't we have you come over here then if you have a question for the Applicant.

COURT REPORTER: Could you --

CHAIRMAN KATZ: Yeah, we'll do all that as soon as he sits down.

COURT REPORTER: And I need his address.

CHAIRMAN KATZ: Yes. Sir, I need you to take the microphone and give your name, spell your name for the court reporter, and give your address, and then also give your party again.

COURT REPORTER: I actually need the address of who you represent.

MR. VIZARD: CRE II, Committee of

Responsible Energy II --

CHAIRMAN KATZ: Can you up his microphone a little --

MR. VIZARD: -- Durham, Connecticut.

MR. ASHTON: Start again please.

MR. VIZARD: CRE II, Durham Connecticut.

COURT REPORTER: Is there a street address?

MR. VIZARD: I don't believe CRE II has a street address.

CHAIRMAN KATZ: Okay, we'll -- we'll take Durham.

MR. VIZARD: My name is Douglas Vizard, V as in victory, i-z-a-r, d as in Douglas. Address, 30 Hemlock Court, Durham, Connecticut.

CHAIRMAN KATZ: Proceed with your question.

MR. VIZARD: I would like to inquire specifically I guess most reasonably to Dr. Bailey with regard to the question of harmonics, specifically radiated power spectrum. Are you familiar with the term and the physics?

DR. BAILEY: In what context, sir?

MR. VIZARD: From power lines or from any

electrical device?

DR. BAILEY: I believe I have an idea of what you're speaking about, but I think one of the engineers here should take a first crack at it.

CHAIRMAN KATZ: Do you understand the question or would you like the question reposed or rephrased?

MR. ZAKLUKIEWICZ: I'm not certain I understand the question.

CHAIRMAN KATZ: Okay. Sir, we're going to ask you to rephrase the question then and they're going to try to answer it.

MR. VIZARD: Are you familiar with the term and the physics of radiate power spectrum as would any maker of an electrical device in the United States and Europe?

MR. ZAKLUKIEWICZ: Yes, I am.

MR. VIZARD: Okay. On a transmission line where as a matter of fact you model very parallel lines without sag, without water, without ice, without wind, you make calculations in your model for a 60-cycle power frequency estimate. You measure on your meter 60-cycle power frequency preferably milligauss because there's less interference there obviously. Do you have any idea

how much of the radiated energy may be at different other frequencies than 60 cycle? Do you have any idea of what fraction may be -- what the energy fraction might be of the radiated power spectrum?

MR. ZAKLUKIEWICZ: It's extremely small, but I do not have that number at the top of my head. It would basically be driven by the generating units themselves and by any of the passive devices that we install on the system, such as capacitors and/or reactors, primarily driven by the quality of the AC generating generators themselves as to what is the harmonic content of the 60-hertz AC power source, but it's extremely, extremely low when I look at an oscillograph.

MR. VIZARD: Being extremely low, I -- I thought it might be until I became aware of the General Electric data where specifically they are talking about transients obviously --

MR. ASHTON: Talking about what?

MR. VIZARD: Transients. But when a fraction that is one percent of the current is being delivered at the 25^{th} harmonic and that radiation efficiency goes up as frequency squared, that tells me a very different story.

MR. FITZGERALD: Excuse me, this is the question part of the program --

CHAIRMAN KATZ: Yes. Sir, I'm going to ask you to pose your thing as a question, and then --

MR. MARCONI: You will have the opportunity to testify later.

CHAIRMAN KATZ: Well your testimony is actually prefiled, sir, so --

MR. MARCONI: Okay.

MR. VIZARD: Ultimately my request will be that reasonable measures to verify reasonable models to be produced at least estimate for the cross-sections and for the configurations under concern radiated power spectrum during wind, rain, ice, bird debris, and anything else, line sag, that may perturb such lines. And I'm particularly concerned when you start to mention split phasing where any imprecision in split phasing, any imprecision in rolling power will have a very significant effect --

CHAIRMAN KATZ: Sir -- sir, is there --

MR. VIZARD: -- on higher harmonics --

CHAIRMAN KATZ: Sir, can you -- you know, is that a question?

MR. VIZARD: That's a question.

MR. ZAKLUKIEWICZ: I would -- I would venture to say if you could -- Mr. Vizard, if you would come back when we have the technical experts here from General Electric, they are scheduled to be here -- the second session of June or the first --

A VOICE: Either --

A VOICE: Definitely July --

MR. ZAKLUKIEWICZ: In July or the second session in June those key components and key concerns regarding the installation of underground cables -- the capacitance of the system changes dramatically from what it is today and those are some of the issues. And I think you made reference to the GE studies, for which you must have had an opportunity to review, you're raising those questions, I would -- I would hold those questions until that time and we will have that open discussion of the issues associated with underground cable systems and have the experts here who have run the studies both before and after the installation of the proposed underground facilities respond to those questions with more authority than I have.

CHAIRMAN KATZ: Thank you. Do you have any other questions?

MR. VIZARD: One more question.

Periodically or over some incidences is Northeast Utilities ever contacted by the FCC?

CHAIRMAN KATZ: Concerning what, sir?

MR. VIZARD: Radiated -- radiation that falls within the domain of FCC regulation.

MR. ZAKLUKIEWICZ: Yes, we have with regard to power frequency -- use of power frequency, what we call on carrier communications in a megahertz range for communications and for our radio systems quite extensively and for our microwave systems. The answer is, yes, we are in communications with the Federal Communications Commission.

MR. ASHTON: Mr. Zaklukiewicz, has NU or UI -- or I'll let Mr. Prete answer that -- ever been contacted by the FCC as being an emitter of spurious radio frequency signals from its system?

MR. ZAKLUKIEWICZ: Not -- not from the operation of the 60-hertz system, but we have had communications with the FCC over power carrier frequencies.

MR. ASHTON: Yeah. But that's over technologically acceptable communication devices --

MR. ZAKLUKIEWICZ: Correct.

MR. ASHTON: But nothing -- no contact

then in the form of a complaint or follow-up on a complaint from the FCC for spurious signals?

MR. ZAKLUKIEWICZ: Not from the 60-hertz system that I am aware.

CHAIRMAN KATZ: Thank you.

COURT REPORTER: One moment please. (Pause). Thank you.

CHAIRMAN KATZ: So Mr. Vizard, if you want to check with the staff on when you should come back to ask questions concerning the GE model --

MR. VIZARD: Alright, thank you --

CHAIRMAN KATZ: -- they'll fill you in. Thank you. Next Mr. Cunliffe.

MR. FRED O. CUNLIFFE: I just want to confirm, there are no split phase installations in Connecticut as you have proposed in your prefiled testimony?

MR. ZAKLUKIEWICZ: That is correct.

MR. TAIT: Are there any in the United States?

DR. BAILEY: As testified yesterday, we believe -- (mic feedback) -- that such a system had been tested and operating a line somewhere on the West Coast. I would point out that in terms of structure and

operation, the split phase design is in principle no different from an ordinary double-circuit transmission line.

MR. TAIT: Why haven't we heard of this before? Is this the first time that it's going to be put into operation?

MR. PRETE: Most -- most of what we are considering split phasing is, as Dr. Bailey said, a double-circuit tower. In fact, the right-of-way on Section 8 has that. All we're doing is taking advantage of the closest that you can bring the phases and the alteration of the phases to mitigate EMF. So those all have been in existence in our system and other systems for many, many, many years.

MR. ZAKLUKIEWICZ: I think, Mr. Tait, if you look at the structure makeup, it's a vertical structure -- going back to a previous comment, our -- the focal import at all of the town meetings prior to were the height of the structures and the impact. If you look at the delta that was proposed and you look at the split phase structure, you are now a much large structure at the base and I believe 25-foot taller.

MR. WILENSKY: And what would be the height?

MR. TAIT: We're back to one-thirty, one-twenty?

MS. BARTOSEWICZ: One hundred and five feet is what was filed in Dr. Bailey's supplemental testimony.

MR. WILENSKY: I'm sorry, you said what, they would be one -- 105?

MS. BARTOSEWICZ: One -- 105 is what was filed in Dr. Bailey's supplemental testimony.

MR. PRETE: There's a cross-section in page 9 of that supplemental filing --

MS. BARTOSEWICZ: Yes.

MR. PRETE: -- that gives a picture --

MR. WILENSKY: 105 from where, 85, or --

MS. BARTOSEWICZ: From 85.

CHAIRMAN KATZ: Yes.

MR. TAIT: And if you went higher, would it also reduce the EMFs?

MR. PRETE: Yes.

MR. TAIT: So one of your options would be to go higher than that?

MR. PRETE: Yes.

MR. TAIT: And that will be in your analysis of when you can get it down to the right-of-way

to -- by the height?

DR. BAILEY: That will be among the options available.

MR. TAIT: Good.

CHAIRMAN KATZ: Thank you. Back to you, Mr. Cunliffe.

MR. CUNLIFFE: Is there any --

MR. BRIAN EMERICK: Madam Chair --

MR. CUNLIFFE: Is there any other reason to implement a split phase other than for cancellation purposes for EMF?

MR. PRETE: No.

MR. EMERICK: Are there any other pros or cons of doing split phasing?

MR. PRETE: Well, off the top of my head, certainly a con as we just talked about is the height of the structure, it will increase, no doubt about it. There will be a premium in cost because now you're building essentially two circuits where you could have gone along with one.

MR. EMERICK: Are there any benefits other than EMF, operationally or --

MR. PRETE: Not that we're -- not that we can think of, no.

MR. CUNLIFFE: Is there an opportunity that these phases could go out of phase?

MR. PRETE: No. The design -- no.

MR. CUNLIFFE: And just for my understanding, I think you've already testified, post construction to go back in, could you install split phase in specified areas?

MR. FITZGERALD: I'm sorry, could you --

MR. CUNLIFFE: After --

MR. FITZGERALD: -- I don't understand the question.

A VOICE: Could you retrofit --

MR. CUNLIFFE: After completion of construction, sometime down the road could you go back to like a one-mile segment and install split phase?

MR. PRETE: The answer there would depend on the right-of-way exactly where. We would certainly try if that's something that somebody wanted us to do.

MR. CUNLIFFE: But it's technically feasible?

MR. PRETE: Again given -- you know, we have to abide by NESC and other clearances. As long as those type of things are --

MR. ZAKLUKIEWICZ: In general, the answer

is yes, recognize that before you go to split phase you need at least a couple of spans on either side of the split phase to roll the conductors from the configuration you have. So it's not just the one-mile section. The one-mile section becomes closer to two miles. And some of the structures on the other side of the split phase are going to be significantly different than what is there today because of the need to have the ability to roll those phases. So you -- you will be impacting a two-mile section to provide split phasing over one mile.

MR. CUNLIFFE: And is the company considering doing a split phase around any and all residential areas or those areas that have been identified by the recently -- enacted by the Legislature?

MR. ZAKLUKIEWICZ: I believe that's what you've asked us to look at and report back on.

MR. CUNLIFFE: Thank you. If I could go to Exhibit 73, the supplemental testimony of Dr. Bailey, page 11, under Row No. 2 for the proposed you have a reading of 9.4 milligauss projected?

MR. PRETE: Correct.

MR. CUNLIFFE: And 15 feet. It changes to 7.3?

MR. PRETE: Correct.

MR. CUNLIFFE: And now at split phase, at line 7 you have 1.3 going to 0.1. Could you explain the difference in magnitude between 9.4 and 7.3 and the 1.3 to 0.1?

MR. PRETE: I'm assuming you don't want the mathematical explanation. The -- if the profile -- and I think that was given in an exhibit by Mr. Schaefer -- if I could just draw with my hands -- if this is the right-of-way --

COURT REPORTER: That doesn't translate well --

MR. TAIT: No, but it's helpful to us.

MR. PRETE: The right-of-way obviously is a point right outside the right-of-way. So if this is 165 feet, which is the right-of-way in that cross-section for instance, where it bisects the right-of-way that's the measurements that they're giving. Now what we need to do is go into the right-of-way. And the profile -- the profile of the EMF could be at a low point as it exits the right-of-way or it could be at a high point. And then as you get away from the right-of-way, you can't assume that the same distance will generate the same reduction. It will be depending on where you are in the arc of the profile. And in this case the arcs are

different. And they are different almost in every case.

DR. BAILEY: I would like to just add that a major factor there is that you have, you know, relocated the right-of-way further away from the building and so you're at a point where the strength of the field is lower.

MR. CUNLIFFE: Those are my questions.

CHAIRMAN KATZ: Thank you. Mr. Emerick.

MR. EMERICK: Yes -- well, I see Dr. Cole is just leaving. Yesterday afternoon I had asked a question --

MR. FITZGERALD: No, he's -- actually, he's going out to see if he can get a later flight. He has to -- he has to leave here at 3:30 to make his flight and it looked like he wasn't going to make it, so I suggested --

MR. EMERICK: Yesterday we had started a question and Dr. Aaronson started to answer it and said let's defer to Dr. Cole for tomorrow --

MR. FITZGERALD: Oh --

MR. EMERICK: -- and we've gotten to that point, and now Dr. Cole must have known it was his turn -- (laughter) --

MR. FITZGERALD: Well, he'll be -- he'll

be back at least for that question.

CHAIRMAN KATZ: Why don't we come back to that question --

MR. EMERICK: So we're going to defer again --

(Multiple voices overlapping, indiscernible)

CHAIRMAN KATZ: Do you want to come back to you --

A VOICE: No, here he is --

CHAIRMAN KATZ: Oh --

A VOICE: He was just making arrangements for --

MR. EMERICK: Yesterday we had a question for Dr. Aaronson and it was kind of deferred until today to you and kind of the background was that he had kind done a search on the web on -- CRISP I think is the acronym he used -- in terms of trying to identify the number of ongoing studies in terms of EMF. And basically he said there was one study. And in his mind from a scientific perspective the issue was settled. And clearly from a public perspective it isn't. And when the public looks at some of the organizations that assess all this information, we end up with EMFs being in this

uncertain category. My question is what -- what is it going to take from a -- what's it take from a study perspective to move their determination out of this uncertainty category one way or another?

DR. PHILIP COLE: There is --

MR. EMERICK: It seems to me that that's the only way from a public perspective the issue gets answered.

DR. COLE: I think -- there is no simple or short answer to this question. I have to tell you a fair amount of information to tell you -- to respond to that. First, let's look at the whole picture. In the first place, the National Toxicology Program of the United States has declined to list EMF as either a known or a suspect carcinogen.

IARC, the International Agency for Research on Cancer has said that EMF is not an animal carcinogen, that it is -- the information is inadequate to consider it a carcinogen for any form of human cancer except for childhood leukemia where the information is only limited, and on that bases they placed it in Category 2B, possible. It was suggested yesterday that they could have placed it in Category 3 if they really felt it was not a concern. But they cannot. And that is

because Category 3 means insufficient evidence or inadequate evidence to classify. And we have over 150 human studies and hundreds of animal studies and hundreds of in vitro, in cellular studies.

So basically, IARC is going to be locked into Category 2B until they reconsider it. They have not considered it since 1999. What they will do when they reconsider it, and I have no idea whether they will or when they will, but they will presumably take notice of the studies that have appeared since then, which are all negative. So perhaps they will then put it possibly even into Category 4.

There have also appeared within the last couple of years two very fine META analyses, those by Dr. Greenland and others and Dr. Ahlbom and others. Both of those META analyses make it very clear that despite 25 years of research now, and depending on how you choose to count them, somewhere between 20 and 30 studies of childhood leukemia, 150 studies of human cancer in all, there is no causal relationship established.

The Greenland META analysis, which is in my opinion the best of the three, also says that they have estimated the proportion of childhood leukemia that would be attributable to EMF if it were a cause. All of

the ifs and other conditions they are very important. And they put the estimate at 3 percent. Now, I think yesterday Dr. Ginsberg suggested 10 percent. I think that figure probably comes from the older META analysis of Wartenberg, but I'm not sure.

In any case, at least in my opinion, the most current and the best estimate of the population attributable risk percent we call it, the proportion of the disease that would be so caused if in fact the agent were a cause is 3 percent. But it's very interesting, it has a range of uncertainty. That ranges from minus 2 to 8. Now the minus 2 could be interpreted as EMF actually having a protective effect against childhood leukemia. I'm not going to suggest that, it's almost certainly just a mathematical fact of the computation of a confidence interval. But it certainly is true that the confidence interval includes zero. So what I'm saying to you is that the best most inclusive META analysis that we have includes a figure of zero effect.

Now how and when the scientific community collectively will adopt the position that there is no risk, I don't know, but we can look at things and we can make observations. Originally, there was all forms of childhood cancer. Then Wertheimer did another study,

which has never been mentioned here, and she added in a number of adult cancers. And then other studies were done. And from that high point -- or -- well high point in terms of numbers of cancers -- ever since then the numbers of cancers that are of concern has shrunk and now we're all the way back down to only one disease of interest. In the meantime the perception of the amount of electromagnetic fields that it takes to cause a hazard for that one disease, childhood leukemia, has gone up. So that we are now in the latest META analysis at .3, micro-tesla of 3 milligauss, whereas originally the concern was in the 1 to 2 milligauss range, and 2 was considered to be distinctly hazardous, that is no longer so.

So with the passage of time we have seen some movement in the scientific community in the publications, we have seen the NTP refuse to consider it, we have seen IARC lock in on one disease only, we have seen the perception of the amount of energy that it takes to produce disease go up, and all I can say is that if you look at this over a 25-year spectrum, what you see is convergence on a perception of lesser and lesser and lesser risks. Meanwhile the animal in the in vitro studies, the one study yesterday notwithstanding have

been persuasively negative.

I'd like to clarify a point that may not have been clear yesterday when Dr. Aaronson said that there is great value to be attached to the in vitro studies. That is certainly true. That is certainly true in terms of their reliability. However, nobody is going to call an agent a human carcinogen on the basis of in vitro findings. If it's going to be done on the basis of animal research, it's going to take whole animals. And nobody has ever consistently produced cancer in animals using electromagnetic fields at 60-hertz, at any intensity.

So we have the human research moving towards the absence of effect, the animal studies consistently absent, and there is as of yet no theoretical basis -- although back in the 80's and 90's several pretty fancy theoretical developments were put forward, one called cyclotron residence and other let's say provocative physical theories as to how EMF might cause cancer, including for example something that was mentioned a few minutes ago, the concept of harmonic residence to augment the energy force --

CHAIRMAN KATZ: Thank you, Dr. --

DR. COLE: -- none of these things has

panned out.

CHAIRMAN KATZ: Thank you, Dr. Cole.

DR. COLE: Okay. Sorry.

CHAIRMAN KATZ: Do you have any other questions, Mr. Emerick?

MR. EMERICK: Who does IARC respond to?

DR. COLE: IARC is an arm of the World Health Organization. It is the cancer research arm of WHO. It has a director and it has an advisory board, both are ultimately responsible to the Board of Directors of the WHO.

MR. EMERICK: Okay, thank you.

CHAIRMAN KATZ: Thank you. Mr. Tait.

MR. TAIT: No questions.

CHAIRMAN KATZ: Mr. Ashton.

MR. ASHTON: Yes.

CHAIRMAN KATZ: Pull that microphone a little closer.

MR. ASHTON: Yep. Sorry about that. I think you've touched on it already, but let me ask you explicitly. Having heard the testimony of Dr. Ginsberg yesterday, are there any other points on which you disagree?

DR. COLE: Well, actually there were a

fair amount of points that Dr. Ginsberg made that I would have to disagree with. I wasn't going to, but if I'm invited to, I will. I could summarize a lot of them by saying I fully endorse everything that Dr. Aaronson has said.

I think a couple of the things that Dr. Ginsberg said were not exactly wrong, but I think they may have conveyed a misimpression. For example, you may have the impression that leukemia is common in children and of a magnitude equivalent to that in adults. And in particular, Mr. Ashton, you asked a few very pointed questions on this subject, so let me clear. Leukemia is rare in children --

MR. ASHTON: I understand that --

DR. COLE: -- we perceive it as common because it is the only common -- the only relatively common malignancy in children. But the particular form of leukemia, ALL, acute lymphocytic leukemia, is far more common in adulthood than it is in childhood, and I think that should be clear. And the idea that EMF would be a cause of ALL in childhood and not in adulthood because of some particular sensitivity of the stem cells of childhood is in my judgment speculative at best.

MR. ASHTON: That's what I was struggling

with a little bit yesterday.

DR. COLE: The adult has many more stem cells than does the child and they are indeed rather sensitive to cellular effects, but nonetheless there is no reason at all to think that EMF causes ALL or any other form of leukemia in adulthood.

There was a representation, I don't know that it was intentional, that EMF can cause cell death, and as a result of cell death it may be a protective effect against cancer. EMF cannot cause cell death. It is ionizing radiation. Ionizing radiation given at high dose, for example the equivalent of that given for radiation treatments for cancer that can cause cell death and in fact may indeed protect surrounding tissues against cancer, but there is no reason whatever -- in fact, there's plenty of evidence that it is not true that EMF would be able to cause cell death.

It was suggested that there have not been cancer clusters in -- leukemia clusters in Connecticut. Firstly, let me say that Connecticut has the oldest and most well respected cancer registry in the world. And a number of studies of the clustering of childhood leukemia have been done in this state and none of them has ever led to the identification of any cause of childhood

leukemia, including electromagnetic fields. I'll stop at that point.

MR. ASHTON: Thank you. One more. I ask this question to try and again put a fence around the animal we're wrestling with. In the universe of issues that we as Homo Sapiens face in conducting our lives and as I posed the question to Dr. Ginsberg in toxicological terms, arsenic, chromium, carbon monoxide, God knows what else, where does the EMF issue fall? Are we talking about a mole on the wart of a gnat, on the back of a fly, on the back of a cow that we may or may not feed off of, or are we talking about something which is the threatening band just over the brow of the hill ready to descend upon us and wipe us out?

DR. COLE: Mr. Ashton, you no doubt know my answer with regard to my own position on the threat that EMF poses. I don't believe it does pose any threat at all. And I take my position from not only a number of entities that are supportive of my position -- I may be a minority, but I'm not a minority of one by any means. I will try to represent to you fairly what I think the scientific and public health community thinks of this entity as a hazard. It is a small hazard and an improbable one.

MR. ASHTON: I want to pick up one more question that I asked a little bit about yesterday. In regard to workers exposed by the nature of their job to large magnetic field producing devices, steel mill motors, electricians and plant operators around large power transformers, around turbine generators, the large power plant motors, is there anything, is there anything to your knowledge which indicates any adverse effect from such occupations?

DR. COLE: Mr. Ashton, I've been waiting for two months to answer this question. There is literature on the occupational exposures to EMF and cancer in adults that is the equal or superior to that on childhood leukemia. There have been any number of studies of occupationally exposed groups of people. They are, in a few words, negative. But I want to mention that over the last 10 years or so there have been three benchmark studies, one is the Southern California Edison study, one is the so-called Canada/France study, which was a huge study, and the other one was the study done in the United States among a collection of utilities. I don't know if any of the Connecticut utilities were participants in that -- apparently not -- and --

MR. ASHTON: Do you want to get that in

the record, Miss Shanley --

DR. COLE: Well, they may not even have been invited to participate because logistical issues were at the heart --

MR. ASHTON: Yeah --

DR. COLE: -- of the assembly of the study. But if you go through three large studies, each of which had many categories of workers, some not at all exposed, clerical workers, administrators, linemen and power station operators, which was one I think you mentioned as well, you get many different categories of people, and then you have many different cancers. So that when you go through all of these studies and all of these workers and all of these exposure levels and all of these different metrics, you cannot be surprised that there are going to be some positive relationships and there are also going to be some negative. That is where the odds ratio, relative risks are substantially and significantly below one. But when you asked the question that must be asked of epidemiologic studies is there a pattern, is there one or more diseases that appeared in at least two of the three studies and showed some semblance of a dose response relationship, the answer is no. So here you have men and women with massive, just as

you described, exposures to EMF eight hours a day and they showed no excess -- no consistent excess of any form of cancer. Of course the response is well they aren't children and they aren't exposed for 20 hours a day, but that's how it is.

CHAIRMAN KATZ: Thank you.

MR. ASHTON: Are you aware of OSHA having any limitations on EMF exposure --

MR. TAIT: OSHA.

MR. ASHTON: OSHA -- OSHA -- he's from northern Connecticut.

DR. COLE: I -- I understand that OSHA has considered the question, has looked at it, but I am not aware that they have ever attempted to set standards in the workplace.

MR. ASHTON: Thank you. I'm glad I was able to satisfy your two-month desire.

CHAIRMAN KATZ: Mr. Wilensky.

MR. WILENSKY: I just have a couple of questions on the split phase. In discussing the split phase is any land -- is there any land acquisition that would be necessary or everything would be done in the existing -- or would everything be done in the existing right-of-way?

MR. PRETE: I'll answer that question in what we know and have done the most work on, and that would be in Cross-Section 8. In Cross-Section 8 a majority of the right-of-way is 165 foot wide. And as you remember by the cross-section, the proposal is to have one monopole with two 115 circuits on and the 345. And as Mr. Zak has stated, in order -- the transition itself is where the right-of-way would have to be increased by 10 feet. So for approximately two to three pole sections as you then make the transition to the split phase, you would need that at the time that that transition is taking place. In other words in the cross-section we have -- in Dr. Bailey's testimony the 165 is adequate. So approximately two to three pole sections prior to the transition and after you would need --

CHAIRMAN KATZ: And in what town is Cross-Section 8 in?

MR. PRETE: It is in -- between Cheshire and Milford, the 22 miles.

CHAIRMAN KATZ: Oh, okay. The long one.

MR. PRETE: The long one.

CHAIRMAN KATZ: Yes.

MR. WILENSKY: And there would be -- then I gather the answer is, yes, certain land would have to

be acquired, is that correct?

MR. PRETE: Depending where the transition takes place, exactly.

MR. WILENSKY: In acquiring this land are any homes endangered? I'll use that word, I can't think of anything else. In other words, does it affect any existing homes?

MR. PRETE: What we'd like to do when we get back to you with the homework assignment in June, we'll take a stab at not having to impact any homes. In other words, if we can make the transition on existing CL&P property, I'll offer that up. That would be preferable, perhaps in the right-of-way that exists in the water company property. So in those type of things that would be a preference I think that the Council would want, and indeed that's the direction we would pursue.

MR. WILENSKY: And I -- what I'm getting at is, you know, to eliminate one problem and create another problem and another problem. But along with that another question is --

CHAIRMAN KATZ: Welcome to our world.

MR. EMERICK: Yeah. In Phase 1 --

MR. PRETE: Ours too.

MR. EMERICK: In Phase 1 what is the

maximum height of any of the towers, the Bethel to Norwalk line?

CHAIRMAN KATZ: Phase 1 you mean.

MR. WILENSKY: I did say Phase 1.

CHAIRMAN KATZ: Oh, I'm sorry, I thought you --

MR. WILENSKY: I think I --

MR. ASHTON: (Indiscernible) -- docket --

MR. WILENSKY: Yeah, 217.

MR. ASHTON: Yeah.

MR. ZAKLUKIEWICZ: I believe in a Natural Falls area where the request is, is to minimize the right-of-way, that would be in the Gallows Hill area, I believe those were 130-foot towers -- subject to check, I believe it was 130-foot in Gallows Hill into the Natural Falls area --

MR. WILENSKY: So in this --

MR. ZAKLUKIEWICZ: -- (indiscernible) -- at the railroad crossing.

MR. WILENSKY: In this split phase that we're talking about, would any of the towers be as high as 130 feet? And I suppose the answer is no.

CHAIRMAN KATZ: Should we wait for the homework assignment?

MR. TAIT: That's the homework assignment, Ed.

MR. WILENSKY: Okay --

CHAIRMAN KATZ: Okay --

MR. ZAKLUKIEWICZ: I believe, subject to check, what we have proposed in one area was 105 foot.

MR. WILENSKY: Okay.

MR. TAIT: No, but the homework was to go on up --

MR. ZAKLUKIEWICZ: That is --

MR. TAIT: -- to see how you could minimize --

MR. ZAKLUKIEWICZ: -- that is correct.

CHAIRMAN KATZ: Yes.

MR. TAIT: So we will wait --

MR. WILENSKY: Okay.

MR. FITZGERALD: I did just check the findings of fact in Docket 217 and it is 130 feet.

MR. WILENSKY: Okay. Thank you.

A VOICE: Is that testimony --

MR. FITZGERALD: No, you can take -- you can take administrative notice --

MR. WILENSKY: That's alright, I accept that, whether they -- thank you very much. Thank you,

Madam Chairman.

CHAIRMAN KATZ: Yeah. Mr. Murphy, any questions?

MR. JAMES J. MURPHY, JR.: No questions, Madam Chairman.

CHAIRMAN KATZ: Mr. Lynch.

MR. LYNCH: No questions.

MR. ASHTON: I've got one.

CHAIRMAN KATZ: Mr. Ashton, one question.

MR. ASHTON: Yeah. Mr. Prete, in your earlier testimony you said something which caught my ear. You said --

AUDIO TECHNICIAN: Turn that microphone towards you, Mr. Ashton.

MR. ASHTON: You said to the effect that if you carried split phasing far enough, you've in effect built another circuit. Do you recall that?

MR. PRETE: Yes.

MR. ASHTON: Insofar as the Council in its infinite wisdom chose to require that along the entire right-of-way from Beseck to East Devon, would it not be attractive to literally make it a second circuit and gain a degree of reliability?

MR. ZAKLUKIEWICZ: The answer to that is

yes.

MR. ASHTON: Thank you.

CHAIRMAN KATZ: Food for thought. Okay, Mr. Fitzgerald, you had some redirect. Can you give me just an estimate so I can plan our afternoon?

MR. FITZGERALD: It's -- no, it's quite -- it's quite short --

CHAIRMAN KATZ: Okay --

MR. FITZGERALD: -- you offered me the opportunity to do some -- a long time ago to do some redirect on his qualifications and background, and that's all I plan to do --

CHAIRMAN KATZ: Okay --

MR. FITZGERALD: -- and if --

CHAIRMAN KATZ: -- and then we'll take our afternoon break after that.

MR. FITZGERALD: That would be great and then Dr. Cole can --

CHAIRMAN KATZ: Vamoose, yes.

MR. FITZGERALD: Vamoose, yeah, good. Okay, thank you very much.

Dr. Cole, as I mentioned, in light of your questioning by Mr. Schaefer, I'd like to ask you a few questions about your background. First of all, would you

please tell the Council what the -- the textbook -- describe to them the textbook edited by Dr. Vincent DeVita on cancer, the Principles and Practice of Oncology?

DR. COLE: Well, Dr. Vincent DeVita is a Professor of Medicine and Oncology at Yale. He's also the Director of the Comprehensive Cancer Center there. He was for many years the Director of the National Cancer Institute. He is the Chief Editor of the book called Cancer, Principles and Practice of Oncology, which is the largest selling medical textbook in the world.

MR. FITZGERALD: And is that the standard reference work for the principles and practice of oncology?

DR. COLE: It's on the shelf of every medical oncologist in the world I would venture.

MR. FITZGERALD: And what is the latest edition of that work?

DR. COLE: It's the sixth edition. It was published in 2001.

MR. FITZGERALD: Does that textbook contain any chapters dealing with cancer epidemiology?

DR. COLE: Yes. There are two, one is on the statistics of cancer and the second one is on the

cause of cancer.

MR. FITZGERALD: And who is the author of those chapters?

DR. COLE: I was the senior author of both of them.

MR. FITZGERALD: And I'd like to ask you now about some of the work you've done. First of all, please describe very briefly and generally the work that you have done related to tobacco?

DR. COLE: I have done an extensive array of studies showing the causal relationship between smoking and bladder cancer and taking a measurement of the amount of health impact from smoking via that disease. I also was the co-author of the first paper to suggest the now recognized association between cigarette smoking and leukemia.

MR. FITZGERALD: And Mr. Schaefer asked you about a recommendation that you made in a published article that in the case of inveterate smokers for whom conventional cessation therapies had failed, that chewing tobacco be considered as a nicotine replacement therapy. Has any authoritative group concurred with that recommendation?

DR. COLE: Well first, we don't call it

chewing tobacco please --

MR. FITZGERALD: I'm sorry --

DR. COLE: -- we call it smokeless tobacco. It's a new modern refined kind of product and you don't chew it, you don't spit when you use it. And yes, we have recommended it for so-called inveterate smokers. These are people who cannot quit and who are already suffering from adverse health conditions of smoking and are very likely to die from their habit. And that strategy has now been endorsed by the Royal College of Physicians of the United Kingdom.

CHAIRMAN KATZ: Thank you for sharing this with us right before we go eat on our break. (Laughter).

MR. FITZGERALD: And what -- well if that's not enough, why -- why does smokeless tobacco offer any advantage for inveterate smokers over nicotine chewing gum or patches?

DR. COLE: Well, nicotine --

CHAIRMAN KATZ: Just -- I guess I'm starting to wonder how --

MR. FITZGERALD: Okay --

CHAIRMAN KATZ: -- what this has to do with EMF.

MR. FITZGERALD: Well, the -- indeed. But

if you remember the fact that Dr. Cole had written this article and it was used to suggest that he should not be believed because he --

MR. TAIT: There were several doors opened and I think you should continue.

MR. FITZGERALD: Okay. Thank you.

DR. COLE: I heard the question and I can respond quickly. The nicotine gum is essentially a useless product and it's being withdrawn from the market. The patches are useful as a crutch to aid what we call conventional smokers in their efforts to quit. But there are these inveterate smokers who cannot quit using patches. And the smokeless tobacco has the principle advantages that it's much less expensive than cigarettes whereas patches are much more expensive. Most of the inveterate smokers are indeed members of poorer or minority groups. Furthermore, the distinct biologic advantage of smokeless tobacco is that it gives the user a hit, he gets an immediate nicotine effect that mimics smoking.

MR. FITZGERALD: Would you please briefly describe your work with respect to DES and the causation of clear cell carcinoma in the daughters of women to whom DES was administered?

DR. COLE: There's a remarkable story of DES that was given to pregnant women to support their pregnancies when they were thought to be at high risk of miscarrying. Physicians at the Massachusetts General Hospital showed that this form of treatment was causing cancer in the daughters that were being carried in utero at the time that their mother received the DES. And I just want to make it clear that it was on the basis of their work that the causal relationship was established. However, after establishing the causal relationship, they saw fit to try to measure the magnitude of the effects and other determinates of which particular girls would in fact develop the cancer. And over the period from about 1975 to 1985 I worked with them, produced some seven or eight publications on that subject, which provided a substantial amount of information on that subject.

MR. ASHTON: Dr. Cole, is my memory correct that DES is diethylstilbestrol?

DR. COLE: Exactly right. It's a synthetic estrogen.

MR. ASHTON: Thank you.

MR. TAIT: Tony, is that enough?

MR. FITZGERALD: One more --

MR. TAIT: Mr. Fitzgerald --

MR. FITZGERALD: One last one. I noticed that your CV lists something called the Gran Pri Lescona Julienna (phonetic). What is that?

A VOICE: What language is that?

DR. COLE: Well as you've pronounced it, I wouldn't have recognized it, but -- (laughter) -- let's try it in English. It's the Grand Prize Lacasona (phonetic), that being a man's name, of the French Cancer Society, to translate it loosely. And it was given to me and my colleagues at Harvard, the University of Sydney in Australia and the University of Athens in Greece for our collaborative efforts on developing the estrogen balance theory of causation of breast cancer. I will mention that that theory of causation is not yet accepted, although it's been in the literature for some 25 years, but it remains in the running.

MR. FITZGERALD: Okay. Thank you very much. Nothing further.

CHAIRMAN KATZ: Great. After the break -- I want to make this a very short break so that we can get back to work -- after the break is putting on the case of Douglas Vizard. We're going to -- and R.J. Archambault, we're going to have your testimony taken into the record and be available for cross. I have -- I'd like to resume

at 3:20. If everyone could be back in their seats by 3:20.

A VOICE: (Indiscernible) --

CHAIRMAN KATZ: Hmm? Yeah, but you don't have to leave the building -- yeah, yeah, you're off the table.

(Whereupon, a short recess was taken.)

CHAIRMAN KATZ: We had two direct cases and the parties have graciously agreed to combine. We had the direct case of Representative Al Adinolfi with witnesses Doug Vizard and R.J. Archambault, and then we also had the direct case of Communities for Responsible Energy who share a witness of Douglas Vizard, Trish Bradley and Debbie Huscher. And you can correct the pronunciation when you come up. So, I'm going to ask them to come up to this front table those people from Communities for Responsible Energy and from Representative Al Adinolfi's group. And what we're going to do is we're going to get you identified, sworn in and then we're going to verify your exhibits.

COURT REPORTER: Is this I or II?

CHAIRMAN KATZ: Yes, it's Communities for Responsible Energy II.

A VOICE: Where's I?

CHAIRMAN KATZ: I was Phase 1.

A VOICE: Oh.

CHAIRMAN KATZ: Is this -- is this the total of your witnesses?

A VOICE: (Indiscernible).

CHAIRMAN KATZ: Okay. What I'm going to do is ask you to give your name, spell your name -- Tony, do you want addresses?

COURT REPORTER: They're both for Communities for Responsible --

CHAIRMAN KATZ: No. Miss Bradley is -- Miss Bradley is -- well, you explain -- why don't you give your name, spell your name, and give the group that you're associated with.

MS. PATRICIA BRADLEY: My name is Patricia Bradley, P-a-t-r-i-c-i-a, B-r-a-d-l-e-y. And I'm with Communities for Responsible Energy II.

COURT REPORTER: I will need your address when --

MS. BRADLEY: Sorry.

CHAIRMAN KATZ: He's the boss. Mr. Vizard, I'll ask you to identify yourself again.

MR. VIZARD: Douglas Vizard. Do you want me to spell it again?

CHAIRMAN KATZ: Okay. And are you -- and you're representing both the Communities for Responsible Energy II and Representative Al Adinolfi, correct?

MR. VIZARD: Uh -- yes, that's right.

CHAIRMAN KATZ: Fine. Okay, I'm going to ask Mr. Marconi to swear you in.

MR. MARCONI: Okay, could I ask both of you to please stand and please raise your right hand.

(Whereupon, Patricia Bradley and Douglas Vizard were duly sworn in.)

MR. MARCONI: Please be seated.

CHAIRMAN KATZ: Thank you. We have two prefiled testimonies. We have the Prefiled Testimony of Trish Bradley dated March 9, 2004 and the Prefiled Testimony of Douglas Vizard dated March 10, 2004. Mr. Marconi is going to have you verify those.

MR. MARCONI: Yes. The exhibits in question, can I ask both of you if you prepared those exhibits?

MS. BRADLEY: Yes, I did.

MR. VIZARD: Yes, I did.

MR. MARCONI: Okay. Can I ask whether everything in those exhibits are true and correct to the best of your knowledge and belief?

MS. BRADLEY: Yes.

MR. VIZARD: Yes.

MR. MARCONI: And in fact, do you have any changes or alterations or additions that you need to make to those exhibits?

MS. BRADLEY: No.

MR. VIZARD: I don't think so, no.

MR. MARCONI: Okay. And basically, do you adopt that information as your testimony? In other words, you're swearing to the truth of it and you want the Council to consider it?

MR. VIZARD: Yes.

MS. BRADLEY: Yes.

MR. MARCONI: Okay.

CHAIRMAN KATZ: Is there any objection to making these full exhibits?

MR. FITZGERALD: I don't think so, but I have some questions. At this point, I --

CHAIRMAN KATZ: You want to inquire before we make them full exhibits?

MR. FITZGERALD: No, not of the witnesses. I just want --

AUDIO TECHNICIAN: Mr. Fitzgerald, would you just choose a microphone and use it. (Laughter).

MR. FITZGERALD: Okay. I just want to make sure what it is that's been marked and is being now offered because there's been a reference to the Adinolfi case --

CHAIRMAN KATZ: Right --

MR. FITZGERALD: -- and there is something called Prefiled Testimony Submitted by the Honorable Alfred Adinolfi, State Representative, which -- to which is attached a copy of Mr. Vizard's testimony, which also appears elsewhere --

CHAIRMAN KATZ: Right --

MR. FITZGERALD: -- and in addition to that some testimony of Prakash Vaidya. And it is my -- I'm assuming that that package, the Adinolfi package is not among what has just been marked --

CHAIRMAN KATZ: Yes, I think you assumed correctly.

MR. FITZGERALD: Okay.

CHAIRMAN KATZ: We're just doing it for the people who are here.

MR. MARCONI: We do see -- Representative Adinolfi is here?

MR. ASHTON: He was.

MR. MARCONI: Yes. Does he wish to be

sworn or not?

CHAIRMAN KATZ: Is he here? Oh, I'm sorry. Did you wish to give sworn testimony, Representative?

REP. ALDINOLFI: Is this on?

A VOICE: No, it's not.

A VOICE: Now it's on.

REP. ALDINOLFI: Okay. I don't have the slightest idea of what's going on right now. I know I submitted some testimony on behalf of some experts in my community as a party or an intervenor, and I don't have any of that in front of me or anything here. I just came here today to listen --

CHAIRMAN KATZ: Okay --

REP. ALDINOLFI: -- and cross-examine if I had to.

CHAIRMAN KATZ: Well --

COURT REPORTER: One moment please. (Pause). Thank you.

CHAIRMAN KATZ: What we'd like to do is we'd like to go with the witnesses that we have here today and take their testimony in as full exhibits and then allow anybody who has questions of these two witnesses to ask them.

REP. ALDINOLFI: Ask those questions today?

CHAIRMAN KATZ: Correct.

REP. ALDINOLFI: Had I known that, I would have had the people here.

CHAIRMAN KATZ: Well --

REP. ALDINOLFI: Because I believe Mr. Prakash's testimony or statement, or whatever you want to call it --

CHAIRMAN KATZ: We are going to have an EMF --

REP. ALDINOLFI: -- had to do with under-grounding.

CHAIRMAN KATZ: Yeah. We do not -- we do not think we're going to finish EMF today and the staff is looking at an EMF continuation day in June and I invite you to have your witness come at that day in June and Mr. Phelps will be able to let you know what that day is.

REP. ALDINOLFI: That sounds like a good idea to me.

CHAIRMAN KATZ: Okay. So we'll just do these two witnesses today then, if that's alright.

MR. FITZGERALD: Yes.

CHAIRMAN KATZ: Okay. Is there any objection to making their prefiled full exhibits? Hearing none, we will take them in as full exhibits.

(Whereupon, Communities for Responsible Energy II Exhibit No. 1 and No. 2 were received into evidence.)

CHAIRMAN KATZ: And they are available for cross-examination. And Mr. Fitzgerald, you go first.

MR. FITZGERALD: I just have a few questions. Mr. Vizard, would you just tell us a little bit about yourself, who you are, what your expert qualifications are?

MR. VIZARD: Well, I guess my most expert qualification is I'm a resident of Royal Oak Park.

CHAIRMAN KATZ: Can we up his mic a little bit, Ed.

AUDIO TECHNICIAN: Speak directly into to.

MR. VIZARD: Oh, I'm sorry. I guess my most relevant qualification is that I am a resident of Royal Oak Park. Otherwise, I happen to be a Ph.D. in biophysics with numerous credited hours in physics, radiation physics. I'm familiar with many of my colleagues who sort of wrote the book, so I'm naturally concerned.

MR. FITZGERALD: Okay. And Ms. Bradley, just looking at your testimony here for a moment, you describe the -- on the first page of your testimony you say that CL&P's easement cuts through the heart of this subdivision, crossing streets and yards where children play. Would it be more accurate to say that the subdivision was built around the transmission line?

MS. BRADLEY: Yes, it was.

MR. FITZGERALD: Okay. And how long have you lived there?

MS. BRADLEY: Nineteen years.

MR. FITZGERALD: And when was your house built?

MS. BRADLEY: 1985.

MR. FITZGERALD: So were you the first occupant -- did you build the house or did you buy it built?

MS. BRADLEY: We bought it built.

MR. FITZGERALD: Thank you. That's all I have.

CHAIRMAN KATZ: Thank you. Next on the list is the Towns. Ball, Boucher, Kohler, any questions for this witness panel? Miss Kohler said no. Mr. Boucher, you have questions? Please come up to the

microphone. And Mr. Ball, are you going to have questions for this witness panel?

MR. BALL: No, I won't.

CHAIRMAN KATZ: Okay.

MR. BOUCHER: It's a question of Trish Bradley and it concerns whether she made any investigation when she moved into Royal Oak now that we understanding that the existing lines were there apparently when she bought the house and moved in. Could you please describe what you did at that time relative to looking at the issue of EMF at that point?

MS. BRADLEY: Yes. When we first were looking at the house, we contacted the utility companies and asked them about the transmission lines. They assured us that there would never be any upgrades to these lines, that they would only come in to top trees, which they had done for years. And we also had measurements done in this yard we were looking at, and the measurements read approximately .3 milligauss, which is what they read today. We were also told at the time the lines in that right-of-way were barely ever in use. They hadn't been in use for years they told us, and they were auxiliary lines.

MR. BOUCHER: Thank you. And in your

prefiled testimony you include copies of forms that indicate -- they're CL&P/WW -- WMECO 60-megahertz magnetic field measurement reports. Could you indicate where these -- you know, how these forms came to be included in your testimony?

MS. BRADLEY: Well, when I first heard of the submission of this application, we called CL&P out to have measurements read. I had them read last year. I had them read this year. And other people in the neighborhood have had similar measurements done because of the submission of this application. Is that what you're asking?

CHAIRMAN KATZ: The 23 milligauss was directly below the line?

MS. BRADLEY: Twenty-three?

CHAIRMAN KATZ: Yeah -- you said 23 or --

MS. BRADLEY: Point 3.

CHAIRMAN KATZ: Oh, .3, I'm sorry.

MS. BRADLEY: Point 3 milligauss in my yard and at my home.

CHAIRMAN KATZ: Oh, okay.

MS. BRADLEY: Point 3.

CHAIRMAN KATZ: I thought you said 23.

MS. BRADLEY: No. Directly under the

lines the readings -- we have got neighbors --

CHAIRMAN KATZ: Yeah --

MS. BRADLEY: -- that have had their readings in different months, May, June, July, October --

CHAIRMAN KATZ: Right --

MS. BRADLEY: -- the highest measurement I think is about a 4 or a 5 milligauss under the center of the line, and at the edge of the right-of-way it's approximately .7 milligauss.

CHAIRMAN KATZ: Thank you.

MR. BOUCHER: And with reference to the two measurement reports for 47 Ironwood Lane, the first one dated October 18, '02, is the individual who did the measurement -- is his or her name on the form?

MS. BRADLEY: Yes, it is.

MR. BOUCHER: And who -- who is that individual?

MS. BRADLEY: John Donne (phonetic).

MR. BOUCHER: And Mr. Donne is a CL&P employee as you understand it?

MS. BRADLEY: As I understand --

MR. BOUCHER: Alright --

MS. BRADLEY: -- yes.

MR. BOUCHER: And is it Mr. Donne who

filled out the form?

MS. BRADLEY: Yes.

MR. BOUCHER: And on the November 3, '03 measurement form, what's your understanding of the information posted on the bottom?

MS. BRADLEY: Well, he -- would you like for me to read it or would you --

MR. BOUCHER: Why don't you read it --

MS. BRADLEY: -- like me to say what he told me and then what he wrote?

MR. BOUCHER: Why don't you read it and then tell us anything he told you about it?

MS. BRADLEY: What he wrote at the bottom he put looks reading above 4 milligauss, could be a problem. What he told me before he wrote this is that to keep my children away from anything above 3 or 4 milligauss and that he would never live near these power lines is what he told me. And I asked him could you put that in writing for me, and he wrote that at the bottom of the line. He also did it on a neighbor's.

MR. ASHTON: What was the date of that --

MS. BRADLEY: That was November 3, 19 -- I mean 2003.

MR. ASHTON: Thank you.

MR. BOUCHER: Thank you. And finally, have you been attending the public hearings on this proceeding so far?

MS. BRADLEY: Yes, I have.

MR. BOUCHER: And based on -- based on what you've heard so far, do you have any supplemental comments you wish to make?

MR. FITZGERALD: I -- well --

CHAIRMAN KATZ: I'm going to --

MR. FITZGERALD: I -- well, alright -- alright --

CHAIRMAN KATZ: Mr. Fitzgerald, I'm going to give a little latitude.

MR. FITZGERALD: -- that's right, that's right. I agree. I withdraw my --

CHAIRMAN KATZ: Please -- please go ahead and answer the question.

MS. BRADLEY: May I --

CHAIRMAN KATZ: Yes, briefly --

MS. BRADLEY: -- add to my testimony? Could I read something --

CHAIRMAN KATZ: Uh --

MS. BRADLEY: -- like one page?

CHAIRMAN KATZ: Yes.

MS. BRADLEY: Thank you. I just wanted to say that if these high voltage lines even in the split form phase come through my backyard, I will have to leave my home of 19 years and find a new home for my children. I will not gamble with my children's lives.

Yesterday Mr. Austin I think commented that there are many dangers that children are exposed to everyday and we can't protect them from everything. He's right, but we can take precautions to protect them as much as possible. And that's done by the choices we've made for our children. Mr. Ashton mentioned a few of the dangers that children are exposed to are the sun, not wearing seatbelts, and obesity. I can tell you that I have made choices to do the best I can to protect my children from these dangers. My children are lathered with sunscreen before they go out of the house on a summer day and re-lathered every hour or so after. They know that I will not even start my car until they all and all of their friends are buckled up. I cook a good wholesome dinner, not out-packages, almost every night, and we never eat at fast food restaurants. They're involved in many sports, so they exercise every day. If they ride bikes or ski, they wear helmets.

The point I'm trying to make is that I

have done my best to keep my children safe. Everybody has had somebody in their life that they have watched go through the slow heart wrenching changes while undergoing treatment for debilitating cancer. People make different choices in their lives. I would not choose to watch my children suffer. I would not choose to expose my children to unnecessary dangers. And I think it's unfair if any freedom of choice is taken from me. I have acted responsibly on behalf of my children. And I know that other parents have done the same as well.

I am not an expert. I am only a mom fighting for the lives of my five children and other children throughout Connecticut. There are others in this room who are experts and are also fighting for the safety of the children of Connecticut. These are not uneducated people and their knowledge should not be disregarded. They are not -- no one here fighting for the children is getting any kind of monetary compensation. All are here fighting for what they truly believe and understand as truth. All have busy lives and would not be here if they did not feel so strongly about the dangers of electromagnetic fields. New high voltage power lines should not be put near homes and schools. Thank you.

CHAIRMAN KATZ: Thank you.

MR. BOUCHER: I have no other questions.

CHAIRMAN KATZ: Thank you, Mr. Boucher. Next on the list is Assistant Attorney General Michael Wertheimer. Do you have any questions of this witness?

MR. WERTHEIMER: Yes. Miss Bradley -- Michael Wertheimer for the Office of the Attorney General -- there are some pictures that are attached to the back of your testimony. Do you have those in front of you?

MS. BRADLEY: Yes, I do.

MR. WERTHEIMER: Can you just for my benefit because I'm not familiar with this neighborhood, describe the relationship of the houses to the power lines? There's one picture in here, 49 Black Walnut Drive that's striking. And I asked this question because you referred in your answer to Attorney Fitzgerald and others about the right-of-way. Is there a defined right-of-way on each side of the power lines in this neighborhood that one could see if they drove through it for the first time? Can you just put some more information on the record about how this neighborhood --

MS. BRADLEY: A defined right-of-way? As far as -- we have a 125-foot right-of-way, an easement actually. I guess there's a difference between a right-

of-way and an easement. An easement we own the property, CL&P does not. As far as homes being -- is that --

MR. WERTHEIMER: Homes are in that --

MS. BRADLEY: There are homes actually in the right-of-way --

MR. WERTHEIMER: Okay --

MS. BRADLEY: -- on Packing House Lane and Cherry Lane.

MR. WERTHEIMER: How many streets?

MS. BRADLEY: Two that I know of.

MR. WERTHEIMER: How many houses?

MS. BRADLEY: There are three homes that I know of in the right-of-way.

MR. WERTHEIMER: Okay. In this one picture, 49 Black Walnut Drive, do you see -- I'm sure you're familiar with it?

MS. BRADLEY: Yes, I have that one.

MR. WERTHEIMER: I'm trying to get some perspective because of the angle of the camera --

MS. BRADLEY: Um-hmm.

MR. WERTHEIMER: -- can you give an estimate of how close or how far these pole structures are to the edge of that house?

MS. BRADLEY: Actually that house I have -

- I have a page of measurements here --

MR. WERTHEIMER: Okay --

MS. BRADLEY: -- and that particular house is 23 feet from the right-of-way.

MR. WERTHEIMER: Okay. Thank you.

CHAIRMAN KATZ: Thank you, Mr. Wertheimer. Next on the list is -- Mr. Johnson, any questions for these witnesses? Mr. Johnson is absent. Mr. Schaefer, any questions for these witnesses? Mr. Schaefer says no questions. Is there any party or intervenor I did not call? Mr. Cunliffe, questions for these witnesses?

MR. CUNLIFFE: No.

CHAIRMAN KATZ: Thank you. Mr. Emerick.

MR. EMERICK: No questions, thank you.

CHAIRMAN KATZ: Mr. Tait.

MR. TAIT: No questions.

CHAIRMAN KATZ: Mr. Ashton.

MR. ASHTON: Thank you, no.

CHAIRMAN KATZ: Mr. Wilensky.

MR. WILENSKY: No questions.

CHAIRMAN KATZ: Mr. Murphy.

MR. MURPHY: No questions.

CHAIRMAN KATZ: Mr. Lynch.

MR. LYNCH: No questions.

CHAIRMAN KATZ: Great. You're excused, thank you for your participation.

MS. BRADLEY: Thank you.

CHAIRMAN KATZ: And I appreciate you combining your direct cases, I think that was very helpful. Okay, next is the Woodbridge Jewish organizations. We're going to ask the witnesses to come up to the front table.

MS. RANDELL: Madam Chairman, while they're doing that, changing witness panels, can I do a brief follow-up with respect to Dr. Ginsberg's homework assignment --

CHAIRMAN KATZ: Yes --

MS. RANDELL: -- and his testimony with respect to the childhood leukemia rates.

CHAIRMAN KATZ: Yes.

MS. RANDELL: As I understood it, he said that there were 31 cases in the year 2000 and then an average of 16 for the years before, and that that 31 number converted to 1 in 10,000. We've looked at the Census Bureau data, and I have it here off the web, with respect to the year 2000, and people who can deal with calculators a lot better than me have determined that the census data -- and we have a copy for Dr. Ginsberg -- it

indicates that for children 0 to 14, in the year 2000 there were 709,000 children in Connecticut -- and again the people who are much better at the calculators, determined that 31 cases of childhood leukemia would convert to 1 in 23,000. And then if you looked at that 16 number from the earlier years, and I just asked them to do 700,000, that would be 1 in 43,000.

CHAIRMAN KATZ: Okay. Dr. Ginsberg --

MS. RANDELL: I would --

DR. GINSBERG: (Indiscernible) -- that I had given you --

COURT REPORTER: Doctor, would you start over again.

DR. GINSBERG: I'm sorry. The numbers that I quoted were for one sex, one gender, that was just for males. So you'd have to add the females together -- to that.

MS. RANDELL: With your okay, Madam Chairman, I'd like to hand this material to Dr. Ginsberg and ask him to go back because our understanding of his testimony was it was not just males --

CHAIRMAN KATZ: Yes --

MS. RANDELL: -- and we'd appreciate that clarification --

CHAIRMAN KATZ: Yes --

MS. RANDELL: -- but could we have it cleaned up a little?

CHAIRMAN KATZ: Yes. What we're going to do is I'd like for you to give it to him, and I'm going to give him an opportunity while we're doing the Woodbridge organizations to look at that, and then before the end of the afternoon allow him to clarify his testimony.

Okay, I'm going to ask the witnesses to --

MR. SCHAEFER: Give me a moment, Madam Chairwoman --

CHAIRMAN KATZ: Mr. Schaefer, I appreciate you providing names for your witnesses. We find that very helpful.

MR. FITZGERALD: Could you slant them a little over this way.

MR. TAIT: Not too much, sir.

COURT REPORTER: (Indiscernible) -- to spell --

CHAIRMAN KATZ: Yes. I'm going to ask you to go down the table give your name and spell your name for the court reporter. And we don't need addresses, correct? We don't. Okay, just give your name and spell

your name for the court reporter.

DR. ALAN GERBER: Alan Gerber, A-l-a-n, G-e-r-b-e-r.

DR. LEONARD BELL: Dr. Leonard Bell, B-e-l-l.

DR. PETER RABINOWITZ: Dr. Peter Rabinowitz, R-a-b-i-n-o-w-i-t-z.

DR. ERIC GRUBMAN: Dr. Eric Grubman, E-r-i-c, G-r-u-b-m-a-n.

CHAIRMAN KATZ: Okay. Mr. Marconi is going to swear you in.

MR. MARCONI: Doctors, if you could all please -- please rise and please raise your right hand.

(Whereupon, Dr. Eric Grubman, Dr. Peter Rabinowitz, Dr. Leonard Bell and Dr. Alan Gerber were duly sworn in.)

CHAIRMAN KATZ: Thank you.

MR. MARCONI: Doctors, if you would please have a seat.

CHAIRMAN KATZ: Mr. Schaefer, if you could have your witnesses verify their exhibits.

MR. SCHAEFER: Thank you. First -- okay -- first, I'd like to ask Drs. Bell, Rabinowitz and Gerber -- bringing your attention to testimony which you

submitted on March 16, 2004 and ask, gentlemen, did you prepare that testimony?

DR. GERBER: Yes.

DR. RABINOWITZ: Yes.

DR. BELL: Yes.

MR. SCHAEFER: Okay. And is the content of that testimony true and correct to the best of your knowledge and belief?

DR. GERBER: Yes.

DR. RABINOWITZ: Yes.

DR. BELL: Yes.

MR. SCHAEFER: Okay. And do you adopt that testimony and swear to its truth and want the Council to consider that testimony?

DR. GERBER: Yes.

DR. RABINOWITZ: Yes.

DR. BELL: Yes.

MR. SCHAEFER: Is that sufficient?

CHAIRMAN KATZ: That's for No. 1, correct?

MR. SCHAEFER: Correct.

CHAIRMAN KATZ: Is there any objection to making No. 1 a full exhibit?

MR. FITZGERALD: Yes, in part.

CHAIRMAN KATZ: Okay. Mr. Fitzgerald,

please inquire.

MR. FITZGERALD: Well, part of it consists of answers that would only be given by David Carpenter and that is -- well first of all, it's identified as testimony of David Carpenter, but then starting on page 7 there is a question and answer asking Dr. Carpenter to state his name, address, etcetera, his qualifications, his service on various committees. That goes through -- close to the bottom of page 8. And I would object to the inclusion of that portion of the testimony.

CHAIRMAN KATZ: Mr. Schaefer, do you agree that we can strike that from the record?

MR. SCHAEFER: I have no objection.

CHAIRMAN KATZ: Okay. Any other objections to making --

MR. SCHAEFER: His -- the page numbers of mine are very different than his --

MR. FITZGERALD: Okay --

MR. SCHAEFER: -- I don't know what you're looking at, but I --

CHAIRMAN KATZ: We'll just note that it's the background of Dr. Carpenter.

MR. SCHAEFER: Of Dr. Carpenter we have no problem.

CHAIRMAN KATZ: Right, okay. Any other objections? Hearing none, No. 1 is a full exhibit with that change noted.

(Whereupon, Woodbridge Jewish Organizations' Exhibit No. 1 was received into evidence as a full exhibit.)

MR. SCHAEFER: If I could direct to Drs. Bell, Rabinowitz and Gerber, supplemental testimony concerning buffer zones was filed dated May 11, 2004. Did you prepare that testimony?

DR. RABINOWITZ: Yes.

DR. BELL: Yes.

DR. GERBER: Yes.

MR. SCHAEFER: Okay. And is the content of that testimony true and correct to the best of our knowledge and belief?

DR. RABINOWITZ: Yes.

DR. BELL: Yes.

DR. GERBER: Yes.

MR. SCHAEFER: Okay. And do you adopt that as your testimony and swear to its truth and want the Council to consider that testimony?

DR. RABINOWITZ: Yes.

DR. BELL: Yes.

DR. GERBER: Yes.

MR. SCHAEFER: Okay.

CHAIRMAN KATZ: And that's No. 3, correct?

MR. SCHAEFER: I don't know your numbering, I'm sorry.

CHAIRMAN KATZ: Well, we'd like to get you a hearing program so that we're all on the same page.

MR. SCHAEFER: Sure, that would be lovely.

CHAIRMAN KATZ: Okay, any objection to making No. 3 a full exhibit? Hearing none, No. 3 is a full exhibit.

(Whereupon, Woodbridge Jewish Organizations' Exhibit No. 3 was received into evidence as a full exhibit.)

CHAIRMAN KATZ: Mr. Schaefer, No. 2 is the Prefiled Testimony of Dr. Grubman. Do you want to do that next please.

MR. SCHAEFER: Thank you. Dr. Grubman, there's testimony submitted by you dated March 16, 2004. Did you prepare that testimony?

DR. GRUBMAN: Yes, I did.

MR. SCHAEFER: Okay. Is the content of that testimony true and correct to the best of your knowledge and belief?

DR. GRUBMAN: Yes, it is.

MR. SCHAEFER: Okay. Do you swear to the truth of that testimony and adopt it as your testimony and ask the Council to consider that testimony?

DR. GRUBMAN: Yes, I do.

CHAIRMAN KATZ: Is there any objection to making No. 2 a full exhibit? Hearing none, it's a full exhibit.

(Whereupon, Woodbridge Jewish Organizations' Exhibit No. 2 was received into evidence as a full exhibit.)

CHAIRMAN KATZ: Please note on No. 3 -- Exhibit No. 3 there is an appendix of articles and studies referenced that have been submitted as part of this record.

MR. SCHAEFER: Well, Madam Chairwoman, there are actually -- with respect to the testimony, which is No. 1, there are two appendices --

CHAIRMAN KATZ: Okay --

MR. SCHAEFER: -- which I would request be made an exhibit and part of the record.

CHAIRMAN KATZ: Okay, you want that to be a separate exhibit?

MR. SCHAEFER: Well if it's included in

the exhibit with the testimony -- I didn't understand you to say that, but if it is included, I have no problem, it can be part of the testimony --

CHAIRMAN KATZ: Well, let's make --

MR. SCHAEFER: -- but I just want to make sure it's part of the record.

CHAIRMAN KATZ: It's really -- I guess it's really an appendix to exhibit --

A VOICE: (Indiscernible) -- it's listed as 1 --

CHAIRMAN KATZ: Yeah, true --

A VOICE: Actually --

CHAIRMAN KATZ: Yes. I stand corrected. It is listed as part of Exhibit No. 1, so --

MR. SCHAEFER: Fine. That's fine. Then I would ask -- you correctly pointed out that there is an appendix to Exhibit 3, which either can be simply made an exhibit -- I've also prepared and given to Council and the Applicant a formal request for administrative notice of the governmental documents contained in that appendix. Essentially, the documents are from governmental sources or websites, except for two of them that are from utility companies building power lines. And so I don't know whether you want to separate them out, but --

CHAIRMAN KATZ: Yeah, why don't we do two separate things --

MR. SCHAEFER: Fine --

CHAIRMAN KATZ: -- is there any objection to taking administrative notice of the government documents? And have they been provided to the Applicant?

MR. SCHAEFER: They have.

MR. FITZGERALD: I'll answer no -- but all of those documents -- I'm assuming that all -- those are the same documents that are attached to the supplemental testimony?

MR. SCHAEFER: They -- they are in the appendix of the supplemental --

MR. FITZGERALD: And I've not -- I haven't objected to that --

CHAIRMAN KATZ: Okay, so --

MR. FITZGERALD: -- so they're already -- they're already in --

CHAIRMAN KATZ: They're already in as part of 3 --

MR. FITZGERALD: -- but you can take notice of them as well.

CHAIRMAN KATZ: Okay. They're in as part of 3, Mr. Schaefer.

MR. SCHAEFER: That's fine.

CHAIRMAN KATZ: Okay. Okay, I think we have all the exhibits verified.

MR. FITZGERALD: There is one other --

CHAIRMAN KATZ: Yes?

MR. FITZGERALD: There was -- I directed an interrogatory --

CHAIRMAN KATZ: Yes --

MR. FITZGERALD: -- to the Jewish Organizations.

CHAIRMAN KATZ: Yes. And you're right, that should have been listed in the hearing program because we did get a response to that interrogatory. Who would be the authors of that response to the interrogatory?

MR. SCHAEFER: Those authors are not here. They're the Principal of Ezra Academy and a representative of the Jewish Community Center. If you want me to bring them in at the next hearing to swear to the readings taken at their locations, two of which were done by UI and one by a third entity, we'll bring them in. I didn't realize that was necessary.

CHAIRMAN KATZ: Mr. Fitzgerald, could we just have UI verify those readings?

MR. FITZGERALD: Well --

CHAIRMAN KATZ: Would that work?

MR. FITZGERALD: No --

CHAIRMAN KATZ: That's too easy.

MR. FITZGERALD: Yeah -- we could just mark it as an exhibit and I will -- I will waive the --

CHAIRMAN KATZ: Okay --

MR. FITZGERALD: -- I will waive the --

CHAIRMAN KATZ: Why don't we do that, why don't we make that Exhibit No. 4 under Woodbridge Organizations and we'll take it for what it is.

(Whereupon, Woodbridge Jewish Organizations' Exhibit No. 4 was received into evidence as a full exhibit.)

CHAIRMAN KATZ: Okay. Any other procedural matters before we begin cross-examination? Okay. No. 4, we're labeling that Response to Applicants' Interrogatory. Great. Okay. Mr. Fitzgerald, you're up first.

MR. FITZGERALD: Thank you. Perhaps we could begin by just asking each of you gentlemen to state the relationship, if any, that each of you have with any of the organizations on whose behalf you're testifying?

DR. GERBER: Go in this order? Yes. I

have three children who attend Ezra Academy --

MR. FITZGERALD: Excuse me, you are Dr. --

DR. GERBER: I'm Dr. Gerber.

MR. FITZGERALD: Gerber, thank you.

DR. GERBER: Sorry. Yeah, I have three children who attend Ezra Academy. And I believe we're members of the JCC, though I don't get there as much as I'd like.

MR. FITZGERALD: Thank you.

DR. BELL: Dr. Bell, Mr. Fitzgerald. I have no children who attend Ezra Academy. I'm probably not up to the good member and standing of B'Nai Jacob and I rarely go to the JCC. And I'm here because the Town of Woodbridge asked me to.

MR. FITZGERALD: Thank you.

DR. RABINOWITZ: I'm Dr. Rabinowitz. I have a child at Ezra Academy and I am a member of the JCC.

MR. FITZGERALD: Thank you.

DR. GRUBMAN: Dr. Grubman. I'm a member of the JCC, Ezra Academy -- I have kids at Ezra Academy and B'Nai Jacob. I no longer am in elementary school -- (laughter) -- but I also more importantly have probably on the order of 50 or 60 patients that use one or all of

those facilities.

MR. FITZGERALD: Thank you.

MR. LYNCH: Excuse me --

MR. ASHTON: We're having trouble hearing you.

MR. LYNCH: Yeah, could you speak directly into the microphones or move them closer.

CHAIRMAN KATZ: What you're doing is you're trying to be polite --

DR. GRUBMAN: Okay --

CHAIRMAN KATZ: -- and direct your voice that way. But instead be less polite and put it into the microphone.

DR. GRUBMAN: Okay.

MR. SCHAEFER: And also the people you want to talk to are there and not --

DR. GRUBMAN: Got it.

MR. FITZGERALD: Dr. Rabinowitz, in your introductory portion of the testimony, you say that I regularly write technical reviews summarizing the latest research on a wide range of environmental health hazards both for this corporation and the International Aluminum Association. What is the corporation that you refer to there as this corporation?

DR. RABINOWITZ: I think that might have been an omission. I -- I provide some consulting services to Alcoa, and that was the corporation I was referring to.

MR. FITZGERALD: That was another -- another example of the mystery of the word processor --

DR. RABINOWITZ: Yes, I think so --

MR. FITZGERALD: -- that we're all familiar with. Okay. When -- when you provide technical reviews summarizing research to Alcoa and the International Aluminum Association, do you give them the benefit of the best work you can do and your honest opinions?

DR. RABINOWITZ: Yes, I do.

MR. FITZGERALD: And do you think that there's any reason to make a presumption to the contrary because those who have retained you to give them those opinions are in the aluminum business?

DR. RABINOWITZ: I try to be objective and give my best opinion medically.

MR. FITZGERALD: Right. And the fact that it's an aluminum company your giving an opinion doesn't affect that, does it?

DR. RABINOWITZ: I believe that they

engage my services to tell them things that they may not want to hear, that they are looking for an objective third-party opinion on certain hazards, yeah.

MR. FITZGERALD: Fine. Is any of you gentleman a professional epidemiologist?

DR. GERBER: No.

DR. RABINOWITZ: I -- I --

MR. FITZGERALD: Excuse me --

DR. RABINOWITZ: -- part of what I do is epidemiology.

MR. FITZGERALD: This is Dr. Rabinowitz?

DR. RABINOWITZ: Yeah, this is Dr. Rabinowitz.

DR. BELL: Mr. Fitzgerald, I have vast experience in interpreting large sets -- not of random studies like epidemiology, but controlled randomized trials.

MR. FITZGERALD: But none of you is a practitioner in the field of epidemiology, is that fair?

DR. BELL: That's correct.

MR. FITZGERALD: Okay.

DR. RABINOWITZ: I -- to clarify, I mean I am -- I do -- I'm a clinician. I teach. I have a Master's Degree in Chronic Disease Epidemiology and I am

engaged in epidemiologic research as part of what I do.

MR. FITZGERALD: Okay. Are any of you engaged in research on the causes of cancer?

DR. BELL: I have been engaged in the cause -- in research regarding the cause of cancer.

MR. FITZGERALD: And -- and would you please tell us about that?

DR. BELL: Yes. I actually am well published when I was on the facility at Yale focusing on proto-oncogene, that's genes that are changed within cells such that they cause cells to be transformed to become cancerous cells. I am also responsible for a company that focuses quite a bit of interest in research on discovering therapies for cancer and extensive experience in evaluating animal models of cancer, as well as cell culture models of cancer.

MR. FITZGERALD: Thank you.

DR. BELL: You're welcome.

MR. FITZGERALD: And do any of you have a background in the physics of electric and magnetic fields?

DR. GRUBMAN: I'm not sure I understand the question, if that answers it.

MR. FITZGERALD: Yes. I'm trying to get

some more orientation for what questions I'm trying to ask you --

DR. BELL: Oh, in that case no -- (laughter) -- unless you want to rephrase it of course.

MR. FITZGERALD: Alright, I think we have an answer from Dr. Bell. Anybody else?

DR. RABINOWITZ: I would say no.

MR. FITZGERALD: Okay.

DR. GRUBMAN: I think -- as a cardio-electric physiologist, I deal with electrical currents in the human body, so in as far that pertains to your question, then yes.

MR. FITZGERALD: Okay. Thank you, that's an example, and I'll ask you some questions about that. Okay. Since some of you are -- or at least are familiar with epidemiological concepts, I'll ask you a few questions about them. It's true, isn't it, that incidences and prevalence are important measures of disease frequency?

DR. BELL: Yes.

DR. RABINOWITZ: Yes.

DR. GERBER: Yes.

MR. FITZGERALD: And could you explain to the panel what incidence is and what prevalence is?

DR. BELL: Incidence is the -- are related to prevalence in that incidence is the annual occurrence, in this case presumably of a disease or a new onset of a disease. The prevalence actually is the presence or the total population of having that disease at any one time. So for example if a disease occurs 1 per 10,000 people per year and then if it's not a fatal disease, that population will build up over times and you may have 20 or 30 per 10,000 people as a prevalence that would be afflicted by that disease. And so depending on the disease activity, they tend to be related.

MR. FITZGERALD: And what are the principal types of epidemiologic study designs?

DR. RABINOWITZ: Did you say what are the principal types?

MR. FITZGERALD: Yes.

DR. RABINOWITZ: There are a number of types. There are case control studies, there are cohort studies, there are what's called ecologic studies, there are a number of different types.

MR. FITZGERALD: Okay. And what is a ecologic study?

DR. RABINOWITZ: An ecologic study is where you look sort of in a geographic way at whether

race of a particular disease are higher in one area than another and try to see if there's significant differences that could be explained by something. So if there's more stomach cancer in Japan, you wonder if it's because the diet is different in Japan. And the key thing about an ecologic study is that you really don't know what every individual with cancer has been doing, you just sort of look as a big look at one country does versus another and look at the overall rate in one country versus another. That's one example of an ecologic study.

MR. FITZGERALD: And what kind of -- what types of studies have been done with respect to EMF health effects?

DR. RABINOWITZ: What types of studies? I -- there's a number of different types. I would say that the -- a good number of them are considered case control studies.

MR. FITZGERALD: Yes. And what other types?

DR. RABINOWITZ: I think --

DR. GERBER: I'd say the overwhelming majority, almost all of the studies that are included in the META analyses that Drs. Cole and Ginsberg characterized as the state of the art in this area are

case controlled studies.

MR. FITZGERALD: Thank you. And what other types of studies have been done that you're aware of?

DR. GERBER: I'm -- I basically focused my analysis on those META analyses, but I believe that within those META analysis there were a couple of cohort studies, but given the low incidence of childhood leukemia, the cohort study model is a very difficult one.

DR. RABINOWITZ: If you'd like --

CHAIRMAN KATZ: Mr. Fitzgerald, if we could just elaborate on a cohort study.

DR. GERBER: Yeah. It's following a group of people over time and seeing what percent of the different groups get cancer. So if you looked at a large group of people who are living say near a power line and a large group of people who aren't and then you follow them for many years and you see the rate of cancer in the two groups --

CHAIRMAN KATZ: So you're saying because childhood leukemia doesn't have a high rate of incidence, those studies are not useful?

DR. GERBER: Those studies have not been the model that's been used by most researchers.

CHAIRMAN KATZ: Thank you.

MR. FITZGERALD: So I take it from that last answer that the only thing you looked at were childhood leukemia studies?

DR. GERBER: I'm just speaking personally --

MR. FITZGERALD: Yes. And I understand that --

DR. GERBER: Yeah. I -- that's correct in my case, yes.

MR. FITZGERALD: What is an association in epidemiology?

DR. RABINOWITZ: An association in epidemiology is where you are trying to look to see if there's any relationship between a risk factor, something that could cause a disease, and outcome, something that you care about, whether its cancer or another outcome, and you do -- you may do a statistical test to see if there really is evidence of an association. And please if anyone on the Council would like more explanation or if we're drifting into more technical language as sort of a reflect, please -- that's not what we want to do. We want to make this understandable to all of you.

MR. FITZGERALD: And what are the

recognized explanations -- well first of all, are there real associations and apparent associations that are not real?

DR. RABINOWITZ: Yes.

MR. FITZGERALD: Okay. Assume that there is a real association, what are the recognized explanations for the association?

DR. BELL: You're talking about a particular disease or just --

MR. FITZGERALD: No, no. I'm talking -- this is -- this is a general epidemiologic question.

DR. RABINOWITZ: I mean Dr. Cole did a nice -- a very nice job of going over those. Do you want us to go over them again?

CHAIRMAN KATZ: If you just agree with what Dr. Cole said, then you may say that.

DR. RABINOWITZ: I would agree with Dr. Cole. He went over epidemiological association --

MR. FITZGERALD: Trans-bias, confounding, causality, right? Okay. Okay, now let me ask you a few questions about your understanding of the sources of EMF exposure generally. Is it your understanding that everyone is exposed to electric and magnetic fields virtually all of the time?

DR. BELL: To varying degrees.

DR. RABINOWITZ: And there's a difference between the static electromagnetic field that the current exerts versus the alternating field that the electric current exerts.

MR. FITZGERALD: And I will limit my question actually to alternating current fields --

DR. RABINOWITZ: Okay --

MR. FITZGERALD: -- even limit it to alternating current fields, unless you go up to the top of a mountain top there is some exposure to electromagnetic fields --

DR. RABINOWITZ: If you have electricity year-round, you -- if you use electricity, you probably have some, yeah.

MR. FITZGERALD: And if we broaden our scope for just a moment from the extra low frequency or extremely low frequency fields that are associated with electricity, it's true, isn't it, that electromagnetic fields of a variety of frequencies permeate our environment?

DR. RABINOWITZ: At a low level, yes.

MR. FITZGERALD: Okay. And --

DR. BELL: Actually, it was also brought

up earlier in the testimony that much of it actually isn't measured as well.

MR. FITZGERALD: And Dr. Grubman, you explained that you have some familiarity with electric and magnetic fields because of a different type --

DR. GRUBMAN: Correct.

MR. FITZGERALD: -- would you explain what they are?

DR. GRUBMAN: The human body uses electricity to signal between cells. And specifically the heart uses an electric current to generate a heart beat. We as electro physiologists take advantage of that in patients whose hearts go too slowly and we put in pacemakers, and the pacemakers create a small electric current to get the heart to beat. The pacemaker -- modern pacemakers do not have the ability to see the heart beat on its own, so that the pacemaker will not tell the heart to beat if it's beating on its own, they'll just -- we call it demand pacing, they jump in when they're required. That requires that the pacemaker is able to differentiate the electric current that the heart is producing in a normal heart beat and the lack of that current.

MR. FITZGERALD: And it's not just the

heart that produces --

DR. GRUBMAN: Correct --

MR. FITZGERALD: -- or utilizes electrical currents. We have -- well what does the word endogenous mean?

DR. GRUBMAN: Inside.

MR. FITZGERALD: Inside. In the body as you guys use it, right. And nerves and muscles and glandular cells all utilize electrical currents to conduct impulses, don't they?

DR. GRUBMAN: Yes.

MR. FITZGERALD: And each of these is analogous anyway to current flowing through an electric wire in that they generate --

DR. GRUBMAN: Yeah --

MR. FITZGERALD: -- to the extent that they generate electric and magnetic fields?

DR. GRUBMAN: Correct.

MR. FITZGERALD: Okay. Now if we look at the electromagnetic spectrum for a moment we see at the very high end of it cosmic rays, X-rays, and visible light, right?

A VOICE: Okay.

MR. FITZGERALD: And we're all --

COURT REPORTER: I didn't hear an answer to that.

DR. GRUBMAN: Yes.

MR. FITZGERALD: Yes, okay. And lower down in the spectrum we get to the microwave frequencies, which include radio transmission, is that right?

DR. GRUBMAN: Radio is slightly lower, but yeah.

MR. FITZGERALD: Okay. And then when you get to the extremely low frequency fields, we get to 60-hertz fields, which is electric and magnetic fields, correct?

DR. GRUBMAN: Correct.

MR. FITZGERALD: What is ionizing radiation?

DR. GRUBMAN: Ionizing radiation?

MR. FITZGERALD: Yes.

DR. RABINOWITZ: It's -- none of us --

MR. FITZGERALD: Okay --

DR. RABINOWITZ: -- but it's basically higher energy radiation that's able to break off ions from atoms and change -- all sorts of damage in that way, that -- just a higher energy load I guess.

MR. FITZGERALD: And lower frequencies --

you're familiar with the term non-ionizing radiation --

DR. RABINOWITZ: Right --

MR. FITZGERALD: -- which means that it doesn't have that property --

DR. BELL: Actually, non-ionizing radiation in certain studies have demonstrated to initiate chemical reactions via electron transfer, which is a much easier accomplishable objective, which can be done with non-ionizing radiation.

MR. FITZGERALD: And -- 60-hertz electric magnetic fields are not capable of ionization, are they?

DR. BELL: No, but they are capable of initiating electron transfer in published studies.

MR. FITZGERALD: Well -- I think we'll get to that. What is the character -- now you understand that electric and magnetic fields and power frequencies are separately measurable and they exist independently, don't you?

DR. RABINOWITZ: Exist independently? I mean they're measured in different units in -- yeah.

MR. FITZGERALD: And what is the characteristic of the line that produces an electric field?

DR. RABINOWITZ: The characteristic of a

line that produces an electric --

MR. FITZGERALD: Yeah, characteristic of --

DR. BELL: It's flowing --

MR. FITZGERALD: -- electricity --

DR. BELL: -- there's flowing current. Are you trying to ask a specific question other than whether it has flowing current or not, Mr. Fitzgerald?

MR. FITZGERALD: Well, it's related to that --

DR. BELL: I mean --

MR. FITZGERALD: -- I'm actually interested -- well, let me make a statement and then you'll see. Do you agree that it is voltage that produces electric fields or do you know that?

DR. RABINOWITZ: On a lot of this I would defer to the expertise of many people on the Siting Council --

MR. FITZGERALD: Okay --

DR. RABINOWITZ: -- regarding electricity --

MR. FITZGERALD: -- alright, fine --

DR. RABINOWITZ: -- and things like that.

MR. FITZGERALD: Well -- I mean the --

there is -- there is a relevant point here, which is that -- and maybe I can't establish it through you, but --

COURT REPORTER: One moment please. (Pause). Thank you.

DR. BELL: I think, Mr. Fitzgerald, that Dr. Bailey actually testified to the components he has in his model that are responsible for producing the magnetic field that he measured. And we would assert that to the extent that Dr. Bailey recited those correctly, that was the answer.

MR. FITZGERALD: Right. And magnetic fields are a function of current rather than voltage? Now -- okay, forget --

DR. BELL: I understand that was responsible --

MR. FITZGERALD: -- we'll move --

DR. BELL: -- two testimonies ago, a three-fold increase in magnetic fields based upon the increase in current that was estimated to go through the line. It sounded like a one-to-one proportion.

MR. FITZGERALD: Do you know whether there are magnetic fields associated with distribution lines?

DR. RABINOWITZ: Yes -- my understanding is there are.

MR. ASHTON: We're having trouble hearing you, Mr. Fitzgerald --

MR. TAIT: Tony --

MR. FITZGERALD: Okay. And -- and do you -- do you --

MR. TAIT: Would you repeat the question please, we didn't hear it.

MR. FITZGERALD: The question was do you know whether there are magnetic fields associated with distribution lines? Yes -- the answer yes. And do you have any idea how magnetic fields on distribution lines compare with those on transmission lines?

DR. RABINOWITZ: My understanding, and again I am not an expert in electricity, is that the distribution lines carry a lower amount of current and a lower amount of voltage compared to a transmission line. At the -- around the transformer I understand there is a larger amount of EMF produced around there. But I am under the impression that because overall the current is lower, that in general the EMF fields from that are not as great as what's produced by an overhead high voltage power line --

MR. FITZGERALD: Okay --

DR. RABINOWITZ: -- that's -- that's my

impression.

MR. LYNCH: Dr. Rabinowitz, would you also agree that people are surrounded more by distribution lines than they would be by transmission lines?

DR. RABINOWITZ: Yes. And I -- and again there's -- I mean not again -- but there have been surveys of the estimated EMF exposure of the entire population, and obviously the most common exposure probably relates to distribution lines and current within the house.

MR. FITZGERALD: There's also sources outside the home other than distribution lines and transmission lines, aren't there?

DR. RABINOWITZ: Yes.

MR. FITZGERALD: And you're familiar of course that appliances produce magnetic fields?

DR. RABINOWITZ: Yes. But I think to make the comparison between appliance fields and a high voltage transmission line is a -- is a -- runs the risk of a real mistake.

MR. FITZGERALD: And why is that?

DR. RABINOWITZ: Because when you have an appliance, the EMF fields fall off, it's my understanding, very quickly with distance. And so that

if you have an electric appliance and you get a foot or two away of it -- away from it, the field is markedly dropped off. Whereas if you're near a transmission line, you're basically enveloped in a field that you can't walk a foot in one way direction -- in one direction or another and have it be changed.

MR. FITZGERALD: But there's many appliances that you are close to in order to use, aren't there?

DR. BELL: Typically, the household doesn't have all the appliances on at the same time, but you can escape.

MR. FITZGERALD: Sure, but --

DR. RABINOWITZ: For instance, I was -- recently Yale looked at some of the EMF around some of the computers and they found that if you were -- about one inch away on the side there's some EMF, but if you go more than an inch away, it basically dropped off to background. So they decided you'd have to drape yourself over the computer to have an exposure.

MR. FITZGERALD: Well, we've all had that experience -- (laughter) --

A VOICE: It's an occupational hazard --

MR. FITZGERALD: The -- and I'm going to

ask Dr. Bell, you're the cancer expert -- we've heard that leukemia --

DR. BELL: Utt-oh --

MR. FITZGERALD: Pardon?

DR. BELL: I was just saying utt-oh, that's all.

MR. FITZGERALD: Oh. We've heard that leukemia is caused by changes in the stem cells of the bone marrow. And is it -- is it known whether these changes can occur without any environmental stimulus?

DR. BELL: Generally speak -- you know, as Dr. Ginsberg testified -- I guess it was only yesterday, although it seems like a long time ago -- the causes of leukemia are generally not well understood in most etiology. The pathology of leukemia, the different DNA mutations are very well described and patients frequently know their disease by virtue of what part of the DNA is mutated or damaged. In fact, frequently the diseases will be called 5Q after a particular -- for example a particular part of a chromosome that's damaged.

MR. FITZGERALD: But -- I mean in general it's known that these mutations can -- can -- not always do, but can occur spontaneously, isn't that right?

DR. BELL: That's right. Actually, we

have several different sets of clones, really, you know, identical cells within our bone marrow. And over time some of those cells if they have developed enough DNA damage can develop a growth advantage where they actually outgrow all the other cells. And that's obviously a function of the number of hits or the amount of damage that's occurred yields to the evolution of a clone, a large population of leukemia cells where then they'll present to the patient and think they have a clinical disease.

MR. ASHTON: Can I use that as an explanation to my children --

CHAIRMAN KATZ: For his --

MR. ASHTON: -- (indiscernible) -- abnormal height --

DR. BELL: It's a possibility.

MR. ASHTON: Is it also possible for genetic damage or mutations to occur from things such as cosmic radiation, background radiation, that type of thing?

DR. BELL: Well certainly, you know, in very exposed areas, as we're all familiar with -- certainly I've learned a long time to wear a hat. And as the testimony prior to ours about sunscreen, so certainly

very exposed areas as we all know are very sensitive, and that's accumulative DNA damage, which is why it's much more likely to happen in the fifth and sixth decade. And that would be an example as you described, Mr. Ashton.

MR. ASHTON: Sure.

MR. FITZGERALD: But are there some environmental agents that have been established to cause leukemia?

DR. RABINOWITZ: Yes.

MR. FITZGERALD: And what are they?

DR. RABINOWITZ: I'd say several are benzene, ionizing radiation, and certain chemotherapies.

MR. FITZGERALD: And have those agents been recognized as causes of leukemia in both children and adults?

DR. RABINOWITZ: My understanding is -- I don't know about benzene. I believe that chemotherapy agents and I believe that ionizing radiation has been associated with that, yeah.

MR. FITZGERALD: We're finally going to get to the substance of your testimony, but --

DR. BELL: The electricity part, huh?

MR. FITZGERALD: Right. On page 9 you state that our conclusion is based on approximately 50

clinical studies and the conclusions -- I'm sorry, I'm giving page references, but actually it turns out that --

DR. RABINOWITZ: If you could ask the question, we'll try and find it.

MR. FITZGERALD: My pages may be different. In any event, you say our conclusion is based on approximately 50 clinical studies and the conclusions reached by independent scientific panels, and you then go to name several of the panel studies. And then you've provided this two-volume appendix, which has 33 references in it. And I'm not going to go through each one of these in detail, but I would like to go through the list and categorize them and establish what's in the appendix. And I'm looking now at your list of references. The first one is the IARC monograph, and am I correct that what's in the appendix consists of the Executive Summary and Chapter 5?

DR. RABINOWITZ: Looking quickly, that appears to be true.

MR. FITZGERALD: Okay. And Reference 2 is to the National Institutes of Health Review. And that's in there in its entirety, right?

DR. BELL: Yes.

MR. FITZGERALD: Both of these references

are multidisciplinary reviews by government agencies or under the auspices of government agencies, correct?

DR. BELL: Yes.

MR. FITZGERALD: The third --

DR. BELL: Although IARC really isn't actually, right? IARC is a world -- you know, is sort of a semi-autonomous arm of the World Health Organization, which, you know, would be a non-governmental organization.

MR. FITZGERALD: An NGO --

DR. BELL: In the popular vernacular.

MR. FITZGERALD: Right, okay.

DR. BELL: But to that extent, yes.

MR. FITZGERALD: Reference 3 is the Neutra (phonetic) review -- or -- and you have included Chapter 8, is that right?

DR. BELL: Yeah, I think he actually had a publication, so this is actually the California report by Neutra, et al.

MR. FITZGERALD: Reference 4 is the Department of Public Health Fact Sheet that we've seen elsewhere.

DR. BELL: It's the January 2004 version, yes.

MR. FITZGERALD: And -- I'm going to call that a fact sheet, whereas the first -- the first three I would characterize as reviews. Would you concur with that?

DR. BELL: Sure.

MR. FITZGERALD: And the -- No. 5, however, is an original -- is a report of -- oh, I'm sorry, no it isn't -- 5 is an article by Linet, but it's not a field study, it is an article on cancer incidents and trends, is that right?

DR. BELL: It gets to your original question of incidence and prevalence --

MR. FITZGERALD: Yes --

DR. BELL: -- Linet --

MR. FITZGERALD: -- right, yeah --

DR. BELL: -- a small world.

MR. FITZGERALD: No. 6 is a paper on children's health and the environment, which deals with the special vulnerability of children generally, correct?

DR. BELL: Actually, I think -- I believe that this paper was actually part of the mandate from the United States Federal Government to focus on children's health issues and particular environmental hazards to children. And it actually was produced for the purpose

of the United States Environmental Protection Agency.

MR. FITZGERALD: Fine. Does it mention EMF?

DR. BELL: I'm just trying to see the date of -- (pause) -- I don't think it actually -- whether it does or not --

MR. FITZGERALD: Okay. Okay, well we can -- we can pass on that. In any event, it's not a specific EMF article, it's about children's health more generally?

DR. BELL: That's right.

MR. FITZGERALD: And then No. 6 -- I'm sorry, that was No. 6. No. 7 is a public policy document, correct?

DR. BELL: I think that's correct. I think actually -- unbeknownst to us actually 7 came in with a couple of documents as a matter of fact.

MR. FITZGERALD: Oh. Well, maybe I --

DR. BELL: It's okay, I think your characterization is still fair though.

MR. FITZGERALD: Okay. Now, we get to numbers 8 through 14, and each one of those is a report of a piece of epidemiological research, which one might call a field study. Would you accept that term or an

original epidemiology study?

DR. BELL: Okay, if you want to call it original research.

MR. FITZGERALD: Original research, okay.

DR. BELL: That works.

MR. FITZGERALD: Is that what you refer to as a -- in your testimony as a clinical study?

DR. BELL: It's a bioassay, I apologize, yes.

MR. FITZGERALD: Okay.

DR. BELL: Clinical is to distinguish -- generally is a term that most people focus on, either studies that are in humans, which are called clinical studies, or studies that are not in humans, which are laboratories studies, as Dr. Aaronson prefers they would be in cell culture, as others might talk about they'd be animals studies, but whatever it is, they would be non-human studies.

MR. FITZGERALD: I thought that a clinical study was something done in a hospital?

DR. RABINOWITZ: Yeah, I think -- again from a professional point of view, we tend to think about that mostly in that direction as well, but --

DR. BELL: I mean a clinical study

involves patients --

DR. RABINOWITZ: The broader picture is it's --

MR. FITZGERALD: Okay --

DR. RABINOWITZ: -- it's individuals, yes.

MR. FITZGERALD: No. 15 is an exposure -- wait a minute -- 15, let me look at it -- I can't read my own handwriting -- exposure assessment, yeah, that's what it stands for. It's -- it's an article about exposures to magnetic fields, right?

DR. BELL: That's correct. I believe it's a study in Los Angeles.

MR. FITZGERALD: Okay. And 16 is a review from the National Research Council, and you've included in appendix the Executive Summary and chapter -- uh -- the Executive Summary and Chapter 5 here, but that's the same thing I had earlier, is that right --

DR. BELL: It's a different study. I believe actually what -- Mr. Fitzgerald, you're characterizing correctly, which is it's the summary, and actually it also focuses on I think the human epidemiology studies.

MR. FITZGERALD: Okay, thank you. Then we get to some more original -- oh, no, I'm sorry -- 17, 18

and 19 are the three META analyses that we heard about, and that is a -- these are analyses of other studies --

DR. BELL: Actually in each of these cases I would defer to Dr. Gerber as the statistician --

DR. GERBER: Sure. I think that your characterization is mostly correctly, it's just a little complete because Ahlbom and Greenland got the original data from the studies that they were reviewing and so were able to conduct some independent analysis as well, but I'm not going to disagree with the general point that you're making.

MR. FITZGERALD: Okay. And then 20 through 28 -- I'm sorry, 20 through 27 are reports of laboratory studies such as -- although I don't think this is one of them, such as that Lei and Singh study that we've talked about, these are reports of experiments conducted in laboratories?

DR. BELL: I think it was Mr. Ashton who pointed out Reference 22 as I recall, which was one of the ones that Dr. Ginsberg mentioned as well, so that would be right, these are the non-human studies.

MR. FITZGERALD: I'm sorry, what was -- what was --

DR. BELL: These are some of the non-human

studies --

MR. FITZGERALD: Non-human -- non-human, okay. 28 is another review, although it also is a suggestion of a -- it has a hypothesis in there as well as being a review of the previously published literature, right?

DR. BELL: I think you actually characterized it very well. It's a review that generates hypothesis for further research is exactly right.

MR. FITZGERALD: Okay.

DR. BELL: Or what it considers to be a plausible hypothesis, right.

MR. FITZGERALD: 29 is another -- is an article by one of the authors that was included in 28 and a colleague, and that also is about --

DR. BELL: It's related, yeah --

MR. FITZGERALD: -- that hypothesis, yeah.

DR. BELL: Right.

MR. FITZGERALD: And then we get to 30 through 32 -- I'm sorry, 30 through 31. Both of those two are reviews of -- under the auspices of government agencies, is that right?

DR. BELL: I think -- I think again actually --

MR. FITZGERALD: Well --

DR. BELL: -- probably 31 might be an NGO issue, but the concept is correct, yes.

MR. FITZGERALD: Right. It represents another --

DR. BELL: The same -- yeah, the same view.

MR. FITZGERALD: Okay. 32 is a background -- is entitled Background -- it's a publication of the World Health Organization that deals with policy issues, right?

DR. BELL: It espouses their view in March 2000 of cautionary principles regarding EMF.

MR. FITZGERALD: And finally we get to -- 33 is another fact sheet, similar format to the Connecticut fact sheet, right?

DR. BELL: Yes. From an NGO, yes.

MR. FITZGERALD: Okay. Now, I -- on this count in terms of what you would label as clinical studies in the --

DR. BELL: I think it's probably 10 to 15 or something like that.

MR. FITZGERALD: I have seven original -- pieces of original research, 8 through 14. And then if

you include the three META analysis as clinical studies, I'm not sure if you do or not, then that would bring it up to 10 --

DR. GERBER: I'm sorry, I don't mean to interrupt. I think I can respond to your -- to one of the implications at least in part with respect to the META analyses which you mentioned. A META analysis takes the data from a number of studies. We presumably could have included another appendix which was all of the studies that were reviewed in the META analysis, but we didn't do that.

MR. FITZGERALD: You're -- well --

DR. BELL: As well as actually an appendix, all the references in each of the seven reviews that we have as well.

MR. FITZGERALD: What I'm trying to do simply, doctors, is establish what were the 50 clinical studies to which --

DR. BELL: That's actually reviews reviewed by the National Research Council in the reference I think. And it scans back towards the late 70's in both the United States and outside the United States.

MR. FITZGERALD: So the 50 studies you

were referring to are approximately 50 studies that were listed in a list of references in the National Research Council review?

DR. BELL: Actually, I think what they stated was they found it remarkable that out of the 53 studies 45 of them showed an increase in cancer with EMF and 8 did not --

MR. FITZGERALD: Would you --

DR. BELL: -- but --

MR. FITZGERALD: -- would you answer my question --

DR. BELL: -- but from the review, right.

MR. FITZGERALD: -- yeah -- okay, you said yes, it's -- they're listed -- the studies that you referred to are listed in the citations in the --

DR. BELL: They're incorporated in the citations that we have, yes.

MR. FITZGERALD: And what was that review that you referred to?

DR. BELL: There are actually several. One was the National Research Council --

MR. FITZGERALD: That -- okay, that's the one that you just mentioned. Alright so that's --

DR. BELL: Well, there's several actually

as I said --

MR. FITZGERALD: That's where I will look to find those studies. And are you -- and are all those -- that roughly number 50, those are all epidemiologic studies?

DR. BELL: Cancer studies, yes.

MR. FITZGERALD: Okay.

DR. RABINOWITZ: Can I clarify? I mean, I think that round number of 50 includes the recent META analyses --

MR. FITZGERALD: Okay --

DR. RABINOWITZ: -- in terms of on what do you base your conclusion that there's a strong position relationship. And we say our conclusion is based on approximately 50 clinical studies. So this -- and I think Dr. Bell has clarified that clinical we really should be talking about human studies. But this includes the most up to date studies that are in here, whereas the National Research Council was a number of years ago.

MR. FITZGERALD: Fine.

DR. BELL: And that would have been prior to any of the META analysis.

MR. FITZGERALD: Okay. Now the studies -- the original studies that you've included were covered in

the META analysis, weren't they?

DR. GERBER: Yeah, that's correct, certainly.

DR. RABINOWITZ: But they -- but as Dr. Gerber said they took original data and basically restudied it. So it's not quite like taking an existing study and just looking at it. It's actually taking the data and manipulating it.

MR. FITZGERALD: No, I -- I understand that --

DR. GERBER: I would say though --

MR. FITZGERALD: -- I'm not -- the point is that the original studies that you include are included among those studies that were addressed by the three META analyses?

DR. RABINOWITZ: Right.

MR. FITZGERALD: Right, okay.

DR. GERBER: I would say the most relevant ones certainly, and --

MR. FITZGERALD: Well --

DR. GERBER: Yeah, that's correct, certainly.

MR. FITZGERALD: Okay. And that's -- but you -- because you thought they were particularly

relevant, you included copies of the individual studies as well, is that -- is that right? Okay.

COURT REPORTER: Is that a yes?

DR. RABINOWITZ: Yes.

MR. FITZGERALD: Now, the ones that you included were Wertheimer, Leeper from 1979, Savitz from '88, Feychting and Ahlbom from '93 and '95, Linet from '97, and Green and Nicolotsie (phonetic) from '99, right?

DR. BELL: I'm sorry? Are you just reading from our testimony? If so, then --

MR. FITZGERALD: No, I'm just reading from a list that I --

DR. BELL: Oh -- I apologize, we just got off the references. Do you want to -- I apologize -- so you had Linet, is that right -- are you just reading off the reference list?

MR. FITZGERALD: Yeah, I could give you the --

DR. BELL: I mean what's on the reference list is what's in -- what we've included --

MR. FITZGERALD: Right, right --

DR. BELL: -- as references --

MR. FITZGERALD: Right, you've --

DR. BELL: -- tautology --

MR. FITZGERALD: Right. Now, I'm going to ask you some questions about these studies, but first I'd like to ask you about ones that you didn't refer to. Are you familiar with the UK study? The childhood leukemia --

DR. GERBER: Yeah -- yes, I am. I am, and I think everyone else is as well.

A VOICE: Yeah.

MR. FITZGERALD: Okay. And is that the largest study of childhood leukemia -- epidemiologic study of childhood leukemia that's ever been done?

DR. GERBER: I believe it is, yes.

MR. FITZGERALD: And was it a well conducted study?

DR. GERBER: I have no reason to think not.

MR. FITZGERALD: Was it -- was it initially designed under Richard Doll as the principal investigator?

DR. GERBER: I'm not sure how much -- I mean with all due respect, I think Sir Richard Doll was well into his 80's I believe when the study was initiated, which doesn't mean --

MR. TAIT: Easy now --

DR. GERBER: -- he didn't have a lot to do with that --

MR. TAIT: Easy now -- (laughter) --

DR. GERBER: -- but I'm just saying I have no reason to believe that people do their best science in their 80's --

MR. FITZGERALD: Actually, I --

DR. GERBER: -- even if they're Sir Richard Doll, but -- but again, I -- I think that --

MR. FITZGERALD: I --

DR. GERBER: -- yes is the answer to your question.

MR. FITZGERALD: Parenthetically, I once saw Sr. Richard Doll make a presentation in which he had a graph and he pointed out that he had redefined middle age to go up to age 69 -- (laughter) --

DR. BELL: That's also occurred with transplant surgeons as it turns out. The level for transplantation keeps going up as the surgeon gets older to allow for more transplants --

A VOICE: It's a common phenomenon.

MR. FITZGERALD: Well, is there any reason why you didn't include the UK study?

DR. GERBER: I would just have to say that

I think these studies were included in a somewhat episodic fashion, but all of the studies that are relevant and important in this area are included in the META analyses, which are contained in this literature review. And so anyone who consulted -- actually consulted our references would be aware of all of the studies that had been done recently, including the ones that Dr. Cole singled out as the ones he preferred. I think he singled out McBride's Canada study, the UK, and also Linet, the USA, the New England Journal of Medicine study.

MR. FITZGERALD: McBride isn't in here either, right?

DR. GERBER: Uh -- yes, it is. It's included in the META analysis --

MR. FITZGERALD: Yes, but it's --

DR. GERBER: -- but yeah.

MR. FITZGERALD: But it's not one of the ones that you chose to -- such as for instance the 1979 Wertheimer Leeper study, you didn't --

DR. GERBER: I think every -- every literature -- everyone who talks about this area would have mentioned Wertheimer, but --

MR. FITZGERALD: What about --

CHAIRMAN KATZ: Can I interrupt, Mr. Fitzgerald?

MR. FITZGERALD: Sure.

CHAIRMAN KATZ: Dr. Gerber, is there any studies that were mentioned by either Dr. Ginsberg or the Applicants' witness panel that you think that we should discount in our deliberations?

DR. GERBER: You know, I'm not prepared to comment on the quality of individual epidemiological studies. I -- I can comment on the basic data analysis. And I -- and I'll have comments on that if you're interested in hearing what I have to say, but I'm certainly not going to find fault with the work of McBride, Linet, or the UK Child Cancer Study, but I think that anybody can look at the data and draw their own conclusions. But in terms of the studies, you know, certainly not.

DR. BELL: Maybe you can tell Chairman Katz about the relevance between the size of the patients and the number of the patients in the META analysis versus --

DR. GERBER: Well, I'm prepared to let Attorney Fitzgerald conduct this proceeding if he'd like to continue -- (laughter) -- but we could have a

conversation about whatever you think is appropriate.

CHAIRMAN KATZ: Well, I -- I will let Mr. Fitzgerald continue, but I may be following up with you --

DR. GERBER: Sure --

CHAIRMAN KATZ: -- when we get to our part of this --

DR. GERBER: Certainly, certainly --

CHAIRMAN KATZ: -- on how you think as a Council we should weigh these different studies which say -- some which say this is a problem and ones would say maybe this isn't a problem --

DR. GERBER: I'm certainly --

CHAIRMAN KATZ: -- but we'll --

DR. GERBER: -- I'm quite happy to answer whatever questions you have --

CHAIRMAN KATZ: -- but we'll get to that --

DR. RABINOWITZ: Just as a preview to that, as you look at any individual study, look how many actual cases and controls are in the high exposure groups --

CHAIRMAN KATZ: Yeah --

DR. RABINOWITZ: -- just when you look at

a study, and we can talk about that.

CHAIRMAN KATZ: Okay. Thank you.

MR. FITZGERALD: Actually are there any of studies that say this is a problem?

DR. GERBER: This is a problem?

DR. RABINOWITZ: What is a problem?

MR. FITZGERALD: Well --

CHAIRMAN KATZ: He's paraphrasing me.

MR. FITZGERALD: Yes, I'm paraphrasing the Chair, who said that some say it's a problem, some say it may be. I mean my -- my understanding indeed of your testimony is that nobody claims that EMF has been established as a cause of childhood leukemia. The concern is that there are suggestions in the literature that that might be a possibility --

DR. BELL: I think that's -- I think that's accurate --

DR. RABINOWITZ: That's correct --

DR. BELL: -- I think that your focus, which is exactly right, is that there's broadly a hodgepodge of studies going this way, that way, and not even changing. And you know, amongst that, you know, there are comments and all sorts of discussions, but none of which either we or you would consider to be -- to be

credible.

MR. FITZGERALD: Now Linet -- you mentioned Linet. In your testimony you characterize that study as -- you say it strongly supports a dose response relationship between EMF levels and childhood leukemia. What is a dose response relationship?

DR. BELL: A dose response relationship is particularly in human study, so I'll leave the clinical piece out of this for the sake of confusion. A dose response -- and I speak at this from experience with looking at tens of thousands of patients and clinical studies and substantial interaction with the Food and Drug Administration on this area -- a dose response in human studies is when you give a particular dose of an intervention called a drug, called EMF for example, you give EMF at this level, that level, and that dose, you'd expect the response to get higher every time. It does not mean -- or what it was asserted before from a regulatory point of view that if you double the dose, you double the response. In my experience that's been very, very rarely observed in complicated examples, for example humans. It means though that when you give more, you should see more effect. And in fact, one expects at some level that that increasing effect with increasing dose

will get less and less and less, such that at some dose you won't see any more effect.

MR. FITZGERALD: You mean you won't see any more increase?

DR. BELL: That's correct.

MR. FITZGERALD: And so you'll still see an effect?

DR. BELL: I apologize, that's -- I appreciate you pointing that out. You'll see the same effect. It will level off.

CHAIRMAN KATZ: Plateaus.

DR. BELL: That's the precise term, thank you.

MR. FITZGERALD: Now what Linet reported was, if you look at your data, which I'm sure you did, is a tendency to a higher risk at exposures above 2 milligauss and a tendency for the risk to be -- I'm sorry, no tendency, excuse me -- she reported no tendency for the higher risk at all exposures above 2 milligauss, but a tendency for the risk to be higher between 3 and 5 milligauss. And then above 5 milligauss, the risk went back down, didn't it?

DR. BELL: Actually at 5 -- above 5 milligauss as it regards Dr. Rabinowitz's comment, there

were five individuals, so it's a very small number. In fact, one would say that it went back down, but just there's too few to sample, which really highlights one of the problems with this study --

MR. FITZGERALD: Sure --

DR. BELL: -- is that with any of these single studies, just as you're saying, Mr. Fitzgerald, if you have a very small sample size, your ability to detect a change is very little. And I think that really highlights why this is an area that prior to the META analyses one sees -- you know, every couple a hundred patients in a study you see varying effects because the power statistically to identify the truth of what's happening obviously is dependent upon how many cases in this case you inquire. If you inquire in maybe 50 to 100 cases, you're likely of seeing a difference is much greater. But if you have only three or four cases, who can tell whether there's really a change or not because you can't see, you know, a double -- you know, an increase by 20 percent if you see one more case, that could be an effect.

MR. FITZGERALD: Dr. Bell, if I could ask you to come back to the question. What we were talking about was the statement in the testimony that the Linet

study showed a strong dose response relationship. And my question to you is whether I accurately characterized the data as showing no tendency to a higher risk if you looked at all exposures above 2 milligauss, a tendency for the risk to be higher between 3 and 5 milligauss, and the risk going back down above 5 --

DR. BELL: Yeah --

MR. FITZGERALD: -- that's the --

DR. BELL: -- I understand. Actually, I know we have this page number issue, but I'll just look at that section of the testimony which actually lays it out, which is they did another analysis, so as Mr. Fitzgerald is describing, that looking at 2 milligauss as the cutoff, they saw the risk being 1.72, so there's 72 percent increase in likelihood of having leukemia. And that was not conventionally significantly. The value instead of being only 5 out of a hundred chances being random, it was 12 out of a hundred. So that 1.53 risk when they looked then at greater than 3 milligauss, they saw it go up to 1.72 risk of a cancer. And that's the dose response, as you go up higher, you see a greater effect. In this case it's numerically greater.

MR. FITZGERALD: And then when you went higher, it went down?

DR. GERBER: I would say -- Mr. Fitzgerald, are you referring to Table 2? Is that -- is that where you're basing your -- is that where we're working from? Linet --

MR. FITZGERALD: Let's see -- it's Reference 12 --

DR. GERBER: Just so we can situate ourselves.

MR. FITZGERALD: Table 2, yes.

DR. GERBER: Okay. So Table 2 -- what does Table 2 show? Table 2 shows that for the match analysis, the -- there's -- Linet shows over 2 milligauss, say a 50 percent increase in leukemia rates, is that -- is that where we're looking, the 50 percent increase with the confidence interval there?

MR. FITZGERALD: Um-hmm.

DR. GERBER: Okay. And then you can see those confidence intervals are fairly large. If you group all the people over 3, I think you've got -- Linet shows one point -- one point -- I'm sorry, a 51 percent I believe increase in relative risk. But if you look at only those cases above the 4 milligauss cutoff, which you can't really do that in your head here, it's just going to be too hard to do, but Ahlbom does it in the META

analysis, and I believe Linet shows that the relative risk is 3.44, which is I think approximately a -- like a 250 percent increase in the incidence of childhood leukemia for the over 4 milligauss exposure group. I think that might be what was being referred to in the testimony --

CHAIRMAN KATZ: Mr. Fitzgerald --

DR. GERBER: -- I'm not positive of that, but --

CHAIRMAN KATZ: -- I'm going to ask you to in the next few minutes suspend your cross --

MR. FITZGERALD: Sure --

CHAIRMAN KATZ: -- at a logical point because we have some housekeeping matters that we need to do before we adjourn.

MR. FITZGERALD: Sure. If I can just get an answer to what happened to above 5 milligauss?

DR. BELL: Above 4 milligauss -- above 2 milligauss there's 1.53. Above 3 milligauss there is 1.72. And above 4 milligauss it's 3.43.

MR. FITZGERALD: And is there --

MR. TAIT: And is there 5 --

MR. FITZGERALD: Is there a report for above 5?

DR. GERBER: Yeah, there certainly is. It's a report of 1, but the confidence interval goes from .26 to about 4. In the case of the unmatched analysis, 4.9. In the case of the matched analysis, 4. So, I -- I don't think -- I don't think this really shows anything from a statistical standpoint, but if you want to make the point that 1 is less than -- that 1 is less than 3 and a half, absolutely you're -- that's absolutely correct.

MR. FITZGERALD: Okay. That's a good place to suspend.

CHAIRMAN KATZ: That's a good place to stop? Okay, thank you.

MR. SCHAEFER: Madam Chair, could I just ask -- make one comment? We do have copies of the appendix to the supplemental testimony to the commission members --

CHAIRMAN KATZ: Yes --

MR. SCHAEFER: -- and wondered if I could just at the end of the meeting provide them to you so I don't have to carry them back and bring them back again?

CHAIRMAN KATZ: That's fine.

MR. SCHAEFER: Thank you.

CHAIRMAN KATZ: Please give those to Mr.

Cunliffe and we'll get those out. Okay, just some --

MR. WILENSKY: Let Fred carry them -- (laughter) --

MR. ASHTON: No, he'll let you carry yours.

CHAIRMAN KATZ: We'll take care of a couple of housekeeping matters. First at this point, I'm going to ask -- give Dr. Ginsberg an opportunity to clarify his testimony on the cancer rates and numbers. Dr. Ginsberg.

DR. GINSBERG: Thank you. The rates that we were using to estimate roughly 1 in 10,000 leukemia for children is based upon our tumor registry's reporting for the year 2000 where they report for different age groups, age 0 to 4, 5 to 9, 10 to 14. And what we looked at was their report for the rate per hundred thousand, which for the age group 0 to 4 is 13 per hundred thousand, which is roughly 1.3 per 10,000. For age groups 5 to 9, it's 8 per hundred thousand, which is .8 per 10,000. And for the later age group, it's -- 10 to 14, it's 2.4 per hundred thousand, which is .24 per 10,000. If one were to weight average based upon the population in those different age groups, across those -- and this is just for males by the way -- the females

you'd have to add based upon their rates -- but just using the males as an example, if you weight averaged, you would end up with approximately 4 per hundred thousand. When you add in the girls, you get 5.8 per hundred thousand or .58 per 10,000. So that's across all the ages from 0 to 14. When you look at the highest group, the 0 to 4 years olds, their rate is approximately 1 per 10,000 for boys and girls combined. So these are just right in the report, you can -- you know, I think it's on the record, you can just look at the report that I made available --

CHAIRMAN KATZ: Thank you --

DR. GINSBERG: -- to -- to the panel.

CHAIRMAN KATZ: Thank you for that clarification in the record.

At this time, I'd like to -- Mr. Phelps has provided copies of the schedule we are looking at for June and July. I have a correction for you. On the bottom of the first page where it says close of record, September 17th is a Friday.

MR. S. DEREK PHELPS: This was mailed out to the service list this afternoon and I just wanted to make the correction on the bottom of the first page. What we're posting on the website of course will be

correct, but that's a Friday, September 17th.

CHAIRMAN KATZ: We envision that our under-grounding consultant will be perhaps posing -- on the second June session posing some things that we might want to -- some things on GE modeling, etcetera, that we might want to take up in July. But the -- basically, our under-grounding expert will probably be doing some cross-examination. We envisioned a continuation of the EMF today on June 16th.

If anybody has any comments or concerns about the schedule, I'd like you to have -- see -- contact Mr. Phelps. Or if there's something readily apparent, you can tell us now. Mr. Wertheimer.

MR. WERTHEIMER: (Indiscernible) -- a question -- the record -- the close of the record is September 17th?

CHAIRMAN KATZ: Yes.

MR. WERTHEIMER: So briefs are 30 days thereafter. Isn't that the -- your practice?

CHAIRMAN KATZ: That's right.

MR. WERTHEIMER: Okay. Because that's not clear from the following sentence there. It said may file briefs --

CHAIRMAN KATZ: Yes --

MR. WERTHEIMER: -- but we'll just do the math. Thank you.

CHAIRMAN KATZ: Uh -- well if you go to page 2 -- (pause) -- oh, okay -- Mr. Wertheimer, the last hearing is July 29th. And 45 days after July 29th is September 17th, so the briefs have to be in by then.

MR. WERTHEIMER: Got it. Okay.

CHAIRMAN KATZ: Okay? That's how the math works.

MR. WERTHEIMER: The record closes on the 29th, got it.

CHAIRMAN KATZ: Miss Kohler.

MS. KOHLER: Just as a clarification, the July dates, the 27th, 28th and 29th, I think we've been referring for the Towns' purposes, both Woodbridge and Milford and the larger town group, to the GE modeling as being -- we've created sort of a term of art --

CHAIRMAN KATZ: Yes --

MS. KOHLER: -- in fact, the GE modeling will also include a load flow analysis --

CHAIRMAN KATZ: Yes --

MS. KOHLER: -- that is done by the towns separately and any other issues that may come up as a result of those alternatives --

CHAIRMAN KATZ: Yes --

MS. KOHLER: -- so maybe we might want to refer to the July dates as being presentations of the Towns' alternatives.

CHAIRMAN KATZ: Okay. Mr. Phelps, can we do that? Can we --

MR. PHELPS: Could you repeat that for me?

MS. KOHLER: Presentation of the Towns' alternatives?

MR. PHELPS: Where?

MS. KOHLER: On the --

CHAIRMAN KATZ: July --

MS. KOHLER: -- July 27th, 28th dates, just so it includes more than just the GE modeling for that.

CHAIRMAN KATZ: So the intent is to close the hearings by the end of July. Mr. Ball.

MR. BALL: Yes. The only other thing that I would add is -- obviously, there is still an open issue for the Towns of Woodbridge and Milford, and as you know we are waiting to see if GE can accelerate their studies, so that might impact the dates that we have put in our motion, and I guess that's still an open question, but we will --

A VOICE: (Indiscernible) -- open --

MR. BALL: Slightly open and not promising as we understand from Mr. Fitzgerald, but we will, I think, very quickly want to get back to you --

CHAIRMAN KATZ: Yes --

MR. BALL: -- as to whether it's doable and then ask you to act on our motion one way or the other.

CHAIRMAN KATZ: We'd appreciate that.

MR. BALL: Thank you.

MS. KOHLER: Is there -- does anybody know when ISO is planning on -- in the schedule is ISO planning on being in the second set of June hearings?

CHAIRMAN KATZ: We -- I don't know. Can anyone report -- indicate what ISO -- I guess they were served -- yes, Miss Randell?

MS. RANDELL: My understanding from Mr. MacLeod is that ISO was planning to be here in the second set of June hearings. Now, I don't know whether you want to continue that or push them to July, but that was their plan to be --

CHAIRMAN KATZ: No, I'd rather do them -- I don't want to leave too much to July.

MS. RANDELL: Okay. So they are planning to be here the second set of June hearings. When I spoke

to Mr. MacLeod, he said he did not think it would be possible to get them here for the first set.

CHAIRMAN KATZ: Okay. I had envisioned that last day in June, June 17th to be sort of -- I'd like to -- you know, some of these little things that have been left out there in cleaning up, we could take those up that day. Any other procedural matters we need to do? Okay. The prefiled date is May 25th.

A VOICE: Underscore that.

CHAIRMAN KATZ: Underscored. We really -- we really need to stick to May 25th if we're going to handle this is a timely and expeditious manner. Yes?

MS. RANDELL: Not meaning to be too much like Mr. Johnson, but I do have a question. With respect to the Towns' proposals -- I understand we'll get load flow and transients and harmonics later, but to the extent they have real routing proposals, the sooner the companies can get them, the better. It's not an easy thing as you know --

CHAIRMAN KATZ: Yes --

MS. RANDELL: -- to review potential routes for environmental aspects --

CHAIRMAN KATZ: Right --

MS. RANDELL: -- for constructibility and

so on --

CHAIRMAN KATZ: I think that's fair --

MS. RANDELL: -- and so can we ask that we get something a lot sooner?

CHAIRMAN KATZ: Miss Kohler, did you hear that?

MS. KOHLER: We did. And to the extent that we can and it not necessarily implicates the technical aspects of it --

CHAIRMAN KATZ: Right --

MS. KOHLER: -- we will certainly try because we understand their concern.

CHAIRMAN KATZ: Right.

MS. KOHLER: Some of the aspects though are certainly technically based, we won't know until we have the studies back.

CHAIRMAN KATZ: Okay, and --

MS. KOHLER: I'm not sure that answers the question, but --

CHAIRMAN KATZ: Well, we will aim --

MS. KOHLER: -- but we will do our best.

CHAIRMAN KATZ: Yes.

COURT REPORTER: One moment --

MS. RANDELL: We'll certainly --

MR. ASHTON: Whoa, wait a minute.

MS. RANDELL: Sorry, Tony.

(Pause)

COURT REPORTER: Thank you.

CHAIRMAN KATZ: This Council would like to hear during the first June session alternative routes in Milford that you have, if you could have somebody describe those alternative routes that you are looking at that goes down this street and that street and through this wetland, etcetera.

MR. TAIT: Including the railroad right-of-way --

CHAIRMAN KATZ: Right --

MR. TAIT: -- all those we would like in on the early June hearing and that means the 25th of May prefiling.

MS. RANDELL: That is our understanding. It's going to be a little busy between now and then.

CHAIRMAN KATZ: Yeah.

MS. RANDELL: And we were really asking for the same type of information from -- whether it's Milford or any of the other towns --

CHAIRMAN KATZ: Right --

MS. RANDELL: -- they certainly are going

to have to figure it out in order to give the materials to GE to study --

CHAIRMAN KATZ: Yes --

MS. RANDELL: -- and so I don't think it should be a time problem for them.

CHAIRMAN KATZ: Yes. But this Council also wants to know if there are alternative routes that are going to have environmental implications wholly aside from liability, harmonics, etcetera --

MS. RANDELL: Right --

CHAIRMAN KATZ: -- where these routes are. So if that -- if we could do that.

MS. KOHLER: To the -- again, I'm not -- I'm not sure that we're going to be able to do that for the first set of June hearings because we had contemplated filing them with the GE -- the load flows, the, quote, unquote, "The Town Alternatives". But to the extent that we can, we most certainly will --

CHAIRMAN KATZ: Yes --

MS. KOHLER: -- even --

CHAIRMAN KATZ: -- we'd like them identified --

MS. KOHLER: -- even if they're preliminary.

CHAIRMAN KATZ: Right. I think -- I think it's fair to ask that at least they have them identified.

MS. KOHLER: Okay.

MS. RANDELL: Waiting until July 9th, which is the day as I understand it we get the results of the transient harmonics, would be impossible for the companies to analyze. So, I think if they could aim, as we are, for May 25th --

CHAIRMAN KATZ: Yes --

MS. RANDELL: -- it would be extremely helpful.

CHAIRMAN KATZ: I think we're going to try that. Any other procedural matters? Okay, we are adjourned until --

MR. WILENSKY: This 80-year-old guy has to go home.

CHAIRMAN KATZ: Yes, yes -- (laughter) -- they -- no, they've already lost your vote, Mr. Wilensky, by talking about 80-year-olds I know -- but we are adjourned until June 1st.

(Whereupon, the hearing adjourned at 5:03 p.m.)

HEARING RE: CL&P and UI
MAY 13, 2004

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WOODBRIDGE JEWISH ORGANIZATIONS WITNESSES:

Dr. Eric Grubman
Dr. Peter Rabinowitz
Dr. Leonard Bell
Dr. Alan Gerber

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WOODBRIDGE JEWISH ORGANIZATIONS

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