

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES
ENERGY FACILITIES SITING BOARD
EFSB 14-4/DPU 14-153/14-154

EVIDENTIARY HEARING, held at the
Department of Public Utilities, One South Station,
Boston, Massachusetts, on Thursday, February 4,
2016, commencing at 10:06 a.m., concerning:

NSTAR ELECTRIC COMPANY, D/B/A EVERSOURCE ENERGY

SITTING:

M. Kathryn Sedor, Esq., Hearing Officer

Siting Division:

Barbara Shapiro, Environmental Director, EFSB

Charlene de Boer, Regional Planner, EFSB

John Young, Technical Director, EFSB

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1 February 4, 2016 10:06 a.m.

2 P R O C E E D I N G S

3 MS. SEDOR: Let's go on the record.

4 Good morning. This is Thursday, February 4th, 2016,
5 and this is a continuation of the evidentiary
6 hearing in EFSB 14-4, DPU 14-153/154. This morning
7 we will be beginning the topic of EMF. We have
8 Eversource's EMF witnesses on the panel, and
9 questioning will begin with Channel Fish.

10 Before we proceed to swear in Dr.
11 Valberg, we have just a few quick procedural items
12 to address.

13 The first one, which I addressed in the
14 short procedural memorandum I issued yesterday is
15 the matter of the Vernhunt Realty Trust witnesses.
16 First of all, there are six of them, not seven, as I
17 said in the memo, so that should be corrected.

18 My first question goes to Vernhunt's
19 counsel, Mr. Rikleem. I had asked whether
20 Ms. Jacobs would in fact be available to testify on
21 February 19th.

22 MR. RIKLEEN: She is.

23 MS. SEDOR: Okay. Excellent. Thank
24 you. The other thing that I mentioned in the

1 memorandum -- and there may be a little bit of
2 confusion around this, for which I apologize: The
3 Siting Board does not see the need to question all
4 six Vernhunt fact witnesses. However, it was not at
5 all the Board's intent to preclude Vernhunt from
6 presenting all six witnesses if it wishes to do so.

7 I would like to know by tomorrow, as the
8 memo states, whether Channel Fish or Eversource
9 would like to question any of the other five
10 Vernhunt witnesses and, if so, which of those
11 witnesses it would like to call.

12 If neither Eversource nor Channel Fish
13 wishes to examine any of the other five witnesses
14 and Vernhunt itself does not wish to present any of
15 the other five witnesses, then you will just have
16 Ms. Jacobs here for examination on the 19th.

17 Mr. Rikleen, did you have anything you
18 wanted to say around that at this point?

19 MR. RIKLEEN: No. What we were planning
20 to do is wait to see what happened tomorrow, and
21 then either Ms. Jacobs or I or both of us will talk
22 to the other witnesses and explain the procedure
23 you've just explained.

24 MS. SEDOR: Okay. That's great. I

1 appreciate that -- which means, just to make sure
2 we're all on the same page, that we're on for the
3 19th. It's just a matter of how many Vernhunt
4 witnesses will be here.

5 The other thing I wanted to just briefly
6 address is the series of four email filings that
7 Channel Fish made yesterday. I recognize that those
8 were made in response to the company's request that
9 those documents be made available. I didn't have an
10 opportunity to open them until late yesterday
11 afternoon, and I realize that they are quite
12 voluminous. And it's my impression, from having
13 talked with counsel for Channel Fish briefly
14 Tuesday, that Channel Fish has selected certain of
15 those documents that it intends to present here
16 during hearings and to use during its examination of
17 witnesses.

18 What I want to say is that, unless I'm
19 persuaded otherwise, the Board is not going to take
20 those four emails and thousands of pages of
21 documents they contain and put them in the
22 electronic docket on the website or put them in our
23 J drive or enter them into the record of this
24 proceeding. If that was the wish or was the intent,

1 then a filing to that respect, or to that end,
2 should be made.

3 What I am imagining and expecting that
4 will happen is that Channel Fish will proceed along
5 the lines of what I understood on Tuesday, which is
6 that, as documents from that voluminous composite of
7 documents become available during the proceedings,
8 that Channel Fish will distribute copies and we'll
9 use them at hearings, they'll be marked for
10 identification, and we'll enter them into evidence.

11 A, I want to discourage warehouse filing
12 of documents that don't really help the Board arrive
13 at its decision in the proceeding; and B, filings
14 like that would overwhelm the Department's still
15 rather primitive, relatively speaking, electronic
16 filing capabilities.

17 So that's what I want to say on that.
18 And I understand that I don't believe Channel Fish
19 would even have filed those Zip files if they hadn't
20 been requested on Tuesday.

21 I was going to ask you, would you like
22 to respond?

23 MR. THAYER: Channel Fish agrees with
24 everything you just said, Ms. Sedor, and would not

1 seek to burden the Siting Board or to add needlessly
2 to the record. The only documents we would wish to
3 have made part of the record would be those that are
4 presented to witnesses and asked about in the course
5 of these hearings.

6 MS. SEDOR: That's what I thought, and
7 that's excellent. I appreciate that.

8 Just very quickly: Ms. Shapiro has two
9 evidentiary-related matters that she would like to
10 put into the record.

11 MS. SHAPIRO: Good morning. I believe
12 on Friday we received the updated traffic numbers,
13 and that was EFSB-T-2(S-1). And we had a discussion
14 with the company the other day about adding to
15 that -- or updating that request or those answers.

16 And it has to do with the information
17 that was provided in the analysis that was attached.
18 Not all the data pages, but the first perhaps 20
19 pages of the document, are focused on truck traffic,
20 and we would also like to see an update where we
21 have all of the traffic analyzed.

22 And so we would like Figures 1 through
23 21 to reflect all traffic, not just trucks, and if
24 they could update Table 3 for all traffic and also

1 perhaps provide a summary paragraph similar to
2 what's on, I believe, the end of the written
3 analysis that could highlight some of the
4 information as it relates to all traffic, similar to
5 what is provided now for just trucks.

6 And then also, I believe, if you're
7 looking at Figures 1 through 21, there were
8 highlighted numbers about peaks -- actually, really
9 just highlighted with a marker, so you could see
10 which numbers were the peaks.

11 So everything would be similar to what's
12 provided, except for we don't necessarily need Table
13 2, because if they highlight the numbers, you don't
14 have to re-provide Table 2. But it's generally the
15 same information with all traffic included.

16 A second question I have -- it's not a
17 record request. I would just provide it as an
18 update. It would be EFSB-T-2(S-1), so this would be
19 (S-2).

20 The second: I have a question for the
21 company, and then maybe it would evolve into a
22 record request. Are you aware of, for any of the
23 Towns or all of the Towns, whether there's a winter
24 construction moratorium for roadways?

1 WITNESS O'MALLEY: Yes, they do have
2 winter moratoriums.

3 MS. SHAPIRO: And so all of the Towns --
4 Everett, Chelsea, and Boston?

5 WITNESS O'MALLEY: I know Boston does.
6 I believe they all do.

7 MS. SHAPIRO: And do you have
8 information on what the dates are and how those
9 moratoriums work for each of the Towns?

10 WITNESS O'MALLEY: I don't have the
11 specific dates, but generally they're between
12 November and April. I can get the specific dates.

13 And generally how it works is, there's
14 no -- they generally do not allow street
15 construction unless authorized by the -- you'd have
16 to request it, and they may or may not allow that.

17 MS. SHAPIRO: And do you know if the
18 company's project schedule includes those winter
19 moratoriums?

20 WITNESS O'MALLEY: I'd have to review
21 the schedule, but I believe right now the schedule
22 does not reflect that. I believe we have the
23 schedule in one of the record requests here. Let me
24 just review it, if we have it here, and see what it

1 says in there. And again, this would be a....

2 So the schedule is -- here it is right
3 here, actually. The schedule just shows one
4 specific line item for construction, let's say. It
5 hasn't been broken out, but it would have to be
6 broken out to show any moratorium activities.

7 MS. SHAPIRO: I'd like to make a record
8 request, for each of the Cities -- for Everett,
9 Chelsea, and Boston -- any documentation that the
10 City provides or explanation of the moratoriums and
11 what dates those encompass; if there's any details
12 that are important; and if there's any update in the
13 project schedule or any information that the company
14 has that relates to their planning as it takes into
15 account those winter moratoriums.

16 MS. SEDOR: I was just going to identify
17 the record request as RR-EFSB-29.

18 MR. SCOBBO: For purposes of the record,
19 just for clarity, could the witness state -- he said
20 it is "right here." He started reading something
21 from the record request. Can you identify the
22 number of the record request from which you were
23 reading?

24 MS. SEDOR: The construction schedule he

1 was referring to?

2 MR. SCOBBO: Yes.

3 WITNESS O'MALLEY: EFSB-G-2.

4 MR. SCOBBO: Thank you.

5 MS. SEDOR: Thank you, Mr. O'Malley.

6 MS. KEUTHEN: Also with regard for
7 clarification: With regard to the construction
8 schedule, are you asking if the company has updated
9 the construction schedule to take account of the
10 moratorium, but you're not asking for the company to
11 update its construction schedule for --

12 MS. SHAPIRO: I guess I'd first like to
13 find out any information in writing, what the
14 company is doing in regard or that reflects the
15 winter moratorium, and then we could see -- we could
16 go over the schedule that they've already proposed
17 and get some more information. It's just for when
18 we start talking about traffic, so I have that
19 information before us. I mean, if there is an
20 updated schedule, that would be great. If you
21 haven't updated the schedule, you would explain why,
22 perhaps.

23 WITNESS O'MALLEY: I can explain why
24 now. At this stage in the process, where the actual

1 construction is, let's say, further in the future --
2 right now we just have a block of time for
3 construction. As we get further along into the
4 planning and start to engage contractors to do the
5 work, then we will get specific, let's say, blocks
6 of area that we'll be working in specifically, which
7 would encompass the full detailed schedule. Right
8 now it's mostly a planning, summary-type schedule.

9 MS. SHAPIRO: I guess also in that
10 answer -- and we will be talking about this in the
11 questioning in the hearing -- but how a winter
12 moratorium would affect the amount of months --

13 WITNESS O'MALLEY: Certainly.

14 MS. SHAPIRO: -- that you already
15 provided.

16 MS. SEDOR: I think the point is,
17 although you may not get to a point where you're
18 detailing the schedule such that it would include
19 such details as these moratoria, we expect the
20 company to be prepared to talk about, when we get to
21 traffic, does your planning include an allowance for
22 these moratoria or does it not, and given that they
23 exist, how are you going to account for that when
24 you're telling us how long the project is going to

1 take to construct.

2 WITNESS O'MALLEY: Understood.

3 MS. SEDOR: Okay. Great.

4 (Record Request RR-EFSB-29.)

5 MS. SEDOR: I would remind Mr. Zicko,
6 Mr. O'Malley, as they know, that they remain under
7 oath, having been sworn in the other day.

8 At this point, Dr. Valberg, I would ask
9 that you simply raise your right hand.

10 PETER A. VALBERG, Sworn

11 MS. SEDOR: Ms. Keuthen or Ms. Blair?

12 JOHN M. ZICKO, MICHAEL O'MALLEY, AND PETER A.

13 VALBERG,

14 having been duly sworn, testified as follows:

15 DIRECT EXAMINATION

16 BY MS. BLAINE:

17 Q. Dr. Valberg, could you please state your
18 full name, business affiliation, and business
19 address for the record.

20 A. [VALBERG] Yes. My name is Peter Valberg.
21 I'm a principal at an environmental consulting
22 company called Gradient. The address of Gradient is
23 20 University Road in Cambridge, Massachusetts.

24 Q. What is your position with Gradient?

1 A. [VALBERG] I'm the principal in
2 environmental science.

3 Q. And what has been your role on behalf of
4 the Mystic-East Eagle-Chelsea reliability project?

5 A. [VALBERG] I have been charged with looking
6 at the design of the underground lines and the
7 substation and doing calculations that provide
8 information on electric and magnetic field impact
9 and responding to any questions that may arise in
10 that regard.

11 Q. Do you have documents in front of you that
12 have been marked for purposes of identification as
13 Exhibits NSTAR-PAV-1 and NSTAR-PAV-2?

14 A. [VALBERG] Yes, I do.

15 Q. Are those your prefiled direct and rebuttal
16 testimonies in this proceeding?

17 A. [VALBERG] Yes.

18 Q. Was your prefiled testimony and all
19 materials identified therein prepared by you or
20 under your supervision?

21 A. [VALBERG] Yes.

22 Q. Were the responses to information requests
23 that bear your name prepared by you or under your
24 direct supervision?

1 A. [VALBERG] Yes.

2 Q. Do you have any changes to your prefiled
3 testimony or other materials provided in this
4 proceeding that bear your name to offer for the
5 record?

6 A. [VALBERG] No, I do not.

7 Q. Do you adopt your prefiled testimony and
8 all materials provided in this proceeding that bear
9 your name as testimony in this proceeding?

10 A. [VALBERG] Yes.

11 Q. Dr. Valberg, on February 1st, Channel Fish
12 Company filed rebuttal testimony in this matter.
13 One of its claims is that your evaluation of the
14 power-frequency magnetic fields that are expected to
15 result from the operation of the proposed East Eagle
16 substation did not take into account the
17 electromagnetic frequency spectrum which will result
18 from the proposed substation. Can you address that
19 claim?

20 A. [VALBERG] Yes, I will do so briefly. I
21 think for the staff and so forth, it's important to
22 remember that for power facilities, the lines and
23 the substations, the frequencies that are involved
24 are called extra-low frequencies, so-called ELF,

1 electric and magnetic fields. And because they're
2 of such a low frequency, they're really not
3 considered electromagnetic fields, where the
4 electric and magnetic fields are coupled together,
5 such as the transmissions from AM radio or FM radio
6 or television and so forth.

7 And so those electromagnetic frequencies
8 are regulated by the Federal Communications
9 Commission, and in the normal course of events,
10 substations are not required, as far as I know, to
11 get a license from the Federal Communications
12 Commission.

13 I think in this particular case it's
14 also important to remember that this is a substation
15 that has underground connections. Both the
16 transmission and the distribution lines are
17 connected underground. In a typical substation,
18 where lines come in overhead, the source of the
19 predominant electric and magnetic fields are those
20 overhead connections. So those do not exist in this
21 case.

22 Furthermore, this particular station
23 uses what's called gas-insulated switchgear, GIS,
24 and what that also means is that the conductors

1 within -- the busbars within the substation are
2 contained within this gas-insulated covering, which
3 then prevents additional discharge from those
4 connections.

5 So consequently, I think what I want to
6 emphasize is that this is really not a transmission
7 source. It is not a transmission source of
8 radio-frequency waves. Those transmission sources
9 are the ones that are all familiar to us -- cell
10 phones, radio transmissions, and television
11 transmissions.

12 Q. Mr. Zicko, as part of Channel Fish's
13 rebuttal testimony filed on February 1st, Channel
14 Fish claims that lightning strikes may be drawn to
15 the substation equipment, resulting in impulse
16 voltages and currents in Channel Fish's equipment.
17 Channel Fish also claims that the ground within the
18 substation fence collects ground faults on the
19 transmission system, which could cause voltage
20 shifts at Channel Fish. Can you address these
21 claims?

22 A. [ZICKO] Certainly. The amount of
23 lightning present in an area is a meteorological
24 phenomenon, and the addition of the East Eagle

1 Street -- of the substation or the proposed
2 substation at the East Eagle site will not create
3 any additional lightning in the area.

4 Presently Channel Fish is flanked by a
5 tank farm and salt shed, and all three -- the tank
6 farm, salt shed, and Channel Fish -- are potential
7 targets for lightning. Lightning will follow the
8 laws of physics and circuit theory with regard to
9 exactly what it strikes, but it will tend to strike
10 higher structures.

11 The substation will not be taller than
12 the adjacent buildings and therefore will not
13 present a greater potential attractant to lightning
14 strikes. If the lightning were to strike the
15 substation, it would have the same effect as if it
16 were to strike another structure, such as the tank
17 farm, salt shed, or Channel's building; that is, the
18 lightning would take the path of least resistance to
19 ground or it would create a momentary ground
20 potential increase, just as it does today.

21 One difference between a substation and
22 most other facilities is that a substation is
23 designed to conduct this current to ground without
24 damage to the equipment, through the use of large

1 ground pigtails on each piece of equipment and the
2 structures and a ground mat with ground rods
3 underneath the station. This ground mat and ground
4 rod would serve -- ground rods would serve as a
5 low-impedance path for the stroke current, or the
6 lightning stroke current, and given the realities of
7 Ohm's Law, would result at least ampere for ampere
8 in less of a ground potential rise than a facility
9 without such a ground map.

10 The company designs its grounding
11 systems in accordance with IEEE-80, Institute of
12 Electrical and Electronics Engineers dash-80. This
13 standard is based on experiences of engineers from
14 several utilities. It's the industry standard to
15 which ground systems are designed.

16 Regarding the claim of voltage shift:
17 This voltage shift is a condition where unbalanced
18 operation of a power system -- that is, voltage on
19 one phase lower than the other two -- causes the
20 neutral point of the system to shift outside of the
21 voltage triangle.

22 While it is true that during a ground
23 fault event on the system will cause ground current
24 to flow in the station ground grid, the company

1 operates what is known as an effectively grounded,
2 sometimes called solidly grounded, transmission and
3 distribution system and has not had instances where
4 neutral shifts have damaged equipment. Placing a
5 substation at East Eagle Street will not change the
6 voltage balance during ground fault events.

7 It's also important to note that events
8 occur on the system, or fault events occur on the
9 system, in its present configuration and that these
10 voltage imbalances, such as depression of voltage on
11 the faulted phases, are felt throughout the system.

12 For this reason, the company installs
13 protection schemes that sense and remove these
14 faults in two to five cycles, allowing the voltage
15 to return back to its normal levels.

16 Q. Thank you.

17 MS. BLAINE: The panel is ready for
18 cross-examination.

19 MS. SEDOR: Could I ask: Can the
20 witnesses be heard in the back?

21 MR. BERARDI: We can hear them, but it's
22 very difficult.

23 MS. SEDOR: I'll try to do that during a
24 break, but in the meantime, if you could turn your

1 microphone on, it might help a little bit.

2 I think Mr. Young has a couple of quick
3 followup questions.

4 BENCH EXAMINATION

5 BY MR. YOUNG:

6 Q. Just clarifications on the testimony this
7 morning. Mr. Zicko, when you said two to five
8 cycles, that's out of the 60-cycles-per-second
9 system; correct? So that's a fraction of a second,
10 is what you're describing?

11 A. [ZICKO] That is on a 60-cycle base,
12 correct.

13 Q. Dr. Valberg, you said this station uses GIS
14 switchgear and the busbars are contained within this
15 gas-insulated covering, and then you said "which
16 then prevents additional discharge from those
17 connections." And I didn't understand what would
18 have been discharged otherwise or what's the thing
19 that's discharged when you were describing it.

20 A. [VALBERG] Yes, I'd be glad to answer that.
21 For voltages -- for line voltages above 115,
22 typically 230 kilovolts and 345, for conductors that
23 are suspended in the air, such as on overhead
24 transmission lines, particularly on imperfections on

1 the surface, you can get what's called corona
2 discharge, and that corona discharge is a slight
3 arcing in the presence of the conductor when free
4 electrons are accelerated to such a rate that they
5 cause the gas to ionize.

6 Those corona discharges can be sources
7 of radio-frequency fields. And so to the extent
8 that the gas-insulated switchgear is not subject to
9 corona discharge, in addition to the fact that we're
10 dealing with a lower voltage here than is typical of
11 corona discharge, that is what I was referring to.

12 Q. For more of a lay interpretation, would it
13 be correct to say that without the GIS around that,
14 you could have some minor sparking into the air, and
15 that kind of sparking is the kind of thing that
16 could interfere with, say, television reception?

17 A. [VALBERG] That's roughly correct, yes.
18 There are two sources of potential radio frequency.
19 One would be the corona discharge. But then even
20 with distribution circuits, you can have faulty
21 connections -- in other words, connections that are
22 not completely made electrically -- so that the
23 current has to jump a gap, a spark gap; and that
24 spark gap, which has nothing to do with corona --

1 but that spark gap can also create radio-frequency
2 interference.

3 So to minimize that, of course,
4 tightening up anything that could produce sparks is
5 good, and then also minimizing the potential for
6 corona discharge is good, and both of those reduce
7 radio-frequency interference.

8 Q. Thank you.

9 MS. SEDOR: Mr. Thayer?

10 MR. SCOBBO: Actually, I'm going to do
11 the cross-examination today.

12 MS. SEDOR: Actually, if you wouldn't
13 mind, Mr. Scobbo, entering an appearance here today.

14 MR. SCOBBO: I will. I have filed a
15 form of appearance in writing, but as far as the
16 record is concerned, my name is Nicholas J. Scobbo,
17 Jr., Ferriter Scobbo & Rodophele, 125 High Street,
18 appearing on behalf of Channel Fish.

19 MS. SEDOR: Thank you. You may proceed.

20 CROSS-EXAMINATION

21 BY MR. SCOBBO:

22 Q. Just a quick question: Mr. Zicko, in your
23 testimony I noticed you were reading from your
24 computer. Is that right?

1 A. [ZICK0] That's correct.

2 Q. What were you reading?

3 A. [ZICK0] What I read into the record.

4 Q. I know that's what you read into the
5 record. But what was it that you were reading? Is
6 it something you prepared?

7 A. [ZICK0] Yes, it was.

8 Q. When did you prepare that?

9 A. [ZICK0] Yesterday.

10 Q. Dr. Valberg, before I begin my cross-
11 examination, I have to admit, I'm a bit confused
12 already from your statements. Would you agree with
13 me that extra-low-frequency waves are part of the
14 magnetic spectrum?

15 A. [VALBERG] They could be considered part of
16 the electromagnetic spectrum. But the point I was
17 getting at is that for extra-low-frequency waves,
18 you could have electric and magnetic fields that are
19 completely independent of each other, they're not
20 coupled. So you could have a line that has no
21 current. It could produce electric fields and no
22 magnetic fields. You could have a line with very
23 low voltages, which could have a lot of current,
24 which would produce -- a line with low voltage and

1 high current would produce magnetic fields in the
2 absence of electric fields.

3 So in the traditional sense of an
4 electromagnetic wave that's propagating, where you
5 have actual interaction between the electric and
6 magnetic fields, that does not occur in the
7 extra-low-frequency region of the spectrum.

8 Q. I appreciate that, but that's not what I
9 asked you. What I asked you was: Would you agree
10 with me the extra-low-frequency waves are part of
11 the electromagnetic spectrum? I think your answer
12 was "yes, however," and then you went on to talk
13 some more. Am I stating your testimony correctly?

14 A. [VALBERG] No, because they're not
15 considered waves. Waves would be propagation. From
16 transmission lines and substations, there's no
17 energy that's propagated away from them via waves.

18 Q. Is another word for low-level
19 electromagnetic -- with the low level in the
20 spectrum, 0 to 10 hertz, maybe something to that
21 effect?

22 A. [VALBERG] It goes much -- I mean, no, it's
23 higher than that, because ELF includes 60 hertz and
24 180 and higher, probably up to about 1,000.

1 Q. Sure, so 0 to 10 is within that.

2 A. [VALBERG] Yes.

3 Q. And is that called nonionizing low-level?

4 A. [VALBERG] Yes. Nonionizing goes much
5 higher than that. The borderline between
6 nonionizing and ionizing is roughly at the region of
7 visible light. So once you get the ultraviolet
8 light, you get into the ionizing region. But radio
9 waves, television, those are considered part of the
10 nonionizing spectrum.

11 Q. And so the extra-low-frequency would
12 include sort of microwaves, perhaps, computers,
13 those types of things?

14 A. [VALBERG] Well, no. I mean, those extra-
15 low, as I say, includes this very-low-frequency band
16 from about 0 to, let's say, as much as 1,000 cycles
17 per second. The next-highest band that's typically
18 used is AM radio. AM radio goes roughly from
19 500,000 cycles per second up to 1 million cycles per
20 second. And so that's the next one up. And that
21 would no longer be in extra-low-frequency. And
22 microwaves, of course, would be above that.

23 Q. Dr. Valberg, please turn your attention, if
24 you would, to your prefiled direct testimony,

1 Exhibit NSTAR-PAV-1, Page 4. Am I correct in
2 stating that as of December 16th, 2014, you
3 certified this direct testimony?

4 A. [VALBERG] Yes. But since that time there
5 have been interrogatory requests and so forth, and
6 so this would not cover those responses.

7 Q. I understand that. I'm just asking you
8 about this exhibit. I very purposely, Dr. Valberg,
9 stated "turning your attention to PAV-1." I didn't
10 say turn your attention to other exhibits or other
11 discovery or anything of the sort.

12 So my question to you was: With respect
13 to PAV-1, am I correct in stating that this prefiled
14 direct testimony, PAV-1, was certified by you on
15 December 16th, 2014?

16 A. [VALBERG] Yes.

17 Q. Now, keeping your attention on Page 4, in
18 particular Lines 7 and 8: You indicate that you are
19 responsible for the factual components of the
20 petitions regarding potential impacts of EMF; is
21 that correct?

22 A. [VALBERG] Yes.

23 Q. And the petitions to which you refer in
24 that line are the petitions which start on Page 3 of

1 your prefiled direct testimony, Line 17, and end
2 approximately at Line 6 on Page 4; is that correct?

3 Starting on Line 17 of Page 3 of Exhibit
4 PAV-1 and ending on Page 4, Line 6: Are those the
5 petitions to which you refer on Page 4, PAV-1, Lines
6 7 and 8?

7 A. [VALBERG] Yes.

8 Q. I don't know whether you have it in front
9 of you or not. But do you have the company's
10 petition in the EFSB docket? I just want to clarify
11 something.

12 A. [VALBERG] No, I do not.

13 Q. I have it. Dr. Valberg, you have in front
14 of you, do you not, the company's petition in the
15 EFSB filing?

16 A. [VALBERG] Yes, you have provided that for
17 me, and I have it in front of me.

18 Q. And in particular, Page, is it 1-R?

19 A. [VALBERG] 1-1-R.

20 Q. And could you read the first -- take your
21 time and read the first paragraph to yourself,
22 because I'm going to ask you a couple of questions
23 about it.

24 A. [VALBERG] Yes, I have looked that over.

1 Q. Have you seen that before, before today?

2 A. [VALBERG] I probably have. I don't recall
3 if I saw the exact wording.

4 Q. Now, based on your reading, would you agree
5 with me that the company calls the cap P Project the
6 transmission lines, the distribution system, and the
7 substation; is that right? As a capsulation of that
8 particular paragraph -- or encapsulation?

9 A. [VALBERG] The paragraph, as I read it,
10 describes both the transmission lines that are
11 connecting the East Eagle Street station to the
12 Mystic and Chelsea Street stations in one paragraph.
13 I'm not sure I --

14 As I say, what I would interpret this
15 paragraph to mean, that they're putting the lines
16 and the substation together into one project.

17 Q. Capital P Project; right?

18 A. [VALBERG] Yes.

19 Q. And in fact, is that what you're referring
20 to on Exhibit PAV-1, Page 3, in response to the
21 question starting on Line 6?

22 A. [VALBERG] Yes.

23 Q. Thank you. Turning your attention back to
24 the company's petition: Could you state the date on

1 which that -- or the date that is on that petition?

2 A. [VALBERG] The date on the page that you're
3 pointing me to is December 22, 2014.

4 Q. And can you turn your attention to Page
5 5-145 of the petition.

6 A. [VALBERG] Yes, I have Page 5-145.

7 Q. Could you read for the record what's stated
8 under Section 5.3.3.8.

9 A. [VALBERG] "The company has engaged
10 Gradient to conduct an EMF assessment for the
11 project. The company will provide the EMF
12 assessment when it is available."

13 Q. Thank you. Turning your attention back to
14 Exhibit PAV-1, first page. Do you have that in
15 front of you?

16 A. [VALBERG] Yes.

17 Q. In particular, Line 7, you indicate that
18 you were retained by NSTAR as an expert scientist in
19 the areas of electric and magnetic fields and public
20 health; is that right?

21 A. [VALBERG] Yes, that's right, two separate
22 areas of electric and magnetic fields and their
23 sources, and public health.

24 Q. When were you retained, if you recall, by

1 NSTAR for this proceeding?

2 A. [VALBERG] I don't have an exact date in
3 mind. It probably was a year ago.

4 Q. So sometime in February of 2015?

5 A. [VALBERG] I would have to check my
6 records. I truly do not know the date.

7 Q. I'm not asking you for a specific date.
8 Can you give me a time frame in which you were
9 retained?

10 A. [VALBERG] Well, I have been working on it
11 throughout 2015. That's why I suggested that --
12 from 2015 to the present date. So I would suggest
13 sometime early in 2015.

14 Q. You indicate that you were retained. Do
15 you mean you personally or Gradient?

16 A. [VALBERG] Gradient was retained.

17 Q. Turning your attention, if you would, to
18 Page 3 of Exhibit PAV-1. Am I correct in stating
19 that your expertise includes physics and the
20 methodology behind measuring and predicting EMFs as
21 they arise in generation, transmission, and
22 distribution of electric power?

23 A. [VALBERG] Yes.

24 Q. I show you a copy of Exhibit D, Page 1 of

1 1, to DPU 14-154.

2 MS. DE BOER: Do you have a copy for the
3 Bench?

4 MS. SHAPIRO: Can you just tell us where
5 it is in the docket?

6 MR. THAYER: It's DPU-14-154, Exhibit D
7 to that petition.

8 MS. KEUTHEN: The zoning petition;
9 correct?

10 MR. SCOBBO: Yes.

11 MS. DE BOER: We have it.

12 Q. And at the very top of the picture, I
13 guess, that is Exhibit D, could you state the date,
14 where it says "last modified"?

15 A. [VALBERG] That fine print appears to say
16 "last modified 12/16/2014."

17 Q. And that's the date of your prefiled direct
18 testimony, is it not, that you certified?

19 A. [VALBERG] Yes, those dates are the same.

20 Q. Now, looking at the portion of Exhibit D,
21 Page 1 of 1, that is highlighted, "Proposed East
22 Eagle Street Substation." Do you see that?

23 A. Yes.

24 Q. And it's designated in dark lines, and

1 inside of those dark lines are a bunch of yellow
2 lines and boxes; is that correct?

3 A. [VALBERG] Yes.

4 Q. What do those represent?

5 A. [VALBERG] That represents both circuitry
6 within the substation and the transformers in the
7 substation.

8 Q. And how many transformers are shown there?

9 A. [VALBERG] It shows outlines of three, but
10 my understanding is that two are proposed.

11 Q. Turning your attention back to Page 3 of
12 Exhibit PAV-1, Line 10. You state, do you not, that
13 you reviewed "the calculated results with regard to
14 what EMF levels could be expected under certain
15 conditions of future use of these lines for
16 transmission of power." Is that a correct reading
17 of your testimony?

18 A. [VALBERG] Yes, that is.

19 Q. Okay. And on Page 8 -- excuse me, Page 3,
20 Line 8, you indicate you were asked to review the
21 project's design diagrams and projected circuit
22 loadings, et cetera. Keeping your attention on
23 PAV-1, Page 3, Line 8: The capital P Project's
24 design diagram, did that include Exhibit 4, that I

1 showed you earlier -- Exhibit D, rather; excuse
2 me -- that I showed you earlier?

3 A. [VALBERG] I'm not sure I used Exhibit D
4 specifically. I used more engineering drawings and
5 information from the company as to where the
6 currents flowed and what their sizes were.

7 Q. You indicate that you reviewed the
8 calculated results, which is on Line 10. And I take
9 it what you mean by that is some calculations
10 performed with respect to an estimate of EMF, given
11 the loadings and the design, et cetera, of the
12 facilities. Is that a fair statement?

13 A. [VALBERG] Yes, the EMFs depend upon the
14 design and loading.

15 Q. Now, you reviewed calculated results. Did
16 you actually, you personally, calculate the results?

17 A. [VALBERG] I did not put the numbers into
18 the computer program, but I oversaw that process and
19 am familiar with the process.

20 Q. So was it someone at Gradient who literally
21 inputted the information into the program?

22 A. [VALBERG] That's correct.

23 Q. Did you indicate to that person what
24 information to put in?

1 A. [VALBERG] The information that we both
2 received from Eversource was the information we put
3 in.

4 Q. You're sure that the person that put in the
5 information, that person saw the same information
6 you saw? Are you telling me that?

7 A. [VALBERG] As far as I know, the
8 information that was relevant to the EMF calculation
9 I passed directly to the person in charge of the
10 calculations.

11 Q. Oh, I see. So it went to you, and then you
12 provided it to someone.

13 A. [VALBERG] Yes, and I think many of the
14 emails may have had both of our names on them.

15 Q. Now, when did you review the calculated
16 results, generally speaking?

17 A. [VALBERG] I think, you know, it was
18 during -- as I said earlier, during the 2015 period.
19 There were some changes that were made that we
20 continued to incorporate as they were presented to
21 us by the engineers.

22 Q. This is dated December 16th, 2014, is it
23 not?

24 A. [VALBERG] Well, this -- yes. I mean, this

1 particular affidavit was filed at that date; that's
2 correct. But during the period -- during 2015 there
3 were additional refinements.

4 Q. I'm sure there were, and we're going to get
5 to that. I'm really interested in this particular
6 date. And you used the past tense, "I reviewed."
7 Doesn't that sort of connote that as of December
8 14th, 2014, you had some information and you
9 reviewed it, and that's why you said that in your
10 direct testimony?

11 A. [VALBERG] Yes, I think that's correct.

12 Q. Thank you. Now, on Page 3 of Exhibit
13 PAV-1, Lines 9 and 10, you indicate that you
14 reviewed EMF in the vicinity of the --

15 On Exhibit PAV-1, Page 3, Line 9, you
16 indicate that the data was used to calculate EMFs in
17 the vicinity of the cap P Project's new distribution
18 and transmission lines that travel underneath the
19 public streets. Is that a correct reading of your
20 testimony?

21 A. [VALBERG] Yes.

22 Q. Does that include the substation?

23 A. [VALBERG] My recollection is that the
24 lines under the streets were calculated first. So I

1 reviewed both, but this refers to review of the
2 transmission-line calculations.

3 Q. It certainly doesn't refer to review of the
4 substation at that point, does it?

5 A. [VALBERG] That sentence does not.

6 Q. Thank you. And continuing, keeping your
7 attention on Page 3 of Exhibit PAV-1, Line 14: You
8 were asked to prepare a report summarizing, quote,
9 "my results," end quote. Are the results that
10 you're referring to in that sentence the results of
11 the calculations that we just talked about starting
12 in Lines 9 through 12?

13 A. [VALBERG] I basically review the
14 calculations as they come along in the project. And
15 as I said, there's generally a sequence of the
16 project. The transmission and distribution lines
17 underneath the street were done first. The
18 substation was done later. And each one of those
19 was subject to review and quality analysis and so
20 forth.

21 Q. I'm sure. But this is going back -- let's
22 make sure we're talking about the same thing. This
23 is dated December 16, 2014; isn't that right?

24 A. [VALBERG] That's the date that's on the

1 document.

2 Q. Did any of the data that you looked at --
3 I'll let that go.

4 Now I'd like to turn your attention
5 to -- I don't know whether you have it -- and that
6 is a document entitled Electric and Magnetic Field
7 (EMF) Analysis For the Proposed Transmission and
8 Distribution Lines Connecting at Station 131 in East
9 Boston, Mass. And it's dated June 12th, 2015. Do
10 you have that document before you?

11 A. [VALBERG] I think that's a slightly
12 earlier version. I don't have that with me.

13 MS. KEUTHEN: I'd like to note that the
14 version of the EMF report to which you're referring
15 was replaced by a revised report.

16 MR. SCOBBO: Yes, I'm aware of it, and
17 we're going to get to it.

18 Q. At the top of the document dated June 12th,
19 2015 --

20 First of all, was this prepared by
21 Gradient?

22 A. [VALBERG] Yes.

23 Q. Was it prepared under your direction and
24 supervision?

1 A. [VALBERG] Yes.

2 Q. At the top, am I correct in reading that
3 this is for EFSB 14-4/DPU 14-153/14-154, Appendix
4 5-7?

5 A. [VALBERG] I did not put that designation
6 on it, so I have no way of knowing if that's
7 appropriate or not.

8 Q. Do you know what that means?

9 A. [VALBERG] I assume that's the case number
10 for -- the appendix is probably an appendix to the
11 petition.

12 Q. Okay. Now, roughly speaking, that report
13 is dated six months after your prefiled direct
14 testimony; is that correct?

15 A. [VALBERG] Yes.

16 Q. Would you turn your attention to Page 16 of
17 that report, and in particular --

18 MS. KEUTHEN: Excuse me. Since this
19 document was replaced by a revised appendix, I don't
20 think that that document is an exhibit in this
21 proceeding at this point.

22 MR. SCOBBO: Can we go off the record
23 for a second?

24 MS. SEDOR: Sure.

1 (Discussion off the record.)

2 MS. SEDOR: We can go back on the
3 record. There is no question this document was
4 submitted. It is a part of the official record in
5 this case. It may have been superseded by 12 other
6 documents, but it doesn't make it disappear from the
7 record. So Mr. Scobbo is well within his rights to
8 examine with respect to a document that is in the
9 record of the case, even if it's obsolete at this
10 point.

11 MR. SCOBBO: I didn't take your
12 statement to say I couldn't examine on it, just that
13 it may not be an exhibit in the case. And I think
14 the hearing officer clarified that it would be -- it
15 is part of the docket.

16 MS. SEDOR: It is. It was an exhibit to
17 the original petition.

18 MR. SCOBBO: Thank you.

19 Q. Turning your attention to Page 16 of the
20 June 12th, 2015 Appendix 5-7: Could you read for
21 the record the last sentence on Page 16.

22 A. [VALBERG] The last sentence says,
23 "Overall, there is no expectation of adverse health
24 effects due to the EMF impact from the proposed

1 underground lines project."

2 Q. And is "project" capitalized there?

3 A. [VALBERG] No, it's not in that sentence.

4 Q. And is that a succinct statement of your
5 opinion based on the analysis you oversaw for this
6 June 12th, 2015 document?

7 A. [VALBERG] Yes.

8 Q. Now, it states "There is no expectation of
9 adverse health effects due to EMF impact from the
10 proposed underground lines project." Does that
11 include the substation?

12 A. [VALBERG] Well, that particular early
13 analysis, I don't believe it included the
14 substation.

15 Q. Okay, thank you. Did any of this analysis
16 or any of the analyses that's reported in the June
17 12th, 2015 Gradient Appendix 5-7 report measure the
18 effect of EMF on any sensitive equipment?

19 A. [VALBERG] The levels were very low, and it
20 did not measure the effect on sensitive equipment.
21 But in terms of what's known about sensitivity to
22 power-line magnetic fields, these are below
23 threshold levels.

24 Q. Point of fact, you weren't asked to look at

1 impact of EMF on equipment; right?

2 A. [VALBERG] In that particular report, no.

3 Q. Correct. You were asked to look at and
4 give an opinion with respect to health impacts;
5 isn't that right?

6 A. [VALBERG] In that report, yes.

7 Q. And in the beginning of your testimony,
8 dated December 16, 2014; is that right?

9 A. [VALBERG] Yes.

10 Q. I'd like to turn your attention to the
11 Gradient report dated August 31, 2015. Do you have
12 that in front of you?

13 A. [VALBERG] Yes, I do.

14 Q. And was this report prepared by you or
15 under your supervision?

16 A. [VALBERG] Yes.

17 Q. And am I correct in stating that this is
18 designated as revised Appendix 5-7?

19 A. [VALBERG] Yes.

20 Q. Yes?

21 A. [VALBERG] I guess. I don't have the
22 designation at the top of the page.

23 Q. Would you take subject to check that it is
24 designated as revised Appendix 5-7?

1 A. [VALBERG] I think that would be
2 acceptable.

3 Q. Now, the date of this is August 31, 2015;
4 is that correct?

5 A. [VALBERG] Yes.

6 Q. That's approximately nine months after your
7 direct testimony; isn't that right?

8 A. [VALBERG] Yes.

9 Q. Now turn your attention to Page 22, and in
10 particular, the last line of Page 22. Do you see
11 that?

12 A. [VALBERG] Yes.

13 Q. Could you read that for the record, please.

14 A. [VALBERG] "Overall there is no expectation
15 of adverse health effects due to the EMF impact from
16 the proposed Eversource project."

17 Q. And there "project" is not capitalized, is
18 it?

19 A. [VALBERG] Not in that line, no.

20 Q. But it is -- it's slightly different than
21 your June 2015 report, is it not? Strike that. Let
22 me ask you another question.

23 Is that a fair statement of your
24 conclusions based on the analysis contained in this

1 report?

2 A. [VALBERG] Yes, this report provides the
3 magnetic fields produced by both the lines and the
4 substation.

5 Q. So in that respect, this report differs
6 from the June report because it includes the
7 substation; isn't that right?

8 A. [VALBERG] Yes.

9 Q. And hence, the conclusion encompasses a
10 perhaps broader range of facilities than the June
11 conclusion?

12 A. [VALBERG] It includes the data from a
13 broader set of analyses, yes.

14 Q. Because it includes the substation; isn't
15 that right?

16 A. [VALBERG] Yes.

17 Q. Do you have any recollection as to when you
18 performed the analysis for the June 2015 report?
19 Approximately. I'm not asking you for a precise
20 date.

21 A. [VALBERG] Well, it would have been prior
22 to that date. And so I would say in the months
23 prior to that date.

24 Q. Would it have been before or after December

1 of 2014?

2 A. [VALBERG] I can imagine that there were
3 some analyses that were done early on, but I can't
4 really answer that question.

5 Q. You can't answer the question as to whether
6 it was before or after December 2014?

7 A. [VALBERG] Well, I mean, the report was
8 produced -- that initial report was produced in
9 June. When the analyses actually occurred was a
10 continuing process. So I can't really say exactly
11 which analyses occurred at what time.

12 Q. Now let's go to the August 31, 2015 report,
13 the revised Appendix 5-7. Can you give me a
14 ballpark time frame within which the analysis for
15 that report was done?

16 A. [VALBERG] Again, that would be basically
17 in the month or two prior to that date.

18 Q. So again, you say "that would be." So
19 taking that word and applying it to the June 2015,
20 would I be correct in saying that, generally
21 speaking, the analysis for the June report would
22 have been done a month or two prior to the June
23 report?

24 A. [VALBERG] Well, the final analyses

1 probably would have been in that time period.

2 Q. And likewise, for the August 31, 2015
3 report, the final analyses would have been done a
4 month or two prior to that report date?

5 A. [VALBERG] That would be my estimate.

6 Q. Now, with respect to the August 31, 2015
7 Gradient report, did Gradient or did you reach any
8 conclusion with respect to the impact of EMF on
9 sensitive equipment?

10 A. [VALBERG] The report does not make any
11 such conclusions. However, the calculations of the
12 magnetic fields would be applicable to that as well.
13 You could use the same calculations to make
14 decisions about impact on equipment.

15 Q. I've no doubt that that's what you're going
16 to say. I'm just asking you whether the report
17 references any analysis of the impact of EMF on
18 sensitive equipment.

19 A. [VALBERG] The report does not.

20 Q. Neither does the June report; right?

21 A. [VALBERG] That's correct.

22 Q. They both focus on the estimated or your
23 view of whether there's any health impacts as a
24 result of EMF?

1 A. [VALBERG] That's the primary focus.

2 Q. Okay, thank you. I show you a response to
3 Information Request CF-2-2 and ask if you're the
4 witness responsible for this.

5 A. [VALBERG] Yes.

6 Q. And am I correct in stating that the
7 response indicates that the company does not have
8 any documents reflecting or referring to any
9 analysis by or on behalf of the company concerning
10 whether and how 115-kV substations affect any
11 equipment, including, but not limited to, the types
12 of electronic equipment identified in Channel Fish's
13 response to EV-CF-1(a)?

14 A. [VALBERG] In my experience, the 115-kV
15 substations have not caused such issues. So in fact
16 I'm not aware that there's a large literature that
17 indicates that there is interference from such
18 equipment.

19 Q. That may be your opinion, but the question
20 was does the company have any studies, and the
21 answer is no; right?

22 A. [VALBERG] In terms of studying specific
23 equipment, I think that's correct, the answer is no.

24 Q. Right. Well -- okay. Now I'd like to

1 refer your attention back, if I could, to the June
2 Gradient report.

3 A. [VALBERG] Which I don't have.

4 Q. I'll give it to you in a second.

5 Do you have that document in front of
6 you?

7 A. [VALBERG] Yes, I do.

8 Q. And in particular, I wanted to refer your
9 attention to Page 5 of the report. Do you have that
10 in front of you?

11 A. [VALBERG] Yes.

12 Q. And am I correct in stating that this says
13 "We used the FIELDS computer program"?

14 A. [VALBERG] Yes.

15 Q. And that program was used to model the EMF
16 coming from or potentially coming from the proposed
17 transmission and distribution lines; is that
18 correct?

19 A. [VALBERG] Yes.

20 Q. Does that model have anything to do with
21 the substation?

22 A. [VALBERG] You could use that as an
23 approximation for the substation; but for the
24 substation I used a model that takes into account

1 the lines more accurately.

2 Q. So we're going to get to what model you
3 used for the substation. But the FIELDS model does
4 not calculate the EMF from a substation, does it?

5 A. [VALBERG] You could use it for individual
6 lines and add the results up and so forth, but it
7 would be much more tedious than using the
8 comprehensive model. It's not inaccurate, I guess
9 is what I'm saying.

10 Q. Now turning your attention to the August 31
11 Gradient report, Page 6. Do you have that in front
12 of you?

13 A. [VALBERG] Yes, I do.

14 Q. Am I correct in stating that, as far as
15 Gradient's modeling of the EMF, it used the FIELDS
16 computer program for the proposed lines?

17 A. [VALBERG] Yes.

18 Q. Let me turn your attention to Page 1 of the
19 August 31 report, Section 4.1. Do you see that?

20 A. [VALBERG] Yes.

21 Q. There you indicate that Gradient used the
22 SUBCALC module of the EMF Workstation software. Is
23 that correct?

24 A. [VALBERG] Yes.

1 Q. And that was used to model the EMF that
2 potentially could emanate from the substation; is
3 that right?

4 A. Yes, because it can take into account those
5 pathways in a more comprehensive fashion.

6 Q. Is FIELDS part of the EMF Workstation?

7 A. [VALBERG] No, it is not.

8 Q. It's a different program, isn't it?

9 A. [VALBERG] Yes.

10 Q. Let me turn your attention, if I could, to
11 your response to Information Request CF-2-1.

12 A. [VALBERG] 2 meaning second set?

13 Q. Yes, Channel Fish 2-1. If you need it, I
14 have it.

15 A. [VALBERG] Yes, I have that.

16 Q. Am I correct in stating that the response
17 indicates that the SUBCALC software was developed by
18 EPRI to project the EMF impacts of substations and
19 that you directed Channel Fish to the Enertech
20 website for the software?

21 A. [VALBERG] Yes. The abbreviation you
22 mentioned stands for the Electric Power Research
23 Institute. And yes, they developed that software,
24 and it's available from Enertech.

1 Q. Are you familiar with the EMF Workstation
2 software?

3 A. [VALBERG] Yes.

4 Q. Do you work with it?

5 A. [VALBERG] Yes.

6 Q. Would I be correct in stating that the
7 version you utilized of the EMF Workstation for your
8 analysis in August would have been EMF Workstation
9 2.51?

10 A. I don't know if I know the numbers. I
11 mean, it's renewed every year, so we get the most
12 current version that's available in that particular
13 calendar year.

14 Q. Do you know the version of SUBCALC that you
15 used?

16 A. [VALBERG] And you're correct, those also
17 have numbers like that, but I don't recall those
18 numbers.

19 Q. Dr. Valberg, I show you a document that at
20 the very top is entitled EMF Workstation Modules.
21 Do you see that?

22 A. [VALBERG] Yes.

23 Q. The document, if you take a couple of
24 seconds to sort of peruse it, sort of goes through

1 the various modules of the EMF Workstation, does it
2 not?

3 A. [VALBERG] Yes, it does.

4 Q. Have you ever seen this document?

5 A. [VALBERG] Yes, I've seen it.

6 MR. SCOBBO: I'd like to have this
7 marked for identification as -- I have no idea.

8 MS. SEDOR: I'll look that up myself.

9 It will be Exhibit CF -- I'll track down
10 that number. We're going to take a break in about
11 two to three minutes, whenever is a good stopping
12 point for you. And I will look at my notes to see
13 which exhibits. I don't know, Mr. Thayer, if you
14 know off the top of your head?

15 MR. THAYER: I think it may be three or
16 four. I'm not sure.

17 MS. SEDOR: I'll take responsibility for
18 that. If you want to finish up in a couple of
19 minutes, we'll take our break, and I'll look up what
20 that number is.

21 MR. SCOBBO: I'll finish up by just
22 going over this document.

23 MS. SEDOR: Sounds good.

24 Q. If you could turn your attention to the

1 second page of this document.

2 Before I get there: You've seen this
3 perhaps because it's from the website or the home
4 page of Enertech?

5 A. [VALBERG] Yes, that's correct.

6 Q. To which you referred us?

7 A. [VALBERG] Yes.

8 Q. The second page describes SUBCALC Version
9 2.0, does it not?

10 A. [VALBERG] Yes.

11 Q. Do you know whether this is the version of
12 SUBCALC that you used in your August 31, 2015
13 report?

14 A. [VALBERG] I can't verify that for sure.
15 This was printed out in 2016, and I know that our
16 license is up for renewal in January. So if they
17 had made some changes in January of 2016, then it
18 may not be the same one.

19 Q. But the date of your response to CF-2.1 is
20 January 29th of 2016; isn't that right?

21 A. [VALBERG] Yes.

22 Q. And that's the response that you referred
23 us -- under which you referred us to the Enertech
24 website; isn't that right?

1 A. [VALBERG] Yes.

2 Q. The paragraph that describes the SUBCALC
3 Version 2.0, have you had a chance to look at that?

4 A. [VALBERG] Yes.

5 Q. And does that, in your mind, give a good
6 description of the capabilities of SUBCALC Version
7 2.0?

8 A. [VALBERG] Yes, I believe it does.

9 MR. SCOBBO: I just have a couple more
10 questions on this.

11 Q. Let me make sure I understand this.
12 SUBCALC is part of the EMF Workstation, and SUBCALC
13 was developed by EPRI; is that correct?

14 A. [VALBERG] Yes.

15 Q. And then would you agree with me that it
16 was licensed, then, to Enertech?

17 A. [VALBERG] I assume that's the case. I
18 mean, I don't know the nuances of licensing.

19 Q. But you, meaning Gradient, in turn obtain a
20 license for its use from Enertech, do you not?

21 A. [VALBERG] Yes.

22 Q. Do you know whether any of the Enertech
23 employees developed SUBCALC?

24 A. [VALBERG] I think Enertech employees are

1 very knowledgeable on EMF, and it's very likely that
2 they participated in developing of SUBCALC and the
3 other modules.

4 Q. Have you ever met or know of a J.R. Pappa
5 from Enertech? P-a-p-p-a?

6 A. [VALBERG] I can't say whether I was or
7 not.

8 Q. Have you ever seen his name with respect to
9 Enertech?

10 A. [VALBERG] I may have when I've gone to the
11 website, but I haven't talked to him recently,
12 that's for sure.

13 Q. How about a J.G. Stewart, S-t-e-w-a-r-t?

14 A. [VALBERG] Again, the same answer.

15 MR. SCOBBO: It's probably a good time
16 to take a break at this point.

17 MS. SEDOR: Thank you, Mr. Scobbo. And
18 the document that you offered for identification,
19 that's EMF Workstation Modules, will be marked as
20 Exhibit CF-3.

21 (Exhibit CF-3 marked for
22 identification.)

23 MS. SEDOR: Let's go off the record, and
24 back at a quarter to 12:00.

1 (Recess taken.)

2 MS. SEDOR: Let's go back on the record.
3 Mr. Scobbo?

4 MR. SCOBBO: Thank you.

5 Q. Dr. Valberg, I would like to refer your
6 attention to Exhibit CF-3, which is the EMF
7 Workstation modules.

8 A. [VALBERG] Yes.

9 Q. And again, in particular the SUBCALC
10 Version 2.0 portion, which is on Page 2 of Exhibit
11 CF-3.

12 A. [VALBERG] Yes.

13 Q. Am I correct in stating that the SUBCALC
14 would measure the EMF from the buses?

15 A. [VALBERG] Well, it would measure -- it
16 would include the EMF from all the circuitry, yes.

17 Q. Buses, circuit breakers, the transformers,
18 and the underground cables?

19 A. [VALBERG] Underground cables, yes.

20 Q. Well, the answer is yes?

21 A. [VALBERG] Yes, yes.

22 Q. Okay, thank you. I'd like to turn your
23 attention to Page 21 of your August 31, 2015 report,
24 revised Appendix 5-7. In particular, there is a

1 graphic at the top of that Page 21, is there not?

2 A. [VALBERG] Yes, that's correct.

3 Q. And would I be correct in calling that an
4 isopleth?

5 A. [VALBERG] Yes. It includes some other
6 information besides the isopleths themselves; but
7 your correct, that's the isopleth output.

8 Q. Let me rephrase my question so that we're
9 clear on the record. The wavy lines that appear at
10 the top of Page 21 is the isopleth output of SUBCALC
11 2.0, is it not?

12 A. [VALBERG] Well, the actual isopleth output
13 is on an immediately previous page, Page 20, and
14 that shows the actual magnetic field contours.

15 Q. And are the same contours which appear on
16 Figure 4.3?

17 A. [VALBERG] Yes.

18 Q. And that is the isopleth output of SUBCALC
19 2.0; right?

20 A. [VALBERG] Yes, it is.

21 Q. But Figure 4.3 on Page 21 of revised
22 Appendix 5-7 also has other information contained on
23 it, does it not?

24 A. [VALBERG] Yes.

1 Q. And that information in particular that I'm
2 interested in is at the bottom, and it's the Channel
3 Fish building. Do you see that?

4 A. [VALBERG] Yes.

5 Q. And am I correct in stating that this
6 Exhibit -- excuse me, this Figure 4.3 indicates an
7 EMF field just sort of grazing a portion of the
8 Channel Fish building?

9 A. [VALBERG] Certain of the low-field
10 contours, the 0.5 milligauss and the 1.0 milligauss,
11 come very close to the Channel Fish building.

12 Q. I'd like to turn your attention, if I
13 could, to the response to Information Request
14 EFSB-MF-7.

15 A. [VALBERG] Yes.

16 Q. Do you have that?

17 A. [VALBERG] Yes.

18 Q. And that's dated October 5, 2015; creating?

19 A. [VALBERG] Yes. There actually were two
20 versions of that. There was a revised version as
21 well, dated November 9.

22 Q. I'm going to get to that. I'm dealing with
23 MF-7 at this point.

24 A. [VALBERG] Okay.

1 Q. And am I correct in stating that the
2 attachment to MF-7 is the same as Figure 4.3 in
3 revised Appendix 5-7, with the exception of some
4 additional information, such as nearby residences?

5 A. [VALBERG] Yes, I believe that's correct.

6 Q. Now, putting your attention back on Page
7 17 -- excuse me, putting your attention back on your
8 August 31 report, and here in particular, Page 17.

9 A. [VALBERG] Yes.

10 Q. The very last sentence of Section 4.1 says
11 that -- or states that "Modeled fields using SUBCALC
12 are both precise and accurate for the input date
13 utilized." Is that correct?

14 A. [VALBERG] Yes.

15 Q. What do you mean by the word "precise"?

16 A. [VALBERG] Precise meaning that they can be
17 calculated to whatever degree of precision you want.
18 I mean, the basic equations of electricity and
19 magnetism are not subject to uncertainty or error.
20 They can be made as precise as you want. "Accurate"
21 means are they in fact true; they are true. And
22 "precise" means can you do it to any degree of
23 precision you want -- a 1 percent accuracy, a
24 tenth-of-a-percent accuracy.

1 Q. I didn't ask you about accuracy. I asked
2 you about the word "precise." Let me make sure I
3 understand your response with respect to the word
4 "precise."

5 Are you stating, saying that SUBCALC,
6 you can set the standard to what precision you wish?

7 A. [VALBERG] No. What I'm saying is that the
8 results are accurate to the number of significant
9 digits that it gives to you.

10 Q. I'm using the word "precise." Your
11 sentence says -- I'm going to repeat my question.
12 Your statement on Page 17 indicates that "The
13 modeled fields using SUBCALC are both precise and
14 accurate." And I am focusing on your word
15 "precise." What do you mean by "precise"?

16 A. [VALBERG] I mean by "precise" that if it
17 gives you the particular value for a magnetic field
18 at a particular location, that that value is
19 accurate to all the significant digits that it
20 provides to you.

21 Q. Is there any range around that precision,
22 or is it simply as to the significant digits on the
23 output?

24 A. [VALBERG] Well, what I meant there was to

1 the significant digits of the output -- and
2 generally that range is far more precise than you
3 would typically need in a magnetic field assessment.

4 Q. Can you give me a range of that precision?
5 Is it plus or minus 5 percent, plus or minus 1
6 percent, 10 percent? What is it?

7 A. [VALBERG] I would say it's better than
8 plus or minus 1 percent, but I don't have a figure
9 better than that.

10 Q. You mean plus or minus less than 1 percent?

11 A. [VALBERG] Yes.

12 Q. Now, you use the word "accurate" for the
13 input data utilized, precise and accurate for the
14 input data. What do you mean by the word
15 "accurate"?

16 A. [VALBERG] "Accurate," I mean that the
17 results are correct as would be predicted by the
18 laws of electricity and magnetism.

19 Q. Did you ever sort of backcast this stuff?
20 I mean, it's accurate as given the laws. Did you
21 ever test it?

22 A. [VALBERG] The laws of electricity and
23 magnetism have been tested for over 100 years, and
24 no exceptions have been found. So I would say that

1 the accuracy of electric and magnetic field
2 equations I think has never been in doubt, and every
3 time it's been checked it's been found to be
4 accurate.

5 Q. I see. So what you're saying is that it's
6 accurate as to the laws of physics or the laws of
7 electricity; that is, that the algorithm is accurate
8 and accurately reflects the laws of physics and
9 accurately reflects the laws of electricity?

10 A. [VALBERG] Correct.

11 Q. Now I'd like to turn your attention to the
12 response to Information Request CF-34. Do you have
13 that in front of you?

14 A. [VALBERG] Yes, I do.

15 Q. And can you tell us the date of that
16 response?

17 A. [VALBERG] The date is given as November
18 2nd, 2015.

19 Q. And that response, a, indicates there's a
20 corrected version of Attachment MF -- let me repeat
21 that. That response under small a indicates a
22 corrected version of Attachment MF-7(1) is provided
23 here as Attachment CF-34(1). Is that correct?

24 A. [VALBERG] Yes.

1 Q. Looking at the response, the attachment, am
2 I correct in stating that the -- strike that. Was
3 that response developed by SUBCALC?

4 A. [VALBERG] Yes.

5 Q. And am I correct in stating that the
6 results indicate that the isopleths are further into
7 the Channel Fish building or superimposed onto the
8 Channel Fish building than those which were on MF-7?

9 A. [VALBERG] Yes, they are slightly further,
10 that's correct.

11 Q. And did the inputs change, for you to make
12 that correction?

13 A. [VALBERG] Yes, the inputs changed because
14 in the earlier graph there was -- it had been
15 modeled as a sharp U-turn heading off toward the
16 Chelsea River. Here that U-turn has been moved
17 farther away.

18 So, yes, the path of the current has
19 changed.

20 Q. Let me back up. You said "it" had been
21 modeled. What's "it"?

22 A. [VALBERG] The model of where the current
23 goes and the magnetic field that is produced, there
24 has been a change in the location of the conductors.

1 And so yes, that change in location is a change in
2 the parameters that go into SUBCALC.

3 Q. Okay. So are you telling me the conductors
4 moved?

5 A. [VALBERG] The path of the conductors
6 moved, yes.

7 Q. By a design change?

8 A. [VALBERG] Yes.

9 Q. And that change caused the -- resulted in
10 an estimated EMF which emanates further into the
11 Channel Fish building than the prior path; is that
12 right?

13 A. [VALBERG] Slightly further, yes.

14 Q. I'd like to turn your attention to the
15 response to Information Request CF-2-10.

16 A. [VALBERG] Yes, I have that response.

17 Q. And the question -- and this is dated
18 January 29th, 2016; correct?

19 A. [VALBERG] Correct.

20 Q. And by the question and answer, I
21 understand that you have never tested the EMF from
22 any company substation after it has been in
23 operation; is that correct?

24 A. [VALBERG] Yes, that's correct.

1 Q. Do you know whether the company has?

2 A. [VALBERG] I don't know. I think the
3 reason for this is that there has never been
4 interest in testing it after operation.

5 Q. I'd like to turn your attention to the
6 response to Information Request CF-2-3. Do you have
7 that?

8 A. [VALBERG] Yes, I have that.

9 Q. And the question asked whether you could
10 identify and produce articles, presentations,
11 studies, et cetera in which you evaluated the impact
12 of electromagnetic fields on equipment, does it not?

13 A. [VALBERG] Yes.

14 Q. And the first page, Page 1 of 1, of the
15 response to CF-2-3 lists seven NSTAR dockets, does
16 it not?

17 A. [VALBERG] Yes.

18 Q. Do any of those dockets address the impact
19 of electromagnetic fields on equipment?

20 A. [VALBERG] Well, those are listed there
21 because they involve electric and magnetic field
22 analyses, and the results of those analyses can
23 easily be taken to any piece of equipment that you
24 desire, and if you have the threshold level at which

1 it would cause interference, then you can check that
2 against it.

3 Q. Sure. Sort of like what these guys did,
4 the experts that we hired? They took your results
5 and they tested it against some kind of equipment,
6 didn't they?

7 A. [VALBERG] I don't know that they tested it
8 against equipment, no.

9 Q. Okay. But none of these pieces of
10 testimony that you refer to in response to our
11 question deal with and are focused on the impact and
12 evaluate the impact of electromagnetic fields on
13 equipment, do they?

14 A. [VALBERG] Those analyses only provide the
15 magnetic field and electric field impacts, and those
16 can be taken with any piece of equipment. I mean,
17 there's a whole universe of equipment that they can
18 be applied to.

19 Q. I didn't ask you whether I could apply your
20 results to equipment. The question was did you
21 study the impact on equipment? The answer is no,
22 isn't it?

23 A. [VALBERG] The answer is no one requested
24 such an analysis in those particular situations.

1 Q. So the answer is no.

2 A. [VALBERG] That's correct.

3 Q. Now turning your attention to the next
4 page -- it's mislabeled Page 1 of 2; it should be
5 Page 2 of 2 -- of the response to CF-2-3. Do you
6 see that?

7 A. Yes.

8 Q. Here you indicate that you have prepared
9 "such reports." Now, I assume you mean such reports
10 in response to the question where we asked for
11 presentations, articles, studies, et cetera, in
12 which you evaluated the impact of electromagnetic
13 fields on equipment. Is that what it refers to?

14 A. [VALBERG] Yes.

15 Q. Now, you list six particular reports; is
16 that right?

17 A. [VALBERG] Yes.

18 Q. And is it your testimony that these reports
19 in fact do analyze the effect of EMF on equipment?

20 A. [VALBERG] They don't involve experimental
21 studies, but they do involve -- yes, they involve
22 comparison of projected fields and potential
23 interference levels for power-frequency magnetic
24 fields.

1 Q. On equipment?

2 A. On equipment.

3 Q. Thank you. And you didn't provide any of
4 those reports; isn't that right?

5 A. [VALBERG] That's correct.

6 Q. Because they're the property of the clients
7 for whom you prepared them; is that right?

8 A. [VALBERG] That's right.

9 Q. Did you seek from those clients any ability
10 to release them to us?

11 A. [VALBERG] No, I did not.

12 Q. Why not?

13 A. [VALBERG] This question never has come up
14 previously, so I have not gotten releases on these
15 reports.

16 Q. No, the question came up prior to January
17 29th, you know. We phrased the question, and based
18 on that question, even though it didn't come up
19 before, based on the question that we asked, did you
20 ask any of those clients to release any of those
21 reports?

22 A. [VALBERG] No.

23 Q. No. Thank you.

24 Would you agree with me that the

1 approximate distance of the Channel Fish building to
2 the proposed substation site is approximately 30
3 feet?

4 A. [VALBERG] I don't know the precise figure,
5 but I would say that's probably in the ballpark.

6 Q. Dr. Valberg, I'm showing you a document
7 entitled EMF Workstation 2.5: Computer Software For
8 Studying Magnetic Field Scenarios. Take a few
9 minutes and look at that.

10 MR. SCOBBO: As he's looking at that,
11 I'd like to have this marked for identification as
12 CF-4.

13 MS. SEDOR: Yes, it shall be so marked.
14 (Exhibit CF-4 marked for
15 identification.)

16 MS. SEDOR: Just for the record, as
17 Mr. Scobbo noted, the document is entitled EMF
18 Workstation 2.5: Computer Software for Studying
19 Magnetic Field Scenarios.

20 It's actually a fairly lengthy document.
21 Are you asking Dr. Valberg to read the entire
22 document?

23 MR. SCOBBO: I'm just asking him to
24 peruse it. I'm going to bring his attention to the

1 SUBCALC portion of it, and ask him some questions
2 about it.

3 A. [VALBERG] I have paged through the
4 document, yes.

5 Q. The first question is: Have you ever seen
6 this document before?

7 A. [VALBERG] No, I have not.

8 Q. Have you ever reviewed documents that deal
9 with EMF Workstation 2.5, address it, analyze it?

10 A. [VALBERG] I have seen it used in certain
11 circumstances. I have not seen this particular
12 document. I have not seen it applied in this
13 particular way.

14 Q. What do you mean, you had not seen "it"
15 applied in this particular way? I don't understand
16 that.

17 A. [VALBERG] It seems to have a whole series
18 of analyses that they have done on a variety of
19 models, and I think this does in fact illustrate the
20 capabilities of their software, but I haven't
21 studied this document.

22 Q. Okay. That's fine. The first thing I want
23 to ask you is: The individual whose name appears in
24 front of the Electric Power Research Institute on

1 the first page -- I'm not even going to attempt to
2 pronounce it -- have you ever seen his name before?

3 A. [VALBERG] I don't believe so, no.

4 Q. You'd remember if you did.

5 A. [VALBERG] Yes.

6 Q. The next individual is J.R. Pappa,
7 P-a-p-p-a, of Enertech Consultants. Do you see
8 that?

9 A. [VALBERG] Yes.

10 Q. Have you seen his name before?

11 A. [VALBERG] I think I may have seen his name
12 before.

13 Q. And would you have seen that on the
14 Enertech website?

15 A. [VALBERG] Yes.

16 Q. The next person is J.G. Stewart, of
17 Enertech Consultants. Have you seen his name
18 before?

19 A. [VALBERG] It would be on the Enertech
20 website if I had seen it, yes.

21 Q. I'd like to turn your attention, if I
22 could, to -- unfortunately, these pages are not
23 numbered, and it's the page that at the very bottom
24 has capital letter B and then SUBCALC 2.0. It's six

1 pages in.

2 A. [VALBERG] Yes, I think I do have that
3 page.

4 Q. The statement that appears there is -- at
5 the bottom of Page 6 there's a statement that
6 appears: "SUBCALC models the power-frequency
7 magnetic fields from a user-specified array of
8 transmission lines, primary distribution lines,
9 substation conductors and substation equipment." Is
10 that an accurate reading of that sentence?

11 A. [VALBERG] Yes.

12 Q. And do you agree with that statement, that
13 that in fact is what SUBCALC 2.0 models?

14 A. [VALBERG] Yes.

15 Q. It goes on to indicate that "The resulting
16 magnetic field environment can be presented in a
17 variety of graphical formats, including 2-D contour
18 and 3-D surface maps." Is that correct?

19 A. [VALBERG] Yes.

20 Q. Now, 2-D contour maps -- or 2-D contour, I
21 should say, are those the isopleths that we talked
22 about earlier?

23 A. [VALBERG] Yes.

24 Q. I'd like to turn your attention to the next

1 page in that document, and it is ii, Magnetic Field
2 Sources, at the bottom.

3 A. [VALBERG] Yes.

4 Q. It states, "The following sources can be
5 modeled in SUBCALC Version 2.0: substation buses,
6 overhead transmission and distribution lines,
7 circuit breakers, capacitor banks, air-core
8 reactors/wave traps, power transformers and
9 underground cables." Do you agree with that?

10 A. [VALBERG] Yes.

11 Q. The next page goes on to discuss modeling
12 of substation buses, overhead transmission and
13 distribution lines, circuit breakers, et cetera,
14 does it not?

15 A. [VALBERG] Yes.

16 MS. KEUTHEN: Excuse me. If we just
17 roll back for a second, just for clarity: You asked
18 Dr. Valberg if he agreed with -- I'm not sure if he
19 agreed with that statement or if he agreed that
20 that's what the statement --

21 MR. SCOBBO: I think I asked him whether
22 he agreed with the statement.

23 Q. Let me ask another question: Do you agree
24 with that statement? Let's just clarify that.

1 A. [VALBERG] I'm sorry, which one?

2 Q. It was the statement under double i,
3 Magnetic Field Sources, where "The following sources
4 can be modeled in SUBCALC Version 2.0," and there's
5 a listing of sources.

6 A. [VALBERG] Yes.

7 Q. And you agree that in fact SUBCALC can
8 model those?

9 A. [VALBERG] Yes.

10 MS. KEUTHEN: Thank you.

11 Q. The next page goes on to discuss the
12 various sources that were discussed on the prior
13 page, at least in some detail, does it not?

14 A. [VALBERG] Yes.

15 Q. The next page talks about input data
16 preview; is that right?

17 A. [VALBERG] Yes.

18 Q. And it has a schematic in the middle. Are
19 you familiar with schematics of this type from
20 SUBCALC?

21 A. [VALBERG] Yes.

22 Q. Thank you. I'd like to turn your attention
23 to the next page, which talks about 3-D Magnetic
24 Field Maps; do you see that?

1 A. Yes.

2 Q. You didn't provide any analysis of this
3 nature, did you?

4 A. [VALBERG] That's correct.

5 Q. Is there a reason why?

6 A. [VALBERG] The primary reason is that the
7 fields within the substation generally are of no
8 particular interest, and the isopleths tell you
9 accurately what the fields are outside the
10 substation.

11 Q. That makes sense. Turning your attention
12 to the next page. There is a figure designated as
13 Figure 10, which is Profile Plot of Magnetic Field.
14 Is that correct?

15 A. [VALBERG] Yes.

16 Q. Have you ever seen this type of output from
17 SUBCALC?

18 A. [VALBERG] Yes.

19 Q. And you didn't present this type of output
20 in your reports, did you?

21 A. [VALBERG] No, but you could infer the
22 output just by following the isopleths around the
23 boundary of the substation. But this plot was not
24 presented.

1 Q. Okay. So just using this plot as an
2 example: On the x axis there is feet, distance;
3 right?

4 A. [VALBERG] Correct.

5 Q. And the y axis is the b field, or
6 milligauss; is that correct?

7 A. [VALBERG] Yes.

8 Q. And if we follow the contours of the lines,
9 it would indicate that there is some increase, at
10 least in this particular chart, of milligauss
11 between 0 and 500 feet; is that correct?

12 A. [VALBERG] Yes.

13 Q. And then it goes down and then goes way up,
14 between 1,000 and 1500 feet -- at least in this
15 output.

16 A. [VALBERG] Yes.

17 Q. Now, I'd like to turn your attention to
18 Roman numeral vi at the bottom of that page, which
19 is entitled Program Verification and Accuracy. Do
20 you see that?

21 A. [VALBERG] Yes.

22 Q. The first statement says, "The SUBCALC
23 program has been verified in several ways," does it
24 not?

1 A. [VALBERG] Yes.

2 Q. The next sentence says, "Field measurement
3 data from existing substations collected by Ohio
4 State University compared favorably with the results
5 derived from the SUBCALC model." Do you see that?

6 A. [VALBERG] Yes.

7 Q. Have you ever seen that particular study by
8 Ohio State University?

9 A. [VALBERG] No, I don't believe so.

10 Q. Have you ever heard of it?

11 A. [VALBERG] I don't think so.

12 Q. It goes on to state, "Comparisons to a
13 scale model substation developed by Ohio State
14 University and hand calculations for conductor
15 configurations with well-known solutions were also
16 used to validate this program." Do you see that?

17 A. [VALBERG] Yes.

18 Q. Do you think that is -- those two
19 approaches that are described in those two
20 sentences, do you think that is a valid way of
21 testing the output of SUBCALC?

22 A. I mean, certainly it's a good way of
23 testing it. I think that's fine.

24 Q. You don't have any real issues with that,

1 do you?

2 A. [VALBERG] I don't think I have issues with
3 that. I'd have to know more about it, really, to
4 examine it closely. But it sounds like they did a
5 valid job there.

6 Q. And then the next sentence says, "In each
7 case, the magnitude and angle of the individual
8 field vector components were checked for accuracy."
9 Then, "The results from the straight line conductor
10 segments (that is, transmission and distribution
11 lines, and buswork) are within 10 percent." By
12 reading that, would you agree with me that the
13 results of that study indicate that, as far as the
14 predicted value, as tested by Ohio State, the
15 accuracy is 10 percent?

16 A. [VALBERG] I'm not sure what they're
17 referring to. I think that the accuracy depends
18 upon whether the conductor segments agree with the
19 theory that is calculating the conductor segments.
20 I mean, there's no reason for an accuracy that --
21 the accuracy is definitely better than that, based
22 on the theory of electric and magnetic fields.

23 Q. But at least at Ohio State, it's 10
24 percent?

1 A. [VALBERG] They found in their validation
2 procedure that it was 10 percent.

3 Q. The next sentence indicates, "Preliminary
4 tests of substation equipment models are accurate to
5 within 5 percent and 20 percent depending on the
6 type of equipment and relative distance from the
7 source." Do you see that?

8 A. [VALBERG] Yes.

9 Q. Do you have any reason to doubt that?

10 A. [VALBERG] No, I have no reason to doubt
11 that.

12 Q. Take a look at Exhibit -- excuse me, Figure
13 11, if you would, for the calculated versus measured
14 fields. Do you see that?

15 A. [VALBERG] Yes.

16 Q. It's a little hard to follow. But the
17 lighter line, would you agree with me, is the
18 calculated EMF fields as found by Ohio State? Is
19 that right?

20 A. [VALBERG] Yes.

21 Q. The darker lines are the actual measured
22 fields; is that correct?

23 A. [VALBERG] Yes.

24 Q. And am I correct in stating that, at least

1 as far as this is concerned -- strike that. The x
2 axis, as we had indicated before, is distance in
3 feet; isn't that correct?

4 A. [VALBERG] It's distance in feet, I assume
5 around the perimeter of the substation.

6 Q. And the y axis is the magnetic field, or
7 the milligauss; isn't that right?

8 A. [VALBERG] Yes.

9 Q. So in looking at this, it appears to me
10 that the measured underground cables between 0 and
11 50 feet exceed the calculated milligauss, at least
12 as far as Ohio State is concerned.

13 A. [VALBERG] You'd have to really look how
14 the measurements and the calculations were done. I
15 mean, it looks like there may be two pairs of
16 underground cables which in calculation were
17 separated but the measurement lumped them together.

18 I would say that that agreement is very
19 good.

20 Q. But the underground cables, at least within
21 that distance, the actual is higher than the
22 predicted.

23 A. [VALBERG] By a small increment, that's
24 correct.

1 Q. Thank you. I'd like to turn your
2 attention, if I could, to the response to CF -- I
3 already did that. Never mind.

4 The response to CF-2-3. If I could put
5 you back on that. Again, it says Page 1 of 2, but
6 it really means Page 2 of 2. Do you see that?

7 A. [VALBERG] Yes.

8 Q. And the last bullet is the Massachusetts
9 Bay Transportation Authority 2003 Power Frequency
10 Magnetic Field Interference With University/Medical
11 Research Facilities Nearby to the Proposed Urban
12 Ring Public Transportation Project. What do you
13 mean by "university/medical research facilities"?

14 A. [VALBERG] Well, the Urban Ring went nearby
15 Massachusetts Institute of Technology, MIT, and it
16 went by the Harvard Medical area as well.

17 Q. Longwood?

18 A. [VALBERG] Longwood area, yes. And so
19 those were the particular areas that it was felt
20 there would be research equipment nearby.

21 Q. And what type of research equipment were
22 they concerned with; do you know?

23 A. [VALBERG] The primary one was electron
24 microscopes.

1 Q. Were there any other sensitive electronic
2 equipment that they'd be concerned with?

3 A. [VALBERG] At this point, I don't recall,
4 again, if they had other equipment. The electron
5 microscope was the one that most people were focused
6 on.

7 Q. The medical, Harvard -- the Longwood
8 Medical Area would have X-ray machines?

9 A. [VALBERG] It would have many machines.
10 But again, the question really arises as to whether
11 the principle of operation of those machines would
12 be interfered with.

13 Q. Right. I'm going to get there. I'm just
14 trying to figure out what type of machines that
15 perhaps, at least in your recollection, Longwood may
16 have been -- the Longwood Medical area may be
17 concerned with. X-ray machines, microscopes,
18 magnetic detectors, perhaps?

19 A. [VALBERG] Possibly, and cardiac
20 pacemakers.

21 Q. I show you a document entitled
22 Circumferential Transportation Improvements in the
23 Urban Ring Corridor, dated November 2008?

24 MS. SEDOR: Would you like to mark this

1 for identification?

2 MR. SCOBBO: I will -- or I would. That
3 would be CF-5?

4 MS. SEDOR: Yes, Exhibit CF-5.

5 (Exhibit CF-5 marked for
6 identification.)

7 Q. This is dated November 8th, 2007, is it
8 not?

9 A. [VALBERG] Yes. It's November, I'm sorry,
10 2008?

11 Q. It does say 2008 there. But turn the page.
12 At the top it says November 8, 2007. And more
13 importantly, turn to the next page. There is a
14 memorandum here to a Ned Codd, C-o-d-d, project
15 manager, Executive Office of Transportation, dated
16 November 6, 2007. Isn't that right?

17 A. [VALBERG] Yes.

18 Q. And it says it's from a James A. Doyle and
19 a Peter Valberg; is that correct?

20 A. [VALBERG] Yes.

21 Q. You're the Peter Valberg; right?

22 A. [VALBERG] That's correct.

23 Q. Who's James Doyle?

24 A. [VALBERG] He was the project manager for

1 the Urban Ring.

2 Q. You didn't list this on your response to
3 CF-2-3, did you?

4 A. [VALBERG] This is essentially the
5 document, a final document, that refers to the work
6 I did for MBTA and the Executive Office of
7 Transportation.

8 Q. Okay. But your response to 2-3 said you
9 did this in 2003; isn't that right?

10 A. [VALBERG] That's -- I was taking the dates
11 from the project number, and the project numbers
12 starting in 2003.

13 Q. And this document which has been marked as
14 CF-5 is the final report?

15 A. [VALBERG] I'm -- it is definitely a report
16 of that same project. I'm not sure if it's final or
17 intermediate. There were many reports that they
18 generated.

19 Q. Was this report prepared by you or under
20 your supervision?

21 A. [VALBERG] It was definitely prepared with
22 my input. I guess the final wording was probably
23 determined by the group in charge of issuing the
24 report.

1 Q. Do you have any disagreement with the
2 wording in the report?

3 A. [VALBERG] I haven't reviewed this
4 particular version, but I probably saw one very
5 similar to it. So I would offhand say no, but I
6 would have to review this one.

7 Q. Wait a minute. You didn't review this
8 version? It seems to me that there is a memorandum
9 dated November 6, 2007, from you that says,
10 "Attached is a technical memorandum." Right?

11 A. [VALBERG] Yes.

12 Q. Okay. So did you review this or did you
13 not review it?

14 A. [VALBERG] Well, all I'm saying is, I'm
15 sure I reviewed either this version or one very
16 close to it. I can't say for certain that I've
17 reviewed this exact version, because it was going
18 through many revisions at the time that we were
19 working on it.

20 Q. If that's your testimony, that's fine.

21 A. [VALBERG] Yes.

22 Q. Now turning your attention to Page 2 of the
23 report; in particular, the sentence that begins with
24 "Earth Tech and Gradient." Strike that.

1 The sentence that begins with, "The
2 Urban Ring Phase 2." Could you read that into the
3 record?

4 A. [VALBERG] You're talking about essentially
5 the first sentence of the whole --

6 Q. I think it's the third sentence I'm asking
7 you to read.

8 A. [VALBERG] "The Urban Ring Phase 2 route
9 will pass near several clusters of laboratories and
10 medical facilities where sensitive electronic
11 instruments are used."

12 Q. What do you mean by that? What sensitive
13 electronic instruments are you talking about there?

14 A. [VALBERG] Well, I'm talking about
15 instruments such as electron microscopes -- you
16 know, any instrument that relies specifically on
17 magnetic fields to get the result in terms of
18 magnification or probing of the material they're
19 looking at.

20 Q. Sort of like a metal detector?

21 A. [VALBERG] I don't know that they had metal
22 detectors. The sensitive instrumentation would
23 involve things where the actual function, such as
24 the movement of electrons in the electron

1 microscope, would be deflected by magnetic fields.
2 And so you have a physical mechanism whereby a
3 magnetic field would interact with that principle.

4 Q. Hold that thought. We're going to come
5 back to that.

6 I'd like to turn your attention to Page
7 4 and the paragraph which begins with, "Magnetic-
8 field excursions from MBTA electric-propulsion
9 currents are expected to have a frequency spectrum
10 of 0 to 10 hertz." Do you see that?

11 A. [VALBERG] Yes.

12 Q. Now, that's that ultra-low frequency we
13 talked about earlier this morning, isn't it?

14 A. [VALBERG] Yes.

15 Q. That's certainly lower than 60 hertz;
16 right?

17 A. [VALBERG] Correct.

18 Q. I'd like to turn your attention to Page 9,
19 and in particular Table 2. Am I correct in stating
20 that Table 2 is a graphic depiction of the results
21 of your study for this project?

22 A. [VALBERG] Yes. This is a tabular
23 description of the results.

24 Q. And these are the magnetic fields that are

1 generated by ultralow frequency, 0 to 10 hertz;
2 right?

3 A. [VALBERG] Yes.

4 Q. And for heavy rail technology, it's 570
5 milligauss between 30 and 60 feet; is that right?

6 A. [VALBERG] Yes.

7 Q. And for the rapid transit it's between 20
8 and 64 milligauss in that distance; right?

9 A. [VALBERG] Yes.

10 Q. And for light rail it's 290 --

11 A. [VALBERG] Correct.

12 Q. -- milligauss; right?

13 A. [VALBERG] Right.

14 Q. Now turn your attention, if you would, to
15 Page 12. And there you list A, B, C, D, and E,
16 summary of mitigation methods. Is that right?

17 A. [VALBERG] Yes.

18 Q. And those mitigation methods are your
19 suggestion how one would mitigate the impact of EMF
20 derived from ultra-low hertz, 0 to 10, impact on
21 sensitive electronic equipment; is that right?

22 A. [VALBERG] If mitigation is needed, these
23 are possible approaches, that's correct.

24 Q. And the first one is, "To reduce the

1 effects of the source by making the source more
2 distant." Isn't that right?

3 A. [VALBERG] Yes.

4 Q. So now let's take the instance of this
5 substation. If in fact -- and you don't have to
6 agree with me. But if in fact there was some EMF
7 interference with sensitive electronic equipment
8 derived from 60 hertz, which is the frequency of the
9 substation, that interfered with Channel Fish, one
10 solution to that interference would be to move the
11 source; isn't that correct?

12 A. [VALBERG] The magnetic field impact
13 decreases with distance, and that's a standard
14 principle, yes.

15 Q. So you'd agree with me, to move the source.

16 A. [VALBERG] That would be one way to reduce
17 the strength of the magnetic field.

18 Q. In fact, that's the first one you suggested
19 in this report that studies the impact of 0 to 10
20 hertz on sensitive electronic equipment.

21 A. [VALBERG] I don't know that the order in
22 which they're given is of any particular
23 significance.

24 Q. If there's a substation, assuming arguendo,

1 that has an EMF impact on sensitive electronic
2 equipment for, let's say, Channel Fish, one way of
3 solving that is to move the substation away from
4 there before it's even built; right?

5 A. [VALBERG] That's a possibility, correct.

6 Q. Thank you. Now I'd like to turn your
7 attention, if I could, to your rebuttal testimony,
8 which is marked as PAV-2; and in particular, Page 3.
9 And I'd like to direct your attention to Lines 17,
10 18, and 19. Do you see that?

11 A. [VALBERG] Yes.

12 Q. It says here, "As shown in Eversource's
13 response to Attachment EFSB-MF-7(1), the magnetic
14 field levels generated at the substation when
15 running at peak loads fall off," et cetera, "and are
16 slightly above 1 milligauss at the westernmost wall
17 of the Channel Fish building." Is that what it
18 says?

19 A. [VALBERG] That's what it says.

20 Q. Didn't you correct MF-7 with CF-34?

21 A. [VALBERG] Yes, and I think that the
22 response here is in agreement with the corrected
23 version.

24 Q. Which response where is in agreement?

1 A. [VALBERG] Well, I'm looking at the
2 response that is the response to CF-34, that shows
3 the contour map of Substation 131.

4 Q. So are you telling me, is it your testimony
5 that the response to CF-34 yields a result of 1
6 milligauss at the westernmost wall, slightly above 1
7 milligauss at the westernmost wall?

8 A. [VALBERG] That's what I'm seeing here in
9 the diagram.

10 Q. I think we already talked about how there's
11 a difference between HF-7 and CF-34, that that
12 isopleth, which indicates the 1 milligauss, moved in
13 towards, into, the Channel Fish facility.

14 A. [VALBERG] Yes, the 1 milligauss isopleth
15 is inside the wall, but the response says that
16 therefore right at the wall it would be slightly
17 above 1 milligauss.

18 Q. So you don't think you need to change your
19 rebuttal testimony at all; is that right? Even
20 though you changed the MF-7?

21 A. [VALBERG] I believe I wrote this rebuttal
22 testimony looking at the graph that we're
23 referencing here.

24 Q. But you just happened to name it HF-7.

1 A. [VALBERG] I think that the EFSB-MF-7 was
2 also corrected with this new -- with this new graph.

3 Q. Do you want to keep your rebuttal testimony
4 the same? You're not going to refer to HF-34.
5 You're going to keep it HF-7?

6 A. [VALBERG] All I can tell you is that this
7 graph that you pointed out is the most recent graph
8 and it's the one that would be most applicable to
9 this rebuttal testimony.

10 MR. YOUNG: Mr. Scobbo, you've been
11 referring to an HF-7?

12 MR. SCOBBO: MF, I'm sorry. It's MF-7.

13 MR. YOUNG: And I think did you also
14 say -- that's fine. Thank you.

15 MR. SCOBBO: MF-7. Thank you.

16 MS. SHAPIRO: I'd like to clarify: So
17 when you're talking about Channel Fish 34, and we're
18 also looking at EFSB-MF-7(1)(R-1), are those two the
19 same isopleths?

20 WITNESS VALBERG: Yes.

21 MS. SHAPIRO: So what was presented in
22 CF-34 is just a copy of EFSB-MF-7(1)(R-1)?

23 WITNESS VALBERG: Yes.

24 MR. SCOBBO: But it's not the same as

1 MF-7.

2 MS. SHAPIRO: Correct.

3 MS. KEUTHEN: If I could, I think this
4 would clarify, if I'm correct: I believe that your
5 rebuttal testimony refers to Attachment
6 EFSB-MF-7(1), should refer to EFSB-MF-7(R-1). Is
7 that correct?

8 WITNESS VALBERG: Yes.

9 MS. KEUTHEN: Sorry for any confusion.

10 MS. SEDOR: So that's Line 18 on Page 3,
11 for example?

12 WITNESS VALBERG: Yes.

13 MR. SCOBBO: I didn't think redirect was
14 ready yet, but that's okay.

15 MS. SEDOR: I think anything that we can
16 do to clear up ambiguity on the spot is worth doing.

17 MR. SCOBBO: Sure.

18 Q. I'd like to turn your attention, if I
19 could, to the response to Information Request
20 EV-CF-7, and in particular, the first attachment.

21 MS. SEDOR: I'm sorry, could you just
22 repeat that again?

23 MR. SCOBBO: Yes, the response to
24 EV-CF-7.

1 MS. SEDOR: Thank you.

2 A. [VALBERG] Is that the first set or second
3 set?

4 Q. First.

5 A. [VALBERG] I would have to get a copy of
6 that. I don't have 7 here. I have 17, but not 7.

7 MR. SCOBBO: Can we go off the record
8 one second?

9 MS. SEDOR: Sure.

10 (Discussion off the record.)

11 MS. SEDOR: Let's go back on the record.

12 Q. Have you ever seen this document before,
13 Dr. Valberg?

14 A. [VALBERG] Yes.

15 Q. Did you review it before?

16 A. [VALBERG] Yes.

17 Q. And did you review it for purposes of your
18 rebuttal testimony?

19 A. [VALBERG] Yes.

20 Q. I'd like to turn your attention to Page 29
21 of that document. Page 29 has a picture of the
22 metal detector, does it not?

23 A. [VALBERG] Yes.

24 Q. And it has two parts to it, doesn't it?

1 A. [VALBERG] Yes.

2 Q. One is identified as a power supply?

3 A. [VALBERG] Yes.

4 Q. And the other is identified as -- well,
5 they're bolts, but the other is the actual metal
6 detector, isn't it?

7 A. [VALBERG] Yes.

8 Q. Do you have any understanding -- having
9 read the manual, do you have any understanding what
10 the power supply is?

11 A. [VALBERG] The power supply is essentially
12 what it says it is: it provides power to the main
13 unit.

14 Q. So I'd like to turn your attention to Page
15 23 of the manual. On the right-hand side, two
16 thirds of the way down, there's a statement that
17 says, "The power supply meets the following
18 requirements." Correct?

19 A. [VALBERG] Yes.

20 Q. And then the third -- second bullet is "EMC
21 immunity, EMC immunity IEC/EN 61000-4." Is that
22 correct?

23 A. [VALBERG] Yes.

24 Q. What is that?

1 A. That is the immunity standard, and that's
2 the immunity standard that I communicated with
3 Safeline regarding the main unit itself. This
4 refers to the power supply and and since it doesn't
5 say anything specific about the main unit, I asked
6 them about its EMC immunity.

7 Q. And you're referring to the response from
8 Mettler Toledo that you have in your rebuttal
9 testimony?

10 A. [VALBERG] Yes, that's correct.

11 Q. Your question to Mettler Toledo was whether
12 the EMC immunity IEC/EN 61000-4 applied to the power
13 supply or to the unit. Did you ask that specific
14 question?

15 A. [VALBERG] No. The question I asked was,
16 "Please let me know what levels of 60 hertz magnetic
17 fields might cause malfunction of the Safeline metal
18 detection series instruments R/RB/RZ."

19 Q. But the manual on Page 23 indicates that it
20 applies to the power supply, isn't it?

21 A. [VALBERG] It gives a value for the power
22 supply. I think my question was about the
23 instrument itself. And so the power supply is one
24 component that they give a number for here in the

1 manual, and because they don't give one specifically
2 for the instrument that was the basis of my question
3 to them.

4 Q. You haven't seen any EMC immunity IEC-EN
5 61000-4 applying to the metal detector itself, have
6 you, in the manual?

7 A. [VALBERG] In the manual I did not see a
8 specific number in that regard.

9 MR. YOUNG: Mr. Scobbo, I would like to
10 ask a question, just so I can follow along better:
11 What does EMC stand for?

12 WITNESS VALBERG: Electromagnetic
13 compatibility.

14 MR. YOUNG: Thank you.

15 Q. Turning your attention back to your
16 prefiled direct testimony: Attachment A to your
17 prefiled direct testimony is your curriculum vitae,
18 is it not?

19 A. [VALBERG] Yes, and I don't have a copy of
20 that here, but I'm sure someone may have a copy.

21 Q. Do you now have Attachment A to your
22 prefiled direct testimony in front of you?

23 A. [VALBERG] Yes, I do.

24 Q. You list a significant number of articles

1 and papers that you've written in that vita, do you
2 not?

3 A. [VALBERG] Yes.

4 Q. Would you take subject to check that over
5 100 of them deal with public health impacts of EMF?

6 A. [VALBERG] There are approximately that
7 number, yes, that's correct.

8 Q. Are any articles there dealing with the
9 impact of EMF on sensitive electronic equipment?

10 A. [VALBERG] None of the articles deal with
11 that topic.

12 Q. So would it be a correct statement to say
13 that your background and your CV focuses
14 significantly on the public health effects of EMF?

15 A. [VALBERG] Yes, but among those public
16 health effects, I have on several occasions provided
17 information on interference with pacemakers, with
18 cardiac pacemakers. So that in fact is an example
19 of sensitive electronic instrumentation that could
20 potentially be disrupted by EMF. And so I have
21 experience in that area.

22 Q. But pacemakers.

23 A. [VALBERG] Cardiac pacemakers, yes.

24 Q. Just for the sake of clarification: You

1 did not model the EMF from three transformers, just
2 two; is that right?

3 A. [VALBERG] That's correct.

4 MR. SCOBBO: Could we have maybe a
5 five-minute break, so I can confer? And then I
6 think, depending upon what my tutors say, I can
7 perhaps end this.

8 MS. SEDOR: The other alternative is, we
9 could take a lunch break at this point. Do you have
10 a preference?

11 MR. SCOBBO: We might as well take a
12 lunch break, then.

13 MS. SEDOR: It's 1:00 o'clock. Why
14 don't we adjourn and be back here at 2:00. Off the
15 record.

16 (Recess for lunch.)

17 MS. SEDOR: Let's go back on the record.
18 Mr. Scobbo?

19 MR. SCOBBO: Yes, I have very little to
20 conclude with Dr. Valberg.

21 Q. Dr. Valberg, I'm correct in stating, am I
22 not, that you contacted Safeline with respect to the
23 metal detector?

24 A. [VALBERG] Yes.

1 Q. Did you contact the manufacturer of any of
2 the ammonia sensors?

3 A. [VALBERG] No.

4 Q. Why not?

5 A. [VALBERG] Well, the metal detector was
6 identified as being the most sensitive piece of
7 equipment, and therefore I wanted to identify that.
8 And I felt if we had information on that, then at
9 least I would address the most sensitive one.

10 Q. Did you contact the manufacturer of the CEM
11 equipment?

12 A. [VALBERG] I'm sorry, which equipment?

13 Q. The moisture-detection equipment.

14 A. [VALBERG] No, I did not.

15 Q. Did you contact the manufacturer of the
16 refrigeration system equipment?

17 A. [VALBERG] No.

18 Q. Did you contact any other manufacturer of
19 any of the other equipment that was identified by
20 Channel Fish as being sensitive?

21 A. [VALBERG] No. The nuclear magnetic
22 resonance detector did have immunity standards
23 within the manual, and so those were the same as the
24 ones provided by Safeline, so I don't have to

1 contact them.

2 Q. I'm not sure I understand. You did contact
3 the manufacturer of the Safeline manual?

4 A. [VALBERG] I did contact Safeline. But I'm
5 saying the other one that had been mentioned, when
6 you said any equipment, I said nuclear magnetic
7 resonance was identified as being a potentially
8 sensitive equipment. That manual already contained
9 within it immunity standards.

10 Q. With respect to the power supply?

11 A. Yes.

12 No, with respect to the instrument
13 itself.

14 MR. SCOBBO: I have no further questions
15 on cross at this time.

16 MS. SEDOR: Thank you, Mr. Scobbo. I
17 believe the Bench has some questions for Dr.
18 Valberg.

19 BENCH EXAMINATION

20 BY MS. SHAPIRO:

21 Q. Good afternoon, Dr. Valberg. If you could
22 turn to EFSB-MF-3. I'm looking at the attachment,
23 which is 1.

24 With regard to this attachment: This

1 was in response to where the 12 distribution lines
2 were and then the six distribution lines, the four,
3 and the two, where they all branch off; is that
4 correct?

5 A. [VALBERG] Yes, that's correct.

6 Q. And the reason -- so the facility was
7 modeled with all 12 of the distribution lines.

8 A. [VALBERG] Correct.

9 Q. Or feeders. Does it matter whether there's
10 two transformers or three transformers? Would that
11 affect this diagram in any way?

12 A. [VALBERG] No, it would not affect this
13 diagram.

14 Q. Thank you. And in regard to what you
15 measured and what the company is asking for -- we
16 had this discussion earlier. So the company
17 currently is only asking for the two transformers?

18 A. [VALBERG] That's my understanding.

19 Q. And if Mr. Zicko wants to chime in at some
20 point, too.

21 So your modeling only reflected the two
22 transformers.

23 A. [VALBERG] Correct.

24 Q. And if you could turn to MF-8, EFSB-MF-8.

1 And if you could just explain your answer, in
2 that --

3 So with the three transformers, there's
4 no change in magnetic fields for the distribution
5 lines. Is that what the answer is here?

6 A. [VALBERG] What we don't know at the
7 present time, and I don't think it's asked for in
8 this application, is what the loading on that third
9 transformer is. And if that third transformer adds
10 load to the lines that are in place, if the peak
11 loads on those go up, then that could affect the
12 magnetic fields in a proportional way, meaning the
13 magnetic fields from those distribution lines
14 themselves.

15 Q. In doing your modeling and looking at the
16 two transformers, do you have any opinion or were
17 there any estimates made -- I guess those are two
18 different questions -- about what it would be with
19 three transformers?

20 A. [VALBERG] No, no estimates were made,
21 because I just didn't have information on what to
22 use for a load and how that would affect the
23 individual distribution lines.

24 Q. And for the company, when they're --

1 there's a space for the third transformer. And
2 originally, I believe for noise you modeled it for
3 three transformers, but for magnetic you just
4 modeled it with the two transformers.

5 A. [ZICK0] That's correct.

6 Q. And does the company have an opinion of, at
7 some time in the future, when you would perhaps --
8 if the substation was built and was built with two
9 transformers, sometime in the future you wanted to
10 add the third transformer, what would be the
11 process? Would the company need to come back to the
12 Siting Board for a project change?

13 A. [ZICK0] I believe we replied to that.
14 That was asked in an information request. I don't
15 recall off the top of my head which one.

16 Q. If you could turn -- I believe the response
17 may have been EFSB-G-19.

18 A. [ZICK0] Yes, that's correct. Thank you
19 for refreshing my memory.

20 Q. And it says that the company will petition
21 as necessary to allow the installation. So is that
22 referring to coming back to the Siting Board or the
23 DPU to install the third transformer?

24 A. [ZICK0] Assuming that none of the

1 regulations change between now and whenever that
2 third transformer is required -- if they were to
3 stay the same as they are today -- we would need to
4 come back with a project change.

5 Q. And when you say none of the regulations
6 change, what exactly do you mean?

7 A. [ZICK0] In other words, the requirements
8 for filing with the Siting Board and the definitions
9 of what a project change are.

10 Q. In terms of the zoning itself or what you
11 were asking for now, would any of the zoning
12 requirements be any different -- any of the
13 individual zoning exemptions that you're asking for,
14 those wouldn't necessarily change between two
15 transformers and three transformers, would they?

16 A. [ZICK0] Not necessarily, but the analysis
17 may change, and that's what we'd have to look at at
18 the time.

19 Q. And in other cases are you aware of -- if
20 you weren't here for a zoning exemption and you were
21 just constructing a substation and you were going to
22 put a new transformer in, do you usually come to the
23 DPU for something like that?

24 A. [ZICK0] It depends on what the underlying

1 local zoning is and what any previous decisions had
2 said.

3 Q. So for here, for this case, any of the --
4 again, any of the individual zoning exemptions that
5 you're asking for, you're still laying out -- you're
6 laying out the site for three transformers; is that
7 correct?

8 A. [ZICK0] That's correct.

9 Q. So it's really just the need and really --
10 and perhaps the magnetic fields that haven't been
11 addressed with the three transformers?

12 A. [ZICK0] I don't think -- I don't think the
13 timing of the need has been identified; and as Dr.
14 Valberg testified, the loading on the third
15 transformer hasn't yet been defined, because the
16 timing of the need hasn't been defined, so he cannot
17 calculate the expected magnetic fields.

18 Q. And at this point there's no indication
19 that the company would be able to estimate what the
20 proposed magnetic fields would be; is that your
21 testimony? And Dr. Valberg?

22 A. [VALBERG] No, the magnetic field impacts
23 are proportional to the current loading, and, you
24 know, you need to know what that is.

1 Q. And again, if the third transformer was
2 installed, would the loading also change on the
3 distribution lines?

4 A. [VALBERG] Well, with a third transformer,
5 it's likely that everything would change. I mean,
6 the other transformers may actually go down in
7 loading as well.

8 Q. And the reason that you modeled the noise
9 based on three transformers -- could you just
10 explain that a little?

11 A. [ZICKO] It's because we would propose to
12 build the enclosure wall now, and if there was any
13 acoustic treatment, special acoustic treatment that
14 was needed, we would want to put that in the design
15 at this time.

16 Q. Thank you. If you could turn to EFSB-MF-7,
17 that we were talking about earlier this morning. I
18 believe that's the isopleth. And I'm looking at 7-1
19 revised. And I believe the discussion this morning
20 was that the difference between the revised version
21 and the earlier version was that there's some new
22 configuration of equipment. Is that....

23 A. [VALBERG] No, it wasn't configuration of
24 equipment. It was configuration of the lines

1 exiting the station. I don't know if you have them
2 immediately before you. But the initial version had
3 the lines turning toward the Chelsea River sooner.
4 The subsequent version had them going down East
5 Eagle Street until they reached Condor Street and
6 then started to turn toward the Chelsea River.

7 Q. And do you know why that change was made?

8 A. [VALBERG] I think the original one was
9 actually done with an outdated engineering drawing.
10 I think the one that we see here, that's the R-1
11 version, has been probably in place for a while.
12 But that's the one that gets it to the duct bank
13 going underneath the river. That's exactly the
14 route that it has to take to get to that duct bank.

15 Q. And if you look at the isopleth -- it's a
16 little hard, some of the lines -- some of the
17 colors. Is the dark pink, that's not an isopleth,
18 that's the distribution lines?

19 A. [VALBERG] Yes. That figure includes some
20 schematics of the lines as well. And my version is
21 not in color except for the one --

22 MS. SHAPIRO: It would be helpful if we
23 could give Dr. Valberg one in color.

24 A. [VALBERG] In the color one the isopleth

1 lines, the ones that we're probably most interested
2 in, are the outermost one. So the outer one, which
3 is most black in color, is the half-a-milligauss
4 one, and the next one in, which is blue in color, is
5 the 1-milligauss line.

6 Q. But in general, I'm also trying to look at
7 some of the lines in the street. Is it that the
8 dark pink is not part of the isopleth? That's the
9 distribution line?

10 A. [VALBERG] Yes, those are the distribution
11 lines.

12 Q. And the orange is the transmission line?

13 A. [VALBERG] Yes, those are the transmission
14 lines.

15 Q. It's not as if the orange is the 100 red.
16 That's somewhere else closer in the substation
17 fence?

18 A. [VALBERG] Yeah, I don't know that there
19 are any red lines. I think the highest ones are 50
20 milligauss isopleths.

21 Q. When we're looking at East Eagle, down the
22 center of the roadway, I believe your report,
23 revised Appendix 5-7, talks about approximately 15
24 milligauss at the center line?

1 A. [VALBERG] Yes, at the center line, that's
2 correct.

3 Q. And so that would be -- I guess it's
4 somewhat hard to see where the dark red is located.
5 Is there a better --

6 A. [VALBERG] There actually look like there
7 are a series of smaller circles. Those are the ones
8 that are brown in color, and those are the
9 50-milligauss isopleths.

10 Q. How close is the nearest sidewalk to the
11 center line; do you know? On East Eagle Street.

12 A. [VALBERG] I would have to do a scale on
13 this graph. The answer is no, I don't know, just
14 looking at it, what that distance would be.

15 Q. I'd like to make a record request. I
16 believe we might have in the record where the
17 nearest residence is. But if you could just provide
18 both, for the sidewalks and where the location of
19 the nearest residence is to the center line.

20 MS. SEDOR: That will be RR-EFSB-30.

21 (Record Request RR-EFSB-30.)

22 Q. Just to make sure for the record: When
23 we're looking at revised Appendix 5-7 --

24 A. [VALBERG] Okay.

1 Q. And I believe Page 16 is the cross-section
2 of East Eagle Street.

3 A. [VALBERG] Yes.

4 Q. And so here you have distance from the
5 center of the right-of-way.

6 A. [VALBERG] Yes.

7 Q. And so that's what I guess I would be
8 looking for, the distance from the center of the
9 right-of-way for the closest sidewalk and the
10 closest residence.

11 A. [VALBERG] All right. I think that center
12 is the center of the street, but yes.

13 Q. Thank you.

14 MS. KEUTHEN: On East Eagle Street?

15 MS. SHAPIRO: On East Eagle Street.

16 MS. KEUTHEN: So the distance from the
17 center line of the right-of-way to the nearest
18 residence and the sidewalk of East Eagle Street.

19 MS. SHAPIRO: Yes.

20 Q. If you could turn to EFSB-MF-6. If you
21 could describe a little the difference in where the
22 existing measurements are taken in MF-6 with the
23 difference in the cross-sections. For example, do
24 the existing measurements, are the existing

1 measurements the center of the right-of-way? Are
2 those -- it seems not to be necessarily based on
3 description, but it's a little hard to tell.

4 A. [VALBERG] The existing measurements were
5 essentially made from a walking path along the
6 routes that are shown on the maps in the response to
7 EFSB-MF-6, and so they are really on the sidewalk.
8 And the idea -- I mean, in many of those cases it's
9 not even clear what electrical structures are under
10 or near to the sidewalk. It was really more a
11 matter of trying to identify typical levels in those
12 urban areas.

13 Q. So the levels increase along the edge of
14 the streets or the sidewalks?

15 A. [VALBERG] Well, the levels go up and down
16 because, as you're walking longitudinally down that
17 path, you get closer to and farther away from
18 electricity use, essentially, which might be an
19 underground line, it might be a drop line for a
20 business or a residence. And those would be going
21 overhead.

22 And so there was no attempt made to
23 identify what the source was of those magnetic
24 fields because many of them are invisible.

1 Q. And if you look at the -- I believe there's
2 three charts -- on Page 1, on Page 2, Page 3, and
3 4 -- actually, four charts. And it appears that --
4 is the highest is on Robin Street?

5 A. [VALBERG] I think the highest feed --

6 Yes, it looks like the highest was on
7 Robin Street.

8 Q. And do you know why Robin seems to be
9 significantly higher than any of the other streets?

10 A. [VALBERG] The answer is no, I don't know.
11 As I said, there was no attempt made to correlate
12 particular readings with particular sources. And
13 the kind of sources could be highly varied. It may
14 well be a drop line from an overhead distribution
15 line into a store. Those kinds of lines typically
16 have the highest levels.

17 Q. And I believe -- I actually am not finding
18 the right cite. But I'm not sure if somewhere it
19 was categorized that most of the magnetic fields
20 along the roadways are pretty much the same or
21 characterized as such. Is that....

22 A. [VALBERG] In an urban environment, the
23 magnetic fields along roadways are typically in the
24 range of, you know, 10 to 20 to 30 milligauss, and

1 most of that has to do with on-street distribution
2 lines and then the drop lines that go to either
3 residences or businesses.

4 Q. However, on Robin Street that's different.

5 A. [VALBERG] Well, it may be that there's a
6 particularly heavy user of electricity on Robin
7 Street.

8 Q. Thank you. If you could turn to EFSB-MF-5.
9 I just want to clarify: If you're looking at the
10 map, the attachment EFSB-MF-5(1), so A is referring
11 to the transmission line or the duct, and B are all
12 the manholes?

13 A. [VALBERG] Yes.

14 Q. And where it says Figure 3-9, what exactly
15 is that referring to?

16 A. [VALBERG] Well, in the EMF report, Figure
17 3-9, or actually 3.9, is the magnetic field plot for
18 East Eagle Street; and East Eagle Street is the
19 yellow line that's shown there.

20 But I think in terms of the question
21 that was asked, that particular segment is not
22 relevant. I don't know -- I think it was asking
23 about manhole sections, and I don't -- I don't
24 believe that the cross-section in 3-9, I don't

1 believe, was part of the question that was asked.

2 Q. Okay. And the figures, obviously, that are
3 represented here are from, if you're looking at the
4 answer to A of EFSB-MF-5, those are -- when it says
5 the percentage, those are giving you the percentage
6 of each of these cross-sections?

7 A. [VALBERG] That's correct, yes.

8 Q. I'd like to turn to EFSB-MF-4. And there's
9 a discussion about manhole locations and magnetic
10 fields at manholes. And I believe in the response
11 to --

12 First let's just discuss the difference
13 of transmission versus distribution magnetic fields
14 at the manholes. If you could just describe that.

15 A. [VALBERG] Well, the manhole sections have
16 to do with the places where they splice the lines
17 together, and when the lines are spliced together,
18 they have to come out of their triangular
19 configuration, and they're generally arrayed in a
20 vertical configuration. So because the spacing
21 between the phase conductors changes, the magnetic
22 field generated above the ground surface changes.

23 For the distribution lines, that's much
24 less of an effect, and so we didn't actually do any

1 changes for the distribution lines, because they are
2 a lower voltage, and so splicing does not cause much
3 of a change in their orientation or separation.

4 Q. And so if we're looking at Page 1 of 1, at
5 the center of the right-of-way, when there's a
6 manhole, it increases almost 100 percent -- the
7 magnetic field increases about 100 percent from --

8 A. [VALBERG] Yes, directly over the lines, it
9 does increase by about twofold.

10 Q. And you're saying at some point less than,
11 I don't know -- it doesn't necessarily completely --
12 where it doesn't vary is about 100 feet from the
13 center line?

14 A. [VALBERG] Yes. I mean, the difference
15 between the manhole and the non-manhole section
16 diminishes as you move laterally away from the
17 circuit. And so about around 50 feet differences
18 are more difficult to discern.

19 Q. And I believe in the response to EFSB-MF-16
20 there's some discussion about mitigation in
21 regard -- as comparing the Salem Cables decision and
22 the decision there, and that the instances that
23 occurred in the Salem Cables that had the approach
24 be significantly higher --

1 A. [VALBERG] Yes.

2 Q. -- you're saying that doesn't occur in this
3 case?

4 A. [VALBERG] Well, the Salem Cable one had
5 two circuits instead of one, and the Salem Cable
6 also had much higher currents involved. I think it
7 went up to probably, you know, 2,000 amperes of
8 current going down the Salem Cable lines.

9 And I think what they actually modeled,
10 where they found that the highest field was was not
11 necessarily at the manhole, but at the places where
12 the manhole approaches caused the phases to
13 separate.

14 Q. And so in this case it's more typical where
15 the highest magnetic fields are right above the
16 manholes.

17 A. [VALBERG] Yes, that's correct.

18 Q. And aside from the reinforced steel and
19 copper ground ring, is there any other mitigation
20 that the company has proposed with regard to
21 manholes?

22 A. [VALBERG] No, they have not. The
23 grounding -- the copper-loop grounding and the steel
24 plate are there as a matter of course for manhole

1 sections, and they will provide some mitigation.
2 But the fields that were modeled for the manhole
3 sections did not give any allowance for that
4 mitigation. So that they're, if you will,
5 conservative estimates.

6 But the fields are not going to be
7 mitigated further.

8 Q. And in terms of -- I believe this project
9 is using the XPLE type of cable?

10 A. [ZICKO] XLPE, cross-link polyethylene.

11 Q. Is there any difference in magnetic field
12 between the XLPE versus oil-filled cables?

13 A. [VALBERG] Yes. The oil-filled, the
14 conductors are brought much closer together, and
15 that's why you need the oil-filled, because they
16 need to conduct that heat away. So the fields from
17 HPFF are lower.

18 Q. And in terms of a magnitude, do you have an
19 idea of what the difference would be?

20 A. [VALBERG] It's somewhere between five- and
21 tenfold. Partly -- there's two factors that apply
22 there. One is the conductors are much closer
23 together, so you get better cancellation. And
24 No. 2, HPFF is surrounded by a metal pipe, and so

1 that metal pipe, the ferromagnetic nature of that
2 metal pipe also helps attenuate the field. So the
3 combination of those factors makes it about five- or
4 tenfold lower for comparable currents, as compared
5 to XLPE.

6 Q. Again, this probably is in here somewhere.
7 I think there was an information request of the
8 locations of the manholes, the closest manhole to
9 residences. And I believe there was one manhole
10 within 50 feet?

11 A. [O'MALLEY] Yeah, I'm looking for the -- I
12 believe the manhole was on Robin Street, and I'm
13 looking for that.

14 Q. It could be EFSB-N0-5.

15 A. [O'MALLEY] No.

16 AUDIENCE MEMBER: I think it's CM-4.

17 A. [O'MALLEY] CM-4, Item B, "How many
18 residences are located within 50 feet of proposed
19 manhole locations. Please identify these residences
20 on a map."

21 The response was, "Item B, there is one
22 residence located within 50 feet of a proposed
23 manhole on the East Eagle-to-Mystic preferred route.
24 Refer to attached map EFSB-C-4(1), see Sheet 5 of 6

1 showing Robin Street. There are no residences
2 located within 50 feet of proposed manholes on the
3 East Eagle-to-Chelsea preferred route."

4 So if you look at that, I believe we
5 said, five of six, EFSB-CM-4. And on Robin Street,
6 if you'll look, you see the route in red, and
7 there's a manhole almost in the middle of the page,
8 just across from the tank farm there. And there's a
9 50-foot radius line around that manhole, and you can
10 see that it does clip that one house on the corner
11 of Robin and Lynde.

12 Q. Given that Robin Street has -- is it a
13 fairly -- a fairly industrial street and commercial
14 street, there's not that many homes located on
15 Robin, and it looks like right to the right of the
16 manhole you're close to, is that a substation or
17 a -- some sort of....

18 A. [O'MALLEY] Right at Simonelli Place?

19 Q. Yes. And I'm specifically looking at Page
20 5 of 6 of EFSB-CM-4(1).

21 A. [O'MALLEY] I've been informed that's
22 National Grid's Thorndike Street distribution
23 station.

24 Q. And was there any thought to just moving

1 the manhole a little further down on Robin Street?
2 It looks like there's a vacant lot next to the home.

3 A. [O'MALLEY] I'm not sure there has been.
4 But, you know, one of the considerations with
5 manhole locations is distance between manholes for
6 pulling cables in between manholes. And to readjust
7 the location, a recalculation would have to be made
8 regarding if there was too much tension placed on
9 the cables during the pulling process.

10 Q. But from what I understand, there's some
11 other questions about location of the line and
12 what's happening at the line, that you haven't
13 really -- this isn't a final -- there haven't been
14 final decisions made about where everything is
15 located. Is that correct?

16 A. [O'MALLEY] From a planning stage, we've
17 determined where we're putting different facilities,
18 such as manholes. And, you know, that's how our
19 planning process has been proceeding, and design
20 process.

21 Q. I guess I'd like to make a record request,
22 for a short discussion of what would be involved in
23 moving the manhole that's on the corner of Robin and
24 Lynde Street slightly north, so it's closer to the

1 vacant lot, and if that affects any other houses,
2 then.

3 A. [O'MALLEY] Which vacant lot are you
4 looking at?

5 Q. If you're looking right to the north or to
6 the right of the house --

7 A. [O'MALLEY] Yeah.

8 Q. -- there's a vacant lot -- or in that area.

9 A. [O'MALLEY] That what appears to be a lawn
10 area?

11 Q. Correct.

12 MS. SEDOR: That will be RR-EFSB-31.

13 (Record Request RR-EFSB-31.)

14 Q. And is it my understanding that there's no
15 manholes on the East Eagle portion?

16 A. [O'MALLEY] When you say East Eagle
17 portion?

18 Q. I'm looking at Page 1 of 6.

19 A. [O'MALLEY] Do you mean in East Boston?

20 Q. East Boston, yes, that's correct.

21 A. [O'MALLEY] Based on this plan, there were
22 no manholes. I believe further development since
23 this plan shows we would potentially have some
24 manholes within the access easement going into the

1 station. And also, there are existing manholes
2 right where the red joins the aqua. Those are
3 existing already.

4 Q. I'd like to make a record request, to
5 update EFSB-CM-4, specifically Page 1, to show where
6 the manholes would be located in the East Boston
7 portion -- and even the existing manhole, where the
8 line would be attached.

9 A. [O'MALLEY] Right where the red joins the
10 aqua?

11 Q. Yes.

12 A. [O'MALLEY] The existing manholes?

13 Q. Yes.

14 MS. KEUTHEN: So this is referencing
15 CM-4(1), Page 1 of 6?

16 MS. DE BOER: CM-4(2).

17 MS. SHAPIRO: Let's go off the record.
18 (Discussion off the record.)

19 MS. SEDOR: Back on the record.

20 Q. So I'd like to update Attachment
21 EFSB-CM-4(1) to include any manholes in the East
22 Boston area and also to then include a 50-foot
23 buffer, and any other information that would be
24 helpful.

1 A. [O'MALLEY] And the 50-foot buffer to
2 residences?

3 Q. Yes.

4 MS. SEDOR: That will be RR-EFSB-32.
5 (Record Request RR-EFSB-32.)

6 Q. The other day we were looking -- not Dr.
7 Valberg, but we were looking at EFSB-RS-19, which is
8 a proposed plan for the rest of the parcel where the
9 East Eagle substation would be located. And you
10 probably can't do it here --

11 MS. SHAPIRO: And I don't know if
12 someone could provide the map to Dr. Valberg of RS
13 EFSB-RS-19(2).

14 A. [VALBERG] Yes, I have a computer image
15 here in front of me.

16 Q. And so if you're looking at that computer
17 image and then you're also looking at
18 EFSB-MF-7(1)(R-1) --

19 MS. SHAPIRO: There's no R-2; right?
20 It's just R-1. I guess I'm wondering why there's a
21 1 instead of just an R.

22 MS. BLAINE: I don't think there's 2.

23 MS. SHAPIRO: Never mind.

24 Q. I know they're at different scales. I'm

1 wondering if it would be best to make a record
2 request, to calculate what the magnetic fields would
3 be, one, at the site line, at the border of the
4 site, of the substation site -- and I believe that
5 would probably be at one -- at the noise wall? Is
6 that --

7 A. [O'MALLEY] Screen wall.

8 Q. Screen wall -- at the closest point to the
9 soccer field; and then what it would be at what
10 looks like the edge of the soccer field.

11 A. [VALBERG] So it sounds like you're asking
12 to do a magnetic field around the site itself.

13 Q. Right.

14 A. [VALBERG] And that would be the area of
15 the rectangle shown here.

16 Q. Correct.

17 A. [VALBERG] But then much farther away, in
18 the region of the American Legion playground --

19 Q. No, I'm looking at the soccer field.

20 A. [VALBERG] Oh, there's the soccer field.
21 Okay. I'm sorry. I see the soccer field and where
22 it's located. So yes, now I understand.

23 MS. SEDOR: That will be RR-EFSB-33.

24 (Record Request RR-EFSB-33.)

1 MR. SCOBBO: Could I have a statement as
2 to what exactly that request is?

3 MS. SHAPIRO: I'm looking for the
4 magnetic field level at the edge of the facility,
5 which would be like the bolded black line along the
6 whole facility, and then what it would be at the
7 closest point at the soccer field.

8 MR. SCOBBO: Thank you.

9 MS. SHAPIRO: Proposed soccer field.

10 Q. If you could turn to EFSB-MF-14. I just
11 want to clarify that we're talking about the one on
12 Robin Street is the nearest residence to the center
13 line of the manhole.

14 A. [VALBERG] Yes, I think, if I understand
15 your question, that the plot of magnetic field
16 versus distance that is given in EFSB-MF-4(1), that
17 plot of magnetic field versus distance does apply to
18 this answer to MF-14. And so if you were to go on
19 that plot and go out a distance of 42 feet, then you
20 would get the magnetic field at that location.

21 Q. Here we're talking about, when you say the
22 nearest residence to the center line, we're talking
23 about the residence on Robin Street?

24 A. [VALBERG] I guess I'm not sure which

1 street that that referred to on MF-14.

2 Q. If we're on EFSB-CM-4-1?

3 A. [O'MALLEY] The manhole we already talked
4 about, referenced being the closest to the residence
5 on Robin Street?

6 Q. Correct.

7 A. [O'MALLEY] Right at the intersection of
8 Lynde Street?

9 Q. Okay, thank you.

10 A. [O'MALLEY] Yeah.

11 Q. Here it says "alignment is within
12 sidewalk." Could you explain that a little? I
13 thought -- where along the route -- I thought the
14 alignment -- or the route is in the street?

15 A. [VALBERG] I don't know myself where the
16 alignment is. You're right, the answer to that
17 question says "alignment is within the sidewalk."

18 A. [O'MALLEY] I'd have to look at the -- if I
19 can have one of my colleagues look up that sheet, I
20 can look to see if it is within the sidewalk area.

21 Q. Okay, or I could -- they could look at that
22 now, or we could make a record request, whichever.

23 A. [O'MALLEY] Either one.

24 Yes, it appears that that manhole

1 traverses a sidewalk, primarily due to the
2 congestion within the street.

3 Q. And again, we're looking at Robin Street?

4 A. [O'MALLEY] Robin, right at Lynde.

5 BY MR. YOUNG:

6 Q. Mr. O'Malley, you're looking at a plan?

7 A. [O'MALLEY] Yes, I am.

8 Q. Is that plan in the record?

9 A. [O'MALLEY] Attachment CM-2, and it is
10 Drawing No. 308, Sheet 807 -- 8 of 37.

11 Q. And when you say "traverses," do you mean
12 it --

13 A. [O'MALLEY] It's partially located under
14 the sidewalk and partially located under the street.

15 Q. Thank you.

16 BY MS. SHAPIRO:

17 Q. Are there other manholes that are located
18 in the sidewalks along the routes?

19 A. [O'MALLEY] I would have to review each
20 location. I'm not aware of any, but that doesn't
21 mean there aren't any. We could take a look at all
22 the locations and determine if there are any.

23 Q. I'd like to make a record request, for the
24 locations where the manholes are also going to be in

1 the sidewalk?

2 MS. SEDOR: That will be RR-EFSB-34.

3 A. [O'MALLEY] We do try to keep all the
4 manholes in the public way, meaning the street
5 itself; but sometimes due to congestion of utilities
6 within the street, we do have to shift them.

7 Q. And if you could make that a two-part
8 question: also, if you could indicate if there's
9 any areas along the preferred or noticed alternative
10 routes where the transmission lines would be located
11 outside of the city streets -- for example,
12 sidewalks, the shoulder, or on private property.

13 A. [O'MALLEY] So transmission line located
14 outside of the traveled way?

15 Q. Yes.

16 A. [O'MALLEY] So when it's outside of
17 sidewalk to -- curb to curb?

18 Q. Yes -- any type, either sidewalk, private
19 property, parking lot, whatever.

20 (Record Request RR-EFSB-34.)

21 Q. In terms of the substation, the discussion
22 of the East Eagle substation, has the company ever
23 installed shielding from substations with regard to
24 neighboring property? A substation that's located

1 close to a neighboring property.

2 A. [ZICK0] When you say "shielding," I assume
3 you mean magnetic shielding.

4 Q. Yes.

5 A. [ZICK0] No, we haven't.

6 Q. Do you know, is that because of feasibility
7 or cost or it hasn't necessarily been needed? Does
8 there exist a method to install shielding?

9 A. [ZICK0] There are materials that will
10 shield for magnetic field. One of the premises of
11 them is that, in order to make the metal behave in a
12 way that will shield, it needs a relatively
13 substantial magnetic field to make the domains move
14 around in the metal. I'd have to punt to Dr.
15 Valberg on the exact physics behind it, but I do
16 know that the materials do exist.

17 Q. Has the company ever looked into anything
18 in that regard for other projects?

19 A. [ZICK0] There's never been an issue with
20 magnetic field interference. And again, typically
21 the magnetic fields, by the time you get to the edge
22 of the facility, the magnetic fields have usually
23 dropped off quite a bit, where there just hasn't
24 been a need to shield.

1 Q. Is the company aware of anywhere or any
2 project that they know, that wasn't an Eversource
3 project but another project, where shielding has
4 been used?

5 A. [ZICKO] No.

6 Q. Dr. Valberg, have you ever encountered any
7 types of shielding in a particular -- any type of
8 project?

9 A. [VALBERG] I think there was one project
10 where there were underground lines from Kendall
11 Square station that went along Memorial Drive. And
12 I didn't participate in this part of the project,
13 but my recollection was that they did put some metal
14 plates on top of an area where the underground lines
15 came closer to the surface. And I don't know
16 anything more than the fact that I believe that was
17 done.

18 Q. Thank you.

19 MS. SEDOR: The Bench is pretty much
20 finished for today with magnetic field questioning.

21 I just wanted to ask a little bit more
22 about the two- versus three-transformer question
23 while Dr. Valberg and Mr. Zicko are here.

24 BY MS. SEDOR:

1 Q. Here's how I'm puzzling about it. On the
2 one hand, it seems to me -- and this is not saying
3 anything about what's going to be approved here or
4 not approved here. This is just for my benefit, in
5 trying to get a grip on what's going on here and
6 what the Board might want to know about.

7 It seems to me that planning ahead is a
8 good thing, that the company sees that sometime in
9 the future, some unspecified time in the future, it
10 may -- it will want a third transformer on this
11 substation site. You know, this assumes that the
12 site is approved and built, et cetera.

13 So that's a good thing. Why not plan
14 ahead, make the space for it now? That's efficient,
15 that's cost-efficient, that's over in the plus side
16 of things.

17 However, on the other hand, if the Board
18 approves this project as currently proposed, we will
19 be approving a space for this third transformer.
20 However, we're throwing up our hands and saying,
21 "Well, we don't know exactly when it will be needed,
22 and it will depend on the load, but we don't know
23 what that load will be, so we can't predict how much
24 magnetic fields will change. Therefore we can't

1 tell, say, Channel Fish what might be the EMF
2 impacts next year, where the company decides to put
3 that third transformer in."

4 So I'm wondering if you can help me on
5 the system-design aspects of that puzzle for me or
6 the technical aspects of it. I'm thinking,
7 Mr. Zicko, you must have a ballpark idea -- maybe
8 not; I'm not an engineer. You must have a ballpark
9 idea of how much --

10 Let me back up. Is it additional load
11 that would lead, primarily, to the addition of a
12 third transformer?

13 A. [ZICKO] Yes, it is.

14 Q. So you must have a ballpark idea of how
15 much additional load would trigger your saying, as
16 substation design manager, "We need a third
17 transformer at East Eagle." Right?

18 A. [ZICKO] The trigger and the load -- again,
19 I'm not trying to be difficult or evasive. But that
20 request would come from system planning to the
21 substation design engineering group.

22 So as far as the prediction of when the
23 load is going to grow, absent some, you know,
24 grandiose announcement of a huge development in East

1 Boston, I would not ordinarily know that the load is
2 coming. That would come out of the system planning
3 group.

4 Q. I get that. I'm not asking you when. I
5 wouldn't ask you to predict when. I'm asking, what
6 would the load itself be? When does it get to the
7 point where you would say, "We need a new
8 transformer"?

9 A. [ZICK0] So in general, the substations are
10 designed to survive the loss of one transformer. So
11 in this case, what we're proposing to build here,
12 we'd have a two-transformer station. The station
13 would need, to carry the load on peak, that one
14 transformer plus whatever you could transfer off to
15 adjacent stations could carry. When that number got
16 exceeded, that in general would be the trigger for
17 the third transformer.

18 Q. What I'm trying -- what my ultimate
19 question is that I'm trying to head towards is:
20 Could you, meaning the company, come up with an
21 estimate of the additional load, that once that
22 additional load is reached, whenever it's reached,
23 you would start thinking about putting the third
24 transformer? Then we would give that load figure to

1 Dr. Valberg, who could then estimate what the EMF
2 effects would be at that point. Or is that
3 something that has so many faulty assumptions in it
4 that it's not possible?

5 A. [ZICKO] If I could have a moment to
6 consult with one of my colleagues, I believe we can
7 answer that question.

8 Q. Sure. Let's go off the record.

9 (Discussion off the record.)

10 MS. SEDOR: Let's go back on the record.

11 Q. Mr. Zicko?

12 A. [ZICKO] Yes. After conferring with a
13 colleague, we can make -- we, the company, can make
14 some assumptions, looking forward, and model what we
15 might expect from a third transformer -- realizing
16 that the timing is still unknown.

17 Q. Okay. That would be great. And then I
18 guess I would turn to Dr. Valberg: Dr. Valberg,
19 could you take that data and do what you have done
20 with the existing data?

21 A. [VALBERG] Yes, if I had the data on the
22 flow coming in and the flow going out. I mean,
23 there may in fact be more distribution lines added,
24 and those could certainly be put into the model.

1 And so yes, I would just basically need
2 to know the fleshing out of that assumption and what
3 it would lead to in terms of additional lines and
4 additional current, and that could be put into the
5 model.

6 Q. Okay. So could I ask the company and Dr.
7 Valberg to work on that?

8 A. [ZICKO] Yes.

9 A. [VALBERG] Yes.

10 MR. SCOBBO: Can I have a succinct
11 statement of what the "that" is?

12 MS. SEDOR: Well, yes.

13 MR. SCOBBO: So I understand it.
14 There's a lot of pronouns being used.

15 Q. Maybe, Mr. Zicko, if I could presume to ask
16 you to tell us what your understanding is. I know
17 you just said it, but if you could repeat what it is
18 that you think the company will be doing.

19 A. [ZICKO] Certainly. So we will ask Dr.
20 Valberg to remodel the station, adding the proposed
21 third transformer and ancillary equipment, which
22 would include the switchgear, the duct bank exits to
23 the street. We will make some going-forward
24 assumptions, and we'll state what those assumptions

1 are, with regard to what that load is going to be,
2 because we don't know what that load is going to be.
3 And we'll make some -- we'll make a statement about
4 the load level that would be the trigger for the
5 third transformer, but cannot specify the timing of
6 what that load trigger would be.

7 MR. SCOBBO: Just for point of
8 clarification: In terms of the demand that would be
9 drawn on that substation, are you talking about peak
10 demand and peak demand only?

11 WITNESS ZICKO: We have modeled the EMF
12 at peak. The company designs for the peak demand.

13 MR. SCOBBO: Correct. And I'm just
14 clarifying that. That's what you're talking about?

15 WITNESS ZICKO: Yes. Thank you. It
16 would be peak.

17 MR. SCOBBO: Great.

18 MS. SEDOR: Can we go off the record for
19 a moment?

20 (Discussion off the record.)

21 MS. SEDOR: Let's go back on the record.
22 Mr. Young has a very good idea for a Part B for that
23 request, Part A being, as Mr. Zicko put it, the
24 trigger point where the demand finally gets to the

1 level where the company deems it prudent to add the
2 third transformer. And then Mr. Young, I'll turn it
3 over to you.

4 BY MR. YOUNG:

5 Q. Well, another version would be pretty much
6 the maximum capacity of the substation, how much it
7 would put out before you decided you needed a new
8 substation somewhere, so the maximum output,
9 whenever that was, after you built three
10 transformers. Is that something you could figure in
11 the same way?

12 A. [ZICK0] Again, you know, making some
13 assumptions -- and we'll state what those
14 assumptions are -- and knowing that the timing is,
15 you know, an unknown, I believe that's something we
16 could do.

17 MS. SEDOR: That's great. I appreciate
18 it. Thank you. So both of those are part of
19 RR-EFSB-35.

20 WITNESS ZICK0: If I could just add:
21 When we were off the record, there was some
22 discussion, and those will be the peak loads on the
23 facility.

24 MS. SEDOR: Thank you for clarifying

1 that.

2 (Record Request RR-EFSB-35.)

3 MS. SEDOR: Let's go off the record for
4 a second.

5 (Recess taken.)

6 MS. SEDOR: Let's go back on the record,
7 please. At this time I believe Eversource has some
8 redirect examination for the panel.

9 MS. KEUTHEN: Actually, the company has
10 no redirect for the panel. We're all set. Thank
11 you.

12 MS. SEDOR: All right. Thank you.
13 Mr. Scobbo?

14 MR. SCOBBO: I do. I said I didn't have
15 any further questions, but thinking about some of
16 the questions that were asked by the Bench, I do
17 have a couple of questions, especially with respect
18 to Mr. Zicko.

19 FURTHER CROSS-EXAMINATION

20 BY MR. SCOBBO:

21 Q. Does the company have fully enclosed
22 substations in downtown Boston?

23 A. [ZICKO] When you say fully enclosed, you
24 mean in the building?

1 Q. Correct.

2 A. [ZICK0] Yes.

3 Q. And those buildings, what kind of
4 construction usually are they? Can you explain
5 that?

6 A. [ZICK0] There's all different types of
7 construction. There's steel frame that's been
8 encased in concrete. There's concrete frame
9 buildings. There's conventional steel with
10 fireproofing. So it's a system that evolved over
11 many, many years, so there's many, many different
12 types of construction.

13 Q. Earlier you testified in some questions
14 that were asked you of the Bench that you don't have
15 any shielding for EMF in substations; isn't that
16 right?

17 A. [ZICK0] That's correct.

18 Q. Now, Dr. Valberg, would steel frames,
19 cement, and the type of materials that Mr. Zicko was
20 talking about act as shielding for EMF?

21 A. [VALBERG] If it was just the frame part,
22 it would have virtually no effect. There are two
23 things that are relatively important: You have
24 something that's relatively continuous from location

1 to location, like an enclosed box. But the other
2 point that was mentioned that's very important is
3 that all of the shielding material have a certain
4 amount of hysteresis. That is to say, in order to
5 respond to a magnetic field and then rearrange the
6 magnetic domains to cancel it, the magnetic field
7 has to be of a certain strength. So magnetic
8 shielding typically you would employ for fields of
9 500 milligauss or higher, and then yes, the domains
10 can respond to that and shield it.

11 If you're dealing with already-low
12 magnetic fields, the fields are not strong enough to
13 essentially move the magnetic domains around, and
14 that really inhibits their ability to shield.

15 Q. Let's talk about Kingston Street. What's
16 the size of the transformers at Kingston Street
17 substation?

18 A. [ZICK0] There are four transformers in
19 there. There are two that have a top nameplate of
20 140 and two that have a top nameplate around 450.

21 Q. MVA?

22 A. [ZICK0] Correct.

23 Q. That's bigger than the ones that you're
24 proposing for East Eagle Street; isn't that correct?

1 A. [ZICK0] Yes, the nameplate ratings are
2 higher.

3 Q. And is that substation fully enclosed in a
4 building?

5 A. [ZICK0] Yes, it is.

6 Q. What about the High Street substation?
7 What are the sizes of the transformers there?

8 A. [ZICK0] The top nameplate is 62 1/2, same
9 as what we propose to use at East Eagle.

10 Q. How about Hawkins Street?

11 A. [ZICK0] Those I believe are 75, and they
12 are outdoors, with a wall around them, open to the
13 top.

14 Q. Scotia?

15 A. [ZICK0] Scotia is two 140's, and they're
16 completely within a building.

17 Q. And that's bigger than what you're
18 proposing?

19 A. [ZICK0] The 140 is bigger than 62 1/2,
20 yes.

21 Q. So based on what he just said, Dr. Valberg,
22 about the size of the Kingston Street substation and
23 the Scotia Street substation, that are fully
24 enclosed, first of all, would the size of those

1 substations emit magnetic fields that are greater
2 than the ones you measured at East Eagle?

3 A. [VALBERG] I would just have to look at the
4 design of the station. I mean, you know, the
5 transformers have more current in them if they have
6 the higher MVA rating. But you have to remember,
7 for transformers, their whole design is to trap the
8 flux within the transformer, because that's what's
9 transferring the energy from high voltage to low
10 voltage. So they may have high fields in their
11 immediate vicinity, but they do drop off rapidly in
12 their vicinity, regardless of their MVA size.

13 Q. What is coming into Kingston Street? Is it
14 115-kV?

15 A. [ZICK0] 345 and 115.

16 Q. What's the voltage coming out?

17 A. [ZICK0] 14,000 volts.

18 Q. Giving the 14,000 volts coming out on the
19 low side and 345 coming in on the high side and 115,
20 is your testimony still the same with respect to
21 Kingston Street?

22 A. [VALBERG] Well, the magnetic field impacts
23 may well be less, because if you remember my list of
24 magnetic field mitigation options, that one way to

1 mitigate magnetic fields is to increase the voltage,
2 because at a higher voltage you require less
3 current, and the source of the magnetic fields is
4 the current, not the voltage.

5 So if you were to take this station and
6 the East Eagle one and increase it to 345 kV, the
7 magnetic fields would actually fall. And if you
8 increase the distribution voltage higher, the
9 magnetic fields would actually fall.

10 Q. Did you work on the Kingston Street siting?

11 A. [VALBERG] I don't believe so.

12 Q. Did you work on the Scotia Street siting?

13 A. [VALBERG] I don't know. That does not
14 sound familiar.

15 Q. Did you ever analyze the EMF emanating from
16 substations of the size we described or he described
17 for Kingston Street and for Scotia Street?

18 A. [VALBERG] I guess I am not sure I have.
19 I've certainly analyzed stations that have 345 kV,
20 yes.

21 Q. But you don't know whether you've worked on
22 analyzing the EMF in substations of the size that he
23 described at Kingston Street and Scotia Street?

24 A. [VALBERG] I cannot answer that question,

1 because I don't usually remember stations by their
2 MVA ratings. I just remember them by their voltages
3 and inputs and outputs.

4 Q. Inputs in terms of voltage?

5 A. [VALBERG] Yes, yes, voltage.

6 Q. And outputs in terms of voltage.

7 A. [VALBERG] Yes.

8 Q. Okay.

9 MR. SCOBBO: I don't have any other
10 questions.

11 MS. SEDOR: Did you say you have no
12 further questions?

13 MR. SCOBBO: I have no further
14 questions.

15 MS. SEDOR: Thank you, Mr. Scobbo.

16 I think at this point we're ready to
17 transfer back to route selection and site selection.
18 I think Dr. Valberg would be free to go. And the
19 Board thanks you, Dr. Valberg.

20 WITNESS VALBERG: Thank you.

21 (Discussion off the record.)

22 MS. SEDOR: Let's go back on the record.
23 We're returning to route selection and site
24 selection, with the continuing examination of the

1 panel by Channel Fish.

2 Before we do that, though, counsel for
3 the company has indicated that Mr. Bergeron has a
4 couple of items that he'd like to clarify on the
5 record. Again, I remind the panel of three that you
6 remain under oath. Mr. Bergeron?

7 JOHN M. ZICKO, MARC BERGERON, AND
8 MICHAEL W. O'MALLEY,
9 having been duly sworn, testified as follows:

10 A. [BERGERON] Thank you. I appreciate the
11 time to point out a few minor clarifications.

12 First of all, yesterday we were speaking
13 about the distance of the Prescott Street site to
14 the existing crossing. We had stated that we
15 believe the distance is approximately one mile. For
16 the record, after further review, I would like to
17 state, restate, that the distance is actually 0.4
18 miles.

19 Also, yesterday, as I had a chance to go
20 back and review some of our backup information
21 regarding our commercial/industrial scoring: I had
22 been providing testimony that indicated that on
23 Table 4-2 R, as part of Response EFSB-RS-9(2), that
24 the commercial/industrial counts that we presented

1 were actually total buildings. Actually, that's
2 what is labeled on our chart.

3 That's actually incorrectly labeled. I
4 apologize. I'm working on several cases. In some
5 instances the assessor's information is available to
6 that level of detail; in others it isn't.

7 So when I saw the word "buildings," I
8 believed this is one of the cases where our backup
9 didn't go down to the actual count of businesses
10 within buildings along the route. In this
11 particular instance, after looking at our backup,
12 the data that we collected for our routing analysis
13 for this particular case actually did indicate each
14 individual business within the buildings along each
15 route. We're working on pulling together the backup
16 of that information, which will be provided as
17 requested.

18 So in conclusion, the counts that you
19 see on our table here are actual total business
20 units or individual businesses along each route.

21 MS. SEDOR: I appreciate your taking the
22 time to go back and review that.

23 A. [BERGERON] You're welcome. One last point
24 of clarification: Yesterday we spent some time

1 talking about whether or not our traffic planners
2 reviewed driveways or streets that had one means of
3 ingress or egress along the route. Upon further
4 review, and as per Table EFSB-RS-9(1) there are a
5 couple of examples where our planners did note --
6 for instance, along the route segment for Beach
7 Street, from the Chelsea city line to Robin Street,
8 they indicated heavy truck use and direct truck
9 maneuvers to and from the street, north of Behan
10 Street.

11 So there were instances where these were
12 noted and factored into the scoring of our routes
13 for the potential to cause traffic congestion along
14 each particular route.

15 I'd just like to finish with: Also,
16 there's additional information being collected by
17 our traffic engineers as we work to respond to
18 several of the information requests. Specifically,
19 T-1 outlines the process that our traffic engineer's
20 going to undertake to develop staging plans to
21 identify in more detail all of the streets and/or
22 driveways that have one ingress or egress from the
23 route and also to develop mitigation as far as
24 staging and/or timing of the construction in those

1 areas.

2 And those are all the corrections I
3 have. Thank you.

4 MS. SEDOR: Thank you, Mr. Bergeron.
5 Mr. Thayer?

6 CONTINUED CROSS-EXAMINATION

7 BY MR. THAYER:

8 Q. While we're on the subject of making
9 corrections, I think I have a mea culpa that I think
10 the witnesses will confirm for me.

11 On Tuesday I stated that the substation
12 portion of the 338 East Eagle parcel would be 13,742
13 feet and that the access easement would be 16,800
14 feet. Do I have that backwards?

15 A. [ZICK0] We have numbers here.

16 Q. Sure. Please take a look and let's make
17 sure that we get this right.

18 WITNESS BERGERON: If you just give me a
19 minute, and I can pull that up. If we can go off
20 the record.

21 MS. SEDOR: Yes. Let's go off the
22 record.

23 (Discussion off the record.)

24 MS. SEDOR: Let's go back on the record.

1 A. [BERGERON] Just to confirm: Our survey
2 plans indicate that the Station 131 site area is
3 16,808 square feet. There's an additional 13,742
4 square feet associated with the easement entrance
5 into the station.

6 Q. Thank you, Mr. Bergeron.

7 A. [BERGERON] You're welcome.

8 Q. On Tuesday you made a statement in your
9 testimony -- and I'm going to quote that statement
10 and ask you about it. Quote, "And we can't get a
11 Chapter 91 license until we're done with these
12 proceedings and obtain an order," end quote. Are
13 you saying that a Chapter 91 license cannot issue in
14 a substation and transmission line approval process
15 until after EFSB issues an order?

16 A. [BERGERON] I'm not an attorney, but it's
17 my understanding that State agencies cannot issue a
18 State permit until the company is complete with
19 these proceedings and an order is issued by the
20 Department.

21 Q. So it's your position that the DEP cannot
22 issue a 91 license until EFSB gives approval?

23 A. [BERGERON] Yes. That has been my
24 experience in the past, on former occasions.

1 Q. And yet the reason the Chapter 91 license
2 was filed, the application was filed first, is?

3 A. [BERGERON] As I stated in my testimony on
4 Tuesday, we typically don't file a Chapter 91
5 license this early in the process. However, that
6 was the only potential MEPA threshold that we would
7 trip. If the Department for some reason determined
8 that the project was not water-dependent, then we
9 would have exceeded a MEPA threshold. And as per my
10 understanding, we need to file a MEPA ENF under MEPA
11 before we can enter these proceedings.

12 So given the timing of when we wanted to
13 file this petition, we needed to have a
14 determination on whether we would have exceeded a
15 MEPA threshold or not to properly follow the
16 protocol for regulations.

17 Q. Do you have an understanding that in the
18 course of the Chapter 91 licensure procedure the
19 water-dependency determination can be amended or
20 revoked, depending on information that's presented
21 in the course of that proceeding?

22 A. [BERGERON] I have -- I don't have any past
23 experience with that. It's my understanding that
24 once a water-dependency determination is issued,

1 there's no appeal of that particular decision nor
2 could it be revoked.

3 Q. To the extent that a Chapter 91 license has
4 not issued, if I'm right that the DEP could revisit
5 that issue and change or remove its determination of
6 water dependency after you've obtained an EFSB
7 approval, would that not then invalidate the EFSB
8 approval and force the company to go through the
9 MEPA process that you described and start all over
10 again?

11 A. [BERGERON] Given that theoretical
12 scenario, I would assume that they need to file for
13 a new license application.

14 You're asking --

15 Q. Well, your license -- in my scenario, your
16 license would not have necessarily been rejected,
17 but the water-dependency determination would have
18 been removed at least temporarily or permanently.

19 A. [BERGERON] So in that theoretical
20 situation, we would then refile as a non-water-
21 dependent facility.

22 Q. In Chapter 91.

23 A. [BERGERON] In Chapter 91. I can't speak
24 to how it would affect the particular order, nor

1 would I -- nor do I, as I sit here and think about
2 it, see any reason why that would affect the order,
3 because, again, the classification of water-
4 dependent versus non-water-dependent doesn't mean
5 that we couldn't obtain a license -- or it wouldn't
6 change the design parameters of the project.

7 Q. But as you've said -- I didn't mean to
8 interrupt. But as you've said, I believe, it would
9 affect the means by which you approach EFSB;
10 correct? You obtained the water-dependency
11 determination prior to filing this proceeding;
12 right?

13 A. [BERGERON] Right.

14 Q. And that was done deliberately. So I'm
15 saying if the water-dependency determination is
16 altered, would that not affect the status of this
17 proceeding? Or the validity of the proceeding?

18 A. [BERGERON] I don't think it would, no. As
19 I stated, it wouldn't change the design of the
20 station itself.

21 Q. Also in your testimony on Tuesday,
22 Mr. Bergeron, you stated that, quote -- let's start
23 over.

24 I'm going to ask you a question about

1 the other sites that are referenced in the Chapter
2 91 application, and I'm going to represent to you
3 that you gave testimony on Tuesday in which you
4 stated that, quote, "You confirmed that in fact they
5 did not meet the criteria and weren't viable
6 options," end quote. Do you recall that testimony?

7 A. [BERGERON] Yes.

8 Q. In what way were the two alternative
9 properties that you identified in 2014 and listed in
10 your Chapter 91 license, in what way were those two
11 properties not viable options?

12 A. [BERGERON] As presented in our Chapter 91
13 application submitted as EFSB-Z-10(1), our
14 alternative site analysis that was submitted to the
15 Department in that application indicated that the
16 two sites that we identified, the first one was a
17 Frankfurt Street parcel. It was determined that
18 that site would not be a viable option because it
19 would result in greater environmental impacts to the
20 surrounding area and also would require a mile of
21 trenching through roadways, which would also
22 increase cost to the project.

23 The William M. McClellan Highway parcel
24 was a second parcel identified, and that was

1 eliminated from further consideration in this
2 particular alternatives analysis because its
3 assessed value is approximately \$3 million. The
4 assumption was that the purchase of that site, the
5 potential purchase of that site, would require
6 additional cost than the project site, preferred
7 project site, and also would require approximately a
8 mile of trenching to connect the transmission lines
9 of the Chelsea Creek Crossing.

10 Q. Is that the end of your answer?

11 A. [BERGERON] Yes, sir.

12 Q. So by "viable" you're talking about
13 preferable; right? None of the criteria you've just
14 given me render the sites nonviable; they may or may
15 not render the sites less preferable than the 338
16 site. Correct?

17 A. [BERGERON] That's correct.

18 Q. Viability would be is it big enough for a
19 substation, can it accommodate a substation, perhaps
20 is it zoned properly for a substation -- things of
21 that nature; right?

22 A. [BERGERON] Correct.

23 Q. And those two sites do in fact meet those
24 criteria; right? We can take it one at a time.

1 A. [BERGERON] Neither site was available. A
2 key consideration is, in this particular
3 alternatives analysis, that the preference would be
4 a parcel that was owned by the company. So the
5 company owned a parcel of land closer to the
6 crossing. They did not own these two particular
7 parcels.

8 Q. The company didn't always own the parcel
9 closer to the crossing, either. It came to acquire
10 it at one point in time. Right?

11 A. [BERGERON] At the time of our filing, this
12 analysis for the Chapter 91 filing, it did in fact
13 own that parcel.

14 Q. Right. At the time you got involved, long
15 after -- by that point in time, the company owned a
16 parcel of land on East Eagle Street. But at, say,
17 in 2008 the company did not own that parcel; right?

18 A. [BERGERON] Right. And we're talking about
19 the alternatives analysis completed for the Chapter
20 91 application, that would be different, somewhat
21 different, than that undertaken in a siting
22 proceeding.

23 Q. Mr. Bergeron, did I hear you correctly that
24 you said the sites identified in the 91 application

1 were not available at the time the company obtained
2 the 338 East Eagle site?

3 A. [BERGERON] If I stated that, I didn't mean
4 to insinuate that. What -- I guess I should clarify
5 and say they were not owned by the company at the
6 time.

7 Q. Okay. So for all you know, sitting here
8 today, the McClellan Highway parcel was available
9 for purchase between the years 2008 and 2011.

10 A. [BERGERON] I can't say either way. I
11 don't know.

12 Q. You don't know one way or the other. Does
13 anyone at the company know one way or the other?
14 Any of the witnesses?

15 A. [ZICKO] I don't know one way or the other.

16 Q. And Mr. O'Malley likewise?

17 A. [O'MALLEY] I do not know one way or the
18 other.

19 Q. And as far as you know, no one at the
20 company aside from yourselves has anything regarding
21 the availability for purchase of the McClellan
22 Highway parcel in the years 2008 through 2011?

23 A. [O'MALLEY] I don't know anyone.

24 Q. Because the company in the years 2008

1 through 2011 never looked at the McClellan Highway
2 parcel; right?

3 A. [ZICK0] What I will say is that, from a
4 substation engineering perspective and a T&D routing
5 perspective, we were never asked to look at it, in
6 the engineering department.

7 Q. What sites were you asked to look at?

8 A. [ZICK0] During what time frame?

9 Q. During the 2008-to-2011 time frame with
10 respect to this project or its alternatives.

11 A. [ZICK0] 338 East Eagle.

12 Q. So let's talk about 338 East Eagle. What
13 were you looking at in terms of substation site
14 location on 338 East Eagle when you first became
15 familiar with the property?

16 A. [ZICK0] I'm not sure I understand your
17 question, Mr. Thayer.

18 Q. 338 East Eagle Street is -- approximately
19 how large is that parcel of land?

20 A. [ZICK0] I don't know. I'll say it's large
21 for something that you would find in an urban
22 environment.

23 Q. It's over 200,000 square feet?

24 A. [ZICK0] I don't know.

1 Q. When the company first became aware of the
2 possibility of locating a substation there, was it
3 your understanding that the company would acquire
4 the entire 338 East Eagle parcel for its substation?

5 A. [ZICK0] It was never my understanding that
6 we would acquire the entire parcel.

7 Q. Right. It was your understanding that you
8 would acquire a piece of 338 East Eagle; right?

9 A. [ZICK0] And perhaps some easements.

10 Q. And perhaps some easements. So when those
11 initial conversations took place, did you or anyone
12 else at the company express a preference for where
13 on 338 East Eagle Street you would like the
14 substation to be located?

15 A. [ZICK0] We had it at one time, in the
16 initial discussions we had, had proposed locating it
17 over the easement coming across the creek, if you
18 will, so on the side towards the American Legion
19 playground recreation area.

20 Q. If I refer to that as the west side of 338
21 East Eagle, will you agree with me that we are
22 talking about the portion of the property that is
23 closest to the easement?

24 A. [ZICK0] Yes.

1 Q. And if I refer to the east side of 338 East
2 Eagle, will you agree with me that we're referring
3 to the portion of the land closest to Channel Fish?

4 A. [ZICK0] I think those are fair ways to
5 call them out for this exercise, yes.

6 Q. Describe for me the components of the land
7 swap that occurred between the City of Boston and
8 the company.

9 A. [ZICK0] Well, I will describe them to you
10 as I was -- you know, with the limitations of my
11 involvement, from the engineering department, and
12 what I was able to glean from my involvement in the
13 engineering department.

14 We had discussed with the City locating
15 the substation on what we've identified as the west
16 side for this exercise. We were told that that did
17 not fit in with their programming. They directed us
18 to the east side of the station.

19 I recall the company had -- I'm sorry,
20 the City had asked us -- the City had asked us about
21 the layout of the station, and then they
22 subsequently retained a consulting firm to lay out
23 the station according to our electrical
24 requirements, so that we could determine the size

1 parcel that we would need plus any access easements.

2 To the best of my knowledge -- and I do
3 remember folks at the City talking about this -- the
4 site where the substation's now proposed on the east
5 side of the property would be subject to an RFP
6 under City -- I don't know if you call them laws,
7 rules, or regulations. But there was a rubric that
8 dealt with how to dispose of that property.

9 And then once we had agreed on the
10 boundaries, the RFP went out and the deal went
11 through -- you know, the deeds were both signed.
12 Both deeds were signed. So we released the Prescott
13 Street site, and they granted us the East Eagle site
14 and the easement.

15 Q. That was a very comprehensive and thorough
16 summary. Thank you. But you left out one important
17 part that I didn't hear, and that is the underground
18 easement by which you made the Chelsea Creek
19 Crossing. That was an important part of the land
20 swap, wasn't it?

21 A. [ZICK0] It was, and it was a part of the
22 project -- when they built that crossing across the
23 Chelsea Creek, I was not involved with that. So I
24 didn't omit it because I wanted to omit it. I

1 omitted it because it was not a piece of the deal
2 that I was familiar with.

3 Q. Understood. I want us to be clear. If we
4 gain nothing else today, I want us to all leave this
5 room with an understanding of what was traded for
6 what. So let's start with: How did the Chelsea
7 Crossing originate? When did that come about, the
8 idea for it, let's say?

9 A. [ZICK0] Again, as I just testified, I
10 wasn't involved. I don't know. But I seem to
11 remember that it was probably around -- again,
12 subject to check -- around the 2005 time frame
13 perhaps they started to plan for it.

14 Q. And at some point in this period of time
15 the company realizes it would like to come into the
16 creek at some point in East Boston at 338 East
17 Eagle; right?

18 A. [ZICK0] At some point in time that was
19 selected as a route, yes.

20 Q. And the City of Boston owned that land.

21 A. [ZICK0] Yes, they did.

22 Q. Now, at that time the company still owned
23 the Prescott Street parcel of land; right?

24 A. [ZICK0] Yes.

1 Q. And so the company's idea was that the
2 Chelsea Creek Crossing would occur and then the
3 substation in East Boston would be located at the
4 Prescott Street parcel; right?

5 A. [ZICK0] That was always our site, because
6 it was the only piece of property we owned.

7 Q. But then the City of Boston expresses an
8 interest in the Prescott Street parcel; correct?

9 A. [ZICK0] Correct.

10 Q. And if I say to you that that happened in
11 or around late 2007, does that sound right to you?

12 A. [ZICK0] Based on when I became involved
13 with evaluating the parcel from an engineering
14 perspective, that time frame sounds about right.

15 Q. So flashing all the way to the end of the
16 story, and then we'll come back: My question was,
17 what was traded for what are? Is it accurate to
18 say -- and please, don't let me put words in your
19 mouth -- that the City traded two things: an
20 underground easement to allow the company to bring
21 its cables and conduits across the Chelsea Creek up
22 onto 338 East Eagle, and a parcel on the east side
23 of 338 East Eagle on which the company would build a
24 substation, along with temporary easements and

1 access easements to build it and maintain it? Is
2 that what the City gave up in the land swap?

3 A. [ZICK0] To the best of my knowledge and
4 recollection, the easement to come across the
5 Chelsea Creek was granted -- and the other easements
6 that you're talking about, the access and
7 construction easements -- to the best of my
8 knowledge -- and again, as I testified earlier, I
9 was not intimately involved with the Chelsea Creek
10 Crossing -- to the best of my knowledge, those
11 were -- the talks on those were started before the
12 City expressed an interest in 265 Prescott.

13 Q. So at one point in time it wasn't going to
14 be a land swap, it was just going to be the company
15 gives the City something of value and the City lets
16 you have your cables come across on 338.

17 A. [ZICK0] That is my understanding, again
18 with the caveat that I was not involved with the
19 Chelsea Creek Crossing.

20 Q. Let's flash forward to the late-2010,
21 early-2011 time period, when you are involved. At
22 that point in time, when the dust settled, was this
23 a two-for-one land swap? Was it that the City gave
24 two things: No. 1 is an easement to allow the

1 company to come across the Chelsea Crossing onto
2 338, and land for a substation, in exchange for one
3 thing: the Prescott Street parcel? I just want to
4 know if I have the terms of the land swap right? If
5 there's anyone in the room who can answer that
6 question for me.

7 MS. KEUTHEN: Can we go off the record
8 for a second?

9 MS. SEDOR: Yes.

10 (Discussion off the record.)

11 MS. SEDOR: Let's go back on the record.

12 A. [ZICK0] So again, to the best of my
13 recollection, after conferring with some of my
14 counterparts on the project, it was the East Eagle
15 Street parcel plus the access easement from the
16 proposed substation out to East Eagle Street in
17 exchange for the Prescott Street site.

18 Q. You said the East Eagle Street parcel, and
19 unfortunately, both of the two properties that I
20 think were part of the land swap are on East Eagle
21 Street. So can you be more specific?

22 A. [ZICK0] I will clarify for you. When I
23 said East Eagle Street parcel, I meant the area
24 where we proposed to put the substation.

1 Q. So if the land swap is the substation land
2 in exchange for the Prescott Street parcel, as
3 you're testifying that it is --

4 A. [ZICKO] I'm testifying that's my
5 understanding.

6 Q. So how does the company get the easements
7 to come across Chelsea Crossing?

8 A. [ZICKO] I don't know. I wasn't involved
9 in that. I can't answer that question for you. I
10 just don't know.

11 Q. Mr. Zicko, with all due respect, I will
12 submit to you that your answer is incorrect. I will
13 submit to you that there is documentation, which I
14 am hoping to show you or any other witness,
15 indicating that in fact the purchase and sale
16 agreement does clarify that the City was giving the
17 company the underground easement for the Chelsea
18 Crossing in exchange for the Bremen Street parcel
19 and that the substation land was a part of that land
20 swap. Do you need to see that document? Is there
21 anyone else, either yourself or another witness, who
22 can corroborate my understanding?

23 A. [ZICKO] It's been a while since I've
24 looked at that -- or seen that purchase and sale

1 document. So I don't recall the contents, and I did
2 testify that -- you know, to the best of my
3 knowledge and recollection, realizing that I wasn't
4 involved with the Chelsea Creek Crossing.

5 MS. KEUTHEN: Are you referring to the
6 purchase and sale agreement that was provided as
7 Attachment CF-3(1)?

8 MR. THAYER: I believe so. Is it dated
9 January 25th, 2011?

10 MS. KEUTHEN: Yes.

11 MR. THAYER: Then yes.

12 Do the witnesses have access to that
13 document?

14 MS. KEUTHEN: I can provide them with
15 access, but I don't know that they can read it and
16 analyze it sort of on the spot.

17 MR. THAYER: Again, with all due
18 respect, if there are other witnesses that the
19 company could put on who are qualified to testify as
20 to the terms and timing and other issues related to
21 this land swap -- which, as Mr. Zicko has testified,
22 was the sole determinant in the company's selection
23 of a property, and thus the sole reason that we're
24 here, then I think that's necessary. It's simply

1 not acceptable for the company to claim ignorance on
2 this subject when this subject is why we're all
3 sitting here.

4 MS. KEUTHEN: I think we can take a few
5 minutes. If you want, we can take a look at this,
6 and the witnesses can take a look at the purchase
7 and sale agreement and see if they can answer your
8 question.

9 MR. THAYER: Thank you.

10 MS. SEDOR: Let's go off the record.

11 (Discussion off the record.)

12 MS. SEDOR: Why don't we go back on the
13 record.

14 Q. I'm going to hand you documents that are
15 produced in this matter in response to EFSB-CF-3. I
16 will represent to you that this document that I'm
17 giving you is an email from October 28th, 2008,
18 making reference to a letter of intent. Mr. Zicko,
19 would you please read the second sentence of the top
20 email of this document.

21 A. [ZICKO] Certainly. And I'm referring to
22 Attachment EFSB-CF-3(S-1)(2), and it's Page 154 of
23 765. And the second sentence as Mr. Thayer
24 requested, "Once consummated, this deal gives NSTAR

1 a critical and valuable cable landing location on
2 the East Boston side of the Chelsea Creek."

3 Q. Thank you, Mr. Zicko. Does the company
4 have any understanding as to whether the proposed
5 land exchange that is referenced in this document
6 refers to the exchange of the company's Prescott
7 Street parcel for some land owned by the City of
8 Boston?

9 A. [ZICKO] The first sentence of that email
10 at the top says, "Attached please find the letter of
11 intent for the land swap." So without seeing that
12 letter of intent for the land swap, I don't know
13 that I can answer that question.

14 Q. Is it possible, just possible for the time
15 being, that what's being referenced here is a land
16 swap in which the City does in fact obtain the
17 Prescott Street parcel and the company obtains a
18 valuable cable landing location on East Boston --
19 which I would submit refers to the west side of 338
20 East Eagle, where the cables come up?

21 A. [ZICKO] You know, based on my knowledge of
22 what was going on at the time, the only piece of
23 property that the company owned that was in play, if
24 you will, with the City of Boston was the Prescott

1 Street site.

2 MR. THAYER: I'm going to pass around
3 another document. This document was not produced by
4 the company but was instead one of the documents
5 produced in response to Channel Fish's record
6 request made to the City of Boston. So as such, I
7 would request that this document be marked for
8 identification as Channel Fish Exhibit 7.

9 WITNESS ZICKO: Was that CF-7?

10 MS. SEDOR: Yes, it is. Thanks.

11 (Exhibit CF-6 marked for
12 identification.)

13 Q. Have the witnesses had an opportunity to
14 familiarize themselves with this document?

15 A. [ZICKO] Yes, I have.

16 Q. Would you please flip to the second page of
17 the exhibit?

18 A. [ZICKO] I have that in front of me.

19 Q. Can you tell me what this is a depiction
20 of?

21 A. [ZICKO] Well, there's a title that says
22 Proposed Easement for NSTAR on City of Boston
23 Property. In the upper left-hand corner there's
24 something that says -- I'm assuming it's a file

1 name -- "proposed easement on City of Boston parcel
2 (as if developed in future) .pdf." And in the lower
3 right-hand corner there's a notation that says doc.
4 0015.

5 Q. So is it correct to say that this is a
6 depiction of a future of 338 East Eagle Street?

7 A. [ZICK0] Yes. I see a police station, a
8 public works yard, and some other ancillary
9 facilities.

10 Q. And on this future of 338 there appears to
11 be a 60-foot-wide NSTAR easement; correct?

12 A. [ZICK0] Proposed NSTAR easement 60 feet
13 wide. I do see that, yes.

14 Q. Ultimately, is the easement that the
15 company obtained on the west side of 338 East Eagle
16 60 feet wide?

17 A. [ZICK0] I don't know for sure.

18 Q. There's no substation drawing on this
19 diagram, is there?

20 A. [ZICK0] I do not see a substation depicted
21 on here.

22 Q. So is it fair to say that in July -- on
23 July 30th, 2010, the City's discussions with the
24 company involving 338 East Eagle Street did not

1 involve the location of a substation on that parcel?

2 A. [ZICK0] Based on the document that I
3 reference, there is no substation depicted on here.
4 So I'm going to go with the assumption that that was
5 not on the table at this time.

6 Q. So if the substation wasn't going to be
7 here, where was it going to be?

8 A. [ZICK0] Again, at the time the only other
9 property that I'm aware of would be the so-called
10 Prescott Street site.

11 Q. But this is 2010. By this time didn't the
12 company understand that, either by land swap or by
13 eminent domain, they were going to lose the Prescott
14 Street parcel?

15 A. [ZICK0] Based on my understanding of the
16 timing, yes.

17 Q. Okay. So the Prescott Street parcel's not
18 an option, and there's no diagram on -- there's
19 nothing on this diagram on July 30th, 2010 to
20 indicate 338 was an option. It begs the question
21 whether the company was at that time exploring
22 alternative locations for a substation, does it not?

23 A. [ZICK0] The company acquired -- what we
24 ended up acquiring we acquired in 2011, the proposed

1 site and the access easement to East Eagle Street
2 that we're discussing now.

3 Q. Right, about six months after this document
4 was created.

5 A. [ZICK0] Yes.

6 Q. So at this time, in July of 2010, does the
7 company have an understanding of where, if at all,
8 it was going to be locating an East Boston
9 substation?

10 MS. KEUTHEN: If you know the answer.

11 A. [ZICK0] I don't know the answer.

12 Q. Sitting here today, can you identify any
13 person employed by the company who would know the
14 answer to that question? Perhaps Stephen Carroll?

15 A. [ZICK0] Mr. Carroll has left the company.

16 Q. Anyone else, then?

17 A. [ZICK0] The only other person who is named
18 on this email that's a company employee is Neven
19 Rabadjija.

20 Q. Is he currently an employee?

21 A. [ZICK0] Yes, he is.

22 Q. Would he be available to testify in this
23 matter?

24 A. [ZICK0] I can't speak for his schedule but

1 through counsel would certainly reach out.

2 Q. We can discuss it at the end of the day,
3 although increasingly I am feeling as though
4 Mr. Rabadjija or another contemporary of his may be
5 able to provide useful information here.

6 MS. SEDOR: I'm already convinced,
7 actually. I think that going at this with these
8 documents with a witness who, A, wasn't even
9 involved in the crossing proceeding or deal is going
10 to take a very long time and is not the most
11 effective way to do this.

12 And I agree with counsel for Channel
13 Fish that the process by which the current proposed
14 substation site was selected is an integral part of
15 what is -- what the Board is interested in looking
16 at in this case. And Neven's name had caught my eye
17 on the earlier email. It's my understanding he's
18 still with the company. Is that correct?

19 MS. KEUTHEN: Yes.

20 MS. SEDOR: What I'm going to ask the
21 company to do -- I understand that it may not be --
22 probably is not possible for tomorrow. But I would
23 like the company to check with your real estate
24 department or wherever is the appropriate department

1 to consult -- I would assume it would be people like
2 Neven in the corporate real estate department. Find
3 someone who was involved in this land swap and also
4 involved in the acquisition of the Chelsea Creek
5 Crossing easement, if that is a separate deal from
6 the land swap deal, and we want that person here to
7 be examined as soon as possible. If maybe you could
8 come back to us with a couple of dates on which the
9 appropriate person would be available, that would be
10 very helpful.

11 MS. KEUTHEN: We can do that. Could I
12 also suggest an alternative that might be more --
13 get us where we need to be more expeditiously?

14 MS. SEDOR: Sure.

15 MS. KEUTHEN: Which would be to take a
16 record request to provide a summary of the dates on
17 which the property for the proposed substation and
18 for the easement were obtained?

19 MS. SEDOR: I think that's a good
20 suggestion. I want to run it by Mr. Thayer. We
21 could try that as Step 1 and then have the real
22 estate person as Step 2 if you think you can
23 summarize a record request that will get you what
24 you're headed towards.

1 What I'm concerned about is that you may
2 not want just a list of dates, that you may want to
3 discuss with someone who was involved in these deals
4 what went on, and that can't easily be translated
5 through the record-request process.

6 So I'm asking you for your input.

7 MR. THAYER: While I certainly respect
8 Ms. Keuthen's attempts to provide efficiencies in
9 the process, the documents that I have provide a lot
10 of dates. They even provide a decent amount of
11 information. But there is context that is missing
12 that can only be provided through witness testimony,
13 and that is particularly true with respect to the
14 many meetings that are referenced or identified in
15 these documents. Without witness testimony, it's
16 simply impossible to know what happened and how
17 arrangements were made, what considerations were
18 taken.

19 And so, unfortunately, I think the only
20 way to do it is through witness examination -- which
21 Channel Fish will strive to do in the most efficient
22 manner possible.

23 MS. KEUTHEN: My concern is that, as
24 Mr. Zicko testified, Mr. Carroll was the individual

1 from the company's real estate department -- I'm not
2 sure exactly what his position was -- who was most
3 intimately involved with the real estate
4 transaction, as I understand it. And to my
5 knowledge, I don't think that there are others
6 remaining at the company who do have extensive
7 knowledge about this. My understanding is that Mr.
8 Rabadjija, who is an attorney, not in the real
9 estate department -- although I think has some real
10 estate experience -- was only peripherally involved.
11 So I'm not sure he would be able to provide the
12 information that counsel for Channel Fish seeks.

13 MS. SEDOR: Understood.

14 MS. KEUTHEN: So sitting here, I'm not
15 sure that I know of -- but certainly I'm not the
16 company -- of an individual who would be able to
17 provide the testimony that Channel Fish is seeking,
18 and why I suggested a record request is that maybe
19 we can consult with various people at the company
20 and try to get a comprehensive answer to questions
21 Channel Fish has.

22 MS. SEDOR: I understand the point.
23 This took place some years ago. But no, I want
24 somebody in here. We don't do that that often. I

1 just think that's the most efficient way. In the
2 end it will save time and money to have someone
3 here. We won't get the best person. The best
4 person probably, as you're saying, is long gone.

5 But we can get the second- or third-best
6 person. We can get someone who is a lawyer and/or a
7 real estate person, as opposed to a substation
8 engineer. I think they can give us a quicker,
9 better set of responses to what Channel Fish is
10 trying to get answers to. And I just want to cut to
11 the chase on this. It's not like it's a side issue,
12 and I don't want to sit here while we go around and
13 around with email after email that Mr. Zicko has
14 never even seen before. It just doesn't make sense
15 to me.

16 I do not want to impose an unfair burden
17 on you. As I said, I know we can't do this
18 tomorrow. But I want you to use your best efforts,
19 if you would, to figure out who the best person
20 would be -- not the perfect person, but the best
21 person who's available now -- who could help us
22 figure out what went on with these land deals and
23 answer the questions that are relevant to this
24 proceeding. I can't see that taking more than a

1 morning of their time.

2 MR. THAYER: If I may very briefly:
3 Other than Mr. Carroll, Mr. Rabadjija's name is the
4 name that appears most frequently. To the extent
5 he's simply going to have to claim attorney-client
6 privilege or something, perhaps he wouldn't be the
7 best person.

8 I will note that there's an email from
9 Mr. Zicko, one of the rare emails he was actually
10 on, in 2010 that says, and I quote, "The discussions
11 of the deal are going on at the senior VP and Mayor
12 of Boston level." The senior VP is Joe Nolan,
13 unless I'm somehow getting that one wrong. If
14 Mr. Nolan is the best person, while I understand
15 he's a very busy and important man, we'd be happy to
16 hear from him as well.

17 MS. SEDOR: Again, Ms. Keuthen, I would
18 just ask that you do the appropriate checking,
19 talking with whoever you need to consult with, and
20 figure out someone who could help us move this
21 along.

22 MS. KEUTHEN: We will do that.

23 MS. SEDOR: I appreciate it.

24 It's a quarter to 5:00. Would this be a

1 good place to stop?

2 MR. THAYER: There's actually one topic
3 that I could spend a few minutes on --

4 Q. -- that, Mr. Zicko, I'm sure you know lots
5 about, and that is the Crescent Avenue parcel.

6 Tell us where the Crescent Avenue parcel
7 is?

8 A. [ZICKO] It is at the corner of Crescent
9 Ave. and Vila Street in Chelsea, and it's
10 approximately, as the crow flies, maybe half a mile
11 to the northeast of the Chelsea substation site that
12 we've been talking about, the one that's off of
13 Willoughby Street.

14 Q. Thank you. What is the square footage --
15 approximate, if you don't have the exact -- of this
16 site?

17 A. [ZICKO] I do recall answering that in an
18 IR, so if you'd just bear with me while I attempt to
19 find it.

20 (Discussion off the record.)

21 MS. SEDOR: Let's go back on the record.

22 Q. Mr. Zicko, does the Information Request
23 Response EFSB-PA-13 provide the information you were
24 looking for?

1 A. [ZICKO] Yes, it does. Thank you.

2 Q. And what is the approximate square footage
3 of the Crescent Avenue parcel?

4 A. [ZICKO] Again, according to the Chelsea
5 geographic information system records, it's
6 approximately 4.2 acres.

7 Q. I became a lawyer so I wouldn't have to do
8 math. Can you translate that into square footage
9 for me?

10 A. [ZICKO] It's just shy of 18,300 square
11 feet.

12 Q. Okay. So it's similar in size, slightly
13 larger, than the 338 parcel.

14 A. [ZICKO] Slightly larger, yes.

15 Q. Is the Crescent Avenue site subject to any
16 zoning restrictions that you're aware of?

17 A. [ZICKO] We didn't look at the zoning on
18 the Crescent Ave. site, so I don't have an answer
19 for that.

20 Q. It is certainly not in a waterfront
21 submanufacturing district, is it?

22 A. [ZICKO] I don't know how it's zoned. I
23 can say that it is not proximate to any water or
24 fronting on any water.

1 Q. It's more than, let's say, 500 feet from
2 any water, as far as you can tell?

3 A. [ZICK0] As far as I can tell, yes.

4 Q. And the company already owns the Crescent
5 Avenue site; right?

6 A. [ZICK0] That's correct.

7 Q. What does the company intend to do with
8 that site?

9 A. [ZICK0] At the present time the company
10 just intends to retain it for future use, some
11 unspecified future use.

12 Q. Are there public right-of-ways that provide
13 direct access to the site, or would you need an
14 easement to go over somebody else's private
15 property?

16 A. [ZICK0] I believe both Crescent Ave. and
17 Vila Street are public ways.

18 Q. So there's two separate streets that
19 provide access to the site from a public way.

20 A. [ZICK0] To the best of my knowledge, those
21 are public ways, and yes, you could access the site
22 from either of those.

23 Q. Now, in your response to PA-13 you say that
24 the Crescent Street site would result in feeders

1 that are longer than in the proposed project, and
2 for this reason and the reasons stated in the
3 petition at 3-13, the Crescent Street site would not
4 be as well positioned to supply the load growth in
5 East Boston. What feeders are you referring to?

6 A. [ZICK0] The feeders I'm referring to are,
7 if the station were to be built at Crescent
8 Street -- and as you may recall, I testified
9 yesterday we're building a system, not a
10 substation -- the feeders would be the 4-kV
11 distribution feeders that would come out of the
12 Crescent Street site, assuming it were to be built.
13 Those would have to be extended somehow from
14 Crescent Ave., whether it be down Eastern Avenue and
15 subject to the same constraints as if we had built
16 at the Chelsea site or if there's another way down
17 Crescent Ave. -- I don't believe we looked at that.
18 Those feeders would then have to get across the
19 Chelsea Creek and tie into the distribution system
20 in East Boston. So in essence, you'd be moving the
21 14-kV source of supply further away from the
22 intended load center that you want to serve.

23 Q. And you think that you've said that the
24 company had not explored the various alternatives

1 that may be available to it for routing those
2 distribution lines; is that right?

3 A. [ZICK0] We didn't look at them in detail.
4 We know in general how to get from Crescent Ave.
5 over to where the existing creek crossing is.

6 Q. So turn to your response to PA-26 briefly.

7 A. [ZICK0] If you'd bear with me for a
8 moment.

9 Yes, I have that in front of me.

10 Q. I see that the estimated cost for Solution
11 5, which is the Crescent Street site --

12 Correct?

13 A. [ZICK0] Correct.

14 Q. The estimated cost for the Crescent Street
15 site is approximately \$9 million more than the
16 estimated cost for the proposed solution; correct?

17 A. [ZICK0] Approximately \$9 million, yes.

18 Q. And the estimate for the crescent Street
19 site's cost is based on, necessarily, an estimation
20 of the cost of running the distribution lines;
21 right?

22 A. [ZICK0] The distribution lines would be
23 approximately three to three and a half times
24 longer.

1 Q. And the cost of that, depending on which
2 route you take, what you encounter under the ground,
3 how many turns there are, and several other factors,
4 that cost could go up or it could go down; right?

5 A. [ZICK0] It could, yes.

6 Q. And without doing the analysis, you simply
7 have no way of knowing whether you got it right or
8 whether you're too low or too high.

9 A. [ZICK0] We do extensive construction in
10 the urban environment, so we have knowledge of what
11 we tend to encounter. Do we know, as you stated, do
12 we know with an exact degree of specificity what
13 we'd encounter if we dug along that route? No, we
14 don't.

15 Q. That's a good point: if you dug along that
16 route. You don't even know which route you would
17 take yet, because you haven't explored that; right?

18 A. [ZICK0] We have not explored it in
19 detailed.

20 Q. I have no doubt that, once the company
21 identifies a route for its distribution lines, that
22 the company has data which allows it to come up with
23 a fairly accurate estimate, barring unforeseen
24 circumstances. What I'm questioning is how you can

1 come up with an estimate that you would consider
2 accurate if you haven't figured out the route yet.

3 A. [ZICK0] We haven't figured out the exact
4 route. We know where -- we obviously know where the
5 Crescent Ave. site is. We know where the existing
6 Chelsea Creek Crossing is. And we did -- we
7 provided a range of mileages for this illustration.

8 Q. Approximately how much of the total cost of
9 the project is owed to distribution-line
10 installation?

11 A. [ZICK0] I don't know precisely. But when
12 we did this, we did it on a unit basis, more or
13 less. We knew that the cost to construct the
14 station was going to be roughly equivalent. We knew
15 that the transmission-line length, as you can see in
16 the table -- we had 4 miles for Solution 5, versus
17 4.7 for the proposed project. So we knew on a
18 dollar-per-100-foot basis how much to deduct off of
19 that.

20 I would say the lion's share of that
21 increase is probably the distribution-line cost.
22 Distribution duct banks are big. Distribution
23 cables are big. There's a lot of copper in them.
24 To transmit the output of one transformer would

1 probably take five distribution feeders or six
2 distribution feeders, versus you could get more than
3 enough power in on a transmission circuit.

4 So the distribution cost is probably --
5 is the predominant item that swayed this upward.

6 Q. So if the distribution cost turned out to
7 be less, either because you discovered an efficient
8 route or for any other one of reasons, the overall
9 cost of the project would be affected significantly.

10 A. [ZICK0] And conversely, if we hit an
11 unknown, the lost city, it could go way up.

12 Q. Absolutely. Either way, a routing analysis
13 and a selection of a route could have a significant
14 effect on this \$118 million estimate.

15 A. [ZICK0] I'll say it could have an effect.
16 I won't necessarily agree with the "significant."

17 Q. But you would agree that the distribution
18 costs -- distribution-line installation cost is a
19 substantial part of the overall cost.

20 A. [ZICK0] It's a substantial part of the
21 added \$9 million.

22 MR. THAYER: That's all I have for this
23 time.

24 MS. SEDOR: Thank you.

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BENCH EXAMINATION

BY MR. YOUNG:

Q. Mr. Zicko, a few minutes ago I wasn't sure whether you had said feeders coming out of Crescent Street would be 4 or 14 kV.

A. [ZICKO] They would be 14 kV.

Q. Thank you.

MS. SEDOR: And before we close, I think I made an error in labeling the Channel Fish exhibit, and I know we didn't label the last one at all.

I think the 7/30/2010 email is actually CF-6, not 7; and then the 10/28/2008 email would be CF-7.

(Exhibit CF-7 marked for identification.)

MS. SEDOR: We are adjourned for today. Thank you again, Mr. O'Malley, Mr. Zicko, Mr. Bergeron. We will see you tomorrow.

(4:59 p.m.)

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REPORTER'S CERTIFICATE

I, Alan H. Brock, the officer before whom the foregoing proceedings were taken, do certify that this transcript is a true record of the proceedings on February 4, 2016.

Alan H. Brock, RDR, CRR.

I N D E X

EXAMINATIONS

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RECORD REQUESTS

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