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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD PANEL

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HEARING

-----x Docket Nos.
In the Matter of: : 50-247-LR and
ENTERGY NUCLEAR OPERATIONS, INC.: 50-286-LR
(Indian Point Generating Units 2:
and 3) : ASLBP No.
-----x 07-858-03-LR-BD01

Monday, October 22, 2012

DoubleTree by Hilton Hotel Tarrytown
Westchester Ballroom
455 South Broadway
Tarrytown, New York

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MICHAEL F. KENNEDY, Administrative Judge
RICHARD E. WARDWELL, Administrative Judge

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Nelson Azevedo	Ronald J. Tenpas
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Donald P. Cleary	Dr. Stephen Sheppard
Alan Cox	Dr. Tina Ghosh
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Jerry Riggs	
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Grant Teagarden	
Matthew Yoder	

P R O C E E D I N G S

9:01 a.m.

1
2
3 JUDGE McDADE: Okay. We are on the
4 record. I want to go through some administrative
5 matters that came up over the weekend. The first had
6 to do with the availability of witnesses for
7 Clearwater-Contention EC3. There were witness
8 availability issues that were raised by Ms. Greene.
9 We received an email from her over the weekend.

10 Based on that email, we had agreed to
11 schedule EC3 to begin tomorrow at 2:00 p.m. Does that
12 meet the needs of Clearwater, Ms. Greene?

13 MS. GREENE: Your Honor, I mentioned that
14 we had not been able to reach Tony Papa, Anthony Papa.
15 We did get an email from him. He's coming later today
16 to observe. But as of now he says he is not available
17 tomorrow. I'm hoping we can prevail upon him, but
18 other than that we have confirmed with all of our
19 witnesses.

20 And I believe with Dolores Guardado who
21 will be arriving at 4:30 p.m. and because she only
22 speaks Spanish, Karla Raimundi has been in
23 communication with her. And we should double-check
24 with Ms. Raimundi.

25 But as far as I know the only outstanding

1 is Anthony Papa. And I'm hoping -- We had encouraged
2 our witnesses to come for hearing observation so they
3 could see how the process works. And he is coming
4 today. He's coming this afternoon. And we will try
5 to do everything we can to get him to be present
6 tomorrow.

7 JUDGE McDADE: Did he explain what the
8 conflict was on Tuesday afternoon?

9 MS. GREENE: No, it was simply an email
10 and did not return phone calls.

11 JUDGE McDADE: And we will arrange and
12 have an interpreter here for Ms. -- Can you do the
13 pronouncement again?

14 MS. GREENE: Guardado.

15 JUDGE McDADE: Guardado. Thank you.
16 Okay. So that's the first thing. We will be starting
17 late tomorrow at 2:00 p.m. and then continue. Plan on
18 continuing with Clearwater EC3 until we finish on
19 Tuesday to accommodate the witnesses.

20 The next has to do with --

21 MR. WEBSTER: Judge, this is Richard
22 Webster for Clearwater. Can I ask a quick question?
23 Is the Board's intention to complete Clearwater EC3 on
24 Tuesday?

25 JUDGE McDADE: Yes.

1 MR. WEBSTER: Thank you.

2 JUDGE McDADE: And if necessary we will go
3 later than our normal, since we're starting later, we
4 will go later than our normal schedule if necessary in
5 order to complete it.

6 MR. WEBSTER: Thank you very much.

7 JUDGE McDADE: With regard to New York 37,
8 do you have any further update with regard to the
9 availability of Mr. Bradford?

10 MR. SIPOS: Yes, we do, Your Honor. John
11 Sipos for the State of New York. Your Honors, the
12 State and I have been in touch with Mr. Bradford
13 throughout the weekend. And I spoke to him within the
14 last hour.

15 He is still in a great deal of pain. In
16 his words, it's "plenty painful." And he is still
17 either on the flat of his back or on his left side.
18 Those are the only positions he can be in without
19 pain.

20 It is extremely difficult for him to sit
21 up for more than a minute or two or to walk without a
22 walker for more than a few seconds. And it does
23 appear that while there has been some improvement
24 neither he or we believe he's in a condition to be
25 travel ready for tomorrow to come down for a hearing

1 here on Wednesday.

2 JUDGE McDADE: Where is he physically
3 located right now?

4 MR. SIPOS: He is located near Manchester,
5 Vermont, up the hill in the Village of Peru.

6 JUDGE McDADE: We're talking about in any
7 event a four or five hour automobile ride.

8 MR. SIPOS: Yes, approximately. Yes. And
9 I don't even know that he can get far beyond his own
10 bedroom right now.

11 JUDGE McDADE: Well, let me explain a
12 little bit of my thoughts on this. First of all, if
13 Mr. Bradford is going to testify, it's really
14 necessary that he be in a condition to testify
15 meaningfully. And if he's either in a great deal of
16 pain or on a great deal of pain medication, it seems
17 like his ability to testify meaningfully would be
18 significantly compromised.

19 So given what you've described having him
20 get in a car with that condition for several hours and
21 then be in a position where he would have to sit in a
22 chair here, it seems extremely unlikely that the
23 option of having Mr. Bradford here to testify in
24 person on Wednesday is viable.

25 In my view, that leaves three basic

1 options. Option No. 1 is to have him testify by
2 telephone. No. 2 is to proceed without him and just
3 simply forego his testimony. Or No. 3 would be to
4 move New York-37 to track 2.

5 It is not possible to hear New York-37 in
6 December. There are other witness availability issues
7 that we have been made aware of months ago that
8 preclude us from hearing it in December. So if we
9 don't hear it this week, then it has to go onto track
10 2.

11 What I would like the parties to do is (1)
12 to contemplate those options and I realize that the
13 first issue is for New York to suggest what it views
14 the priorities of those options are. It's sort of
15 like doing your own SAMA analysis on this. And then
16 (2) to also get input from the other parties as well
17 because this also impacts them if any of those options
18 are exercised.

19 So rather than have you express those
20 views right now, let me ask all of the parties to
21 think about it and after the luncheon break today, we
22 will come back and we will be able to explore the
23 possibilities a little bit further.

24 MR. SIPOS: Your Honor, may I just inquire
25 of Your Honors about a potential fourth possibility

1 recognizing that there are multiple moving parts to
2 this contention amongst the parties. Would one option
3 be to continue with Contention 37 on Wednesday with
4 the witnesses who would be available and take up Mr.
5 Bradford on December 10th for whatever period of time
6 was necessary? I'm certainly hopeful for him and for
7 the contention that he would be better by then.

8 JUDGE McDADE: I don't know and we can
9 have that as a fourth possibility on the table for the
10 other parties to contemplate. One of the issues with
11 that is given the issues on witness availability on
12 the other parties, they may not have responsive
13 witnesses available who would be able to express their
14 views in contradiction of Mr. Bradford's. So they
15 could wind up being at a significant disadvantage if
16 he were to testify and then they were not to provide
17 testimony presenting their positions.

18 But it is something to contemplate. And
19 when we come back after lunch we can ask the other
20 parties what their view is of that. I certainly would
21 not be predisposed to starting 37 on Wednesday and
22 then continuing it until track 2, dividing it by
23 several months on the taking of the testimony. It
24 seems to me not to be the best option.

25 And I think we would be better served just

1 simply if that were the option of hearing Mr. Bradford
2 on track 2 of hearing the whole contention together on
3 track 2 rather than to have it bifurcated by so many
4 months. The dates for track 2 are still dependent on
5 the publication of various documents. We can't even
6 given a definite date for track 2.

7 MR. SIPOS: Thank you, Your Honor.

8 JUDGE WARDWELL: Point of clarification.
9 This is Judge Wardwell. When you said the 10th, do
10 you mean any time during the week of the 10th? Or is
11 there something magical about the 10th itself?

12 MR. SIPOS: Yes, there is something
13 magical about the date of the 10th. Mr. Bradford is
14 scheduled to speak at a conference I believe in Hawaii
15 on Tuesday, Wednesday and Thursday of that week. So
16 that's why I was suggesting the 10th, Your Honor.

17 JUDGE McDADE: Okay. You're not
18 suggesting having the hearing there instead of
19 Tarrytown.

20 MR. SIPOS: Your Honor, we would be open
21 to any reasonable accommodation.

22 JUDGE WARDWELL: At the State's expense,
23 of course.

24 MR. SIPOS: We could discuss that, Your
25 Honor.

1 JUDGE McDADE: The next thing, we received
2 a letter, a copy of a letter, dated October 21st that
3 discusses various matters. It appears that the
4 parties have received a cc on it. And it basically
5 indicates that the State is ready to proceed on 16 and
6 17, but does raise one issue with regard to discovery.
7 The State requests that Entergy be directed to
8 disclose any additional relevant and nondisclosed
9 material.

10 Document 900422 as identified on Entergy's
11 log reveals the existence of at least one related
12 document. And this is listed as Sheppard-sqrt.xls, an
13 Excel spreadsheet that Dr. Tolley apparently created.

14 I realize Entergy received this just
15 yesterday afternoon or evening just as we did.

16 MR. SIPOS: Yesterday evening, Your Honor.

17 JUDGE McDADE: Have you been able to
18 identify whether or not such a document exists?

19 MR. BESSETTE: Your Honor, I would like to
20 have Ron Tenpas, our colleagues, address that issue.

21 MR. TENPAS: Thank you. Your Honor, Ron
22 Tenpas for Entergy. We were not consulted about the
23 letter before we received it. We believe that
24 document or its equivalent perhaps on another by a
25 somewhat different name was disclosed in the early

1 April time frame. It represents a data collection
2 that analyses were run on

3 Nevertheless, we believe we have also
4 found it again and we are prepared to provide it even
5 this morning in electronic format a second time if
6 that would be useful.

7 JUDGE McDADE: Please do so and then we
8 will decide as we proceed whether or not it's
9 necessary to have any delay whether New York reviews
10 it or not. Thank you.

11 Are there any other administrative matters
12 that need to be taken up before we get started with
13 the taking of testimony this morning?

14 MR. HARRIS: Your Honor, this is Brian
15 Harris for the staff. As we discussed before the
16 break last week, Mr. Harrison is not available now.
17 But we're still prepared to go forward with New York-
18 16.

19 JUDGE McDADE: Okay. Thank you.

20 MS. SUTTON: Kathryn Sutton for the
21 Applicant, Your Honor. Also just by way of reminder,
22 Dr. O'Kula must leave by 1:00 p.m. today and he's an
23 expert on this New York-16 panel.

24 JUDGE McDADE: Thank you, Ms. Sutton.

25 We have some old faces and we have some

1 new faces here. Before we get started, a couple of
2 preliminaries. First of all, if you don't understand
3 a question, don't be embarrassed to say so. Don't try
4 to answer a question if you don't understand what it
5 is because it's unlikely that the answer will be
6 responsive. And it may just confuse us as well as
7 you.

8 Secondly, if for any reason during the
9 course of taking of testimony, you feel it is
10 necessary to take a break, don't just sit there in
11 silence and suffer. Either try to get our attention
12 and bring it to our attention. Or alternatively if
13 for some reason we are not particularly observant, try
14 to get the attention of your counsel who won't be the
15 least bit shy about speaking up.

16 For those witnesses who haven't been here
17 before, the procedure today is basically one of us
18 asking you questions. We are going to direct our
19 questions to you. You are going to direct your
20 answers to us.

21 You're not going to be directing your
22 answers to the other witnesses even though you may
23 agree or disagree with the other witnesses. It's not
24 going to be a debate back and forth between you. It's
25 going to be a dialogue between you and us.

1 And we, of course, will have an
2 opportunity to go back and ask witnesses who have a
3 different point of view to comment on the testimony
4 that they've heard. And we'll probably then give you
5 an opportunity to respond as well.

6 In all probability or in all possibility
7 after the Board has finished asking questions, there
8 will be an opportunity perhaps for counsel to ask
9 questions as well. But for right now it's just going
10 to be a dialogue between you and us.

11 Okay. Before we get started, some of you
12 were sworn last week. But we're starting all over
13 again. So could you please raise your right hand. Do
14 you swear that the evidence you will give in this
15 hearing will be the truth, the whole truth and nothing
16 but the truth so help you God?

17 (Chorus of I dos.)

18 JUDGE McDADE: Thank you. Okay. We're
19 starting on New York Contention-16. And it's been our
20 practice in this hearing to give a little bit of
21 summary of the contention as least the Board
22 understand it.

23 This is a contention relating to the SAMA
24 analysis that the Environmental Impact Statement
25 requires that a SAMA analysis be done; that the

1 population within the vicinity of the facility at the
2 Indian Point facility is an input into that SAMA; that
3 if the Environmental Impact Statement significantly
4 understated the projected population in the vicinity
5 of Indian Point during the proposed period of extended
6 operations that could potentially have an impact on
7 the SAMA; and it is alleged by New York through their
8 expert the population is understated because it fails
9 to account for two things, primarily the census under
10 count and the consideration of consumer population.
11 The allegation is the SAMA analysis is fraud because
12 by underestimating the population it underestimates
13 the cost of the severe accident.

14 What we need to understand and what we
15 need to decide is first of all whether or not the
16 population is understated and, if so, by how much.
17 And finally if it is understated, does it make any
18 difference with regard to the SAMA analysis that were
19 conducted or the variance material of consequence.

20 That said, let's get started. Dr.
21 Sheppard.

22 DR. SHEPPARD: Yes, sir.

23 JUDGE McDADE: Good morning, Doctor.

24 DR. SHEPPARD: Good morning, Your Honor.

25 JUDGE McDADE: Your degrees are in

1 economics, your areas of study, land use, urban
2 economics and environmental economics. You've worked
3 extensively in population modeling.

4 Your purpose in testifying here as I
5 understand it is primarily to develop an accurate
6 population model. Is that correct?

7 DR. SHEPPARD: That's correct.

8 JUDGE McDADE: Okay. And am I correct
9 that your hypothesis is not that you have any
10 expertise with regard to the conducting of SAMA
11 analysis, but rather if population is a critical input
12 parameter in a SAMA analysis, then if the population
13 is incorrect, that the SAMA analysis would necessarily
14 be flawed.

15 DR. SHEPPARD: Yes, Your Honor.

16 JUDGE McDADE: Okay. And you've concluded
17 the population is understated.

18 DR. SHEPPARD: That is my conclusion.

19 JUDGE McDADE: Okay. Let's get started,
20 first of all, with the census undercount. Can you
21 describe just very briefly why you believe the
22 permanent population of the area is underestimated?

23 DR. SHEPPARD: Yes, very briefly, Your
24 Honor. The phenomenon of census undercount has been
25 widely studied by demographers and by the Census

1 Bureau itself. It's generally accepted by
2 demographers and by economists and other social
3 scientists that there are good reasons why census
4 undercount occurs, particularly amongst minority
5 populations who may for one reason or another fear
6 adverse consequences if they are counted as part of
7 the census population and therefore endeavor to not be
8 counted.

9 There have been studies of the magnitude
10 of undercount that range in magnitude. And I have in
11 my analysis taken a middle of the road. I wouldn't
12 call it a census estimate. I would call it an average
13 of the range of estimates. I've applied that strictly
14 to the minority population that's within the 50 mile
15 zone surrounding the location of the Indian Point
16 Energy Center.

17 Applying that leads me to estimate an
18 amount that would be undercounted. And it's
19 consistent with --

20 JUDGE McDADE: Do you agree that the 2000
21 Census is an appropriate starting point for our
22 analysis?

23 DR. SHEPPARD: It was the appropriate
24 starting point for when the analysis was undertaken.

25 JUDGE McDADE: You can't submit it.

1 DR. SHEPPARD: Can't submit it, yes.

2 JUDGE McDADE: Okay. And I hope I don't
3 mispronounce this. Dr. Tall? Let me just ask from
4 the Entergy or staff standpoints. Do you agree that
5 the 2000 population is an appropriate starting point?

6 MR. TEAGARDEN: Grant Teagarden for the
7 Applicant. Yes, Your Honor.

8 MR. JONES: Joe Jones for the NRC. Yes,
9 Your Honor.

10 JUDGE McDADE: Now once we get started
11 with that, in your initial analysis, Dr. Sheppard, you
12 indicated that the population undercount was sort of
13 a generalized phenomenon. In the rebuttal testimony,
14 you indicated and went into more detail with regard to
15 the undercount specifying the differences between
16 urban populations, minority populations and the
17 population of -- I believe the characterization was
18 non-Hispanic Whites. Correct?

19 DR. SHEPPARD: Yes, Your Honor.

20 JUDGE McDADE: Okay. Now in Entergy
21 000016, the A.C.E. Revision II, they indicated that
22 most recently the Census Bureau has indicated that
23 generally there is not an undercount but an overcount.
24 Does that document and that analysis impact your
25 analysis? If so, how? And, if not, why not?

1 DR. SHEPPARD: That document, Your Honor,
2 is something that I considered. The A.C.E. process is
3 an internal essentially research process within the
4 Census Bureau in which they continuously endeavor to
5 evaluate the accuracy of the census, to explore
6 different methodologies for evaluating the magnitude
7 of undercount, if any, or any source of inaccuracy.
8 And in addition to that document there is published
9 research by demographers.

10 I have considered that document. But I am
11 comfortable with the estimate of undercount I have.
12 That document doesn't supercede previous research or
13 supplant previous research. It does provide
14 interesting information.

15 Most social scientists however believe
16 that there is undercount of minority populations and
17 that is the basis of my undercount adjustment.

18 JUDGE McDADE: Okay. To Entergy first and
19 then to the NRC staff, that document indicates that
20 while there is a general overcount that the undercount
21 among blacks and Hispanics I believe is approximately
22 five percent and that within the 50 mile radius of
23 Indian Point there's about a 42 percent minority
24 population.

25 Doesn't that support Dr. Sheppard's

1 analysis that there is a significant material
2 undercount in the population within the area
3 surrounding Indian Point?

4 MR. RIGGS: Your Honor, this is Jerry
5 Riggs for the Applicant. We come to the A.C.E. report
6 and we look at the table at the values that pertain to
7 it. And we evaluate it with --

8 JUDGE McDADE: This is Entergy 000016. Do
9 you want to call the document up? Is there something
10 specific you want to put us to?

11 MR. RIGGS: Sure, Your Honor. Entergy
12 000016, let's look at Table 1 in the introduction on
13 page xii. This is the table right there.

14 Okay. In this document, you see a
15 breakdown that shows the 0.49 percent overcount for
16 the total population. In the A.C.E. II column, what
17 we see here is that minority population is broken down
18 and it shows that there is nothing in there that
19 supports a three percent population undercount for
20 minorities.

21 JUDGE McDADE: Okay. Dr. Sheppard, where
22 do you come to the conclusion that there's a
23 significant undercount for blacks and Hispanics?

24 DR. SHEPPARD: Your Honor, this particular
25 report, A.C.E. Revision II, explores one possible

1 methodology. The basic methodologies for estimating
2 undercount are to return to the site and do survey
3 sampling to endeavor with greater effort to identify
4 all the population or to employ demographic analysis
5 in which one compares births, deaths, in and out
6 migration within small subareas to try to identify the
7 magnitude of the undercount.

8 These different methodologies lead to
9 different conclusions about the magnitude. This
10 particular report employs a methodology which tends to
11 result in somewhat smaller estimates of the
12 undercount.

13 This report does verify that there is an
14 undercount of minority population. And as you noted
15 in your previous question, the minority population
16 within 50 miles from Indian Point is nearly double the
17 national average. So it's particularly important in
18 this context to take a count of the phenomenon.

19 Other studies that have employed other
20 methodologies estimate higher levels of undercount for
21 minority populations. And that's why I included a
22 midrange estimate of three percent.

23 JUDGE McDADE: Based on your experience
24 with population projection, what is the basis for
25 undercount among minorities and in urban areas?

1 DR. SHEPPARD: The basis for undercount is
2 that these populations may have a higher fraction of
3 persons who are in some legal dispute or who may have
4 outstanding warrants or who may be immigrants to the
5 country or recent migrants and they simply would be
6 nervous about being counted. And so they undertake
7 even though the Census Bureau endeavors to assure
8 people that no adverse consequences will happen as a
9 result of being counted.

10 They endeavor to avoid being counted.
11 They do not return the forms. When forms aren't
12 returned, the Census Bureau sends enumerators out to
13 the addresses to try to figure out if people are
14 living there and how many. And they simply do
15 everything they can to avoid being counted.

16 JUDGE McDADE: Are you aware of any
17 specific analysis relating to undocumented aliens?

18 DR. SHEPPARD: There has been some
19 discussion of that. There have been a variety of
20 press accounts of that. Some of that is hypothesis
21 that hasn't been carefully tested.

22 JUDGE McDADE: Does Entergy contest the
23 hypothesis that the minority population within the 50
24 mile radius is approximately 40 percent?

25 MR. RIGGS: No, Your Honor. Well, when I

1 looked at the data, Dr. Sheppard's values were on par
2 but slightly inflated.

3 JUDGE McDADE: Okay. But basically that's
4 what the minority population would be.

5 MR. RIGGS: I would say so, yes.

6 JUDGE McDADE: And certainly in the New
7 York City area, it's conceitedly highly urban.

8 MR. RIGGS: The New York City area is
9 highly urban in the southern area of the IPEC region.

10 JUDGE McDADE: Okay. Dr. Sheppard, one of
11 the things that Entergy and the staff point out is
12 that from that A.C.E. report, Entergy 000016, a set of
13 211 places that have a population of 100,000 or more,
14 that 78 percent of them fell between one percent over
15 and one percent under in the population estimate.
16 Does this impact your analysis that urban areas are
17 underreported?

18 DR. SHEPPARD: The underreporting or
19 undercount phenomenon really depends upon the type of
20 population, the specific neighborhood and the ethnic
21 composition of the neighborhood. And as I said,
22 different methodologies do lead to different levels of
23 estimates of undercount.

24 I think it's important to be aware of the
25 range of estimates in choosing an appropriate

1 adjustment to make for undercount as well as to be
2 aware of the level of urban population and minority
3 population.

4 In short, I think it's important to be
5 aware of that. But the fact that some methodologies
6 applied to the locations lead to different estimates
7 doesn't alter my conclusion that undercount is a real
8 phenomenon and that a principle of conservatism
9 applied in attaining population estimates for the
10 Indian Point region would warrant the application of
11 an adjustment.

12 JUDGE McDADE: Okay. You anticipate that
13 the level of undercount in say mid Massachusetts would
14 be different than the undercount in Brooklyn.

15 DR. SHEPPARD: Yes, sir. In large part
16 not just because of the difference in urban structure
17 and population density. But most importantly because
18 of the difference ethnic composition of those two
19 communities.

20 JUDGE McDADE: You submitted New York
21 000213. In that at page 22, you had a discussion that
22 there were 280,000 addresses added in New York City
23 out of the four million that were added nationwide.
24 Can you explain to us the significance of that data in
25 your analysis?

1 DR. SHEPPARD: I'm sorry, Your Honor. Can
2 you tell me again the exhibit number and let me draw
3 my attention to it? Or perhaps we could call it up on
4 the screen.

5 JUDGE McDADE: Yes, I believe it was New
6 York Exhibit 000213 at page 22.

7 DR. SHEPPARD: Yes. So, Your Honor, this
8 exhibit, New York State 000213, is the final report of
9 the U.S. Census Monitoring Board. So this is an
10 internal process within the Census to evaluate the
11 accuracy of the census and the material on page 22 --
12 I'm just trying to find -- Great.

13 JUDGE McDADE: The paragraph starting "It
14 is tempting to believe..." Mr. Wilkie, could you
15 highlight that?

16 DR. SHEPPARD: Okay. Yes, I have that.
17 The improvement is due to the local update of census
18 addresses. The Census Bureau maintains that a
19 database of all addresses in the United States and
20 they endeavor to update that and adjust that over
21 time.

22 JUDGE McDADE: Okay.

23 DR. SHEPPARD: And New York City
24 contributed -- the sentence as it says there, yes.
25 New addressed were added for New York City.

1 JUDGE McDADE: Okay. What is the
2 significance of that? Is that fact that you had
3 280,000 addresses for New York City an indicator that
4 had been undercount prior to that? Or how exactly is
5 this data significant to what we're discussing here
6 today?

7 DR. SHEPPARD: I see. I think that
8 observation is significant in that I'm not sure it's
9 of direct relevance for the undercount because even if
10 the addresses are not included, the Census Bureau
11 tries to reach out to every structure. They try to
12 reach all elements of the population.

13 But they miss some. If there are new
14 addresses added, it is indicative of the fact that
15 they're trying to update their addresses. Those will
16 be new addresses to which census survey forms are
17 mailed.

18 JUDGE McDADE: You indicated that
19 according to your estimate you anticipated a three
20 percent undercount for minorities which would then
21 equal a 1.18 percent total for the general population
22 leading to an undercount of 231,000 plus people. Can
23 you just walk us through very quickly how you came up,
24 how you derived the three percent undercount for
25 minorities?

1 DR. SHEPPARD: Sure. Your Honor, there
2 are several reports that have estimated -- There are
3 some reports that have been in the published
4 literature and in internal Census Bureau documents
5 that have attempted to simply estimate an overall
6 undercount for the census without looking at specific
7 minority neighborhoods or minority populations.

8 But a large part of the -- Because it's
9 been understood that the undercount phenomenon applied
10 differently in minority neighborhoods, much of the
11 research has focused on estimating the different
12 levels of undercount amongst different minority
13 populations.

14 I reviewed the literature both in internal
15 Census Bureau documents and in the published economics
16 and demographic literature, established a range of
17 estimated undercounts and averaged that range rounding
18 to the nearest percent of the average of estimated
19 undercounts which came to three percent. The sources
20 that I reviewed are cited in my report.

21 JUDGE McDADE: From the staff, what is
22 wrong with that analysis in your view? Mr. Jones?

23 MR. JONES: Yes, Your Honor. What is
24 wrong with the analysis is that we are trying to add
25 what I would describe as an artificial confidence to

1 the precision of this data. We are down to a three
2 percent undercount that results in 1.1 percent
3 composite undercount. And there are fluctuations in
4 the population on a daily basis such that when we
5 start talking about values as low as one percent and
6 I think today we'll talk about fractions of one that
7 was sent in of considerable amount that we're just
8 adding an artificial level of confidence to the data
9 that we're looking at.

10 JUDGE McDADE: We're going to be getting
11 into the significance of this data later this morning.
12 But my question at this point is do you conceive that
13 Dr. Sheppard's analysis that there is in all
14 probability an undercount of the permanent population
15 of approximately 1.18 percent is valid.

16 MR. JONES: I agree that approximately one
17 percent number is valid.

18 JUDGE McDADE: Okay. Does Entergy agree
19 with that as well?

20 MR. RIGGS: Your Honor, this is Jerry
21 Riggs for the Applicant. And absolutely not, sir.

22 JUDGE McDADE: Okay. Why not?

23 MR. RIGGS: Okay. If we go to this very
24 same document and we turn to page six to look at the
25 Bureau's A.C.E.'s results.

1 JUDGE McDADE: Okay. And by the same
2 document, you're talking about New York 000213.

3 MR. RIGGS: That's correct, sir.

4 JUDGE McDADE: Okay. And we're going
5 where on it?

6 MR. RIGGS: There's a -- Where it says
7 "Bureau announces A.C.E. results" about the middle of
8 the page. From here we can read the reports of
9 Congress relied on the A.C.E. I report, essentially
10 the March 1, 2001 version of the A.C.E. report. Okay.

11 JUDGE McDADE: And just so we can find
12 this later, this is on page 11 of 179. Please
13 continue.

14 MR. RIGGS: Okay. Then if we turn back to
15 the A.C.E. II report that's Entergy Exhibit 000016.
16 Turn to the next page. That's the wrong spot
17 actually. Let's see. I'm looking for page 1 of the
18 introduction. Okay. The first paragraph. And third
19 sentence.

20 The sentence reads "The March 2001 A.C.E.
21 estimates of the 2000 coverage which is the reference
22 to the report used by the Report to Congress estimates
23 2000 coverage were determined to be unacceptable
24 because the A.C.E. failed to measure a significant
25 number of erroneous census enumerations and thus

1 overstated the net undercount." From that, we know
2 that we can't rely on the A.C.E. I report based on the
3 Census Bureau's own analysis.

4 All right. In the A.C.E. II report in the
5 introduction, we learn about two distinction types of
6 error. One of them is undercount and one of them is
7 overcount. Undercount is a standard occurrence in
8 census. That's when you omit people for whatever
9 reason.

10 The Census Bureau has historically tried
11 to mitigate that effort by providing estimates to
12 counter the undercount effect. And that's how we get
13 the overcount.

14 Based on that, we know we have to rely on
15 A.C.E. II results. So if we go back to the table and
16 we calculate. We use percentages of minorities and we
17 weight them accordingly.

18 JUDGE McDADE: Okay. And when we say go
19 back to the table you're talking about Table 1.

20 MR. RIGGS: That's correct, Your Honor.

21 JUDGE McDADE: And Table 1 on Entergy
22 Exhibit 000016, correct?

23 MR. RIGGS: Correct.

24 JUDGE McDADE: Okay.

25 MR. RIGGS: Now if we take the weighted

1 average of those values with specifically the minority
2 percentages in the IPEC region, we still can derive an
3 overcount for the total population.

4 JUDGE KENNEDY: I'm sorry. This is Judge
5 Kennedy. You're weighting these percentages by?

6 MR. RIGGS: By the percentage of
7 minorities in the region. The percentage of those
8 race categories in the region.

9 JUDGE KENNEDY: In the 50 mile region.

10 MR. RIGGS: That's correct, Your Honor.
11 You actually use Dr. Sheppard's values that he quoted
12 and you still come up with an overcount.

13 JUDGE KENNEDY: Okay. Can you explain?
14 You said "weighted." How are they weighted?

15 MR. RIGGS: Well, if you look on Table 1
16 and you look at the American Indians on reservation,
17 it shows an overcount of 0.8 percent. In the IPEC
18 region, there's no Indian reservations. So the zero
19 percent of that population in the region. You
20 multiply that by its percentage which is zero and it
21 gets extracted.

22 The non-Hispanic White if we correlate
23 that with the nonminority population which is 100
24 minus the 44 percent in Dr. Sheppard's estimates. Was
25 it 43 or 42? Anyway, if we take that percentage and

1 multiply it by the overcount there and we sum all
2 those averages, we still end up with an overcount.

3 JUDGE McDADE: Dr. Sheppard, I realize or
4 at least I believed you testified that this report was
5 just one of the factors that you considered. But just
6 focusing on this particular report, can you address
7 the comments that were just made?

8 DR. SHEPPARD: I believe I can, Your
9 Honor. First off, obviously for minority groups that
10 are not present in the area, the concern about the
11 under/over count would not be relevant. This table
12 does in fact show that for the largest minority groups
13 that are within the 50 mile area surrounding Indian
14 Point that there is estimated undercount. And this
15 estimated undercount is obtained even using a
16 methodology that in general tends to produce extremely
17 conservative estimates of the magnitude of the
18 undercount.

19 I'm applying this undercount only to
20 minority populations. So this would be the kind of
21 datapoint I would consider. And I would look at this
22 and say, "Well, this suggests that at a minimum there
23 is 1.8 percent undercount for blacks and 0.7 percent
24 undercount for Hispanics." And continuing in that
25 manner and averaging and applying it only to the

1 minority population, you do come up with an
2 undercount.

3 The point is not to -- Mr. Riggs when he
4 refers to the net undercount, that's subtracting away
5 from the undercount of the minority populations for a
6 hypothetical overcount of predominantly white
7 population. And there is controversy amongst
8 demographers, economists and sociologists about
9 whether such an overcount could possibly be true.

10 In the case of an undercount of minority
11 populations, there's a well-established and quite
12 easily understandable incentive at the individual
13 level, mistaken though it may be, the incentive to try
14 to avoid being counted. It's not clear what
15 incentive, if any, someone has to endeavor to be
16 overcounted. So many demographers feel that these
17 estimates of overcount are probably artifacts of the
18 estimation methodology.

19 I think it's safer to focus on the
20 minority populations where we believe the phenomenon
21 applies, to use middle of the road estimates of the
22 magnitude of the undercount and to estimate an
23 adjustment to factor from that.

24 JUDGE McDADE: Okay. Thank you.

25 DR. SHEPPARD: Yes.

1 JUDGE McDADE: Let me ask. The
2 Environmental Impact Statement assumes that the
3 populations are evenly distributed between that
4 portion of a particular county that is within the 50
5 mile radius and those portions that are outside of it.
6 Is that -- let me go first to the staff and then to
7 Entergy -- a reasonable estimate?

8 In other words, you look, for example, at
9 Suffolk County, Long Island. Wouldn't you anticipate
10 that the extreme western portion of Suffolk County
11 that is within the 50 mile radius would have a
12 significantly higher population density than the far
13 eastern portions of Suffolk County? The same being
14 true for say New Haven, Connecticut region. The
15 Litchfield, Connecticut region.

16 Let me ask first of all to the staff. Is
17 that assumption of even distribution of populations a
18 valid one? And, if not, wouldn't that lead to a
19 significant undercount in the population just in
20 Suffolk County alone?

21 MR. JONES: Your Honor, I didn't separate
22 the detail to that level. So I can't answer that
23 question.

24 JUDGE McDADE: Okay. Entergy.

25 MR. RIGGS: Yes, Your Honor. This is

1 Jerry Riggs for the Applicant. In this, I'd like to
2 turn to pages 25 and 26 of Entergy Exhibit --

3 JUDGE WARDWELL: Before we go, this is
4 Judge Wardwell. Just to fix a point that Dr. Sheppard
5 said, Mr. Riggs, I want to verify on Table 1 here that
6 we're looking at that that's how you did arrive at
7 your net overcount is by subtracting off -- just
8 summing that column if you would under the first part
9 of Race-Hispanic Origin Domain.

10 MR. RIGGS: Yes. I used an average based
11 on the contribution, a weighted average, of each in
12 the region.

13 JUDGE WARDWELL: So the non-Hispanic White
14 would compensate for some of the non-Hispanic Black in
15 that fashion. Is that correct?

16 MR. RIGGS: Your Honor, that's correct.

17 JUDGE WARDWELL: Thank you.

18 DR. BIXLER: Your Honor, this is Nathan
19 Bixler. I'd like to make a point that I think is
20 important to this discussion. When the population is
21 evaluated using SECPOP which I think was the starting
22 point for the calculations of the population here, the
23 population data come in at the census block level.
24 They don't come in at the county level.

25 So the calculation determines if a census

1 block is within a grid element. And if it is, it
2 assigns that population to the grid element. So the
3 resolution of the input data that comes into the
4 population data that goes into the MACCS2 calculation
5 is at much higher resolution than a county level kind
6 of information.

7 JUDGE McDADE: So it's your testimony that
8 the EIS does not assume population as evenly
9 distributed within the counties.

10 DR. BIXLER: That's correct. It should
11 not. I'm confident that it does not.

12 JUDGE McDADE: Dr. Sheppard, do you care
13 to respond?

14 DR. SHEPPARD: I wonder if you could give
15 me a moment, Your Honor, because I don't believe that
16 that accords with my memory of the document that
17 reports on how the population estimates were obtained.
18 But I just wonder if you could give me a moment to
19 just consult my references here.

20 MR. TEAGARDEN: Your Honor, Grant
21 Teagarden for the Applicant. If I may augment Mr.
22 Riggs' statements in regards to Table 1.

23 JUDGE McDADE: Why don't you hold on for
24 a second because I'm sure Dr. Sheppard isn't going to
25 be able to find his reference and listen to you at the

1 same time. Just hold for a second.

2 DR. SHEPPARD: One of the difficulties of
3 these complicated matters, Your Honor.

4 MS. LIBERATORE: Your Honor, Kathryn
5 Liberatore for the State of New York. Maybe it would
6 just be helpful to clarify what Entergy did in terms
7 of the counties versus what staff and/or Sandia did in
8 the FSEIS. I believe there may be a difference. But
9 that may help clarify this discussion.

10 JUDGE McDADE: Okay. Thank you. But
11 let's wait and let Dr. Sheppard respond if he can.

12 DR. SHEPPARD: Your Honor, I'm looking for
13 the part. But in the original report I believe it was
14 this. I wonder if New York State counsel can assist
15 me in identifying the report that presents the
16 original population estimates that were inputs for the
17 SAMA analysis.

18 MS. LIBERATORE: Kathryn Liberatore for
19 the State.

20 JUDGE McDADE: 000209.

21 MS. LIBERATORE: I believe that may be New
22 York State 000211, the Enercon site specific MACCS2
23 input data for Indian Point Entergy Center at page 2-
24 1.

25 DR. SHEPPARD: Yes, this is the report.

1 Perhaps we can just scroll up and just review the text
2 because I believe there was something. County level,
3 right. For the population projections, county level
4 population were obtained. So the projections and
5 population estimates appear not to have been done at
6 the block or block group level. But I believe they
7 made use of county level data.

8 It may well be -- and I'm not an expert on
9 the operation of the MACCS2 code -- the MACCS2 code
10 has provisions for taking input of block or block
11 group level data.

12 But I believe the actual estimates of
13 population and this would be particularly relevant for
14 example in the case that you cited, Your Honor, where
15 only a part of a county is included within the 50 mile
16 zone from Indian Point. Essentially if 35 percent of
17 the land area of the county is included, the
18 population estimates took 35 percent of that county's
19 population as opposed to taking the actual block or
20 block groups that lie within.

21 JUDGE McDADE: Okay. From Entergy's
22 standpoint, again focusing for the moment on Exhibit
23 000211, did Entergy in its SAMA analysis presume the
24 population within counties to be evenly distributed or
25 did it break it down further than that?

1 MR. RIGGS: Your Honor, this is Jerry
2 Riggs for the Applicant. When we do the population
3 input, we deal with three distinct types of population
4 data input. One of them is Census 2000 in the block
5 level. The next is population projection information
6 on the county level from the states. And then finally
7 visitor information from the state's tourism
8 departments on the state level. Sometimes they're
9 broken down a little better than that, but those are
10 the resolutions.

11 For the Census 2000, it's provided in
12 block data. And then we have to convert it to the
13 sector geography. And what that means is that we have
14 to take the blocks and if they're bisected by sector,
15 we have to add area weighting function to get that
16 county or that block information into the sectors.
17 Then we sum up the sectors and finally produce a
18 sector population value for 2000 data.

19 JUDGE McDADE: Okay. The language here,
20 Section 2.1 going down five lines, it said,
21 "Population estimates for Connecticut were provided by
22 municipalities and converted to county to maintain
23 consistency." Doesn't that imply that for all of the
24 states other than Connecticut the data came in by
25 county?

1 MR. RIGGS: What that is talking about is
2 the population projection information, not the base
3 2000 population from the census. If you scroll down
4 a bit and look at the table, what you see there is the
5 county population projection information.

6 Its function is to project population in
7 time and you see that the time variable on top goes
8 from 2000 to 2035. Typically, the states provide at
9 the county level. It's a different dataset than the
10 Census 2000 data.

11 JUDGE McDADE: Okay. So we're basically
12 starting from two different starting points here.

13 MR. RIGGS: The problem is we have to use
14 2000 data. Then we also have to combine that with
15 projection information to get the appropriate inputs
16 for the SAMA model. So what we have to do is find a
17 common year which they all have 2000 and we have to
18 convert the geographies from whatever they are to
19 sector geographies.

20 In the case of census, we're converting
21 from small, tiny block areas into sectors by summing
22 them up and then taking their partials and summing
23 those up. And then we're also using the projection
24 information in county form and area weighting them
25 into the sectors as well. So we're going down in

1 geography from the projection information and up in
2 geography from the census block information.

3 JUDGE McDADE: Basically, after this long
4 discussion, your testimony is consistent with Dr.
5 Bixler than rather than using an assumed population
6 that's evenly distributed within counties. You didn't
7 just look at the area in the county and the
8 population. You narrowed it down more than that to
9 sectors.

10 MR. RIGGS: That's correct. We're trying
11 to create a high resolution dataset as high as we can
12 go.

13 JUDGE McDADE: Okay. While we're
14 basically in the same area, we're talking about in
15 your projections you could use either a linear
16 progression or a polynomial regression. Can you
17 explain what a polynomial regression is and why you
18 used it for New York, Westchester and Rockland
19 Counties?

20 MR. RIGGS: Yes, Your Honor. What we're
21 trying to do is we're trying to get a best fit, a best
22 mathematical fit, for the data that the states have
23 presented. And if you look at those particular
24 counties, Rockland and Westchester peak at 2010
25 whereas New York peaks at 2020.

1 And in their datasets they show a decrease
2 of population after those years. And in order to
3 obtain the best possible estimate that corresponds
4 directly with what the state is saying, we used a
5 second order of polynomial regression to fit the
6 points to align that we can then extend out to 2035.

7 JUDGE McDADE: Can you define that term
8 for me, polynomial regression?

9 MR. RIGGS: It's a mathematical method
10 used to produce a line equation based on a set of data
11 points.

12 JUDGE McDADE: That didn't help me a whole
13 lot.

14 MR. RIGGS: Okay.

15 JUDGE McDADE: Is it more than just simply
16 saying that look for those three counties it's
17 anticipated that while the population would increase
18 for a period of time it would then start to decrease?
19 So if in order to look at the population in 2035, you
20 would have to look at it going up and then coming back
21 down again.

22 MR. RIGGS: I'm not sure I follow that.
23 So what we see in the data is we see a definite peak
24 in the population according to what the state has
25 provided to try to make a smooth fit of line on top of

1 those datapoints using math.

2 And because the state -- Excuse me.
3 Because the states don't provide information out to
4 the date we needed, we needed to fit that line to
5 those datapoints and extend it out. And that's what
6 we did mathematically with the second order polynomial
7 regression.

8 JUDGE McDADE: But based on the
9 presumption that the population would be decreasing as
10 we approach 2035 in those three counties.

11 MR. RIGGS: In those three counties, yes.
12 But overall in the 50 mile region the population is
13 showing an increase.

14 JUDGE McDADE: No, I understand.

15 MR. RIGGS: Okay.

16 JUDGE McDADE: But there were only three
17 counties that you used the polynomial regression and
18 I'm trying to figure out what the difference is
19 between a polynomial regression and just any other
20 kind of regression.

21 MR. RIGGS: Okay. Well, in the other
22 counties, we've got a straight line. Essentially it's
23 a straight line or linear regression equation that we
24 use because the data fit that.

25 JUDGE McDADE: There it's a progression.

1 Here it's a regression.

2 MR. RIGGS: I see what you're saying. The
3 regression is to fit the closeness of the line to the
4 point, not necessarily a decrease or an increase.
5 Right. It's the fitment of the line that we're
6 talking about when we're talking about regression
7 analysis.

8 JUDGE McDADE: The what of the line?

9 MR. RIGGS: The fitment, how close the
10 line falls to the datapoint.

11 MS. POTTS: Your Honor, this is Lori Potts
12 for the Applicant. I guess I could help a little bit.
13 For these three counties, the data provided by the
14 State does show a peak and then shows that the
15 population will decrease slightly after the peak.

16 The regression analysis that Mr. Riggs is
17 talking about is a curve fit rather than a linear fit.
18 So it does follow the data that was provided by the
19 states. Since we only have 2030 data and we wanted to
20 use 2035 data, the 2035 is slightly lower than 2030
21 for those three counties.

22 JUDGE McDADE: Okay. Thank you.

23 JUDGE WARDWELL: And is it true -- this is
24 Judge Wardwell -- that it would be a less of a
25 reduction with a polynomial than if you just took the

1 reduction that you did see between the last few years
2 and projected that at a linear rate of decrease from
3 the peak point?

4 MR. RIGGS: Your Honor, this is Jerry
5 Riggs for the Applicant. The problem with using a
6 linear regression model for these particular counties
7 is that it wouldn't fit the data.

8 JUDGE WARDWELL: It would fit the data.
9 It wouldn't fit it as well. Is that better way to
10 word it?

11 MR. RIGGS: Yes, I agree. That's good.

12 JUDGE WARDWELL: It can always fit data I
13 mean.

14 MR. RIGGS: Right. It doesn't provide the
15 best model for -- Okay.

16 JUDGE WARDWELL: But the heart of my
17 question I just wanted to point out if I understand it
18 correctly and that's why I asked the question is that
19 the way the polynomial model that you have now
20 projected a slight decrease through the target year of
21 2035. If you had taken a linear fit from the peak to
22 the reduction that occurred in the last year of actual
23 measurements and projected that downward at a linear
24 rate, that value would have been a lot lower, wouldn't
25 it have, than that you have done with the polynomial

1 fit?

2 MR. RIGGS: I don't know.

3 JUDGE WARDWELL: Okay. That's a fair
4 answer. I don't know is an answer.

5 JUDGE McDADE: One that I gave a lot in
6 school. And I was always right. Dr. Sheppard, do you
7 take issue with the use of the polynomial regression
8 for New York, Rockland and Westchester Counties?

9 DR. SHEPPARD: I do, Your Honor.

10 JUDGE McDADE: Why?

11 DR. SHEPPARD: Because I believe that it's
12 inconsistent with what I understand to be the guiding
13 principles of how population estimates and projections
14 are supposed to be undertaken for input to the SAMA
15 process. In particular, as I understand it from
16 review of Nuclear Regulatory Commission guidelines on
17 how to prepare these population estimates and how to
18 undertake SAMA analysis, the principle of conservatism
19 in developing these population projections suggest
20 that if population is declining in a particular region
21 that an intermediate level population or perhaps the
22 peak population during the proposed relicense period
23 should be used.

24 After all, if an accident were to occur,
25 God forbid, there's no guarantee that it will happen

1 in the last year of licensing. So it would be better
2 off and more consistent with the principle of
3 conservatism to not bother with the polynomial
4 regression or any kind of statistical analysis for
5 this particular process in terms of projection. Just
6 to simply use a peak level population that would occur
7 during the relicense period.

8 JUDGE McDADE: Okay. But putting aside
9 NRC guidance on SAMAs for a moment and just focusing
10 on it as someone who projects population, if what
11 you're trying to do is project the population of those
12 counties in 2035, is this a viable analysis?

13 DR. SHEPPARD: It's a way to do it.
14 That's not the way I would have chosen. I would have
15 estimated the growth rates between the years and
16 extrapolated the growth rates.

17 Indeed, in Sandia's review of the
18 population estimates, they speak of undertaking
19 exactly that type of analysis, projecting the growth
20 rates from the individual state level population
21 estimates out to 2035. And that results in a somewhat
22 higher total population increase within the 50 mile
23 area than the one used by the Applicant. I think that
24 would be a better way of having approached it.

25 JUDGE WARDWELL: And have you qualified

1 that somewhat higher into a --

2 DR. SHEPPARD: I'm sorry. I have to
3 confess. I didn't do the quantification, but
4 according to Sandia's discussion of it their
5 quantification using that methodology resulted in
6 about 3.5 percent increase in the population within
7 the area as of 2035.

8 MR. JONES: Your Honor, this is Joe Jones
9 for NRC. Two things here. Yes, we did a comparative
10 analysis when we looked at the population data because
11 we were reviewing the information to determine whether
12 Entergy's numbers are reasonable. We're not trying to
13 precisely duplicate but just to determine whether they
14 are reasonable.

15 With regard to use of the State data to
16 augment the population projections, that is fully
17 consistent with NUREG/CR-7002 which is entitled
18 "Development of Evacuation Time Estimates for Nuclear
19 Power Plants." And that suggests that licensees use
20 state and local data when projecting and determining
21 populations.

22 JUDGE WARDWELL: Who is the principal
23 author of that NUREG?

24 MR. JONES: That would be myself, Your
25 Honor.

1 JUDGE WARDWELL: Just checking.

2 JUDGE KENNEDY: This is Judge Kennedy. Is
3 that an equivalent appropriate reference for a SAMA
4 analysis then? Are the evacuation time population
5 estimates translatable to a SAMA analysis?

6 MR. JONES: No, they're not, Your Honor.
7 And there is good reason for this. First of all, it
8 is intended, the evacuation time estimate is used by
9 response organizations to support decisions with
10 regard to potential evacuation of an emergency
11 planning zone which is only the 10 miles around the
12 nuclear power plant.

13 JUDGE KENNEDY: So it wouldn't be
14 appropriate for the 50 mile region that we're
15 discussing here today.

16 MR. JONES: It is not a direct reference
17 for the 50 mile region, no.

18 JUDGE KENNEDY: I guess through this
19 discussion I've not lost the path and I'd like to go
20 back to Entergy to understand the population
21 projection. I'm understanding starting at the 2000
22 census data and then using state projection data to
23 get to a final number for 2035.

24 Was a percentage of increase in population
25 added to the 2000 census? Or was the actual projected

1 value the final number that was put into the SAMA
2 analysis? And, Mr. Riggs, if you're the appropriate
3 person that would be just fine.

4 MR. RIGGS: Your Honor, this is Jerry
5 Riggs for the Applicant. The answer to that is the
6 final number is based on the 2035 projected
7 information. The resolution of the data comes from
8 the 2000 census. Does that help?

9 JUDGE KENNEDY: I guess if you explain to
10 us what resolution means.

11 MR. RIGGS: It's the spatial resolution
12 where we try to make sure that the appropriate
13 distribution of population is in each sector
14 appropriately. Because there's an assumption in
15 county level information that the population is
16 distributed evenly, it doesn't provide enough
17 resolution. Well, it doesn't provide as much
18 resolution as the block data does from the Census
19 2000.

20 JUDGE KENNEDY: I guess now that's where
21 I think I was going with this. I'm trying to
22 understand. You have a projection to 2035 that is
23 based more on county-wide. It appears to be based on
24 county-wide information. And you're trying to
25 translate that back to data that's based in the 2000

1 census that's at some sort of block or grid level.
2 And could you try me one more time in explaining how
3 that -- I think what I'm asking is how do we get
4 population back to the grid element that's appropriate
5 for 2035.

6 MR. RIGGS: Okay. If you notice these
7 datasets start out with 2000 value for the county.
8 That's a common date between the county and the 2000
9 census. Right. The values will match up if you sum
10 up all the blocks. In a county, they'll match that
11 number which means that we can then create an index of
12 2035 data relative to the 2000 data for each county.

13 And what we do with that is -- I'm trying
14 to collect my thoughts here.

15 JUDGE KENNEDY: Take your time please.

16 MR. RIGGS: When we create an input for
17 MACCS program, we have to convert geographies into the
18 sector grid. So what we have between the datasets is
19 we have a common year which is 2000 and then we have
20 to go into the sectors with that common year.

21 So what we do is with the 2000 data we
22 convert block data into the sectors using area
23 weighting and summation to create a base 2000 value
24 for the sector. Then we use the population projection
25 information in terms of the year 2000. In other

1 words, we're taking the 2035 and then we create an
2 index with it. We put it in terms of 2000 which means
3 that the 2035 value is like 1.5 times the 2000 value.

4 Then we convert that and put that county
5 level information into the sector grid and weight it
6 accordingly. If we have 100 percent of the county in
7 a sector, then that sector adopts that county's growth
8 rate, you know, the growth index, the value that we
9 put out, say, 1.5. And then we multiply the 2000
10 value by that index to get the 2035 value for that
11 sector.

12 JUDGE KENNEDY: So you in some way come up
13 with an incremental population growth from 2000 to
14 2035 and then distribute that at the block level or
15 grid level.

16 MR. RIGGS: Yes.

17 JUDGE KENNEDY: Let me think about it a
18 minute.

19 MR. RIGGS: Okay.

20 JUDGE KENNEDY: I think I understand what
21 you did. And I don't know. Dr. Sheppard, have you
22 heard this discussion from Mr. Riggs? It seemed like
23 you were raising a challenge to that earlier and maybe
24 we could circle back to that.

25 DR. SHEPPARD: My concern is in

1 understanding the role of what Mr. Riggs calls areal
2 disaggregation or proportion to the area. My
3 understanding of how the population forecast -- Since
4 it is the population forecasts ultimately that enter
5 as inputs as I understand it from the testimony that's
6 just been given that enter as inputs into the SAMA
7 analysis and using the MACCS2 model.

8 It's important to understand where those
9 population forecasts come from. And as I understand
10 it from reading the report and from what Mr. Riggs has
11 testified, that they basically are building population
12 forecasts at the county level using state data. And
13 then they're disaggregating that population down to
14 the individual radial grid structure that's mandated
15 for use in the MACCS2 code based on the area of each
16 grid element.

17 So it does come down to assuming that
18 population is distributed evenly over the county
19 counterfactual though that may be as I understand it.
20 Perhaps someone else can clarify.

21 JUDGE KENNEDY: That's not the way I just
22 understood it.

23 DR. SHEPPARD: Perhaps we have a different
24 -- We're still at a loss for a clear understanding.

25 JUDGE KENNEDY: Mr. Riggs, would you care

1 to respond to that? I believe I understood what you
2 explained. And I think it's in conflict with what Dr.
3 Sheppard's challenge to it is.

4 If there's a better person to explain it,
5 but I believe I understood what you said, Mr. Riggs.
6 And I understand how the projection is arrived at. I
7 don't want to just leave Dr. Sheppard's challenge
8 lying there.

9 MR. RIGGS: Okay.

10 JUDGE KENNEDY: I sense an answer there
11 somewhere.

12 MR. RIGGS: The resolution comes from the
13 2000 block data. And whenever you sum up the
14 population over a sector grid, then you're creating a
15 specific number based in 2000 for that particular
16 sector. Okay. So that's where the resolution for the
17 final dataset comes from.

18 The block data is so small that for a
19 larger area it does not assume that there's an even
20 distribution of population for the county. So
21 whenever you -- Sorry. Go ahead.

22 JUDGE KENNEDY: I was going to say on the
23 off -- In the case where the grid represents a large
24 fraction of the county, I think I get it. If the grid
25 represents a small fraction of the county, I guess

1 we're projecting -- It sounds like there's a
2 projection of the average for the county into that
3 sector or grid element. And so the average of the
4 county-wide --

5 We're back to East Suffolk County, West
6 Suffolk County and how you project that growth pattern
7 into the grid. That's where I see to be the
8 difficulty. And I don't know how. Maybe you could
9 help us understand how real that is in this scenario
10 here. I mean, are there cases where county-wide data
11 based on a large county that isn't fully encompassed
12 in the 50 mile region is actually a real issue here?

13 MR. RIGGS: Okay. I think the best way to
14 look at it is that the population distribution comes
15 from the 2000 census data. The projection rate or the
16 projection itself comes from the county data. So the
17 population resolution is based on the four small
18 elements that are summed up; whereas the projection
19 information, not the population, but the projection
20 component of those population tables is what's assumed
21 to be evenly distributed over the county.

22 JUDGE KENNEDY: Let me try one more time.
23 Are there instances where relatively large counties
24 only constitute a small fraction of -- Or if the grid
25 is not representative of a large area of the county,

1 then it seems like this projection starts getting a
2 little off the mark. Using the average for the county
3 and what I'm really looking for is if we were to go
4 around the grid, how real that projection issue is
5 within the Indian Point 50 mile grid elements here?

6 MR. RIGGS: Okay.

7 JUDGE KENNEDY: If there's 16 times around
8 and this occurs all around the grid or if there's on
9 the order of one or two of these is our real issue.

10 MR. RIGGS: Okay.

11 JUDGE KENNEDY: That's another way for me
12 to for me to understand it. I understand how you're
13 doing the projection. Now what I'm really trying to
14 understand is whether using this average is a real
15 factor in your projection estimate down at the block
16 level. And I think is where Judge McDade started us
17 a bit ago and I think we're back to that issue.

18 MR. RIGGS: Okay. Whenever you're dealing
19 with county level information regardless of what it is
20 and you're going into the sector grid, there are cases
21 where there are contributions of several counties in
22 some of the sector grids. The way to fix that is to
23 essentially provide a weight for the counties in that
24 sector. Say, the county occupies one-third of a
25 portion of a sector. Then you take that county's

1 value and multiple it by that percentage.

2 And then in the final outcome of that you
3 sum all those contributions for the counties in that
4 sector to give you final value to multiply the 2000
5 values by.

6 JUDGE KENNEDY: Let's try it a different
7 way and maybe --

8 MR. TEAGARDEN: Your Honor, Grant
9 Teagarden for the Applicant. If I could.

10 JUDGE KENNEDY: I was either going to try
11 another person or try Mr. Jones who reviewed this for
12 reasonableness and maybe if he could provide some
13 information on the significance of this using an
14 average across the grid.

15 If you have something to offer, Mr.
16 Teagarden, we can start there.

17 MR. TEAGARDEN: Yes, Your Honor. What
18 we're seeking to do is maintain the highest resolution
19 of the data throughout the projection methodology. We
20 can start with the year 2000 census data which has a
21 high resolution at what's being termed a block level.

22 When we look for growth data, the growth
23 data is only reported at the county level. We don't
24 have a means of growth projection rates at the block
25 level. So in that regards we're starting with the

1 highest resolution data at the year 2000. And then
2 we're applying the growth ratio at the best resolution
3 that we have which is at the county level.

4 That assume uniform growth throughout the
5 county. But it's being applied to where -- As I
6 understand the question being raised about
7 disproportionate or uneven population distributions
8 within a county for those portions within the 50 mile
9 analysis region where there is a higher population
10 distribution, that growth rate is being applied to
11 that higher population. That growth rate is being
12 applied to that higher amount. And for the lower
13 population density areas, perhaps outside 50 mile
14 region, the same growth rate would be coming.

15 One could make a case that as urban sprawl
16 grows with time the greater growth rates actually
17 occur in the less populated areas. And the areas that
18 are already more densely developed would have a slower
19 growth rate. And with that hypothesis then Entergy's
20 approach of a uniform growth across the county would
21 be somewhat potentially conservative.

22 JUDGE WARDWELL: You used the term
23 "uniform growth" twice in that little response then.
24 You meant uniform growth rate.

25 MR. TEAGARDEN: Uniform growth rate. Yes,

1 Your Honor.

2 JUDGE WARDWELL: Thank you.

3 MR. TEAGARDEN: If that helps explains.

4 Entergy seeks to use the best resolution that we have
5 and when it comes to growth rate we have that at the
6 county level.

7 JUDGE WARDWELL: Dr. Sheppard, is there
8 anything they could do besides that? As I sit here,
9 it sounds like it's a reasonable approach.

10 DR. SHEPPARD: Mr. Teagarden's comments
11 were quite helpful. But they underscore a slightly
12 alternative version of exactly my concern. Although
13 the growth rates themselves weren't the central focus
14 of my evaluation and proposed revisions of the
15 population estimates.

16 But it's clear that as urban growth
17 proceeds just as Mr. Teagarden has said and testified
18 that growth does not proceed uniformly over a county
19 or any area. It happens in concentrated areas on the
20 urban periphery or elsewhere. A good deal of the area
21 within the Indian Point 50 mile radius zone would be
22 in peripheral areas of Westchester County or elsewhere
23 that would experience some of this urban growth, urban
24 sprawl.

25 Ideally, I think population estimates be

1 undertaken which would take into account the different
2 rates of growth that occur throughout the county
3 rather than assume a constant rate of growth.

4 JUDGE McDADE: Dr. Sheppard, the 2010
5 census gave a figure for population that was
6 approximately 2.0 percent lower than the population
7 was projected by Entergy in its environmental report
8 and by the staff in its Environmental Impact
9 Statement.

10 Doesn't this suggest a conservatism in the
11 calculation of the rate of growth which basically
12 would offset your concerns regarding census overcount?
13 In other words, if there was a two percent overcount
14 on the rate of increase, that would amount to about
15 400,000 permanent residents. Doesn't that offset your
16 concern with the census undercount or overcount?

17 DR. SHEPPARD: Your Honor, I think it
18 would be premature to come to that conclusion. I
19 think that there might be some validity to that if the
20 idea was to obtain population estimates for 2010.

21 What we're trying to do here is a more
22 difficult problem of obtaining population estimates
23 for 2035. And for that you really need I think the
24 2010 data had they been available when the proposal
25 and the application was put forward. It would be

1 reasonable to consider. But then the State growth
2 estimates also need to be considered.

3 So you really can't -- Since those growth
4 rates and the estimates of growth undertaken at the
5 state level are done by comparing a general pattern of
6 development and population growth, you really would
7 have to go back and redo the population growth
8 forecast from the get-go using the new 2010 data
9 rather than take population growth estimates that were
10 based on older data and just try to drop in the 2010
11 estimate. So I wouldn't -- I think it would be
12 premature to come to that conclusion given that what
13 we're really interested in is 2035 population.

14 JUDGE McDADE: I guess the point I was
15 getting at is this. Starting with the 2000 census
16 which is the only one, the most recent one they had
17 when they did their projections, the fact that the
18 growth rates that were utilized wound up overstating
19 the population as of the first benchmark, the 2010
20 census. Is it reasonable to conclude that this overly
21 optimistic growth rate would continue throughout the
22 period of extended operation out through 2035 so that
23 you would -- again there would be this conservatism
24 that in fact the population in 2035 would be slightly
25 less than the population projected by Entergy?

1 DR. SHEPPARD: Right.

2 JUDGE McDADE: Why could you not carry
3 this out in a linear fashion?

4 DR. SHEPPARD: The reason you can't is
5 because preparing the population forecast involves
6 more than simple linear extrapolation of growth
7 trends. It involves analysis of the age and
8 demographic structure, the fertility behavior of the
9 population. So when population forecasts of this sort
10 are made they have to consider anticipated births,
11 deaths, so on and so forth.

12 If the actual growth of -- If this change
13 in population from 2000 to 2010 may be below the
14 initial 2010 forecast, but if the concentration of
15 younger persons or persons from demographic groups
16 that exhibit higher fertility rates, if that portion
17 of the population was greater, then it could be that
18 subsequent population growth will compensate and
19 overshoot.

20 So you have to consider it. You can't
21 just simply drop in a benchmark and compare that and
22 extrapolate the trend because that's not the way that
23 the individual county forecasts will be done. Those
24 will be done by taking into consideration a pattern of
25 births, deaths and net migration at the county level.

1 And those births and deaths in particular, the natural
2 increase will depend upon the age structure and
3 demographic structure of the population.

4 JUDGE McDADE: But that's what the
5 counties did originally and the algorithm that they
6 used appeared to overstate population growth. Why
7 would we assume that it would change or why could not
8 we assume that it would remain relatively constant?

9 DR. SHEPPARD: Because in addition to the
10 2010 census providing us with information about the
11 total, the 2010 census may be providing us with
12 information about the age structure or ethnicity of
13 the populations within the counties. And those
14 populations might have higher growth rates, higher
15 rates and natural increase in the future.

16 So what I'm saying is not that the 2010
17 census data are irrelevant. It's that we can't safely
18 conclude just from comparison of the 2010 census with
19 the 2010 forecast that the 2035 forecast will be
20 constantly overshooting the actual population total as
21 well.

22 Really if you wanted to make sure of the
23 2010 census data, the proper approach, I understand
24 that time doesn't always permit that. But the proper
25 approach would be to redo the county level forecasts

1 taking full advantage of the 2010 census data.

2 JUDGE McDADE: Am I correct then that your
3 testimony is that the hypotheses that I postured I'm
4 just reading too much into the 2010 data? It just
5 really isn't prudent to make that leap.

6 DR. SHEPPARD: That is my belief. Yes,
7 Your Honor.

8 JUDGE McDADE: Okay. Entergy, what's your
9 view?

10 MR. RIGGS: Your Honor, the nuclear
11 industry does a lot of gut checks and for me the 2010
12 census information or census count actually produced
13 similar results to our projections. Then the gut
14 checks work. It's fine.

15 MS. POTTS: Your Honor, this is Lori Potts
16 for the Applicant. I would just like to add one more
17 thing while you're thinking about this. We did in our
18 population estimate use projections to the year 2035
19 which is in itself conservative because we're doing
20 the time averaged analysis over the entire 20 year
21 period of extended operation. And our guidance would
22 have allowed us to use any year in the second half of
23 the period of extended operation, for instance, 2025,
24 as our population projection.

25 By virtue of using 2035, we have added

1 considerable conservatism to the analysis that would
2 account for any minor variations in the projected
3 numbers.

4 JUDGE McDADE: Okay. Thank you. Dr.
5 Bixler, Mr. Jones, do you have anything on this
6 further?

7 MR. JONES: Joe Jones with staff. The
8 2010 data definitely provides a level of confidence in
9 the population values that we're using. I would go
10 back to what Dr. Sheppard mentioned earlier. A linear
11 projection of data is one approach. And so I don't
12 know that I would rule this out as an approach to
13 project the 2035 data. It certainly shows an
14 aggregate increase over a six year period and gives us
15 a lot of confidence in the data that we're using.

16 DR. BIXLER: This is Nathan Bixler for the
17 staff. I just want to add my viewpoint on this. If
18 I had done the analysis that Entergy was doing, I
19 would have done it exactly the same way that they did.

20 They had the 2000 census data available at
21 the block level as a starting point. I would have
22 used that. And then I would have used the Oconee
23 growth rate projections and used that.

24 In most cases, one of the grid elements in
25 the MACCS2 analysis would be entirely within Oconee.

1 You would just use the Oconee growth rate for that
2 particular grid element. In the cases where you have
3 a grid element that overlaps a couple of counties you
4 would use a weighted average of the growth rates for
5 those two counties to estimate the growth rate for
6 that grid element. And then I would put that
7 altogether. And I think it is correct to say that
8 extrapolating all the way out to 2035 leads to
9 significant conservatism in the final answer.

10 JUDGE KENNEDY: Dr. Bixler, this is Judge
11 Kennedy. And I hate to go back to this theme, but
12 what if the grid elements they were all in a
13 particular county, but they only were in one percent
14 of the areal mass of that county? Do you have a view
15 towards using this average based on the other -- I
16 mean there is 99 percent of the land area of the
17 county that you're representing by an average, but
18 only one percent of it is totally -- Well, the grid
19 element is totally in that county, but only represents
20 one percent of all that.

21 Do you have any view towards this average
22 concept we were talking about before?

23 DR. BIXLER: Yes. I believe that that's
24 the best you can do. If you have a grid element
25 that's only one percent of a county but you're

1 assuming that the county growth rate applies to every
2 census block within that county which is that's the
3 best you can do, then you assume that the census
4 blocks that fall within that grid element even though
5 they're one percent of the county grow at the same
6 rate as the county. I think that's what you end up
7 having to do.

8 JUDGE KENNEDY: I mean I guess as Dr.
9 Sheppard pointed out you could inform those averages
10 possibly by maybe some land use information within
11 that county. If it was totally rural, it may be a
12 good candidate for high growth in close to the Indian
13 Point 50 mile region.

14 I don't know if that's a refinement that
15 would be worth the effort here. I mean I think it's
16 really hard to judge from my perspective. But at
17 least Dr. Sheppard pointed out there are possibly
18 other ways to inform that average.

19 And the extremes in my mind are easier to
20 deal with. If just a tiny portion of the county is in
21 the grid versus all of the county is represented by
22 grid elements, I have different concerns. And I think
23 my concern really is on the one where only a small
24 area mass of the county is being represented in the
25 grid element.

1 DR. BIXLER: I think I would be reluctant
2 to go just beyond using the county projections because
3 doing that would be kind of inventing your own
4 strategy or way of doing this analysis. And I think
5 you would get into areas where it would be hard to
6 defend what you've done. But just by simply using the
7 Oconee growth rate projections, that's a
8 straightforward thing to do and it's easier to defend
9 and to explain.

10 JUDGE KENNEDY: Would it be fair to say
11 that the county projection at least at the county
12 level is informed by land use patterns? And somehow
13 they came up with the growth projection. And I guess
14 I'm assuming and maybe looking for a confirmation that
15 typical land use patterns for that county would inform
16 the county's growth rate again at the county level.
17 Would that be your view?

18 DR. BIXLER: Yes, I believe that would be
19 correct.

20 MR. RIGGS: Your Honor, this is Jerry
21 Riggs for the Applicant. Concerning land use patterns
22 or something like that would fall out in the
23 resolution of the census block data as well. Because
24 if you had an area of such maybe it's a river or
25 something that's full of water. The population there

1 would be zero from the block data.

2 JUDGE KENNEDY: Thank you.

3 MR. TEAGARDEN: Your Honor, Grant
4 Teagarden for the Applicant. If I can also augment in
5 regards to your question about a county where you have
6 just a small portion within the 50 mile analysis
7 region, the small portion will have a minimal to
8 negligible impact upon the 50 mile analysis region
9 because it is small in comparison to the over 7,000
10 square miles of the analysis region.

11 And for the SAMA analysis where we're
12 examining atmospheric dispersion of postulated
13 releases, those land portions near the end of the 50
14 mile region would have a very small, a much smaller,
15 probability than other regions within the analysis
16 region of being impacted by those releases.

17 That being said, where there may be
18 questions about the degree of uncertainty when this is
19 applied to these counties that are bordering the
20 analysis region and just slightly encroached, that
21 because of their small land area they essentially have
22 no impact upon the results of the SAMA analysis.

23 JUDGE KENNEDY: Thank you, Mr. Teagarden.

24 JUDGE WARDWELL: This kind of brings up
25 back to a question I had earlier and I held off. But

1 maybe now is a good time to do this, Mr. Teagarden.
2 Is it the practice with SAMA analysis to use the peak
3 population or do you use the best estimate for that
4 population at some time frame, in this case 2035 that
5 we're shooting for?

6 MR. TEAGARDEN: It is our practice, the
7 practice that I'm familiar with, for individuals to
8 pursue a best estimate approach. That being said,
9 most analyses that I'm familiar with have used an end
10 date that reflects the last year of the license
11 renewal period. And that incorporates a fair amount
12 of conservatism as Ms. Potts mentioned.

13 The Entergy analysis could have used the
14 date such as 2025 and instead they choose to use a
15 date of 2035. And that adds in something above a half
16 a million people due to the growth that occurs in the
17 50 mile region over that last ten year period.

18 In general, we seek for the SAMA analysis
19 to pursue a best estimate approach. The approach for
20 population projected that Entergy utilized was
21 conservative and it is an approach that many, if not
22 most, applicants take.

23 JUDGE WARDWELL: If during the projections
24 it's indicated that the population is declining during
25 the period of extended operation, is there any

1 conscientious intention to go back and just us the
2 peak population that was either projected or actually
3 measured for that value in your analysis rather than
4 the lower value that might be erroneously projected?

5 MR. TEAGARDEN: Your Honor, if that trend
6 was a significant trend within the 50 mile analysis
7 region such that the total population for the 50 mile
8 analysis region say for the final year was less than
9 the total for an earlier year, I believe that many
10 applicants would choose to use the earlier year.

11 In this case, we have only three counties
12 that have a slight peak prior to the final year. The
13 delta associated with that peak is of the order of
14 60,000 individuals which is a very small amount in the
15 total population.

16 JUDGE WARDWELL: Ms. Potts, I saw you
17 nodding your head. Does that mean you agree with Mr.
18 Teagarden's assessment?

19 MS. POTTS: Yes, I do.

20 JUDGE WARDWELL: And, staff, do you have
21 any comments on that?

22 MR. JONES: Yes, we've reviewed the
23 documentation that shows that -- this is Joe Jones
24 with the staff -- the delta is only on the order of
25 about 60,000 people.

1 JUDGE WARDWELL: And it's your experience
2 in reviewing these that an applicant often will go
3 back and use the peak value rather than any decline
4 that may be observed?

5 DR. GHOSH: I can answer that. This is
6 Tina Ghosh from NRC staff. I just want to point out
7 that I think as Mr. Teagarten mentioned the point is
8 not to do a purposefully conservative analysis, but to
9 purposefully pick the peak population during any
10 period during the relicensing period.

11 The goal is to do a best estimate
12 analysis. But it's true that many applicants choose
13 a conservative estimate even though what is actually
14 expected or required is really just a best estimate of
15 the population.

16 And the reason for that is we don't know
17 when in the 20 year period an actual accident may
18 occur. And the point is to look at the average or
19 best estimate effects should an accident occur which
20 could occur at any time period in that 20 year period.

21 Again, often applicants do choose a
22 conservative estimate. But there is no requirement or
23 expectation to do so.

24 JUDGE WARDWELL: Thank you, Dr. Ghosh. I
25 think that was helpful.

1 Dr. Sheppard, do you have any comments on
2 what you've just heard?

3 DR. SHEPPARD: I can't speak for what the
4 regulations require. I understood Mr. Teagarden and
5 others to essentially point out that the change in
6 population estimates associated with using or not
7 using the peak year is I take to be about 65,000. I
8 agree with that number. And I also understood others
9 to say the typical practice had been to use end of
10 license period population forecasts as inputs to the
11 SAMA analysis or where peaks occurred during the
12 license period to substitute those peaks.

13 JUDGE WARDWELL: Thank you.

14 JUDGE McDADE: Okay. We're going to start
15 getting into a little bit different subjects starting
16 to talk about commuters. That may take longer than
17 the census. So it might be appropriate for us to take
18 a little bit of a break at this point in time before
19 we do.

20 It's now a 10:45 a.m. I would propose
21 that we take a break until 11:00 a.m. Is that going
22 to be enough time? Anybody request a longer break
23 than that?

24 (No verbal response.)

25 Apparently not. We'll stand in recess

1 then until 11:00 a.m. Off the record.

2 (Whereupon, a short recess was taken.)

3 JUDGE McDADE: And this question will go
4 both to the Staff and to Entergy, perhaps Entergy
5 first. The Environmental Report and the Environmental
6 Impact Statement do consider transients, tourists,
7 shoppers, business travelers. How are they
8 calculated?

9 MR. RIGGS: Your Honor, this is Jerry
10 Riggs for the Applicant. What we do is we get the
11 information from the state tourism bureaus and it's
12 usually in state form and then we area weight those
13 values into the counties to create an index. Then we
14 convert that into the sector grid, using spatial area
15 weight.

16 MR. JONES: This is Joe Jones with Staff.
17 I agree with the way that the description of
18 developing that data is presented. It's important to
19 understand the difference in these three type of
20 population you mentioned, tourists, shoppers, and
21 business travelers because shoppers are included as
22 transients, but they are in the SAMA area for day
23 trips, not necessarily overnight trips. Whereas,
24 tourists and business travelers would be accounted for
25 overnight. And all of them in the Entergy analysis

1 were considered overnight.

2 In this context, MACCS doesn't know how to
3 treat a tourist any different than a general member of
4 the public. So MACCS, the consequence code, treats a
5 business traveler or a tourist or a shopper as though
6 they live in the area, they have a home in the area
7 and as though they're going to incur a dose over a 50-
8 year committed period.

9 JUDGE WARDWELL: And what's the definition
10 of a business traveler?

11 MR. JONES: The way it's used in the SAMA
12 analysis is that it's someone that comes in to the
13 SAMA area for an overnight stay or longer.

14 JUDGE McDADE: Mr. Jones, you indicated
15 they're treated as a permanent resident. Do they
16 impact such things as the calculations per diem for
17 displaced people, the decontamination costs,
18 relocation expenses, loss of use of property? Are
19 they calculated for those purposes the same as a
20 permanent resident of the area?

21 MR. JONES: That is absolutely correct,
22 Your Honor. And that is why it is challenging to
23 consider commuters in total as they enter the area.
24 Well, that's commuters. The business travelers as
25 well.

1 JUDGE McDADE: Okay, but it would be your
2 view that the inclusion of these transients, tourists,
3 shoppers, business travelers would tend to over
4 estimate the clean-up costs?

5 MR. JONES: Yes, and let me explain with
6 just two quick examples. Dr. Bixler and myself came
7 here from Albuquerque and most of the NRC Staff came
8 from Washington, D.C. and areas around there. We are
9 in the SAMA area and the code models us as though we
10 are residents here. Our homes are not here, but it
11 models as though we are residents here. For the folks
12 supporting the State of New York and other folks in
13 the room that have traveled here and are staying in
14 this hotel or other hotels, they are considered
15 business travelers.

16 So the MACCS code assumes, as a business
17 traveler, that they have a home here and they will
18 incur a 50-year committed dose year along with the
19 relocation costs. But it also includes them as
20 members of the census data in their actual resident,
21 and it accounts for all of the same information. So
22 it is a conservative.

23 JUDGE McDADE: Traveling here from
24 Albuquerque, you didn't anticipate the hearing would
25 last long enough to purchase?

1 (Laughter.)

2 MR. JONES: That is correct, Your Honor.

3 JUDGE McDADE: Okay. Why would commuters
4 be treated differently? I mean conceivably a commuter
5 would get more of a dose than a tourist or a shopper
6 or a business traveler. The commuter would have an
7 incentive during both the early and the extended
8 period of cleanup to be back in the city, back in the
9 area on a daily basis where it would be unlikely that
10 after an accident, one would expect tourism and
11 business travel to fall off significantly. So why
12 exclude commuters -- well, first of all, do you accept
13 my premise that a commuter would probably get more of
14 a dose than a business traveler or a tourist or a
15 shopper?

16 MR. JONES: I do accept that premise. The
17 reason -- it's not that I'm saying commuters should
18 not be included. The consequence model doesn't know
19 how to distinguish a commuter from a member of the
20 public. So if we recognize that there are about one
21 million commuters, well, they're only in the SAMA area
22 if they work five days a week, on the order of 20
23 percent of a year. Well, 20 percent of one million
24 commuters, if you just did a straight calculation is
25 200,000 or 1 percent of the total population and you

1 really wouldn't want to calculate decontamination of
2 their home because by definition for the SAMA analysis
3 they're commuting into it. So you would have to
4 reduce those costs as well.

5 In effect, the commuters, the million commuters that
6 we are discussing would have less than a one percent
7 effect on the SAMA analysis.

8 JUDGE McDADE: Wouldn't it be relatively
9 easy to calculate the dose costs for commuters without
10 calculating the other costs that are in the MACCS code
11 such as decontamination costs, loss of use of
12 property, etcetera?

13 MR. JONES: I'd like to defer to Dr.
14 Bixler.

15 DR. BIXLER: It's not possible to do
16 within the code. You could do it, I guess, by post-
17 processing the results. You could, for example, take
18 the population dose and scale it up to account for
19 more people receiving that dose than what you had in
20 the population file and then not scale up the off-site
21 economic costs. That would be one possible way of
22 doing that.

23 But if you're just simply running the
24 code, it has one population database by grid element
25 and there's not a separate accounting for commuters or

1 other types of transients.

2 JUDGE McDADE: Okay, but this is the
3 MACCS2 code. Wouldn't the MACCS3 code be able to take
4 that into consideration?

5 DR. BIXLER: The MACCS3 code doesn't
6 exist, but I suppose in the future it could have,
7 could consider that.

8 JUDGE McDADE: Okay, but in figuring out
9 the costs of a severe accident, wouldn't that be
10 appropriate to take into consideration the dose
11 through some mechanism, the dose that consumers would
12 receive -- commuters, not consumers?

13 DR. BIXLER: That would make a lot of
14 sense to me if you went to -- it does make sense to
15 include the commuters, business commuters in the dose
16 part of the calculation, but it also makes sense to
17 exclude them from the economic cost part of the
18 calculation.

19 MS. POTTS: Your Honor, this is Lori Potts
20 for the Applicant.

21 JUDGE McDADE: Yes.

22 MS. POTTS: It also makes sense in that
23 context if we're just looking at the population dose
24 to people who are here temporarily to exclude some of
25 that dose to people who leave the area.

1 JUDGE McDADE: Let me ask Dr. Sheppard and
2 let me posit a few scenarios and ask you how these are
3 treated differently in your analysis. One of the
4 areas within the 50-mile radius is Suffolk County.
5 You have commuters within Suffolk from outside the 50
6 mile who commute within the 50 mile.

7 You have commuters within Suffolk from
8 inside the 50 miles to outside the 50 miles, but still
9 in Suffolk. And you have commuters within Suffolk
10 from inside the 50 miles to outside the 50 miles also
11 outside of Suffolk.

12 How would these be treated in your
13 analysis? Would they be treated differently? How
14 would they be captured? Let's do them one at a time.

15 If you're within Suffolk, and you commute
16 from within Suffolk from outside the 50 miles to
17 within site the 50 miles, does your analysis capture
18 them?

19 DR. SHEPPARD: My analysis suggests
20 including any person adding to the population
21 estimate. Any person who resides outside of the 50-
22 mile zone therefore would not be counted in the census
23 data that is the foundation of the current population
24 estimates, but works within a 50-mile zone.

25 In order to obtain a count of how many

1 such persons there are, we have to consider the
2 scenarios that you exactly have identified because the
3 data we have available to us are data from the census
4 that give the county work-flow patterns. These work
5 flow pattern data are used for a variety of purposes
6 within the census, in particular, for determining the
7 definition of the metropolitan area which is for the
8 most part based upon work-flow patterns.

9 So for a person who lives in Suffolk and
10 works in Suffolk, but lives outside of the 50 mile
11 from IPEC zone and if they reside outside that area
12 and work within the area, I think that they should be
13 included.

14 JUDGE McDADE: In your calculation, where
15 you came up with the 996,000, they're not, are they?

16 DR. SHEPPARD: Perhaps we should -- let me
17 turn to the table that you're pointing to so that I
18 address clearly your question. You're looking at a
19 table from my report? Or you're considering -- just
20 considering the scenarios? For example, the
21 discussion that I provide in the report, this is New
22 York State 000209 on page 6 is this what you're asking
23 about, you'd like me to discuss how I've come up with
24 these totals?

25 JUDGE McDADE: Yes. I mean the first

1 question is am I interpreting it correctly that that
2 group, the first group commute from within Suffolk
3 from outside to inside the 50 miles stay within
4 Suffolk, they're not captured in your analysis?

5 DR. SHEPPARD: I am endeavoring to capture
6 them, so if you -- if I might refer to the discussion
7 in my report on page 6, suppose we have an observation
8 of a -- what you're talking about is the distinction
9 would fall under Category 2. For every county that is
10 partially within the 50-mile boundary, so Suffolk
11 County would be an example of that.

12 If P is the percent of land area that's in
13 the county that's located within 50 miles of IPEC,
14 then take that percent of the commuter flows that come
15 into that county from counties that are totally
16 outside, so if there's someone commuting from a county
17 in Connecticut say to Suffolk County, this is based
18 upon the idea of a uniform distribution of work
19 places. So the census data don't provide us with
20 information about where in the county the people work.
21 They do provide us with information about the location
22 of work. They provide us with just flows from county
23 to county.

24 JUDGE McDADE: But the data doesn't supply
25 information about flows within the county. If the

1 person is commuting, but stays within the same county,
2 we don't have data?

3 DR. SHEPPARD: I'm sorry, I misunderstood
4 your question. That's right. I don't have data on
5 that.

6 JUDGE McDADE: Okay, now the second
7 question is a similar hypothetical for people who
8 start out within the 50-mile radius, stay within
9 Suffolk County, but move beyond the 50 mile, the data
10 that's available doesn't capture them either?

11 DR. SHEPPARD: Permit me to identify them,
12 that's correct.

13 JUDGE McDADE: Now the third scenario
14 which is not only for Suffolk County, but for all
15 areas, you're starting in Suffolk County, you're
16 within 50 miles and you move outside of Suffolk County
17 and outside the 50 miles. Does your calculation
18 subtract for those individuals?

19 DR. SHEPPARD: The calculations that I've
20 included in my proposed revisions to the population
21 does not subtract for those individuals because they
22 reside within the 50-mile radius area around Indian
23 Point, they will be during some fraction of the day
24 within that area and hence need to be or should be
25 considered as part of the population in analysis -- in

1 the SAMA analysis.

2 JUDGE WARDWELL: But don't those
3 individuals -- excuse me, aren't those individuals
4 placed at their residence rather than at some other
5 location where they may not be in the SAMA analysis?

6 DR. SHEPPARD: So they are counted -- if
7 they reside within the 50-mile zone, they would be
8 counted as part of the residential population.

9 JUDGE McDADE: They're counted as
10 permanent residents. What I'm getting at is one of
11 the discussions is that a cost to commuters is the
12 cost of the dose. And here, we would expect that the
13 increased dose for incoming commuters would be equal
14 to approximately the decreased dose for outgoing
15 commuters. So shouldn't there be an effective
16 leveling so that all we're talking about is the
17 increased number of people in the city during the day
18 when we're talking about commuters?

19 DR. SHEPPARD: I see. So the reason I
20 haven't pursued that approach in providing my analysis
21 is several-fold. First, there can and will be
22 circumstances under which both groups, the people
23 commuting out of the 50-mile zone and the people
24 commuting in will both be present within. So under
25 the idea of wanting to consider peak population, there

1 is certainly the possibility that they will both be
2 within there depending upon the timing of the
3 commuting flows.

4 Second, when I read the guideline -- so in
5 trying to work out what population adjustments I
6 should suggest when the State of New York asks me what
7 I would suggest, I consulted the regulation documents
8 and information on how to prepare a SAMA analysis
9 since I hadn't made use of the MACCS2 code myself.

10 And the guidance provided there says that
11 the population estimate should include census data and
12 extrapolations of census data and then to those
13 figures should be added the transient population.
14 Then if I look in a variety of other locations, but in
15 particular, a recent document that was authored by Mr.
16 Jones, there is a very clear statement of what the
17 transient population should include. The transient
18 population should include shoppers and tourists and
19 should include people who live outside the zone, but
20 work within the zone. So it doesn't say include the
21 net difference. It suggests that the definition of
22 transient population for the purpose of this analysis
23 should be the people who live outside the 50-mile
24 zone, but work within the 50-mile zone.

25 So if I take what I understand to be the

1 suggested definition of transient population, and
2 implement that using the best data available, that
3 leads me to the estimate I've provided.

4 JUDGE WARDWELL: You stated that -- you
5 said that you based this using some guidance for the
6 MACCS2 code and then a document that Mr. Jones
7 authored. Do you have a cite for both of those?

8 DR. SHEPPARD: Yes, I do. So first off,
9 New York State 000287. I don't know what PDF page it
10 is, but the number at the bottom of the page is page
11 13. It's discussing population distribution. This is
12 -- the title page is severe accident mitigation
13 alternatives analysis guidance document.

14 MS. LIBERATORE: Your Honor, Kathryn
15 Liberatore for the State. That's PDF page 22 of 79.

16 DR. SHEPPARD: And it says in Section
17 3.4.1 "transient population included in the site
18 emergency plan should be added to the census data." So
19 it's clear that transient populations are worthy of
20 consideration for this analysis.

21 And then one seeks a more precise
22 definition of what should constitute the transient
23 population? And if I look at -- I consulted two
24 different documents, Entergy document 000014, which
25 has on page 3-2 a very nice, clear definition of what

1 this analysis would consider to be transient
2 population. Transients are people who reside outside
3 of the zone or enter the area for a specific purpose.
4 That's shopping and recreation. And then to that is
5 to be added employees, people who reside outside and
6 commute to business within the planning zone on a
7 daily basis.

8 So the population groups that appear to be
9 mandated to be considered to my understanding were the
10 permanent residents, the tourists-type transients, and
11 then the daily commuter flows who come in. No
12 suggestion is made that we should net out the people
13 who flow out. That seems consistent to me with the
14 principle of conservatism in the population estimate
15 because there are times when both the out-commuters
16 and the in-commuters are on the road, en route, as you
17 suggested in your previous question, Your Honor.
18 Those individuals could, in some circumstances be
19 subjected to a higher dose exposure than those who
20 have a residence or shelter protecting them.

21 So it seemed to me, it all seemed
22 consistent to me to proceed that way in forming the
23 best possible estimate of the population to be
24 included within the 50-mile zone.

25 JUDGE McDADE: Does your calculation take

1 into consideration super commuters?

2 DR. SHEPPARD: My calculation -- the
3 calculations I've presented they include anybody who
4 responded to the census survey and said yes, I'm
5 commuting. On the census day I was in New York City
6 or in any of the counties within the -- that intersect
7 the 50-mile zone around Indian Point. So it does
8 include a very small number of people who appear to
9 have commuted from a very long distance.

10 In rebuttal testimony, an issue or concern
11 was raised about this small number of people who
12 appeared to be commuting from Boston or Chicago or
13 other long distances within the United States. I
14 don't feel it's wise to exclude those. They're not a
15 large part of the number in any event, so they could
16 be excluded. But there is a studied and understood
17 phenomenon that contemporary labor markets do involve
18 small numbers of people who commute astonishing large
19 distances.

20 JUDGE McDADE: But wouldn't they already
21 be captured as business travelers? And I think the
22 information that was put forward by the Staff and the
23 Applicant is that in this area there were about
24 59,000, a significant number. But how do we avoid
25 -- and under your calculation, how do we avoid

1 counting them as business travelers already counted
2 and as commuters as well?

3 DR. SHEPPARD: It's difficult to be
4 absolutely certain because of the lack of precise
5 information from the state tourist agencies about how
6 they collect their data. And I know that practices
7 differ between the states. I've worked myself in
8 other research in quite detail, in a lot of detail
9 with Massachusetts, Connecticut, and New York tourism
10 data and I know that those three states all use
11 different methodologies.

12 So can I be absolutely certain that none
13 are double counted? No. But it seems to me
14 reasonable that some business travelers -- if business
15 travelers are estimated by overnight stays, then many
16 of those will be included in the tourist numbers. But
17 not all super commuters involved overnight stays. A
18 person can -- if a person on a census day who resides
19 in Chicago traveled to New York, they can take a
20 morning flight, they can be in Chicago or be in New
21 York. They can have a series of meetings. They can
22 confer with colleagues and they can return home that
23 same day.

24 JUDGE McDADE: And this is to the Staff,
25 whoever, Mr. Jones or Dr. Bixler, there was an

1 estimate that 25 percent of Dr. Sheppard's commuters
2 are already included in the transient population. Can
3 you explain where that 25 percent figure came from?

4 MR. JONES: This is Joe Jones with Staff.
5 Yes, I can. It was understood and documented that
6 business travelers are included in the commuter
7 estimate. But there was no quantification provided
8 for that.

9 Now I was aware and fully confident that
10 it was not 100 percent of the commuters were business
11 travelers and I was very confident that half the
12 commuters were not business travelers in this part of
13 the country. So I selected an estimate of 25 percent.

14 Now recognizing that this is a small
15 contribution to the SAMA analysis because if they're
16 treated appropriately, they should not be considered
17 to include decontamination costs per person or full
18 dose commitments or relocation costs. So the 25
19 percent of one million people is on the order of
20 250,000.

21 Now the super commuters document that we
22 just discussed, identified about 59,000, 60,000 people
23 commuting to Manhattan. So there's kind of a delta
24 there; 59,000 is 6 percent, so we could say that 6
25 percent are business travelers using that document as

1 a basis. Or my estimate of 25 percent, it was an
2 assumption for a simple illustration. So the delta
3 there is 19 percent. Because we're certainly not
4 arguing that my estimate was high -- was low. It's
5 evidently being considered as a high estimate.

6 So we're looking at something on the order
7 of 19 or 20 percent difference which in the context of
8 commuters is, as I just explained, 20 percent of
9 commuters, one million people would be 200,000 who
10 should not receive a full cost allocation in the SAMA
11 area. And therefore, they represent less than 1
12 percent contribution to the SAMA analysis.

13 JUDGE McDADE: Okay, why do you think
14 business travelers are captured in Dr. Sheppard's
15 commuter group?

16 MR. JONES: The testimony explains that
17 business travelers are included and with tourists.

18 JUDGE McDADE: But they're included with
19 tourists. I'm talking about with commuters. Why do
20 you think the business travelers would be captured in
21 the commuter group? The business travelers -- well,
22 let me just leave it there. Why do you think that?

23 MR. JONES: Could you repeat the question,
24 Your Honor?

25 JUDGE McDADE: Okay, it seemed like the

1 answer that you gave assumed that super commuters and
2 business travelers were accounted for within the
3 commuter group that Dr. Sheppard referred, his 900,000
4 something. Can you point me to what it is that
5 informs that belief?

6 Actually, hold that for a second. Dr.
7 Sheppard, I just chased down something that isn't
8 being chased. Do you believe that business travelers
9 and tourists would be included in that 900,000
10 commuter group?

11 DR. SHEPPARD: No, I don't, certainly not
12 tourists.

13 JUDGE McDADE: What about business
14 travelers?

15 DR. SHEPPARD: Business travelers, I don't
16 believe that they are included.

17 JUDGE McDADE: They would have to self-
18 identify as commuters.

19 DR. SHEPPARD: A business traveler would
20 have to self-identify as commuter. That point what
21 you just said is exactly correct, because these county
22 to county work-flow numbers are obtained by individual
23 responses to census surveys. And so they're asking
24 are you commuting to such a such location and they say
25 if you work outside the county in which you reside,

1 what county do you work in? So it's answering that
2 basic question.

3 So in order to believe that the commuter
4 numbers that I'm using or that I'm providing and using
5 to supplement the population estimate, in order to
6 believe that that includes a large number of business
7 travelers, we would have to believe that a person who
8 was attending a business conference within the 50-mile
9 zone or was staying overnight as a sales
10 representative or whatever, a typical business
11 traveler, that they would have to say yes, I work
12 outside the county that I reside in and that county is
13 one of the counties within the 50-mile zone.

14 One can conjecture about that, I'm not
15 aware of any research that identifies specifically
16 that weight. The choice I made in my analysis was to
17 say I think it's most plausible that if a person says
18 I was commuting, they are commuting. They understand
19 commuting in the ordinary sense of the word as regular
20 travel for purposes of work, not simply occasional
21 business travel that would involve an overnight stay.

22 I agree that that latter group will --
23 most of them will be picked up by the state tourist
24 boards.

25 JUDGE McDADE: Mr. Jones, wouldn't you and

1 I be considered business travelers into the 50-mile
2 area, but not commuters?

3 MR. JONES: That is correct.

4 JUDGE McDADE: Wouldn't most business
5 travelers be in that, if not vast majority of business
6 travelers be in that same category?

7 MR. JONES: I would agree with that, yes.

8 JUDGE McDADE: So should they be deducted
9 somehow from Dr. Sheppard's commuter calculation?

10 MR. JONES: No, they should not. They are
11 -- I was attempting to say that they are included with
12 the transients that was a population of about 300,000
13 plus that was defined as including the business
14 travelers, tourists, and shoppers. And they're a
15 portion of that.

16 JUDGE McDADE: Is in any way a commuter's
17 loss of income captured in the SAMA analysis as a cost
18 of the severe accident?

19 MR. JONES: I'd like to defer that to Dr.
20 Bixler.

21 DR. BIXLER: They would not normally be
22 included as far as a loss of income since they reside
23 outside of the 50-mile zone, they wouldn't be
24 included. In fact, maybe a portion of them would have
25 some loss of income, although it could be that the

1 income continues, but they now work outside of the 50-
2 mile zone or something to that effect. So it's not
3 clear to me what fraction of the commuters who would
4 normally commute into the 50-mile zone would actually
5 lose employment as a result of an accident.

6 MR. TEAGARDEN: Your Honor, Grant
7 Teagarden for the Applicant. If I could augment Dr.
8 Bixler's response, because for individuals who are
9 commuting out of the region for their workplace, they
10 would be -- MACCS would be counting them as having
11 their disruption associated with their job when in
12 actuality their job occurs outside the 50-mile region.
13 So MACCS would be accruing costs for those
14 individuals, the outflow, which does not reflect their
15 situation. So another example of how the inflow and
16 the outflow need to be considered together just
17 because MACCS does not distinguish individuals by
18 their role within the 50-mile region.

19 JUDGE McDADE: But in the circumstances we
20 have here, wouldn't it be reasonable to assume that
21 the inflow of commuters into the 50-mile area far
22 exceeds the outflow of commuters out of the 50-mile
23 area?

24 MR. TEAGARDEN: Your Honor, Entergy has
25 examined that question and found that it does not

1 exceed it to the degree that you might anticipate.

2 Ms. Potts, would you --

3 MS. POTTS: Yes, Lori Potts for the
4 Applicant. In our testimony, there's Table 4 on page
5 47, that's Entergy 000003 if you want to go there.

6 MS. STOLLEY: Your Honor, Martha Stolley
7 for the Applicant. That's Entergy Exhibit 000016.

8 MS. POTTS: I'm sorry. I was actually
9 going to our testimony.

10 JUDGE McDADE: I'm sorry, is this your
11 direct testimony. You said Entergy 000003.

12 JUDGE WARDWELL: Page 47, you said?

13 MS. POTTS: Page 47. What this table
14 reflects is the analysis that we did using the county
15 to county worker flow data that Dr. Sheppard used and
16 accounting for where each person goes to work in or
17 out, coming into the region or leaving the region.
18 And you can see in the total there in the center that
19 there's only -- there is a net influx of commuters,
20 but only about 110,000.

21 You can see for some counties there are
22 actually more people who leave that county to go to
23 work than enter that county. The negative numbers are
24 the ones where there are more people leaving.

25 JUDGE McDADE: Okay, but on the more

1 people leaving, according to this chart, the way you
2 just described it, it would mean that a quarter of a
3 million more people commute out of Kings County and
4 out of the 50-mile area each day than commute in. I
5 mean is that realistic that there would be -- I mean
6 you start off with a population of less than 2.5
7 million for the county. It seems like out of that
8 population a significant number of people wouldn't be
9 employed at all because they're under 18. They're
10 over 70. They work inside the home. They're
11 students. They're unemployed. And then you would
12 have a significant percentage of the people in Kings
13 County who would live and work in Kings County and you
14 would have a significant percentage of the people in
15 Kings County who would commute into New York County or
16 into the Bronx.

17 I mean I guess I'm saying at first glance,
18 it appears to me that quarter of a million number
19 appears unrealistic. Am I misreading it?

20 MS. POTTS: No, Your Honor, but that's
21 what the census data shows from the people that said
22 they were -- live in Kings County, New York and work
23 elsewhere.

24 JUDGE WARDWELL: Let me ask this, if those
25 Kings County people for sake of argument let's assume

1 all 250,000 work in downtown New York City. Would
2 those numbers be reflected in the 1.355 million value
3 of New York, New York?

4 MS. POTTS: Yes, they would.

5 MR. RIGGS: Your Honor, this is Jerry
6 Riggs for the Applicant. In this data set, you can
7 see this is high resolution data set. Those numbers
8 are from people -- net numbers of coming into and
9 leaving the county and the 50-mile region.

10 JUDGE WARDWELL: And the 50-mile region?

11 MR. RIGGS: Yes, sir. So you get a net
12 total in and out of the 50-mile region of 110,663,
13 people coming into the region.

14 MR. BESSETTE: Your Honor, this is Paul
15 Bessette. I would refer you to the source of the data
16 as identified by Ms. Potts. The source of the data is
17 the rebuttal commuter analysis. It's the same data
18 that Dr. Sheppard relied on. And the title of the
19 columns are commuters into the 50-mile region.

20 JUDGE McDADE: I understand, Mr. Bessette.
21 All I was getting at is just in taking a quick look at
22 those numbers and just at first glance and perhaps
23 since I'm not testifying and I don't have the
24 knowledge to testify in any event, in a county like
25 Queens County or Kings County, and Kings County is

1 Brooklyn, correct? Okay. What percentage of the
2 total population would you expect to be employed?
3 Wouldn't it be about 40 percent of the people? Does
4 anyone have any knowledge in that area of what
5 percentage you would expect to be employed totally?

6 Again, like in Queens, you have 460,000
7 net commuters out of 2.6 million population. Does
8 anyone have any knowledge in that regard, sort of a
9 general estimate as to what percentage of an urban
10 population like Brooklyn or Queens would be employed,
11 taking out people who are retired, people who are
12 below working age, people who are students, people who
13 don't work outside the home, people who are
14 unemployed?

15 MR. RIGGS: Your Honor, this is Jerry
16 Riggs for the Applicant. We do use that data, but we
17 don't have it in front of us.

18 MR. JONES: Your Honor, this is Joe Jones
19 for the NRC. In development of the evacuation time
20 estimates that we do when we look at school data, for
21 instance, we find that just under 30 percent of the
22 public tends to be school-age children.

23 JUDGE McDADE: Okay, let me move on to
24 something else to the Staff. The NEI 05-01 --

25 MS. LIBERATORE: Your Honor, Kathryn

1 Liberatore for the State. Just a point of
2 clarification for the record. Kings County is
3 Brooklyn. I think there was just a verbal nod, so I
4 just wanted to make sure that that was clear on the
5 record.

6 JUDGE McDADE: We would hate to make a
7 finding of fact that moved Brooklyn.

8 (Laughter.)

9 I guess that's a way it can trump its
10 neighbor as well. Anyway, never mind. NEI 05-01, New
11 York Exhibit 000285, it recommends that transient
12 population included in site emergency plans be added
13 to the census for the SAMA.

14 Commuters are included for emergency
15 plans. Why aren't they included for the SAMA?

16 MR. JONES: This is Joe Jones for the NRC.
17 There's a good reason for that, Your Honor. In
18 developing an evacuation time estimate, we need to
19 understand how many vehicles may be on the road at any
20 given time over the course of many different
21 scenarios. And if we could look at Entergy Exhibit
22 000014, page 6-5, this might help describe this.

23 While that is being brought up, the reason
24 we need to look at this is we need to account for the
25 number of vehicles on the road in the event that an

1 evacuation is ordered. So we do a time roadway
2 capacity population estimate that identifies and as
3 this table comes up, that identifies the evacuation
4 time estimate for any of a given number of scenarios.
5 And this is the Indian Point evacuation time estimate.
6 And you can see on the lefthand side, there were 14
7 different scenarios.

8 Now for instance, Scenario 5 is a summer
9 midweek or weekend evening. We would have a different
10 number of commuters for that scenario. If you go
11 directly to the next page, we include commuters in the
12 employees column here. You can see there are only
13 three scenarios there, 6, 7, and 8, where 100 percent
14 of commuters are used. For Scenario 12 and Scenario
15 5, there are only 10 percent of the commuters included
16 in the analysis.

17 So we take the information and apply it in
18 a scenario-specific approach so that we can identify
19 under any of the given conditions for the scenarios
20 what the evacuation time might be. That provides
21 offsite response agencies the information at a level
22 that is useful to them. If we just blindly included
23 commuters in every scenario, an evening evacuation
24 time estimate would not be realistic. And it would
25 misinform the individuals that would be needing to

1 make an evacuation decision.

2 JUDGE McDADE: Okay, but is my
3 recollection of NEI 05-01, that's 287 at 13, correct
4 that it recommends that transient populations included
5 in the site emergency plan be added to the census for
6 the SAMA? Are you saying you disagree with that
7 insofar as it includes commuters?

8 MR. JONES: Well, it definitely says and
9 I have it here in front of me that the population
10 included in the site emergency plan and this data in
11 the evacuation time estimate is the population
12 included in the site emergency plan. It's a very
13 small subset of the SAMA area, since this only goes to
14 10 miles.

15 JUDGE McDADE: Okay, and the exhibits
16 000405, 000406, and 000407 and 000407 we talked about
17 before the NUREG/CR-7002 which you authored, that
18 talks about the NUREG for emergency planning does lump
19 commuters with tourists and business travelers, but
20 your testimony is that while in your opinion it is
21 appropriate for the emergency plan, it's not
22 appropriate for the SAMA analysis?

23 MR. JONES: That is correct, Your Honor.
24 I just realized that the entire 7002 was not an
25 exhibit, just up through about page 12. Otherwise, I

1 would point to the reference in that document where we
2 provide the descriptions of commuters in greater
3 detail. And it defines that or it explains that
4 commuters should be identified as appropriate for the
5 given scenario.

6 JUDGE McDADE: Okay, you reduced Dr.
7 Sheppard's estimate on commuters because they're not
8 present 24/7. Not knowing when an accident might
9 occur, one could estimate that 100 percent of
10 commuters or close thereto would be available or in
11 the area say at noon, almost none at 2 o'clock in the
12 morning. What number, if any, do you think should be
13 used in this regard?

14 MR. JONES: Again, I reduced that number
15 because commuters should not be assigned the full
16 allocation of costs associated with a permanent
17 resident. In my opinion, the cost with regard to
18 commuters, if we agree there are on the order of a
19 million commuters and they are in the area on the
20 order of 20 percent of the time, we have 200,000
21 commuters which is 1 percent of about 20 million
22 people in the SAMA area. And if we discount the fact
23 -- if we discount the decontamination costs and
24 relocation costs associated with those individuals and
25 just accounted for dose, even if we accounted for dose

1 of them coming back every day and working in the area,
2 it would be less than one percent of the SAMA
3 analysis.

4 JUDGE McDADE: I believe --

5 JUDGE WARDWELL: Just a point of
6 clarification before you leave that? Now are these
7 only the commuters that are outside the 50-mile area
8 coming in or are these all commuters or --

9 MR. JONES: When I use the number of about
10 a million, that does not account for any commuters
11 leaving the SAMA area and returning back. This is just
12 commuters coming into and working.

13 JUDGE WARDWELL: It doesn't include any
14 commuters within the 50-mile zone?

15 MR. JONES: Correct.

16 JUDGE WARDWELL: And Entergy, is that what
17 you used in your SAMA analysis, what Mr. Jones just
18 described? Is that what you -- oh, no. You just did
19 that for sensitivity.

20 MR. JONES: Correct.

21 JUDGE WARDWELL: You did not use any
22 commuters, is that correct, Entergy?

23 MR. TEAGARDEN: Your Honor, we did not
24 incorporate commuters specifically. However, we
25 incorporated transients throughout the whole 50-mile

1 region.

2 One point of clarification, it's been
3 mentioned, but may not have been highlighted is that
4 the NEI guidance specifies including transients that
5 are included in the site emergency plan. The site
6 emergency plan goes to a distance of ten miles.

7 What Entergy uses were transients for the
8 full 50-mile region from available state data. And
9 the number of individuals they included is a factor of
10 two higher than what would have been included had they
11 simply approached the commuters for the ten-mile
12 region with other transients from the emergency plan.

13 So Entergy had collected available data
14 for the whole 50-mile region and elected to use that
15 data, recognizing that it was conservative in regards
16 to transients.

17 MR. JONES: And Your Honor, if I could
18 just clarify one other item with regard to this NUREG-
19 7002. As I had mentioned earlier when asked by Judge
20 Kennedy whether this was guidance for SAMA analysis,
21 I specifically identified that it is not.

22 JUDGE WARDWELL: Back to Entergy. Can you
23 state the rationale for why business travelers are
24 considered different than commuters in your opinion?
25 And I don't care who elects to answer that question.

1 MR. TEAGARDEN: Your Honor, the business
2 traveler data was collected with a view towards hotel
3 occupancy and things of that nature. So it was part
4 of the data set.

5 JUDGE WARDWELL: I wasn't asking how it
6 was collected. I was asking why if you include
7 business travelers wouldn't the same rationale pretty
8 much hold for commuters or at least some fraction
9 thereof of those commuters from a philosophical
10 standpoint? And I'm speaking now of commuters outside
11 the 50-mile -- whenever I use the phrase commuters,
12 I'm only referring to those outside the 50-mile zone.

13 MS. POTTS: Could you rephrase that
14 question? This is Lori Potts for Applicant.

15 JUDGE WARDWELL: Probably not.

16 MS. POTTS: I'm not sure what you're
17 asking.

18 JUDGE WARDWELL: I'm asking if business
19 travelers are incorporated into a SAMA analysis which
20 you have done, correct?

21 MS. POTTS: Yes.

22 JUDGE WARDWELL: Then why isn't it
23 rational to also include commuters outside the 50-mile
24 zone at least in some fraction of the time that
25 they're here?

1 MS. POTTS: Well, again, as we have stated
2 before, the SAMA analysis accounts for each person
3 that you add as a permanent resident. So it accounts
4 for all those economic costs for every person that you
5 add. By including the tourists and business travelers
6 from the state tourism data, we included some 349,000
7 people and assigned a residence to them within the
8 region.

9 If we had included the commuters that are
10 listed in the evacuation time estimate study, as
11 recommended, we would have only included about -- we
12 would have only added about 160,000 people to the
13 analysis. So what we have done is conservative.

14 The SAMA analysis doesn't know who is a
15 commuter and who is a business traveler and who is a
16 permanent resident if they're all permanent residents.

17 JUDGE McDADE: You lost me there for a
18 moment. Can you just repeat that analysis right at
19 the end? I thought I heard that you included a few
20 hundred thousand people in the -- as transients, but
21 that if you included commuters you'd be talking about
22 100,000. Wouldn't you be talking about 1.2 million as
23 opposed to 300,000?

24 MS. POTTS: Sir, what I meant was if we
25 had included the transients and employees that are in

1 the evacuation time estimate study as recommended in
2 the guidance, that would only be about 160,000 people,
3 the 10-mile number of people.

4 JUDGE McDADE: Okay, so what you're saying
5 is and correct me if I'm wrong here because this is
6 what I'm hearing, so I want to make sure it's the same
7 thing that you're saying, is you have built
8 conservatism in because the guidance only requires you
9 to consider the immediate 10-mile zone around the
10 facility. Instead, you considered the 50-mile zone
11 around the facility for transients and therefore one,
12 you have almost three times as many transients; and
13 two, those transients are, if anything, over
14 represented because all of the costs of a permanent
15 resident are attributed to them, whereas they actually
16 only are responsible for a significantly smaller
17 percentage of that overall cost.

18 MS. POTTS: That's correct.

19 JUDGE McDADE: I want to make sure what
20 I'm hearing is what you're saying, there's no
21 disconnect there.

22 MS. POTTS: Correct.

23 JUDGE WARDWELL: And now what I'm asking
24 is not how much conservatism have you built in, but
25 the way I would deduce the answer to my question --

1 JUDGE McDADE: I was rephrasing her
2 answer, not your question.

3 (Laughter.)

4 JUDGE WARDWELL: If I was to deduce your
5 statement as a response to my question, I would word
6 it this way, that -- I don't know how I'd -- I had it,
7 but I lost it. I apologize. I'll just ask my
8 question again to someone else.

9 Mr. Teagarden, does NEI define transient?

10 MR. TEAGARDEN: NEI-0501 does not
11 specifically define transient.

12 JUDGE WARDWELL: In Entergy's analysis,
13 you have used business travelers and tourists as
14 transients.

15 MR. TEAGARDEN: That's correct.

16 JUDGE WARDWELL: With that same rationale
17 that you use those two as transients, why have you not
18 used commuters in some fashion? Because the same
19 types of conservatism exists with those. You have
20 some concern. The same problems with -- you have the
21 same problems associated with the facts that yes,
22 you're assigning costs to those business travelers and
23 tourists as residents. Well, fine. Why aren't you
24 applying that same rationale to commuters or vice
25 versa? Why don't you draw the line at only business

1 travelers and not the tourists and commuters? Why did
2 you draw the line when you drew the line?

3 MR. TEAGARDEN: That data was developed
4 for multiple purposes, the 50-mile data for the
5 tourist segments, I'm sorry for the transient
6 segments, tourists and business travelers. So that
7 was a readily available set of data that bounded by a
8 factor of two or more the data that could have been
9 used had a stricter or application of the NEI-0501
10 guidance used.

11 Entergy could have added additional
12 conservatism by adding commuters into the 50-mile
13 region, understanding that MACCS misrepresents their
14 contribution. But at some point, as it's been
15 discussed, SAMA analysis is intended to be a best
16 estimate analysis. Entergy has included several
17 conservatisms going to the Year 2035 which even
18 exceeds the life-extension date for Indian Point Plant
19 2 by including the transients for the full 50-mile
20 region. And that was judged to be more than
21 sufficient level of conservatism to be included in the
22 analysis.

23 JUDGE WARDWELL: And is there any
24 indication that that was a true judgment of a
25 conscientious decision mechanism when first developing

1 this, that you actually did look at the commuters and
2 say no, we're not, or was this just an oversight or
3 something that hasn't been done before until it was
4 brought to your attention?

5 MS. POTTS: Lori Potts for the Applicant.
6 I don't believe that that rationale is written down,
7 but that certainly is what was in our mind.

8 JUDGE WARDWELL: Thank you.

9 JUDGE McDADE: Dr. Sheppard, does your
10 analysis take into consideration at all where within
11 the 50-mile zone commuters are going?

12 DR. SHEPPARD: It does at the county
13 level. So the data that I have available from the
14 Census Bureau provides information on which county is
15 the destination of their commuter journey. But below
16 that, I have no information. So I don't take separate
17 account at a sub-county level.

18 JUDGE McDADE: Would it be accurate that
19 the vast majority of the commuters are going to the
20 periphery of the 50-mile zone, such as New York
21 County?

22 DR. SHEPPARD: That strikes me as not an
23 unreasonable hypothesis. However, many of them will
24 also pass through other portions of the 50-mile zone.
25 So in an ideal world, if we had unlimited time and

1 resources to conduct this analysis, we'd probably want
2 to combine not only the commuter destinations, but
3 also the primary transient route so that we could
4 ascertain what portions of the -- what grids, what
5 portions of the 50-mile zone they pass through. That
6 would be doable. I haven't undertaken such an
7 analysis.

8 JUDGE McDADE: But a very significant
9 percentage of the people commuting into Manhattan from
10 outside the 50-mile zone would be commuting from North
11 Jersey, Long Island, and eastern Connecticut.

12 DR. SHEPPARD: That's correct.

13 JUDGE McDADE: So they wouldn't be going
14 towards the epicenter of the accident.

15 DR. SHEPPARD: That's right.

16 JUDGE McDADE: To the Staff or Entergy,
17 there's a significant percentage of people who commute
18 from this area down to New York City to Manhattan, I
19 would assume. I believe that your testimony indicated
20 that there's about 170,000 commuters from the vicinity
21 of the plant into New York City.

22 Is there any way to calculate the
23 difference in the dose that they would receive by
24 staying in the Peekskill area as opposed to moving
25 down to the New York area, New York City?

1 MR. JONES: This is Joe Jones with Staff.

2 The MACCS code will not account for that. I would
3 imagine that Dr. Bixler could do a hand calculation of
4 some sort, but it is not accounted for in the
5 analysis. So in that example, those individuals and
6 it is about 170,000, they are modeled as getting a
7 greater dose than they likely would receive.

8 JUDGE McDADE: So there's no change in the
9 SAMA analysis to reflect the fact that during a
10 significant portion of the day, maybe a third of their
11 time is spent away from the site of the accident?

12 MR. JONES: That is correct.

13 JUDGE KENNEDY: This is Judge Kennedy. It
14 makes me wonder and it's maybe even stated, the
15 transient population, how is it distributed within or
16 is it distributed around the 50-mile region? Is there
17 any attempt to place the transient population in
18 different grid elements?

19 MR. RIGGS: Your Honor, this is Jerry
20 Riggs for the Applicant. When we get the data, we
21 -- the data comes in state-wide data, so it's
22 distributed evenly for -- distributed evenly over the
23 entire state. Then we place that information into the
24 sectors.

25 JUDGE KENNEDY: And how is it placed in

1 the sectors?

2 MR. RIGGS: Again, by area weighting.

3 JUDGE KENNEDY: Area weighting?

4 JUDGE WARDWELL: I assume that means by
5 square footage?

6 MR. RIGGS: Yes.

7 JUDGE WARDWELL: Or square miles.

8 JUDGE KENNEDY: And the transient
9 population that you're speaking of in this case would
10 be tourists plus business travelers?

11 MR. RIGGS: It's business travelers and
12 visitors. So tourists would be included.

13 JUDGE KENNEDY: Is visitors a new category
14 here? I was pretty good with tourists and business
15 travelers. Are visitors --

16 MR. RIGGS: Let's keep it at that then.
17 It's sufficient.

18 JUDGE KENNEDY: We can stay with that if
19 that's an accurate representation of the transient
20 population. What constitutes -- let's try it
21 differently. Maybe Mr. Riggs, what constitutes
22 transient population?

23 MR. RIGGS: According to the data, it's
24 business travelers and visitors.

25 JUDGE KENNEDY: Are visitors commuters?

1 MR. RIGGS: No, they are not. They would
2 be people coming in for shopping or entertainment,
3 people visiting hotels that aren't business travelers.
4 There's not a real clear division on any of that in
5 the data.

6 JUDGE KENNEDY: And that's based on
7 statewide data?

8 MR. RIGGS: From the tourism bureaus, yes.

9 JUDGE WARDWELL: And you proportionate it
10 strictly by the area of the various sectors?

11 MR. RIGGS: That's correct. It's by area.

12 JUDGE WARDWELL: So a given square mile in
13 Tarrytown would see the same number of transients as
14 a square area in Manhattan?

15 MR. RIGGS: Well, to make it clear, in our
16 report we've got tourism data. In New York's case, in
17 particular, from the New York MSA and then the State
18 of New York. So we were able to glean out a little
19 bit more resolution out of that data set so I'd have
20 to go into it and review it to find out if Tarrytown
21 is in the New York MSA to answer that question. So
22 the answer to your question is I'm not sure. I'd have
23 to look into it further.

24 JUDGE WARDWELL: So the answer to your
25 previous question is you're not sure that it's

1 necessarily done by area. It may have some fine
2 tuning associated with it?

3 MR. RIGGS: There is fine tuning, but
4 regardless, both of these are by area.

5 JUDGE WARDWELL: What is MSA?

6 MR. RIGGS: Metropolitan Statistical Area.
7 It's -- there's different geographies that things are
8 broken down into and it's a large geography that
9 incorporates much of New York City.

10 JUDGE KENNEDY: This is Judge Kennedy,
11 again. I'm changing the subject slightly, but it's
12 been stuck in the back of my head. This may not be
13 the right time to ask it, but in the context of having
14 this discussion about commuters, there was discussion
15 about conservative analyses, best estimate analyses,
16 and that when you net it all out, it may not be
17 important to consider commuters because there's some
18 sort of conservative assessment that at least led to
19 a judgment, including commuters in this calculation
20 may not be appropriate.

21 The question is is there something that
22 you can point us to that could help us understand this
23 judgment that was done on what's conservative, what's
24 best estimate?

25 Is there -- where do we want to be

1 looking? I mean what exhibit that's in the evidence
2 here would help us understand this better? I'm sort
3 of getting confused as to what's best estimate, what's
4 conservative, and what takes care of the commuters, if
5 you will, if it does?

6 Anybody? I can restate the question. I'm
7 really trying to understand where this conservatism is
8 that I'm understanding is what's taking care of the
9 commuter population so that it may not be a
10 significant factor. And if I didn't hear it that way,
11 maybe it's this opportunity to restate that position.

12 I think, Ms. Potts, I think that's what I
13 was hearing from what you were saying is that there's
14 conservative numbers. There's some best estimate, but
15 at the end of the day, there's conservatism in here
16 that makes us less concerned about the commuter
17 population.

18 MR. JONES: Your Honor, this is Joe Jones
19 with Staff. And there are a number of areas where
20 conservatism appears and I would start as Ms. Potts
21 said earlier that the populations are projected to the
22 end of the life. There is a conservatism in that we
23 have tracked the data point that shows the 2010
24 population is about 2 percent greater than had been
25 projected. There is a conservatism with regard to

1 business travelers and maybe I can clear that up a
2 little bit as to why it may be more appropriate to
3 model them than commuters because we do know that
4 business travelers stay overnight. That's how we
5 define them. Whether or not it's the same business
6 traveler that comes back isn't important. What's
7 important is the assumption is that hotel will be
8 full. So the dose is accrued for a resident being in
9 there or as a resident.

10 Now it's conservative in the sense that
11 we're also accounting for decontamination costs of the
12 business traveler's home and he does not live here,
13 whereas a commuter is only in the area for a small
14 period of the time.

15 And lastly, another conservative item is
16 that when Entergy included the transient data which
17 was described as visitors and business travelers, as
18 Dr. Sheppard pointed out in his testimony, they could
19 have culled out the daily visitors. They could have
20 separated those and maybe said we don't need to count
21 those because they're only in the area a percentage of
22 the time, but they did not. They kept them in that
23 total and included them as though they were residents.
24 So there again, we've got another population subgroup
25 that is treated as residents that do not live within

1 the SAMA area.

2 So there are many areas within the
3 analyses where you see this arise.

4 JUDGE KENNEDY: I mean I guess what I'm
5 hearing is that there's a number of places where
6 conservatism has been built into the analysis, but I
7 didn't quite hear an assessment of the contribution
8 that commuters could play to the overall either dose
9 calculation or cost calculation -- offsite economic
10 cost risk calculation. Is there such an estimate that
11 can be pointed to in this proceeding?

12 MR. JONES: It's conservative compared to
13 what -- and I guess that's what I'm struggling with.
14 I understand that you feel something is conservative
15 but I'm trying to get a measure of is there sufficient
16 conservatism that the issue of commuters and
17 estimating the commuters or accounting for them in
18 some fashion has been taken care of.

19 MR. JONES: I can only point to a portion
20 of my testimony where I identified that I believed
21 commuters would represent less than one percent effect
22 on the SAMA analysis. That was based on the fact that
23 if we recognized there may be about one million
24 commuters, not accounting for commuters that leave the
25 SAMA area, and if we account for them coming into the

1 SAMA area for about 20 percent of the time, that takes
2 into account weekends, holidays, sick leave, other
3 reasons they may not come in to work.

4 So we have about 20 percent of a million
5 which if you tried to analyze that number as a
6 resident, that would be 200,000 residents which is
7 approximately 1 percent of the 20 million population
8 in the SAMA area. And again, if we tried to count
9 them as residents and included decontamination costs
10 that would still be conservative, even at one percent.

11 JUDGE KENNEDY: That one percent isn't the
12 bottom line of the -- the difference in the bottom
13 line of the SAMA analysis. It's more of the
14 difference in the relative populations. Is that
15 correct, as I just heard you? Or did you rerun the
16 SAMA analysis to see the effect on the bottom line?

17 MR. JONES: No, we did not rerun the SAMA
18 analysis.

19 DR. GHOSH: If I could just add, this is
20 Tina Ghosh from the Staff. The question came up
21 earlier of possibly undercounting the population dose
22 to these commuters who might still be coming into work
23 after an accident. The population dose risk is, I
24 believe, on the order of 50 percent of the total
25 economic risk and the OECR or the Off-Site Economic

1 Cost Risk which accounts for things like
2 decontamination, lost income and so is 50 to 55
3 percent for Indian Point 2 and 3.

4 So I think there again we may be
5 undercounting some of the population dose for that 40
6 percent term. But for those transients and others
7 that are assigned to the 100 percent living within
8 that 50-mile region, we're over accounting a lot of
9 that 50 to 55 percent of that cost term, just to put
10 it in perspective in terms of the total effect.

11 MR. TEAGARDEN: Your Honor, Grant
12 Teagarden for the Applicant. If I may just augment
13 one item that Mr. Jones, I don't think specifically
14 articulated, but which we had articulated is that by
15 use of the transients for the full 50 miles, we have
16 more than a factor of 2 above what we would have had
17 we only included transients and commuters within the
18 10 miles. So there is a factor of 2 higher related to
19 the population included within the 50-mile analysis
20 region.

21 JUDGE McDADE: We have been using commuter
22 data based on a typical business day in this area. If
23 there were an accident that resulted in a release of
24 radionuclides at Buchanan, it would be several hours
25 before that plume, assuming the winds were going

1 southerly, would reach Manhattan.

2 Is there any data available where we could
3 calculate the number of commuters who would be
4 diminished from average based on that? In other
5 words, either commuters already in the city who would
6 leave Manhattan before the plume would reach there and
7 therefore they would get no dose, or depending on the
8 time of day commuters who were not yet within the 50-
9 mile area, but who would remain out of the area
10 because of the reports of the accident.

11 Is there any data anywhere we could look
12 at to be able to estimate that change in the commuter
13 population with any degree of accuracy? Let me ask
14 Dr. Sheppard, is there anything that you can think of?

15 DR. SHEPPARD: Yes, there is, Your Honor.
16 The Census Public Use Microdata would be capable of
17 providing those types of estimates because they
18 include for a subset of recipients of census survey
19 questionnaires information about obviously where they
20 reside, where they are commuting to if they work and
21 commute to work, and it includes duration of the
22 commuting journey and the time that they depart the
23 house. So using those data, one could come up with in
24 my judgment a pretty reasonable estimate to answer the
25 question you're asking.

1 JUDGE McDADE: Okay, I guess I'm not
2 really sure how that data would supply it. What I'm
3 trying to get at is I'm sitting at home in Newark, New
4 Jersey. I'm getting ready to go to work. I hear that
5 there is an accident at Buchanan, New York at Indian
6 Point and that there is a radionuclide release and
7 that release is heading south. I may find that I
8 don't need to go to work that day.

9 (Laughter.)

10 DR. SHEPPARD: Or don't want to.

11 JUDGE McDADE: And the same thing if I'm
12 already in work, again, depending on the time of day
13 of the accident. If I'm in work, I might decide I
14 want to go home early and get out of town before the
15 show.

16 Is there any data that I could look to on
17 how to calculate, in other words, if I'm assuming
18 there's 900,000 and something tourists there on an
19 average day, is there any way I can calculate with any
20 degree of accuracy, a reasonable estimate of how many
21 fewer tourists there would be in the event there's a
22 public notice of this accident?

23 DR. SHEPPARD: In my experience, for
24 tourists and shoppers, it would be a more difficult
25 question to answer. So the current analysis attempts

1 to include tourists and shoppers and would have less
2 direct information about what times shopping journeys
3 commence, how far they go. There's maybe some
4 information about that. But for journeys to work, for
5 the commuting journey, we do have the data that I
6 mentioned previously that could be drawn upon.

7 Obviously, the answer to the question
8 you're asking is a time of day dependent one, right?
9 So the kind of analysis one could imagine undertaking
10 would be to say if the accident and public
11 announcement occurs between the hours of six a.m. and
12 nine a.m., we estimate this, between nine a.m. and
13 noon, and so on and so forth. So one could come up
14 with that. But obviously it would take time and
15 resources.

16 MR. JONES: Your Honor, one thing we did
17 look at was the average wind speed and if you assumed
18 a kind of worst case situation where the reactor had
19 an accident and there was -- there would be notice
20 before it actually released, but from the time the
21 reactor started to release, you're looking at five
22 mile an hour wind speed, about an average of that. So
23 you're looking at six to ten hours to get down into
24 the area around Manhattan. So there's a very small
25 window of opportunity for people not to be informed

1 quite honestly. Something would have to happen in the
2 wee hours of the morning and individuals not turn on
3 their television sets, not to be aware of something
4 that is going on. There's considerable time for a
5 plume to travel directly if that happened to be the
6 case.

7 JUDGE McDADE: This is a hypothetical.
8 Assume for the sake of argument that we agreed that
9 consumers should be -- commuters should be counted in
10 some way and that on a typical day, there's about
11 900,000 of them in the 50-mile radius that wouldn't --
12 is there any way we could estimate how many would be
13 there under this circumstance? Is there any kind of
14 accident analysis that is out there that looks at
15 accidents, any kind of accident, whether it be a --
16 not a nuclear accident, but any kind of accident like
17 this where we could estimate the how many fewer
18 commuters it would be?

19 Mr. Jones?

20 MR. JONES: Yes, we've done -- I've been
21 involved with many evacuation studies where we've
22 looked at populations that are evacuated under
23 technological hazards such as chemical spills,
24 hurricanes that -- where you have a few days' notice.
25 And there really is no data that I'm aware of where

1 people have either evacuated or not reported to work
2 at distances of 30 to 40 or 50 miles away from the
3 hazard. I have not seen anything of that nature.

4 JUDGE McDADE: Assuming for the sake of
5 argument that we were to accept Dr. Sheppard's 900,000
6 and something commuter figure, and they were
7 calculated in as permanent residents, just adding to
8 the MACCS code, would that make any difference on any
9 of the SAMAs? Would any of the SAMAs that you have
10 evaluated become cost effective under that scenario?
11 Has Entergy looked at that close enough to be able to
12 make that determination?

13 MR. TEAGARDEN: Yes, Your Honor. Grant
14 Teagarden for the Applicant. We have looked at that
15 with two sensitivity studies that we performed where
16 for the first sensitivity study we included the
17 undercount data at 100 percent, the census undercount
18 data that's alleged in this contention. And we
19 included the commuter data with a 50 percent reduction
20 factor, just purely to address the fact that commuters
21 aren't in the region 24 hours a day. There's all the
22 additional issues of they don't have property in the
23 region, homes, and such.

24 When we looked at the values, we would
25 increase the population, I believe it was 3.8 percent

1 and for the MACCS values when we reran that, we saw
2 that the population dose risk increased 3.1 percent
3 and off-site cost risks increased 3.2 percent. And
4 that's well below the realm that would be needed to
5 impact the next potentially cost beneficial SAMA.

6 So including 100 percent of the
7 undercounts and 50 percent of the commuters in the 50-
8 mile region proposed by Dr. Sheppard, and that value
9 is what we basically expected. Because these two
10 metrics from MACCS that are used in the SAMA analysis
11 basically scale with population. It's population dose
12 risk, so how many individuals are being subjected to
13 exposure and attributing accounting for dose. And the
14 cost risk as we've discussed, many of the factors are
15 per capita based factors for economic impacts. So it
16 is reasonable that as you add population, you would
17 see these two metrics increase somewhat linearly with
18 population.

19 We performed a second sensitivity case,
20 not because we agree with any of the proposed changes
21 to the data, but we performed a second sensitivity
22 case where we included 100 percent of the commuters,
23 100 percent of the census undercount and we also even
24 took the three counties that were discussed where they
25 have peak populations that occurred prior to the year

1 2035. We took those. We just used their peak values
2 as a surrogate for the year 2035.

3 We found -- I'll out that. We increased
4 the total population -- let's see -- approximately 6.7
5 percent and the population dose risk increased
6 approximately 6.7 percent and the cost risk increased
7 approximately 6.8 percent.

8 And that still falls short of what would
9 be necessary to impact the next cost beneficial --
10 essentially cost beneficial SAMA. So even if it was
11 agreed that the postulated values were appropriate and
12 Entergy does not believe that they are appropriate,
13 but if they were postulated as such that does not
14 impact the conclusions of the SAMA analysis.

15 MS. STOLLEY: Martha Stolley for Entergy.
16 At this time we would like to offer the sensitivity
17 analysis No. 2 into evidence as Entergy No. 000589.

18 (Whereupon, the above-referred to
19 document was marked as Exhibit ENT000589
20 for identification.)

21 JUDGE McDADE: Does New York have an
22 objection?

23 MR. SIPOS: Your Honor, John Sipos for the
24 State of New York. This is one of the documents that
25 was recently produced and disclosed to the state and

1 was the subject of the letter that we wrote last
2 night. It was very recently produced, but at this
3 time, the state does not have an objection to the
4 introduction of this exhibit.

5 JUDGE McDADE: We will receive Exhibit
6 000589, subject to a later objection, recognizing the
7 late time when you received it. So if at a later
8 point in time you believe it should be objected to and
9 excluded, you'd have an opportunity to raise the
10 objection at that time.

11 Also, Entergy should replace its current
12 exhibit list, have a new exhibit list which adds
13 000589 to the list.

14 (The document, having been marked
15 previously for identification as Exhibit
16 ENT000589, was received in evidence.)

17 MR. BESSETTE: Yes, Your Honor.

18 JUDGE McDADE: Okay, at this point in time
19 I think the Board is basically satisfied itself that
20 we understand the testimony and the exhibits with
21 regard to New York 000016. Before we break, let me
22 ask first of all, New York, based on the evidence
23 that's been submitted, the questions of the Board,
24 does New York desire to interrogate any of these
25 witnesses?

1 MR. SIPOS: Yes, Your Honor. John Sipos
2 for the State. The State would request approximately
3 -- the State would request 15 minutes for us to
4 collect our notes and start that process.

5 JUDGE McDADE: Entergy? Or would you like
6 to wait and find out what New York does first before
7 you decide?

8 MR. BESSETTE: Your Honor, if New York is
9 going, we'll go. I think that's kind of a -- our
10 answer. We do have to remind the Board that Dr.
11 O'Kula does have to depart at 1 p.m. today, but I do
12 think the other panel members are available to address
13 any answers.

14 JUDGE McDADE: Okay, and as far as Dr.
15 O'Kula, although he was a very active witness in
16 previous sessions, he seemed to stay under the radar
17 today. So I'm assuming that New York does not have
18 any clarifying questions with regard to Dr. O'Kula?

19 MR. SIPOS: That would be correct, Your
20 Honor.

21 JUDGE McDADE: So if we take a break now
22 until a quarter of 1, Dr. O'Kula can leave? New York
23 has no objection to that?

24 MR. SIPOS: That is correct, Your Honor.

25 JUDGE McDADE: And Entergy certainly has

1 none?

2 MR. BESSETTE: No, Your Honor. Thank you
3 for your consideration.

4 JUDGE McDADE: Okay. Does Riverkeeper?

5 MR. MUSEGAAS: No, Your Honor.

6 JUDGE McDADE: Clearwater?

7 MR. WEBSTER: No, Your Honor.

8 JUDGE McDADE: The Staff?

9 MR. HARRIS: No, Your Honor.

10 JUDGE McDADE: Okay, fine. And I take it
11 the Staff would like to reserve the opportunity to
12 interrogate these witnesses until after you've heard
13 what New York and Entergy says?

14 MR. HARRIS: Yes, you're correct, Your
15 Honor.

16 JUDGE McDADE: Okay. Let us try to keep
17 it very brief. This testimony has gone a lot quicker
18 certainly than the other two that we have had and
19 hopefully doesn't need all that much clarification.
20 See if we can, when we come back, keep the round of
21 interrogation to somewhere between all three parties
22 30 to 40 minutes.

23 Mr. Sipos?

24 MR. SIPOS: And Your Honor, just following
25 Mr. Bessette's notation about Dr. O'Kula, as we set

1 out in our letter last night, Dr. Sheppard also has
2 commitments. And as we say I'm looking forward to 17
3 and the State is willing to stay -- the State and its
4 attorneys and its expert are willing to stay as late
5 as necessary tonight.

6 JUDGE McDADE: We have the room until
7 Wednesday.

8 (Laughter.)

9 In that regard, we don't have to break it
10 down tonight. So it is certainly our intent to try to
11 finish up 17 this afternoon, if at all possible and if
12 it means going a little bit late, I think it would be
13 the Board's preference as well to go a little bit
14 late.

15 MR. SIPOS: Thank you, Your Honor.

16 JUDGE McDADE: We'll stand in recess to
17 12:45.

18 (Off the record.)

19 JUDGE McDADE: Is New York ready to
20 proceed?

21 MR. SIPOS: Yes, your Honor.

22 MS. LIBERATORE: Your Honor, it's Kathryn
23 Liberatore for the State of New York. I just have a
24 few clarification questions, and I will try to keep it
25 as short as possible.

1 Doctor Sheppard, does the site-specific
2 nature of the 50-mile radius surrounding Indian Point
3 inform your decision as to whether it's reasonable and
4 appropriate to consider commuters in the SAMA
5 analysis?

6 DR. SHEPPARD: Absolutely. This is a very
7 unique site, with few comparable sites around the
8 country. So I have taken specific account of the
9 structure of labor market flows, using census data,
10 just as I used census data to take specific account of
11 non-white and minority populations in making my
12 analysis of census undercount.

13 So this is a unique site, and I have taken
14 into account those site-specific characteristics.

15 MS. LIBERATORE: Thank you.

16 MS. HESLIN: Your Honors, this is Laura
17 Heslin from the State of New York. Dr. Sheppard, in
18 Entergy's second sensitivity analysis, they predicted
19 that the population of New York County will peak in
20 2020. Do you agree with that?

21 DR. SHEPPARD: I cannot say that I agree
22 with that. I've undertaken no separate study of when
23 the New York population, the New York County
24 population, or the three county populations that were
25 alleged to have -- that will peak.

1 I have undertaken no separate study in
2 this, but I am aware of studies undertaken by other
3 government agencies that hold contrary -- that have
4 put forward contradicting projections, including that
5 the population of New York County, for instance, will
6 not peak in the period between now and 2035.

7 MS. HESLIN: And what do you mean by "will
8 not peak?"

9 DR. SHEPPARD: I mean 2035 -- in these
10 forecasts, 2035 is actually the maximum population.
11 There isn't an intermediate year after which the
12 population declines.

13 MS. LIBERATORE: Kathryn Liberatore for
14 the State of New York. This next question is directed
15 to Dr. Bixler. In order to calculate the population
16 dose risk associated with only the commuter
17 population, couldn't you simply run the MACCS2 code
18 using only the commuter population, and use the
19 population dose risk from that run to calculate that
20 population dose risk associated with commuters?

21 DR. BIXLER: Yes, I think that would work.
22 That would be one way to do it.

23 DR. GHOSH: Could I clarify, though? But
24 MACCS would assume that those are people living at
25 their workplace, presumably.

1 DR. BIXLER: Yes, that's correct. The
2 population dose that would be calculated would assume
3 that they lived there 100 percent of the time, which
4 clearly that wouldn't be the case. But you would be
5 able to get a population dose for that population.
6 You'd just have to be careful, and realize that they
7 don't really reside there 100 percent of the time.

8 MS. LIBERATORE: Thank you. This question
9 is directed to Entergy, specifically to Entergy's
10 sensitivity analysis, disclosed on Friday, October
11 12th, that has been offered as an exhibit.

12 Isn't it true that Entergy has determined
13 that to render IP2 SAMA 025 cost-effective, its
14 benefit would only have to increase by 11 percent?

15 MS. POTTS: This is Lori Potts for the
16 applicant. Yes, with the current implementation cost
17 estimate, if we increased the benefit of SAMA IP2 025
18 11 percent it would show potentially cost beneficial.
19 Yes.

20 MS. LIBERATORE: I'd like to pose a
21 hypothetical. For the purposes of this hypothetical,
22 please assume that population dose risk remains the
23 same and off-site economic cost risk increases by a
24 factor of three to seven. In this hypothetical, would
25 IP2 SAMA 025 become cost-effective?

1 MS. POTTS: Lori Potts for the applicant
2 again. In that hypothetical, I do not know the answer
3 to that question. I would like to state that
4 increasing the OECR by three percent does not equate
5 to increasing the benefit of any particular SAMA by
6 three percent.

7 MS. LIBERATORE: I believe you may have
8 misunderstood my question. In my hypothetical, I
9 would like you to assume that population dose risk
10 remains the same, and OECR increases by a factor of
11 three to seven, not three to seven percent.

12 MS. POTTS: I'm sorry. As I stated,
13 increasing the OECR by a factor of three does not
14 equate to increasing the benefit of any particular
15 SAMA by a factor of three.

16 MS. LIBERATORE: What would increasing the
17 OECR by a factor of three translate to as far as the
18 benefit of a given SAMA?

19 MS. POTTS: It is SAMA-specific.

20 MS. LIBERATORE: Let's focus on IP2 SAMA
21 025, since it appears that you've done some analysis
22 on that. What would an increase in OECR by a factor
23 of three translate into for IP2 SAMA 025?

24 MS. POTTS: I don't know at this point,
25 without looking into it.

1 MS. LIBERATORE: Does anyone else on the
2 panel? Can anyone else on the panel respond?

3 MR. TEAGARDEN: Well, let me augment Ms.
4 Potts' answer. The factor of three increase that's
5 being hypothetically postulated could be coming from
6 various means. And you don't know how those various
7 means are being incorporated into any specific SAMA
8 candidate evaluation, whether this is being the result
9 of a frequency change, a consequence change. And each
10 SAMA candidate has its own unique footprint of how it
11 impacts the risk. So it's something that would need
12 to be evaluated.

13 JUDGE McDADE: Mr. Teagarden, are you
14 saying that you wouldn't be able to estimate it
15 without actually running the calculation for that
16 particular SAMA, which is not something you could do
17 here in your head?

18 MR. TEAGARDEN: Yes, your Honor. It could
19 be dependant -- it's dependant upon how the risk is
20 being increased, and how that relates to the
21 mitigation that that SAMA candidate is providing.

22 DR. GHOSH: Could I add something? This
23 is Tina Ghosh of the staff. That particular SAMA
24 candidate mitigates steam generator rupture problems
25 that might occur during a severe accident.

1 And there are actually potentially cost-
2 beneficial SAMAs that are already in the FSEIS listed
3 to mitigate exactly those types of accidents, and SAMA
4 025 would be a more costly way to mitigate those same
5 types of accidents for which these other SAMA
6 candidates are already identified. Just for some
7 perspective.

8 MS. LIBERATORE: Going back to my
9 hypothetical, please assume that the increase in OECR
10 by a factor of three to seven is caused by an increase
11 in population. Can you now answer my question as to
12 what effect this OECR increase would have on the cost-
13 beneficial-ness of IP2 SAMA 025?

14 MS. POTTS: If the increase in OECR was
15 due to an increase in population, the population dose
16 risk would also increase. I can't do the other part
17 of your hypothetical, where you said it would not
18 change.

19 MR. SIPOS: Your Honor, John Sipos for the
20 State of New York. I'd like to ask Mr. Wilkie if he
21 could pull up Entergy Exhibit 000464, and specifically
22 the first page?

23 And could we go to the bottom of the page,
24 sir?

25 And my question is for Ms. Potts. Ms.

1 Potts, is it correct that the responsible engineer for
2 this document was Kou-John Hong?

3 MS. POTTS: Yes.

4 MR. SIPOS: And is it also correct that
5 the reviewer was M. Golshani?

6 MS. POTTS: That is also correct.

7 MR. SIPOS: And that the supervisor was C.
8 Yeh, Y-E-H?

9 MS. POTTS: Yes.

10 MR. SIPOS: Thank you. I have a question
11 for -- your Honor, I have no further questions.

12 JUDGE McDADE: Entergy?

13 MS. STOLLEY: For Entergy, Martha Stolley,
14 your Honors. Thank you. By Dr. Sheppard --

15 MR. SIPOS: Your Honor, could I just ask
16 a point of clarification? Is Entergy requesting the
17 opportunity to conduct cross or redirect?

18 JUDGE McDADE: They have, yes.

19 MR. SIPOS: Thank you.

20 MS. STOLLEY: Dr. Sheppard, in your
21 analysis regarding the census undercount, you rely
22 wholly on the September 2001 final report to Congress,
23 correct?

24 MS. LIBERATORE: Objection,
25 mischaracterizes the witness's testimony?

1 JUDGE McDADE: The witness is certainly
2 free to disagree with the statement. Would you repeat
3 your question?

4 MS. STOLLEY: Sure. Dr. Sheppard, in your
5 analysis regarding the census undercount and whether
6 that should be included in the SAMA analysis conducted
7 by Entergy, you rely, if not wholly than in major
8 part, on the September 2001 final report to Congress.
9 Is that correct?

10 DR. SHEPPARD: No, I don't agree that that
11 is correct. I reviewed a variety of reports on census
12 undercount, the problem's magnitude. Several of those
13 reports are cited in my report on this contention.

14 MS. STOLLEY: And that includes the
15 September 2001 final report to Congress. Is that
16 correct?

17 DR. SHEPPARD: It does include that.

18 MS. STOLLEY: And that, the final report
19 to Congress, is based on the A.C.E. -- I'll call it
20 the A.C.E. I report for lack of a better term. The
21 A.C.E. I analysis, which was conducted in March of
22 2001. Is that correct?

23 DR. SHEPPARD: That report is based on
24 A.C.E. I revisions.

25 MS. STOLLEY: And you're aware, of course,

1 of the A.C.E. Rev II analysis, right?

2 DR. SHEPPARD: I am.

3 MS. STOLLEY: And that was issued a full
4 two years later in March of 2003, is that correct?

5 DR. SHEPPARD: We could call it up and
6 verify it. I'll accept your word. I know it was
7 issued later.

8 MS. STOLLEY: And that was after about a
9 year, a full year of analysis of the A.C.E. I report
10 and the final report to Congress. Is that correct?

11 DR. SHEPPARD: That was after ongoing
12 research by Census Bureau researches on different ways
13 of estimating undercount.

14 MS. STOLLEY: Now, do you deny that the
15 A.C.E. Rev II report supersedes the A.C.E. Rev I
16 report?

17 DR. SHEPPARD: I think that that is a
18 mischaracterization.

19 MS. STOLLEY: Mr. Wilkie, could you please
20 call up Entergy Exhibit Number 000016?

21 Page 1?

22 Yes, the first paragraph. Could you
23 enhance the first paragraph? Thank you.

24 Dr. Sheppard, starting at the sentence
25 that says "The March 2001," could you please read

1 that? Out loud?

2 DR. SHEPPARD: Sure. "The March 2001
3 A.C.E. estimates of Census 2000 coverage were
4 determined to be unacceptable because A.C.E. failed to
5 measure a significant number of erroneous census
6 enumerations, and thus overstated the net undercount."

7 I would emphasize in that reading "The net
8 undercount."

9 MS. STOLLEY: Mr. Riggs, is there any
10 doubt in your mind that the A.C.E. I report was
11 superseded by the A.C.E. Rev II report?

12 MR. RIGGS: No.

13 MS. STOLLEY: And based on that, would it
14 be fair to say that the A.C.E. I report is not
15 reliable?

16 MR. RIGGS: The A.C.E. I report is not
17 reliable.

18 MS. STOLLEY: If you could pull up Entergy
19 Number 000018, please?

20 Page 2, please?

21 If you could pull up the first paragraph
22 underneath "Results of A.C.E. Revision 2?"

23 Dr. Sheppard, if you could please read out
24 loud the sentence beginning with "The results of
25 A.C.E. Rev II?"

1 DR. SHEPPARD: Yes, I see the one. You
2 mean the one that refers to the net undercount rather
3 than the undercount of minority populations?

4 MS. STOLLEY: I mean the sentence that
5 begins with "The results of A.C.E. Revision II."

6 DR. SHEPPARD: Oh, I see. "The results of
7 A.C.E. Revision II are substantially different from
8 those of March 2001, changing the net coverage of the
9 total household population from a net undercount of
10 1.18 percent to a net overcount of 0.49 percent."

11 That applies to the entire population, not
12 exclusively to the minority population.

13 MS. STOLLEY: And the overall population
14 was not, in fact, an undercount of 1.18 percent, as
15 A.C.E. Rev I reports stated, but in fact a net
16 overcount of 0.49 percent, as according to the A.C.E.
17 II report. Is that correct?

18 DR. SHEPPARD: You may recall from my
19 testimony earlier that there was, in the A.C.E.
20 Revision II, an estimate of an undercount of minority
21 population. You may also recall from my testimony or
22 my report that I applied the undercount numbers not to
23 the entire population, which these figures refer to,
24 but only to the minority population.

25 MS. STOLLEY: Dr. Sheppard, there is still

1 some question as to how you came up with the three
2 percent figure for the undercount, but my question to
3 you was "Isn't it true that the A.C.E. Rev II found a
4 net overcount of 0.49 percent and not a net undercount
5 of 1.18 percent?"

6 DR. SHEPPARD: For the entire population.

7 MS. STOLLEY: Is that true or not, Dr.
8 Sheppard?

9 MR. SIPOS: Objection, your Honor.

10 MS. LIBERATORE: Objection, asked and
11 answered.

12 JUDGE McDADE: The objection is overruled.
13 The question really wasn't answered. The question was
14 "Does the A.C.E. II reflect a net overcount of 0.49
15 percent," and a responsive answer to that is either
16 yes or no.

17 DR. SHEPPARD: Yes.

18 JUDGE McDADE: Okay. Do you have another
19 question?

20 MS. STOLLEY: Yes, your Honor. And in
21 fact, based on the A.C.E. Rev II -- actually, based on
22 either the A.C.E. Rev I or the A.C.E. Rev II, there
23 were no adjustments made to the census data. Isn't
24 that correct, Dr. Sheppard?

25 DR. SHEPPARD: The Census Bureau proposed

1 such adjustments. They were contested in court when
2 used for reapportionment purposes, and the court
3 decided the census should not apply those adjustments.

4 MS. STOLLEY: So as I asked, in fact --

5 DR. SHEPPARD: None were applied due to
6 the court order, not because of Census Bureau
7 recommendations.

8 MS. STOLLEY: There were no adjustments
9 made to the Census Bureau data for 2000. Is that
10 correct, Dr. Sheppard?

11 DR. SHEPPARD: That is correct.

12 JUDGE McDADE: That question was answered
13 by Dr. Sheppard, with an explanation.

14 MS. STOLLEY: Just a few more questions,
15 your Honor, for clarity's sake.

16 For Entergy, does MACCS2 differentiate
17 between Hispanics, Asian-Americans, African-Americans,
18 Caucasians, in any way?

19 MR. TEAGARDEN: No, it does not. A person
20 is a person, and is a resident.

21 MS. STOLLEY: And a person is a person and
22 is treated as a permanent resident, correct?

23 MR. TEAGARDEN: That's correct.

24 MS. STOLLEY: And in terms of the analysis
25 done by Entergy, just to clarify, the number that was

1 included as permanent residents for transients and
2 business travelers was about 349,000, is that correct?

3 MR. TEAGARDEN: That's correct.

4 MS. STOLLEY: And if Entergy had stuck
5 strictly to NEI 05-01 guidance in terms of calculating
6 the transient population and the non-resident employee
7 population within the 10-mile emergency planning zone,
8 that number would have been approximately 160,000, is
9 that correct?

10 MR. TEAGARDEN: That is correct.

11 MS. STOLLEY: So the numbers that Entergy
12 used, which were included as permanent residents as if
13 they lived there 24 hours a day, 365 or 66 days a
14 year, was more than twice as many as they would have
15 come up with if they had stuck to that 10-mile zone.
16 Is that correct?

17 MR. TEAGARDEN: That is correct.

18 MS. STOLLEY: Out of curiosity, Ms. Potts,
19 perhaps you can answer this. As far as you know,
20 other applicants for license renewals, do they use the
21 10-mile zone, or do they generally use the 50-mile
22 zone that Entergy used?

23 MS. POTTS: Most of the ones that I have
24 experienced have used the 50-mile zone, although
25 several other utilities -- that may be because they

1 were Entergy ones -- several other utilities that I
2 have done peer reviews on have used the 10-mile
3 information from their ETE, or their evacuation time
4 study.

5 MS. STOLLEY: Just a minute, your Honors.
6 Nothing further, your Honors. Thank you.

7 JUDGE McDADE: From the staff?

8 MR. HARRIS: Nothing further, your Honor.

9 JUDGE McDADE: Okay. That being said, we
10 are completed with contention 16. Thank you very much
11 to the witnesses. I know some of you are going to be
12 testifying this afternoon on New York 17. If we break
13 until 2:00 for lunch, is that adequate?

14 MR. SIPOS: Your Honor, it's a little
15 tight. Could we have until 2:10?

16 JUDGE McDADE: Okay. It's your witness
17 who wants to get out of here. We can break until
18 2:10. Entergy, is that enough time?

19 MR. SIPOS: Your Honor, we could go at
20 2:00.

21 MR. BESSETTE: 2:00 p.m. is fine for us,
22 your Honor.

23 JUDGE McDADE: Staff?

24 MR. HARRIS: 2:00 is fine for us, your
25 Honor.

1 JUDGE McDADE: Riverkeeper?

2 MR. MUSEGAAS: 2:00 is fine, thank you.

3 JUDGE McDADE: Clearwater?

4 MR. WEBSTER: Yes, that's fine, your
5 Honor. Thank you.

6 JUDGE McDADE: Okay. We're in recess
7 until 2:00. Thank you.

8 (Whereupon, the hearing in the above-
9 entitled matter went off the record at 1:09 p.m., and
10 resumed at 2:02 p.m.)

11 JUDGE McDADE: The hearing will come to
12 order. Mr. Sipos.

13 MR. SIPOS: Good afternoon, Your Honor,
14 John Sipos for the State of New York. Your Honors, I'd
15 like to introduce two colleagues of mine. To my left
16 first is Susan Taylor, Assistant Attorney General, and
17 to her left is Adam Solomon. I don't believe you have
18 seen them before in person.

19 JUDGE McDADE: Greetings. Welcome.

20 MS. TAYLOR: Thank you.

21 MR. SOLOMON: Thank you.

22 JUDGE McDADE: Mr. Sipos, we the first
23 thing this morning had raised various issues with
24 regard to the availability of Mr. Bradford. I had
25 raised various possibilities. What is the position of

1 the State of New York at this point as how you wish to
2 proceed?

3 MR. SIPOS: Your Honor, the parties have
4 consulted this morning during the lunch break, and one
5 proposal that the parties are collectively considering
6 is to go forward with Contention New York State 37 on
7 Wednesday with all the witnesses save for Mr.
8 Bradford. And then if it was acceptable to Your Honors
9 to locate a date that was convenient to Your Honors
10 and to NRC counsel, and Entergy counsel and their
11 witnesses and have Mr. Bradford come down to Rockville
12 for a shortened session at some date between the time
13 we break here and before the 10th of December mindful
14 of Your Honor's schedule, we would try to work around
15 that.

16 JUDGE McDADE: My -- and I'll hear from the
17 other parties, as well, but my first reaction to that
18 is not positive. One of the issues with that is if Mr.
19 Bradford testifies alone, what we've had basically
20 here is an opportunity for witnesses with opposing
21 views to hear what the witness has to say. And for us
22 after hearing the witness answer our questions be able
23 to turn to witnesses representing another party, and
24 in the short term get their perspective on it to make
25 sure that we truly understand both sides of the issue.

1 If we were going to do that and have Mr.
2 Bradford testify by himself, we as members of the
3 Board wouldn't have that opportunity. It would be
4 basically just asking questions of him based on his
5 direct testimony just seeking to clarify it, but we
6 wouldn't have the opportunity of gaining the insight
7 into the issue that the witnesses for the other
8 parties, Entergy and the Staff might have.

9 MR. SIPOS: And, Your Honor, I apologize
10 but I did not do an adequate job of explaining the
11 proposal. It would also -- Mr. Bradford would not be
12 in Rockville before Your Honors and the lawyers by
13 himself, but Entergy's experts and the NRC expert, Mr.
14 Stuyvenberg, would be there, as well. And presumably
15 by the time he testified he could be provided with
16 whatever transcripts, so he could almost be caught up
17 to where we are when we -- wherever we are on
18 Wednesday.

19 JUDGE McDADE: Okay. And we will discuss it
20 among ourselves, but I -- my first reaction is I would
21 be more disposed to just moving it to Track 2 starting
22 with the premise that he physically isn't going to be
23 able to be here on Wednesday, and that New York has a
24 strong aversion to doing it telephonically. Between
25 those two alternatives of either moving it to Track 2

1 or having a special session -- and, I mean, that puts
2 the other witnesses at a significant inconvenience.

3 I recognize that counsel for all of the
4 parties with the exception of New York -- well, not
5 with the exception of New York, we have Riverkeeper
6 and Clearwater, and we have interested government
7 entities are located here, but Entergy's counsel and
8 the Staff counsel are down in D.C.

9 Let me just go, from Entergy's standpoint
10 between moving it to Track 2 and following the
11 proposal put forward by Mr. Sipos of having a special
12 session in Rockville, what do you view is the pluses
13 and minuses of each?

14 MS. SUTTON: Yes. Kathryn Sutton for the
15 Applicant, Your Honor. We, like you, would like to
16 proceed with Mr. Bradford by telephone but that just
17 doesn't appear to be a possibility. Given that we
18 strongly oppose moving this to Track 2, we have
19 witnesses who are fully prepared, who have been here,
20 who are ready to go. We understand even from Mr.
21 Sipos' characterization that Mr. Bradford's role in
22 this is somewhat limited. We think that this
23 supplemental session would be limited in nature,
24 several hours, not a full day, and we fully support
25 bringing our witnesses to bear to support this

1 alternative proposal versus waiting for Track 2.

2 JUDGE McDADE: I mean, it would probably be
3 a lot less than several hours.

4 MS. SUTTON: Correct, Your Honor. I'm
5 assuming it would not exceed that.

6 JUDGE McDADE: From the Staff?

7 MR. TURK: Yes, Your Honor. The Staff would
8 prefer to have a special session some time between now
9 and that week of December for several reasons. One,
10 the witnesses have been reviewing documents, they're
11 prepared to testify now. If we slip the contention to
12 Track 2, there would be something like a five or six
13 month lag in time. They would have to go back and
14 study, spend a lot of time getting refamiliar with all
15 the evidentiary materials, and I think that would be
16 a tremendous waste of time and greater inconvenience
17 to them than having to appear in Washington for a half
18 day or less session.

19 So, although we would prefer to have
20 Commissioner Bradford with us even by telephone this
21 week, we believe that doing an additional session
22 before the December session would be the preferable
23 way to go.

24 And may I take a moment also to introduce
25 Beth Mizuno to you. You may know her from telephone

1 conference calls but she is lead on this contention
2 for the Staff.

3 JUDGE McDADE: Okay. Thank you, Mr. Turk.
4 Greetings. We have met many times before. Ms.
5 Brancato, what is your view on specifically the sort
6 of lump session as opposed to Track 2?

7 MS. BRANCATO: Riverkeeper has no objection
8 to that proposed special session, and would request
9 that to the extent Riverkeeper would like to observe
10 that there would be measures taken to have a call-in,
11 or a webcast, or some alternative to physically
12 appearing in the event that that would be not feasible
13 for Riverkeeper.

14 JUDGE McDADE: Okay, thank you. Clearwater,
15 do you have a view on this?

16 MR. WEBSTER: No objection, Your Honor.
17 Thank you.

18 JUDGE McDADE: Okay. At the break we will
19 discuss is among ourselves and let you know, because
20 certainly if we are going to go ahead with 37 this
21 week you'd want to let your witnesses know as soon as
22 possible. And if they're not going to be testifying
23 this week, to let them go as soon as possible.

24 MS. SUTTON: Kathryn Sutton for the
25 Applicant again, Your Honor. While we're doing

1 introductions we, to, would like to introduce our lead
2 on this particular issue. Next to me is Mr. Ron
3 Tenpas, and next to Mr. Tenpas is Jonathan Rund.

4 JUDGE McDADE: Greetings. Okay, we have
5 some new people here, some old people.

6 MR. TENPAS: Your Honor, there is a
7 preliminary procedural matter to New York 17. I don't
8 know whether you want to address that before
9 identifying witnesses and moving to discussing the
10 contention or after doing those introductions.

11 JUDGE McDADE: Let's take care of it now.

12 MR. TENPAS: Okay. Your Honor, it is -- as
13 the Board is aware, there are two disclosure documents
14 that you have been provided with. One is, just for the
15 record, was Entergy's disclosure document 9422, the
16 second was a New York State disclosure document, I
17 believe number 1638. Our understanding is that the New
18 York State witness in this contention will likely
19 intend to refer to and discuss the results reflected
20 in disclosure number 1638, which is a number of charts
21 and printouts that reflect data analyses.

22 We believe that the witness should be
23 directed to refrain from doing so as we do not believe
24 those disclosures can be properly relied upon at this
25 point, and that is for several reasons.

1 It's perhaps useful to begin this by
2 understanding chronologically there was a disclosure
3 from Entergy. That is number 16 -- I'm sorry, that's
4 number 9422. And I start with that because as we
5 understand it, New York's position is somehow the
6 disclosure 1638 that they made Saturday night, less
7 than 48 hours ago at 10:30 at night or thereabouts is
8 somehow justified and responsive to Entergy 9422. So,
9 let me start with 9422, and then move on to discussing
10 why that justification is not appropriate.

11 If you look at the sequence of testimony
12 here you will see that in Dr. Sheppard's rebuttal,
13 that is his final piece of testimony in a context
14 where, obviously, New York State got the first and the
15 last word in the exchanges of testimony. In his
16 rebuttal, which is New York State number 434, and
17 particularly at page 36, he -- and we'd be happy to
18 have that brought up, or I can walk you through it,
19 Your Honor.

20 He -- at that point, Dr. Sheppard suggests
21 that Dr. Tolley might have adopted what he calls a
22 functional form of the square root of distance. I
23 think the important point here is to simply note that
24 you can search throughout all of the testimony up to
25 that point and you will not find any discussion of

1 this functional form square root of distance. And I
2 think it is fair to say that Dr. Sheppard's critique
3 was to say well, using this kind of analysis on some
4 of the data that has been developed; and, in
5 particular, using that analysis when applied to
6 something called the MLS data set, there is something
7 to be learned. That was, essentially, Dr. Sheppard's
8 position.

9 Dr. Tolley, who obviously didn't have an
10 opportunity then for further responsive testimony in
11 preparing for this hearing essentially scratched his
12 head and said well, one way to think about that
13 question and whether this square root of distance
14 function is useful, provides insight, is to see how p-
15 - what results it reveals if you use it applied to a
16 second data set, what is called the Assessor's Data.
17 That is all, that and that alone is all that is
18 represented in the disclosure 944 that the NRC made.
19 And if you look at -- I'm sorry, Entergy 9422. And you
20 can see that if you look at that document by simply
21 looking about halfway down, and you will see a line
22 that says, "SQRT_DIST."

23 JUDGE McDADE: Hold on a second.

24 MR. TENPAS: All right.

25 MR. TURK: Your Honor, we don't have

1 anything on our computer screen. Is there an exhibit
2 that --

3 JUDGE McDADE: Well, we don't --

4 MR. TENPAS: It's not yet an exhibit, so --

5

6 JUDGE McDADE: Which document is this? Is
7 this one that's --

8 MR. TENPAS: This would be --

9 JUDGE McDADE: -- headed STATA?

10 MR. TENPAS: Yes. The heading of it is
11 STATALOG, all as one word, S-T-A-T-A.

12 JUDGE McDADE: And where on that document
13 are you referring?

14 MR. TENPAS: L-O-G. If you move about
15 halfway down you will see a line labeled, "Sales
16 Price." Go about -- if the clerk could go a little
17 further down, "Sale Price," keep moving down. Okay. In
18 that last block move the cursor up slightly, you see
19 SQRT_DIST. It's the first line in that block that the
20 cursor is hovering near. There you go. Thank you.

21 That line, and that line alone is what Dr.
22 Tolley was focused on. And the reason to do that
23 calculation on this data set that Dr. Sheppard had not
24 performed it on was Dr. Sheppard's critique offered
25 as, again I say, for the first time in his rebuttal.

1 So, let us now with that by way of
2 background turn to the New York State disclosure 1638
3 which, as I say, was received Saturday evening. As you
4 look at that, you will see a number of charts on it.
5 And I would like --

6 JUDGE McDADE: Let's go back, 1638. What's
7 the heading on that?

8 MR. TENPAS: It is on the upper left, it
9 says STATA, S-T-A-T-A, and a kind of -- and what looks
10 a little bit like a banner. The clerk has it up
11 correctly now. It says STATA to the left, and then to
12 the right is says "User Steven Sheppard," at the very
13 top.

14 JUDGE McDADE: Okay. Before we go further,
15 the Board exhibits for identification, we've gone up
16 to Board Exhibit 3 or Board Exhibit 4? The first of
17 these will be marked right now as Board Exhibit 4 for
18 identification, what we have up in front of us right
19 now will be marked at this point Board Exhibit 5 for
20 identification, and in the event we determine that
21 they can't be entered into evidence, then whoever
22 offers them into evidence if we accept them, they
23 would then be marked as the next successive exhibit by
24 the offering party. But at this point, just so we know
25 what we're talking about here, they're marked as Board

1 Exhibits for identification.

2 (Whereupon, the above-referred to
3 documents were marked as Board Exhibits 4
4 and 5 for identification.)

5 JUDGE McDADE: Continue.

6 MR. TENPAS: Thank you, Your Honor. So, I'd
7 like to start at page 3 of this document, because the
8 first three -- the three charts on top of page 3,
9 bottom of page 3, and top of page 4 go together as a
10 group.

11 The first chart is reporting information
12 that had earlier been provided. And New York State, I
13 think as the Board is likely familiar from the
14 testimony, one of the theories of Dr. Sheppard is
15 essentially that the operation -- initiation of
16 operations of the units in the '74 to '76 period
17 caused some depressive impact on property values. And
18 a way to identify or confirm that hypothesis is to
19 compare kind of rates of return on properties for
20 people who owned the property throughout that period
21 versus people who didn't. And he used to develop that
22 analysis initially, which was provided in his first
23 direct testimony, he used something called the
24 Assessor's Data.

25 When Dr. Tolley provided his direct

1 testimony responding to that, which is Entergy 132,
2 and when he provided his report, which is Entergy 144,
3 he as the New York State acknowledges in lines 3 and
4 4 of this document says, "Dr. Tolley raises a question
5 about inclusion of data where one or more sales
6 involved a vacant lot. Essentially, the critique of
7 Dr. Tolley that was offered back in March of this year
8 was that Assessor's Data you used had a number of bad
9 records in it because it wasn't fair to think about
10 this question if you had a property that was vacant on
11 one sale, and then somebody put a home on it, so it
12 was then worth \$400,000, the first sale had been 50.
13 What that is reflecting, or possibly reflecting is the
14 improvement from the home."

15 That critique that that was a problem and
16 that he found many such records in the Assessor's Data
17 that Dr. Sheppard used, as I say was expressly and
18 pointedly laid out at Entergy 144 at page 38. And if
19 the clerk could call that up, I'd like to show the
20 Court -- show the Board how --

21 JUDGE McDADE: There's no need for --

22 MR. TENPAS: Okay. So, that was directly
23 laid out at that point. So, that's March of 2012.

24 There is literally not a word of mention
25 of that critique then in Dr. Sheppard's rebuttal. It

1 simply goes completely ignored. And as I think I have
2 shown the Court, this one additional chart that Dr.
3 Tolley has now done relates only to the square root of
4 distance.

5 So, essentially, what you have here is New
6 York State ignoring the criticism that was laid out in
7 the direct, our direct testimony, ignoring it in their
8 rebuttal, and now some -- as we're halfway into the
9 hearing providing something that they pretend responds
10 to Dr. Tolley, but really has nothing to do with this
11 last chart. They want, basically, a do-over on their
12 rebuttal testimony.

13 Similarly, if you move down to the next
14 chart at lines 13 and 14, New York State identifies
15 what are they trying to do with the last chart? They
16 say, "Dr. Tolley objected to including sales that
17 occurred in times of rapid house price increases." So,
18 his next table is designed to address that criticism.
19 Well, when was that criticism made? It was not as part
20 of the square root of distance table that was
21 provided. In fact, that criticism, too, was identified
22 in the March 2012 direct testimony of Dr. Tolley. And
23 that can also be found at Entergy 144 at pages 38-44,
24 and in the testimony which is Entergy 132 at pages
25 116, questions 146 and forward.

1 JUDGE McDADE: Okay. Let me cut you off at
2 this point. I'm going to overrule the objection. At
3 this point, I do not know whether the exhibit will be
4 accepted into evidence. It may, or it may not. These
5 issues probably will come up, but Dr. Sheppard is
6 going to be responding to our questions here. And from
7 reading the direct testimony of Dr. Tolley, it appears
8 to me that he is very capable of explaining and
9 articulating his position, and can explain to the
10 Board clearly on a document what it is, how he used
11 it, and in his opinion the significance of it, which
12 may differ from Dr. Sheppard. But I don't think it is
13 unfair to Dr. Tolley for Dr. Sheppard to make
14 reference to this. And if Dr. Sheppard does make
15 reference to it during the course of his testimony, we
16 would certainly be inquiring of Dr. Tolley and asking
17 for his read and explanation of the significance. So,
18 I don't think it has a potential either to prejudice
19 Entergy or to mislead the Board. So, the objection is
20 overruled. We are going to proceed.

21 I would mention a couple of things.

22 MR. TENPAS: Your Honor, respectfully, I do
23 need to note that we disagree on the prejudice. And I
24 do need to note factually just one other point about
25 this in terms of Dr. Tolley's opportunity to respond.

1 When you look at this data, you see that on the
2 first go around there were 1,511 observations. In this
3 new stuff, there are now 1,222 observations; that is,
4 it appears that Dr. Sheppard has taken out some of the
5 data. We have not been given that underlying data, so
6 we have no idea what was -- which of the data was
7 taken out, whether it is, in fact, the repeat -- the
8 problematic Assessor's Data cards that Dr. Tolley
9 identified, or some other group. So, in fact, Dr.
10 Tolley has not had an opportunity to review this work
11 other than to see in summary fashion the purported
12 results. But we understand the Board's ruling. I
13 simply need to note that for the record. Thank you.

14 JUDGE McDADE: And one of the benefits of
15 the Board allowing brief interrogation by the parties,
16 both of their own witnesses and the opposing witnesses
17 is that if at the conclusion of this session you
18 believe it is important for us to understand how the
19 data was changed, why the data was changed, and the
20 significance of the change, you will have an
21 opportunity to inquire both of Dr. Sheppard and Dr.
22 Tolley to make sure that we do not misapprehend the
23 significance of any of that.

24 If these are offered, if they are referred
25 to as a witness as part of their testimony, then the

1 party sponsoring that witness would enter it as the
2 next exhibit. And I also do want to mention, I'm not
3 sure I mentioned before, we did receive, I believe,
4 Entergy 589 at the earlier session. We do have an
5 electronic copy of it, but for our record purposes if
6 you could file that through the EIE and also the
7 revised exhibit list through the EIE so that we have
8 those properly in the record.

9 MS. SUTTON: We will do so, Your Honor.

10 JUDGE McDADE: Okay, thank you.

11 Since we have some different witnesses,
12 additional witnesses, before we get started I'd like
13 to swear the witnesses. Would you raise your hand,
14 please.

15 (WITNESSES SWORN.)

16 JUDGE McDADE: Okay. And, again, since we
17 have some additional witnesses, let me just give some
18 very brief introductory remarks.

19 First of all, if you don't understand a
20 question don't be shy about asking for clarification.
21 We want to make sure that the question that you're
22 answering is the same question that we think we're
23 asking.

24 Secondly, this is going to basically be a
25 dialogue between you and us. We're going to ask you

1 questions, you're going to respond to us. Although we
2 are going to be going back and forth from one witness
3 to another, this is not a dialogue between two of the
4 witnesses. You may argue with each other but you're
5 going to do it derivatively through us, and not talk
6 back and forth to each other.

7 The other thing is if for any reason
8 anybody needs a break, don't suffer in silence. First
9 of all try to get out attention and don't be shy about
10 asking for a short break. If you can't get our
11 attention, try to get the eye of the counsel who
12 sponsors you and they certainly won't be shy about
13 asking us for a break.

14 I think we're ready to get started. Okay.
15 This contention has to do with land use, and land
16 value. There's an allegation that the EIS was
17 inadequate in that it did not consider the effects of
18 changes in land value on land use in the event the No
19 Action Alternative; that is, the No License
20 Alternative were to be exercised and only looked
21 sufficiently at the impact in the event the license
22 was renewed. And, specifically, I believe Dr.
23 Sheppard's initial statement was he concluded that the
24 value of the land in the vicinity of the Indian Point
25 facility would, in the event of the license being

1 denied, increase by approximately 27 percent, which
2 could constitute over \$1 billion in the increase in
3 the land value.

4 That said of what we're looking at, let me
5 go first. Dr. Sheppard, can you describe for us, first
6 of all, what you mean and understand by a disamenity,
7 and then explain to us how as an economist you would
8 go about differentiating between the effects of one
9 disamenity and another. For example, in a circumstance
10 like Indian Point, you have Indian Point. You have it
11 in an industrial area. You have other potential
12 disamenities such as the resource recovery plant,
13 wallboard factory, et cetera. So, first, what is -- in
14 your view, how do you define a disamenity? And when
15 you're doing your analysis how are you able to
16 differentiate the impact of one as opposed to another
17 or several?

18 DR. SHEPPARD: I understand, Your Honor.
19 So, as I understand as a disamenity, a localized land
20 use or this could be a structure or activity on the
21 land that generates some -- generates an adverse
22 impact that reduces the desirability or use of the
23 land by other nearby land owners or occupants.

24 So, this typically is understood to happen
25 through the classic indicia of nuisance in which this

1 could involve either substances, noise, unusual levels
2 of activity, warning alarms, a variety of different
3 things that could happen at a particular location that
4 would affect the desirability of using land in nearby
5 locations. So, that's sort of in a nutshell what we
6 understand to be disamenity.

7 These can take a variety of forms, of
8 course. And the way we typically look for them or test
9 for them as economists is to look for some alteration
10 in nearby property values. This can give us both an
11 indication of the extent of the disamenity and its
12 importance or magnitude for local property owners.

13 Identifying, measuring the disamenity, and
14 distinguishing it from others is a part of the skill,
15 our training of an urban economist, and it's something
16 that I have engaged in for most of my career. There
17 are a couple of different approaches that can be used.
18 One is the traditional hedonic approach that Dr.
19 Tolley discusses in his report, and that I, myself,
20 have employed in other settings.

21 That's quite useful if you have a
22 spatially distinct or isolated disamenity, and there's
23 no ambiguity about other nearby disamenities that
24 could be causing -- affecting property values. But
25 when you have other nearby disamenities, it's helpful

1 to tie the estimation of the impact down to a
2 particular point in time. And for that you can either
3 -- for that I, in my report, I've employed, and others
4 have employed a resale price analysis in which you
5 track properties over time and observe the purchase
6 price and sale price of the property, and estimate the
7 impact on property values at the time that a possible
8 source of disamenity emerges.

9 Of course, when one approaches this
10 analysis one wants to be careful not to presume
11 existence of a disamenity, or presume existence of any
12 impact of a particular magnitude. One wants to be open
13 to what the data has to teach us, so we -- what I have
14 done is collected information over time from property
15 tax records and examined how the -- calculated,
16 essentially, the annual rate of return or the annual
17 percentage interest rate that the owner of a home gets
18 viewing the home as an asset. So, think of what annual
19 interest rate would be equivalent to the difference
20 between the purchase price and the sales price of the
21 home. And then I distinguish those homes both by
22 location, their proximity to Indian Point, and by the
23 time period when Indian Point IP2 and IP3 commenced
24 commercial operations.

25 This establishes for me a treatment group

1 that can be compared with the control group. The
2 control group is the set of properties that are either
3 bought and sold before IP2 and IP3 commenced
4 commercial operation, or bought and sold after IP2 and
5 IP3 commenced commercial operation. Because in either
6 of those cases, the impact of commercial operation
7 would affect both purchase and sales price.

8 And those are contrasted with the
9 treatment group that are properties, as you alluded to
10 in the earlier discussion, properties that are
11 purchased before IP2 commenced commercial operation
12 and sold after IP3 commenced commercial operation.
13 That establishes a treatment group to help me
14 understand, analyze, and estimate the impact of
15 operating these plants as commercial electricity
16 generators. Why that's important as a control group?
17 This provides a clear experimental design than
18 standard hedonic analysis, although standard hedonic
19 analysis still has something to teach us in this case,
20 but looking at the resale price analysis establishes
21 a cleaner experimental design, and it directly
22 addresses exactly the question posed when we ask about
23 the impact of the No Action Alternative.

24 The No Action Alternative will lead to the
25 p-- not the instantaneous disappearance of the plant,

1 but the cessation of the operation as a commercial
2 generator of electrical power. So, my treatment group
3 is the properties that experienced the commencing of
4 commercial operation, so I'm using that as a way of
5 estimating what will happen when that commercial
6 operation ceases, as would happen under the No
7 Treatment -- under the No Action Alternative.

8 JUDGE McDADE: Okay. In this particular
9 instance, you used the opening of Indian Point 2 as
10 the event to create your treatment group. Correct?

11 DR. SHEPPARD: It's actually the beginning
12 of the event, and then the opening of Indian Point 3
13 is the end of the event.

14 JUDGE McDADE: Why did you use that as
15 opposed to the beginning of the construction of Indian
16 Point I in 1956, or the opening of Indian Point 1 in
17 1961?

18 DR. SHEPPARD: Those would have been
19 interesting alternative things to investigate, but
20 they wouldn't be as directly relevant for the question
21 that's on the table in this Environmental Impact
22 Statement or before us in Contention 17.

23 What we need to ask ourselves in
24 evaluating the impact on land use, it's an indirect
25 question, the impact on property values which will

1 generate the impact on land use, we want to know what
2 will be the impact of the cessation of commercial --
3 of operation as a commercial power generator. That's
4 what's really going to happen in 2015 if the No Action
5 Alternative is adopted. In 2015, there will cease to
6 be commercial generation of electric power at that
7 site.

8 JUDGE McDADE: But if the presence of a
9 electric generating facility is the disamenity, that
10 disamenity began in 1956. Certainly, people knew it
11 was coming as of then, and by 1961 it was open and
12 operating. And it continued to be open and operating
13 until Indian Point 2 and 3 came on line and took their
14 place. Why would you believe that there would be a
15 significant additional disamenity with the opening of
16 Indian Point 2 that had not preexisted going back to
17 the late 1950s?

18 DR. SHEPPARD: So, first off, let me say
19 that the question you opened with to me was -- the
20 second part of it was how do you separate out many
21 different disamenities, and a particular site may have
22 many different types of disamenities. As you've just
23 observed, there could be an early, sort of early stage
24 disamenity at the site that consists of construction
25 noise or something like that. And then there's a

1 second phase disamenity that consists of the operation
2 of IP1.

3 What's at issue here is not to evaluate
4 those other sources of disamenity. That's why I have
5 adopted the methodology I have adopted. I'm trying to
6 isolate just that part of the disamenity that is
7 relevant for evaluating the No Action Alternative,
8 and that means evaluating the cessation of commercial
9 operation of IP2 and IP3.

10 So, I may have gotten a different estimate
11 if I had chosen an alternative control group, or an
12 alternative time period, but by focusing on this
13 particular time period I'm zeroing in on exactly that
14 part of the disamenity that's most relevant for the
15 issue at hand.

16 And, of course, if I'm missing a major
17 part of the disamenity, the data might have told me
18 there is no statistically significant impact, but
19 that's not what the data tell me. When I look at the -
20 - when I estimate the impact what I find is that those
21 properties that were subject to the treatment of being
22 owned when IP2 and IP3 began -- commenced commercial
23 operation they did experience a diminution in value.

24 JUDGE McDADE: Given other circumstances at
25 the time and we're talking now about the late 1970s,

1 as I recall during that time period somebody got
2 elected President talking about the misery index of
3 interest rates and unemployment. How do you factor out
4 if you start as a time period as an event in the mid
5 to late '70s, how you factor out the changes in the
6 rate of appreciation of that property wouldn't be as
7 attributable, more attributable, or at least partially
8 attributable to factors totally unrelated to Indian
9 Point, such as interest rates at 15 or 16 percent, or
10 high unemployment.

11 DR. SHEPPARD: Okay. So, one way that you
12 factor that out is by having an end to the time
13 period that constitutes the treatment. So, I'm using
14 '74 to '76 as my treatment because that's when the
15 plants commenced commercial operation. And the
16 maladies to which you refer, concerns about high
17 interest rates or other dislocations in the housing
18 market, those -- some of those are happening before
19 the commencement of commercial operation, many of them
20 have been happening since then. So, those will affect
21 the control group. They might affect the treatment
22 group, as well, but what I'm -- my estimates are
23 driven by the difference between the experience of
24 those properties that experience -- that are in the
25 treatment group compared with those in the control

1 group.

2 JUDGE WARDWELL: You mentioned the plant is
3 going to cease operations in 2015 under the No Action
4 Alternative. Isn't the plant going to cease operations
5 under the other alternative?

6 DR. SHEPPARD: Not in 2015.

7 JUDGE WARDWELL: Not in 2015. Well, how do
8 you factor that in then? In fact, the plant will cease
9 operations some time in the future anyhow. It's really
10 the difference between ceasing in 2015 and ceasing in
11 some other area that is of interest in regards to when
12 and if any rebound occurs. And isn't that the only
13 difference that we're interested in when we're trying
14 to compare the No Action Alternative to any other
15 action that this Agency is taking, i.e., the license
16 renewal?

17 DR. SHEPPARD: I understand your question
18 but I'm not sure I can accept the conclusion that's
19 implied in it that there is no difference between the
20 two. So, in terms of evaluating socio economic impacts
21 on --

22 JUDGE WARDWELL: No, I'm asking how did you
23 separate that out? I mean, because we're --

24 DR. SHEPPARD: Sorry, okay.

25 JUDGE WARDWELL: -- not dealing with just

1 -- we are dealing with a comparison of the No Action
2 Alternative to the federal action which is license
3 renewal. And under both situations the plant does
4 cease.

5 DR. SHEPPARD: Yes.

6 JUDGE WARDWELL: So, how does your study
7 have any -- provide any data or useful information in
8 regards to evaluating that?

9 DR. SHEPPARD: So, my study provides very
10 useful information regarding evaluating that because
11 it gives you the magnitude, an estimate of the dollar
12 value magnitude of property value recovery that can be
13 expected after cessation of operations. And then you,
14 the Board, or whomever can consider the difference
15 between getting \$1 billion now, or getting \$1 billion
16 in 2015 versus getting \$1 billion 20 years later.

17 JUDGE WARDWELL: And how do you account for
18 that in your analysis?

19 DR. SHEPPARD: I don't account for it in my
20 analysis. What I am doing is estimating -- in my
21 December 2011 report, I am estimating the magnitude,
22 the dollar value magnitude of impacts. I'm testing the
23 statistical significance of the impact and estimating
24 the dollar value magnitude of the impacts that can be
25 expected to occur when operations cease.

1 JUDGE WARDWELL: But with that you need to
2 somehow come up -- how did your analysis come up with
3 the rebound number?

4 DR. SHEPPARD: My analysis estimates that
5 properties that were subject to the treatment, that is
6 the commencement of commercial operations, experienced
7 a 3 percent per annum lower return for owners during
8 that ownership period. I then used the average
9 ownership period for the properties, so if you have a
10 3 percent, approximate -- I'm rounding here but
11 approximately a 3 percent per annum reduction in the
12 return to owning the home as an asset, and if you hold
13 that home for eight or nine years, you're going to get
14 approximately a 27 -- I calculate it more precisely,
15 but that's where the 27 percent impact on property
16 values comes. A 3 percent per annum reduction over the
17 average holding period of the property gives you that
18 estimated impact on the properties.

19 JUDGE WARDWELL: I guess I'm still not
20 clear on how your numbers were really crunched,
21 because you were comparing -- well, tell me what were
22 you comparing in order to generate those numbers
23 exactly?

24 DR. SHEPPARD: Okay.

25 JUDGE WARDWELL: What sales were you using,

1 what groups of sales?

2 DR. SHEPPARD: Right.

3 JUDGE WARDWELL: And when they were
4 occurring, and how they relate to the fact that the
5 plant is still operating at the time you're doing it.
6 And then how do you discount it for changes in market
7 value generally that occurred, that has nothing to do
8 with not being within this `74 to `76 period. That's
9 the period you think the houses were depressed. Is
10 that correct?

11 DR. SHEPPARD: What I -- they may have been
12 depressed for other reasons at other times, but I'm
13 trying to isolate only that impact on their value that
14 was associated with commencement of commercial
15 operations. And the way I estimate that is by
16 assembling a large amount of data, as we've referred
17 to and as is illustrated in the various tables and in
18 my report, it's over 1,500 pairs of transactions; that
19 is a purchase and sale. And for each one of those
20 pairs, I've got a purchase date and a sales date s I
21 can -- and a price for each so I can calculate the
22 annual rate of return associated with that period of
23 ownership for that property.

24 I know where those properties are, and now
25 I know what rate of return per annum was realized for

1 holding that. And then I estimate the relationship
2 between the annual rate of return to holding the
3 property, and the distance from Indian Point Energy
4 Center, and whether or not the property was bought
5 before and sold after the commencement of commercial
6 operations.

7 So, the real hypothesis to be tested is,
8 does the impact of being in that treatment group, is
9 it (a) statistically significant, my analysis finds
10 that it is. And (b) what is the magnitude of it? My
11 analysis finds that it's approximately 3 percent per
12 annum. So, that's a 3 percent per annum reduction in
13 the rate of return to holding a home over the -- and
14 then I apply that to the average holding period of a
15 house for that region for the sample. And that's about
16 nine years, so if you're getting -- a little less than
17 nine years. If you're getting 3 percent per annum less
18 and you're holding -- imagine you take your money and
19 you put it in a bank account that's paying you 3
20 percent per annum less than you could get elsewhere,
21 and then what you want to calculate is what's the
22 total hit, what's the total diminution in your assets
23 that results from that treatment of depositing your
24 savings in a less attractive bank or savings
25 institution. And that's where I calculate that the

1 total impact is 27 percent.

2 So, the per annum impact is estimated
3 using data that I collected and related to when the
4 properties were bought and sold. And then I apply that
5 to the average holding period to get an overall
6 estimate of the percent impact on property values
7 that's generated from that -- the event that happens
8 at that location because I'm relating these to
9 distance from the Indian Point Energy Center and at
10 that time. I'm not trying to capture every disamenity
11 that may or may not be associated with the plant. I'm
12 trying to focus in on that disamenity that will --
13 that disamenity, if any, that will cease once the
14 plant ceases commercial operation.

15 JUDGE WARDWELL: Did you use all 1,500
16 observations in your analysis?

17 DR. SHEPPARD: In my original analysis, I
18 did.

19 JUDGE WARDWELL: Didn't you disqualify some
20 for various criteria, or something?

21 DR. SHEPPARD: Yes, I'm sorry. I should
22 say, so, 1,500, there were actually more than 1,500.
23 There are some observations that were -- that
24 exhibited either unusually large -- so, if a property
25 appeared to double in value or to lose all value

1 entirely, I excluded them from my original analysis.
2 And that was the source of my 3 percent. Other than
3 that, I included --

4 JUDGE WARDWELL: You're confusing me.

5 DR. SHEPPARD: I'm sorry.

6 JUDGE WARDWELL: How many numbers did you
7 start with?

8 DR. SHEPPARD: Let me look at my chart, or
9 my table. My analysis was based on -- and my estimates
10 were based on 1,511 paired sales. That excludes a
11 small number, and I'm sorry, I just don't have the
12 numbers here in front of me. It's a small number, like
13 on the order of 40 or something of observations that
14 exhibited a nominal return that was either a complete
15 loss of value of the property, or more than a doubling
16 of value of the property. Those seemed to be extreme
17 values, to me, and I didn't include them. The effects
18 aren't affected very much if you do include them. They
19 just don't seem correct to me, and I was concerned
20 about that.

21 JUDGE WARDWELL: So, you didn't disqualify
22 any others for any other reason, like the fact that it
23 appeared to be -- didn't you go through the data --
24 I'm recalling from memory. I can't pull it up right
25 now --

1 DR. SHEPPARD: Yes, so there was --

2 JUDGE WARDWELL: There were some that
3 appeared to be vacant lots and then someone built on
4 them or vice versa.

5 DR. SHEPPARD: Okay.

6 JUDGE WARDWELL: They burned down or
7 something. I can't remember exactly, but weren't there
8 ones like that that you threw out, also?

9 DR. SHEPPARD: So, in this last analysis as
10 I'm -- in the analysis that was recently filed, I do
11 have an evaluation of that that demonstrates that if
12 you --

13 JUDGE WARDWELL: Be specific. What do you
14 mean by the "recent analysis?" We've had -- you've
15 done something like five analyses or so.

16 DR. SHEPPARD: Yes, I have.

17 JUDGE WARDWELL: Do we take any credence
18 with the first four, or were you doing -- is it your
19 position we should focus only on the fifth analysis
20 that you ran?

21 DR. SHEPPARD: The fifth report.

22 JUDGE WARDWELL: Fifth report.

23 DR. SHEPPARD: The December 2011. The
24 December 2011 report is the only report that I have
25 filed that actually presents analysis of data

1 collected from area around Indian Point.

2 JUDGE WARDWELL: Why didn't you do that
3 earlier?

4 DR. SHEPPARD: Because at the time we were
5 engaged in the process of collecting and recording
6 those data continuously over a couple of year period.
7 Westchester County is an unusual situation. I've
8 worked with many data -- a great deal of property tax
9 data in the State of New York. Most counties have
10 their local taxing authorities centralized at the
11 county level, and the data are all computerized, that
12 is by state law. Westchester County has a special
13 exemption from that, so their tax records are not
14 computerized. So, we had to -- I had to send a
15 research assistant to the towns in Westchester County
16 to collect information, to make copies of the property
17 tax record cards. Those had to be scrutinized for
18 readability information, that data had to be entered
19 into a database.

20 JUDGE WARDWELL: Okay, go on. Proceed.

21 DR. SHEPPARD: Okay.

22 MR. BESSETTE: Your Honor, this is Paul
23 Bessette. I do have to -- I'm a bit surprised to learn
24 that Dr. Sheppard is collecting data throughout the
25 process of his other five reports. We have -- there

1 were no disclosures on any of that data until he
2 produced his fifth report, so we'd like to note that
3 for the record. Again, that's the first time I've ever
4 heard of this.

5 JUDGE WARDWELL: Dr. Sheppard, so you were
6 back to this 1,500 observations, and you're saying
7 that all of those you've used in this analysis, that
8 you didn't disqualify any because you've done into
9 them and found out they're vacant lots and that type
10 of thing.

11 DR. SHEPPARD: So, I have included -- I
12 have endeavored to include all the observations that
13 had valid prices and appeared to be representing valid
14 transactions, and conveying useful information about
15 the rate of return to home ownership during the
16 period.

17 It is the case that concerns have been
18 raised about using transactions that involve vacant
19 lots. I undertook no separate evaluation of the --
20 which transactions included vacant lots, but I did
21 accept the characterization that was provided to me by
22 Dr. Tolley, not indirectly I should say, that
23 identified 300 odd properties as involving sales that
24 -- where one of the sales was a vacant lot. And what
25 I found is that by excluding all of those observations

1 it made no difference to my basic estimates. In fact,
2 it actually strengthened my estimates, resulted in
3 slightly higher estimated damage and more precise
4 estimates.

5 MR. TENPAS: Your Honor, at this point we
6 have to renew our objection. That's directly
7 discussion of the analysis we've objected to.

8 JUDGE McDADE: You've renewed your
9 objection.

10 MR. TENPAS: Thank you.

11 JUDGE McDADE: Okay. Dr. Sheppard, you
12 talked about 1,500 pairs of transactions. How many
13 properties are we talking about?

14 DR. SHEPPARD: Five hundred odd.

15 JUDGE McDADE: Okay. So, by pairs we have
16 a number where you have multiple sales, multiple times
17 where you've had a buyer and a seller, but
18 approximately 500 properties total.

19 DR. SHEPPARD: Correct.

20 JUDGE McDADE: Okay. And you've eliminated
21 ones that did not appear to be arm's length such as
22 based on sales within the family. What other criteria
23 did you use for eliminating them? Was it totally
24 subjective, or did you have any objective criteria?

25 DR. SHEPPARD: No objective criteria other

1 than we had to be able to read the property tax record
2 card and enter the data so that it would be useable.
3 We started with an initial set of properties that were
4 sales that had taken place. And I believe I've
5 reported that the time period in my report, it's
6 around 2009, and our research assistant, my research
7 assistant pulled those records and made copies of the
8 property tax record cards which would include
9 information about prior sales, the dates when those
10 sales occurred, and the transactions prices.

11 JUDGE McDADE: Okay. And going back to the
12 concept of event again we were talking about a little
13 bit ago, we start, or I started with the premise that
14 there was an event in 1956 through 1961, the beginning
15 of construction of Indian Point 1 through the opening
16 for operations of Indian Point 1. There were also
17 other occurrences during that period of time; namely,
18 the zoning as industrial of areas in and around the
19 Indian Point area. Correct?

20 DR. SHEPPARD: Correct.

21 JUDGE McDADE: And there was also then the
22 beginning of industrialization in what had been a
23 relatively undeveloped area, as well.

24 DR. SHEPPARD: So, a mixture of
25 industrialization in some nearby areas, and

1 deindustrialization in other areas within five miles
2 of Indian Point. But, yes, there were ongoing changes
3 in the patterns of industrial land use.

4 JUDGE McDADE: So, we were developing a
5 history of land use in the area for almost 20 years
6 before the event that you described.

7 DR. SHEPPARD: Correct, or longer.

8 JUDGE McDADE: Is there any way of in your
9 calculations determining whether or not there were any
10 other contemporaneous, equally significant events
11 going on in the area at the time? In other words,
12 you've described Indian Point 2 as opening. Were there
13 any other facilities or entities that could serve as
14 a disamenity that were being constructed or operated
15 in or about the same time that could skew your
16 analysis, if you know?

17 DR. SHEPPARD: So, there were other things,
18 obviously, going on at the same time, but not, I
19 believe, that would skew my analysis. So, let me
20 mention I'm aware of the fact that there were other
21 generating facilities that had been built, there were
22 other -- as you just mentioned, there were other
23 industrial land uses, and other changes in land use
24 that happened during the time. But my analysis focuses
25 not only on this very specific time period and the

1 specific location. So, when I estimate the impact on
2 property values, or the impact on the annual rate of
3 return of owning a property, I'm estimating an impact
4 that also adjusts for how far away the property is
5 from the Indian Point Energy Center.

6 So, in order for it to seriously skew my
7 analysis, what would have to be true is it would need
8 to be not only happening exactly in the interval `74
9 to `76, but happening essentially at or extremely near
10 to the site of the Indian Point Energy Center. And
11 since that, essentially, focuses our attention to the
12 commencement of commercial operation of IP2 and IP3.

13 JUDGE McDADE: Dr. Tolley, am I pronouncing
14 your name correctly?

15 DR. TOLLEY: Beg your pardon?

16 JUDGE McDADE: Am I pronouncing your name
17 correctly?

18 DR. TOLLEY: Yes, sir.

19 JUDGE McDADE: Okay. Doctor, would you
20 comment on Dr. Sheppard's selection of an event and
21 his selection of what he described as a treatment
22 group. Do you think those were sound?

23 DR. TOLLEY: No, I do not.

24 JUDGE McDADE: Why not?

25 DR. TOLLEY: Well, an event needs to be as

1 narrow as possible in the first place because there
2 are these other confounding things, and they are
3 certainly not constant. They're going on all the time,
4 and they're affecting returns. It's not as if the
5 control group could earn this 9 percent every year. It
6 was always going up and down, so you need a narrow
7 control group.

8 On the contrary, Dr. Sheppard has chosen
9 a three-year time period. And as you've been bringing
10 up, it isn't -- the effect of the plant is not
11 connected to that. Moreover, the saying that we're
12 focusing on '74 to '76, if we have these earlier
13 observations that are effective, it's polluting the
14 observations. It is affecting the returns of the
15 control group. He's neglected to say that, so that's
16 another reason that he has violated the situation.

17 I question whether it is possible to do --
18 and his testimony he calls it event study, and then
19 by some discovery materials that came along later it's
20 beginning to be known as repeat sales. Either way,
21 there are very stringent methodological requirements
22 out of the economic literature that need to be
23 followed to make this approach valid. If you're using
24 an event study, it's loud and clear what you need to
25 do is hold everything else constant. That's the whole

1 idea. All the houses, all the residences need to be
2 affected by the same thing and very similarly, because
3 the whole idea is to just separate out this one thing
4 that you're trying to measure. And if you allow all
5 these other events in, then it's not valid. We've
6 heard the reasons that are being brought out here. I
7 could go on, but those are some of the major reasons.

8 JUDGE McDADE: Dr. Sheppard, as I
9 understand it, suggests that he can differentiate the
10 appropriate event by time to a degree by looking at
11 the changes in the property values related to the
12 distance from Indian Point. And is that sufficiently
13 narrow to be a workable hypothesis?

14 DR. TOLLEY: I don't really see that that
15 affects the analysis, frankly. The -- let's see, you
16 have the -- what Dr. Sheppard's analysis is doing, his
17 treatment -- all his properties, both treatment and
18 non-treatment, control are within a certain radius. I
19 think it's 3.1 miles, 5 kilometers. And he takes all
20 properties within that area. Well, that doesn't --
21 still those properties are not -- all these shocks
22 we're talking about, or all these changes other than
23 this `74 to `76, which is supposed to be somehow the
24 major shock, all those are affecting all those
25 properties, so I don't see that that controls for it

1 at all.

2 JUDGE McDADE: You, I think, described your
3 analysis as hedonic. Am I --

4 DR. TOLLEY: Yes, right.

5 JUDGE McDADE: Can you describe the
6 difference in methodology or theory between that and
7 Dr. Sheppard's? But Judge Wardwell had a question
8 before we get to that.

9 JUDGE WARDWELL: Yes, I just -- I was just
10 -- I'm still confused exactly what Dr. Sheppard did,
11 so I'd like to, if it's all right, clarify that before
12 I get muddled with another second layer of
13 understanding here.

14 So, your treatment '74 to '76.

15 DR. SHEPPARD: My treatment are the --
16 maybe we should just be real clear. I'm sorry to -- I
17 don't want to be disputatious. I just want to make
18 sure that I try to explain it as clearly as possible.
19 The observations here are a property over an interval,
20 so what characterizes each observation is a sales date
21 p-- a purchase date and a sales date, the price at
22 each. And then we calculate the annual rate of return
23 to that. So, an observation is a property over an
24 interval. And the treatment group are those intervals
25 that span the '74 to '76 time period.

1 JUDGE WARDWELL: What do you mean those
2 intervals are --

3 DR. SHEPPARD: So, those observations, that
4 is properties that involve ownership over the interval
5 1974 to `76.

6 JUDGE WARDWELL: That subsequently had sold
7 and then bought again and resold, or --

8 DR. SHEPPARD: So, if it's an observation
9 in my data set it was purchased and sold, so if it was
10 p-- it could be the exact same house, you know, some
11 houses might be sold four, five, six, seven times in
12 the data.

13 JUDGE WARDWELL: What are you comparing in
14 your analysis? That's what I --

15 DR. SHEPPARD: Right. Exactly. So, the
16 group of observations that receive the treatment,
17 those are properties that were purchased sometime
18 before `74 and sold sometime after `76. So, not --
19 with no intervening sales in between. Okay? And then
20 they may have been sold and suppose -- let me
21 illustrate, for example.

22 Suppose a home was purchased in 1968, and
23 sold in 1980. So, it was owned for a 12-year time
24 period. That would clearly be in my treatment group.
25 If that same home was then purchased by someone in

1 1980, sold again in 1992, another 12-year span, it
2 would -- that same home would then be in my control
3 group because now I would have a time period when the
4 commercial operation of Indian Point was affecting
5 both the purchase and the sale.

6 Similarly, if I had a recorded sale for
7 that same house in the time period before the
8 hypothetical 1968 purchase date, maybe it was
9 purchased in 1964 and sold in 1968, that also would be
10 in the control because neither the purchase nor the
11 sale would be affected -- they'd be affected by Indian
12 Point all right because, as was mentioned previously,
13 Indian Point existed, and IP1 was buzzing along, et
14 cetera. But it wouldn't be -- it would be part of the
15 control because it's not an ownership interval that
16 spans the commercial -- the commencement of commercial
17 operations. And that's what's central in terms of
18 understanding what property value impacts might result
19 from cessation of commercial operations.

20 JUDGE WARDWELL: That -- you had me right
21 to the very last thing.

22 DR. SHEPPARD: Okay.

23 JUDGE WARDWELL: Where does cessation of
24 operations come into play?

25 DR. SHEPPARD: Well --

1 JUDGE WARDWELL: You just said it was
2 affecting the rate of return during that time frame
3 because it was included in that -- in the span between
4 bought and sold.

5 DR. SHEPPARD: Right. So, I'm --

6 JUDGE WARDWELL: What that's saying to me
7 is that may have some indication of what strictly the
8 startup operations of only IP2 and 3, not the startup
9 of IP1, have on that rate of return. How do you then -
10 - how did you then massage, manipulate, interpret,
11 whatever you want to call it to come up with a value
12 that will indicate --

13 DR. SHEPPARD: The impact.

14 JUDGE WARDWELL: -- the rebound when
15 operations cease, because isn't that what we're really
16 after? And then it's the differential between that
17 over the two different time frames that will occur
18 between the No Action and the license renewal.

19 DR. SHEPPARD: Right. So, you're quite
20 correct that what we're really after is the change in
21 property values that will happen after it ceases
22 commercial operation, after IPEC ceases operation.

23 JUDGE WARDWELL: And to add to that, I'm
24 going to have another question on top while I think of
25 it so you can be thinking of this, too, at the same

1 time.

2 DR. SHEPPARD: If I can remember it.

3 JUDGE WARDWELL: During this time frame,
4 also, one might speculate that just -- it isn't just
5 the startup operations but it's the continual
6 operations of this plant that changes market value.
7 That could be another hypothesis. And you're not
8 concerned with that because the disamenity that you're
9 looking at is only the startup operations. You're not,
10 as you've described it so far, focusing on the impact
11 of ongoing operations.

12 DR. SHEPPARD: Right. So, I'm not saying
13 that -- obviously, when a person purchases a property
14 they're forward looking, so the impact of startup is
15 going to be associated -- people also understand that
16 nuclear -- that IPEC is not going to start and then
17 cease at some random point. It's all well understood.
18 So, it's correct to say that the impact that's
19 measured associated with the startup of commercial
20 operations involves a measure of the impact that's
21 expected to be felt during the continued commercial
22 operations that will happen after they actually start
23 up.

24 To go back to your original question, I
25 think you were spot on in saying what we want to do is

1 estimate the impact of cessation of operations, and
2 then be able to compare these at different times. That
3 seems exactly correct to me. And the problem we have
4 is that that has to be estimated because we're asking
5 about an event that has not yet occurred. So, we
6 employ different methods to try to figure out, to
7 estimate what will be that impact.

8 So, what I'm doing is making an estimate
9 that's based on -- well, let's -- we're trying to
10 figure out what will be the impact of when it stops.
11 Let's look at what the impact was when it started. And
12 then when it stops, we can hypothesize, I hypothesize
13 that the effect will undo itself.

14 JUDGE WARDWELL: Assume. You're not
15 hypothesizing. You're assuming --

16 DR. SHEPPARD: I'm assuming.

17 JUDGE WARDWELL: -- it's going to rebound
18 the same amount and rebound.

19 DR. SHEPPARD: Right, to rebound the same
20 amount that -- and I'm not assuming that it goes down.
21 I estimate, my estimate suggests that it went down.
22 But I'm assuming that -- what I'm putting forward as
23 an estimate of what will be associated with the
24 stopping is to undo what was associated with the
25 starting. And that's where I think actually the

1 hedonic analysis does have something to teach. If we
2 observe -- if the hedonic analysis that's done is
3 consistent with my estimate then that gives us greater
4 confidence.

5 I think that my experimental design is
6 more desirable, but we want to compare it with other
7 sources of information, other ways of looking at the
8 problem.

9 JUDGE WARDWELL: Why didn't you use
10 construction rather than the startup, because --

11 DR. SHEPPARD: You mean the construction --

12
13 JUDGE WARDWELL: Of the IP2 and 3 plants.
14 I mean, that to me, if I was a home buyer forward
15 looking I would know those are going to be built. And
16 what's the difference between the startup and the
17 construction? I would hazard a guess that probably
18 most people didn't realize when it did start up. They
19 knew when construction started but they didn't have
20 any idea when the plant actually turned on the switch.

21 DR. SHEPPARD: And it may well be the case
22 that there were additional disamenities associated
23 with the construction that would have, if I had
24 included those in the way I set up my experimental
25 design, that I would have captured additional

1 disamenities. And then my estimates of the property
2 value impacts would be greater than they are,
3 possibly. And then I would be being criticized for not
4 focusing on what's going to happen when they cease
5 operations, but incorporating some sort of disamenity
6 due to construction. So, by choosing the interval I
7 chose, I helped to focus our attention squarely on
8 what's likely to get undone when they stop operation.

9 JUDGE McDADE: Okay. Dr. Tolley, we talked
10 a second ago about a hedonic analysis which is what
11 you did. Dr. Sheppard testified that he thought the
12 analysis he conducted was more desirable. Could you
13 explain to us from a macro standpoint, not a micro
14 standpoint, the difference in methodology between a
15 hedonic analysis and what Dr. Sheppard did?

16 DR. TOLLEY: Yes, I'll try. If I could,
17 Your Honor, I'd like to make two brief comments on
18 what's been said. These previous events, construction
19 and so forth, it's not that they -- the point here is
20 that you cannot isolate the '74 to '76 by this
21 methodology because these previous events have been
22 put in the control group. It's just mistake in
23 analysis to do that. That's the first thing. And we
24 had a very good discussion of what some of these other
25 previous events are.

1 Something else that needs to be brought in
2 here is anticipation effects. This IP2 and IP3 were
3 publicized in the New York Times, there's all kinds of
4 publicity. It is well known. People are not -- people
5 take account of anticipation effects. If they know
6 that this plant is going to open and they don't like
7 it, they're not going to bid as much for the property.
8 So, these are things that will occur beforehand just
9 because of anticipation of what's going to happen even
10 if the '74-76 event were -- could be isolated, which
11 I do not believe it can for the reasons we're saying.

12 JUDGE WARDWELL: But wouldn't that just
13 reduce the difference between the treatment group and
14 the control group if, in fact, that did take place?

15 DR. TOLLEY: Well, I think it might well do
16 that. It's a bit more complicated than that. You have
17 this control group, and it has so called measurement
18 error. You're not measuring the thing that you're
19 trying to measure. You're polluting the data. You're
20 putting in there something that's affected by the
21 plant if there's an effect, and you're counting that
22 in the control group. You're just -- you're
23 introducing error into your analysis. It's not an
24 analysis that would stand up to rigorous thinking.

25 JUDGE McDADE: Now, if you were trying to

1 estimate the impact of Indian Point using a hedonic
2 analysis, would it be possible, and again how that
3 would analysis differ in methodology from what Dr.
4 Sheppard described?

5 DR. TOLLEY: Right, let me proceed to that.
6 So, I used hedonic analysis which is the analysis that
7 has overwhelmingly been used in power plants, and in
8 particular nuclear plants. Several studies have been
9 done at other nuclear plants around the country. I
10 used that. I followed the customary procedures in
11 doing this, that the vast, vast majority of
12 investigators have used, and that's the hedonic
13 analysis.

14 I would like also to point out that --
15 well, I'll come to the sales, the repeat sales. So,
16 what the hedonic analysis does is a statistical
17 technique, and you take a regression technique. You
18 get a sample of homes and their sale prices, and then
19 that's the dependent variable. You're trying to
20 exclaim that, and you then -- so you ask yourself what
21 explains the price of a home? Well, it's the number of
22 bedrooms, the number of rooms, lot size, whether it's
23 detached or single, how old it is, a variety of
24 characteristics like that. And then you get a sample
25 of sales, and the best way to do it is to get a sample

1 of sales at one point in time, because if you get that
2 one point in time you're not introducing all these
3 confounding effects and so forth. You just get at that
4 one point in time what is affecting the sale of the
5 house.

6 Then what you put in that, if you're
7 interested in some possible disamenity, something like
8 that, you put that in. So, these plant studies put in
9 proximity to the plant, to the nuclear plant. And that
10 is the one variable that you add to a hedonic
11 analysis. You could add other disamenities, too, if
12 you have enough data to do it and so forth, but that's
13 what you do.

14 And then what the regression analysis
15 does, it's a method of holding everything constant.
16 It's a method of measuring the independent influence
17 of each of these things like number of bedrooms, house
18 age and all that kind of thing. And it also -- the
19 coefficient on distance to the plant measures the
20 extent to which this is -- a plant is an amenity or a
21 disamenity, so it's the coefficient on that, and it
22 holds constant everything else. So, it's a much --
23 using the word clean, it's a much cleaner way to do
24 things. And it is the way that is overwhelmingly used
25 by analysts for all kinds of work in housing.

1 JUDGE McDADE: Using that kind of an
2 analysis, doctor, how do you differentiate a
3 disamenity such as Indian Point as opposed to other
4 disamenities in the area, say like Clark Point
5 Resource Reclamation Center, or factories, or other
6 facilities or entities that might be viewed generally
7 as a disamenity?

8 DR. TOLLEY: Right. Well, two things. One,
9 to the extent that you have enough data and time, and
10 resources, and so forth, you put in these other
11 disamenities. In the Indian Point case and in most of
12 these other -- some of the other cases they are put
13 in. But you put them in to the extent that you can.
14 Then the other part of this is that no matter --

15 jUDGE McDADE: Excuse me. Does that mean
16 you run them separately? In other words, you do the
17 analysis with Indian Point, then you do the analysis
18 with Clark Point, and then you do the analysis with
19 the paperboard company, and then you see what
20 differences there are between the three?

21 DR. TOLLEY: Well, I think in this case
22 we're interested in Indian Point, and the analysis is
23 focused down to within a very small distance, three to
24 five miles. So, the analysis is confined to that, so
25 you pick out the amenities and disamenities within

1 that 5-mile area, and that's going to be a good deal
2 more limited. For the analysis of the power plant, you
3 just want the other amenities that would affect these
4 properties within this confined area. So, you try to
5 do that. However, no matter how hard you try in a
6 spatial situation, there are always things you're not
7 going to be able to measure. So, there are so called
8 econometric problems. You just do the best you can.
9 You get the size of sample really, frankly, that you
10 can afford and then you run this regression. And if
11 you can get information on some of these other
12 amenities, I think some -- I recall a plant that put
13 in a beach and things like that, and you put those in
14 if you can.

15 Frankly, in the case of Indian Point I
16 don't think either -- neither Dr. Sheppard or I have
17 put in these other amenities, and that's just part of
18 the game in statistics. You do the best you can, you
19 make your estimates and your standard errors on the
20 coefficients. You have measures of reliability. You
21 have a very good fit, you'll have a very narrow
22 confidence interval, to use that terms. I don't know
23 whether they're comfortable to you, or not. But you
24 have measures of the reliability of it. Have I
25 explained enough about hedonic?

1 JUDGE McDADE: We'll find out.

2 JUDGE WARDWELL: To fix some of these
3 points, can we go to page 72 of your testimony, and
4 that's Entergy 132. You want to pull that up, Andy.
5 Yes. It's going to be -- try 74. Yes, which is
6 actually page 72 of the document.

7 Is that a plot of your results?

8 DR. TOLLEY: No. That is a plot of what you
9 would expect if Indian Point were, in fact, a source
10 of disamenity. If it were depressing planned values.
11 And that's -- yes, so that's the so called expected p-
12 - if you have a disamenity that's what you expect.

13 JUDGE WARDWELL: How -- why -- the formula
14 still confuses me a bit, though. That formula says
15 that Y should equal zero if X is zero. Correct?

16 DR. TOLLEY: Well, no -- yes, actually it
17 does. The --

18 JUDGE WARDWELL: The graph doesn't seem to
19 indicate that.

20 DR. TOLLEY: That's correct. There should
21 be a -- it should have ax minus bx plus c , plus a
22 constant, or it really might have a lot of -- see, it
23 really had -- that's just the hedonic --

24 JUDGE WARDWELL: I'm sorry. You hit the
25 mike, I didn't hear that.

1 DR. TOLLEY: Yes, that's just the property
2 -- that's the affect of this distance on the property
3 values. So, it says --

4 JUDGE WARDWELL: So, that's not a formula
5 for the line.

6 DR. TOLLEY: No, it's not. The total line,
7 the simplest way of thinking about the total line is
8 that there are many other terms in this equation which
9 are part of the number of bedrooms, other things.
10 Also, the constant is -- it's affected by people's
11 alternatives of where they can live nearby. So, if
12 we're talking about the whole line we can get into
13 things about that. But this is just trying to
14 illustrate the distance effect.

15 JUDGE WARDWELL: Could we now go up to page
16 78. It'll be 76 on the number on the bottom. There you
17 go. Now, is that your -- is that a schematic
18 representing what your analysis showed?

19 DR. TOLLEY: Yes, it is.

20 JUDGE WARDWELL: You want to explain what
21 that says to you?

22 DR. TOLLEY: Let's see. This says that --
23 what this configuration, if you're close to the plant
24 -- the first place, the x term dominates if you're
25 close to the plant, the x squared term dominates as

1 you get further away because x squared gets bigger and
2 bigger and relatively grows much faster than x . So,
3 what this shows is that if you get a negative a ,
4 you're actually in the vicinity of the plant. As you
5 move away from the plant the property values will
6 decline, which means it's an amenity, not a
7 disamenity. You move away from the plant and you get
8 lower values. So, people somehow are liking to live
9 close to the plant.

10 Then you reach a certain point here, the
11 minimum where the x squared term begins to take over
12 and then it begins rising. From that point, you do
13 find it a disamenity. The problem there is that it's
14 an increasing disamenity, so that if I am five miles,
15 I value an extra mile distance by some amount. Then if
16 I'm at 20 miles, I -- disvalue it by double that
17 amount, I guess, by the square of that amount. So, the
18 farther away from the plant I get, the more I might
19 get an increasing rate. It's, as I say,
20 counterintuitive. It doesn't make economic sense.
21 That's not the way people behave. And we have all
22 kinds of -- otherwise we'd be eating oranges out of
23 our ears if we started consuming oranges like this.
24 So, this is the result that I got, and it's my -- it's
25 a major reason for saying that there's no -- this

1 result doesn't make sense. I think it's due to these
2 measurement errors, these things that no matter how
3 hard you try you can't get them into the analysis. And
4 it's called Omitted Variable Bias, and it will pick up
5 some distance effect and throw that in there and make
6 an estimate of it.

7 What you have to do when you're
8 interpreting with regressions is think sensibly. You
9 don't just mechanically run the regression. You think
10 sensibly about what the results mean. And if they
11 don't make economic sense you throw them out. You're
12 not going to be a slave to a statistician. A
13 statistician has wonderful tools. The statistician
14 doesn't know how to think about the sense of these, or
15 the common sense of these. Have I answered that
16 question?

17 JUDGE WARDWELL: Yes, you have. Thank you,
18 Dr. Tolley.

19 JUDGE McDADE: Okay, doctor. This graph
20 would indicate on the face of it that there are a
21 certain number of people who view it as an amenity.
22 They want to live close to the plant. Would that be
23 explained by people who are commuting to the plant to
24 work there?

25 DR. TOLLEY: Are you asking about whether

1 they work there?

2 JUDGE McDADE: Yes.

3 DR. TOLLEY: Yes. Okay. Well, there are so
4 few people who work in this plant, so few people who
5 work in the plant who live anywhere near close to it,
6 that 10 or 20 people living in the Town of Buchanan or
7 something, which is what it would be, to me it's
8 completely unbelievable that those people could be
9 responsible for that. You would find a scarcity value
10 to being right near the plant, and you just don't find
11 it.

12 The technical requirement is that a bidder
13 who wants to be there has to be the marginal bidder.
14 He has to outbid someone else. Well, there are plenty
15 of people who want to live in Buchanan, because
16 they're obviously living there, but you wouldn't have
17 to pay them very much at all in order for them to give
18 up their residence because it doesn't mean that much
19 to them.

20 In any case, in my belief this argument
21 about living close to the plant is -- I don't want to
22 be too strong about it, but it's a red herring in my
23 opinion.

24 MR. REAMER: Your Honor, Bill Reamer for
25 the Applicant. Just I think I can help on this. In the

1 Applicant's Environmental Report is a table on page 3-
2 30 that's Entergy Exhibit 15B. And we don't
3 necessarily need to look at this right now, but the
4 numbers are in Buchanan 20, 20 and then employees in
5 the City, in the Village of Buchanan, and 200
6 employees in the entirety of Westchester County. And
7 that number, let's see. That number is also in 330.
8 And then preceding that table is an indication that
9 there are 1,255 employees totally that work at the
10 plant.

11 JUDGE McDADE: Okay, thank you. Doctor,
12 using your hedonic analysis, do you need to come up
13 with an event?

14 DR. TOLLEY: I'm sorry, I did not hear the
15 question, sir.

16 JUDGE McDADE: Using your hedonic analysis
17 do you start with an event?

18 DR. TOLLEY: No. You start with a sample of
19 homes where you can get it, take it. I should say
20 similar analyses will sample homes over a few years,
21 and in that sense it has different time periods. It is
22 not oriented to events at all. It can be taken any
23 time, so I think that's the basic answer.

24 JUDGE McDADE: So, you would not focus, as
25 Dr. Sheppard did, on the opening of Indian Point 2 for

1 operation.

2 DR. TOLLEY: Yes, I would not focus on what
3 about Indian --

4 JUDGE McDADE: You would not focus on the
5 opening of the Indian Point 2.

6 DR. TOLLEY: No, not at all, not at all.
7 These samples -- this was -- this analysis was run on
8 two samples of data. One was a sample of homes taken
9 on I think it was July 11th of 2011 on a particular
10 day from a multiple list, which has certain advantages
11 to it because it definitely rules out all other
12 events. Analyses will sometimes take a sample over
13 several years and then they will put in so called time
14 dummies to control for the year that it's in. And
15 that's another way of doing it. But these time dummies
16 are usually consecutive years very close together,
17 anyhow. But neither one of them focuses on events.
18 It's a completely different approach.

19 JUDGE McDADE: Okay.

20 JUDGE WARDWELL: Dr. Sheppard, would you
21 like to comment on these two graphs, and whether the
22 first one represented what should be there, if the
23 hypothesis was that the plant was impacting costs, and
24 then the one that Dr. Tolley came up with in his
25 analysis. And then, also, I would like to see whether

1 or not you have some summary chart or a plot that best
2 represents your conclusions besides just the raw
3 numbers that I'm aware of.

4 DR. SHEPPARD: Okay. So, my comment on this
5 plot, I understand the plot and I agree that this
6 provides a rough approximation of the result that Dr.
7 Tolley obtained. I have several comments about that
8 result.

9 The first comment is to remember that this
10 is, essentially, a radial slice so that there's a much
11 larger area, and much larger number of homes that are
12 located in that portion of the curve that -- where the
13 curve is increasing. So, if were to actually imagine --
14 -- if were actually to imagine well, removing the plant
15 would cause this line to go flat, there are much --
16 there's a larger number of homes that would
17 increasing in value than would be decreasing. The
18 number of homes that are in this -- the portion of
19 this curve that's downward sloping where you could say
20 it represents an amenity, that number of homes is much
21 smaller. They're not proportionally located along this
22 line, just because this is a slice through a circular
23 area around the plant.

24 Second, in Dr. Tolley's analysis the
25 linear term which is generating the downward sloping

1 portion is not statistically significant. He discusses
2 that somewhat in his report and reports the so called
3 T test statistic that measures the statistical
4 significance, and notes that the linear portion is not
5 statistically significant, but the quadratic portion
6 is. And even alludes in his report to the possibility
7 that one could, as statisticians and econometricians
8 often do, consider alternative functional forms, even
9 dropping out the linear component of the equation.

10 All of these different components are
11 essentially different ways of capturing the idea of
12 proximity. Okay? We can measure the proximity of a
13 property to Indian Point either as the straight line
14 distance, or we could measure it according as the
15 square of the straight line distance, or the square
16 root of the straight line distance, or a combination
17 of the linear straight line distance and the square of
18 that distance.

19 This particular image, and Dr. Tolley's
20 particular results, are a direct consequence of the
21 way he has chosen to represent proximity as a
22 combination of the straight line distance plus the
23 square of the straight line distance.

24 If one explore -- and I would recommend
25 exploring alternative ways of measuring proximity or

1 characterizing proximity of a property to the plant.
2 And that's why I suggested using the square root of
3 distance. If you use the square root of distance you
4 end up with a model that fits the data essentially as
5 well, that looks exactly -- has the shape of the
6 relationship between property value and proximity to
7 the plant that Dr. Tolley believes would best
8 represent what would occur if the plant, in fact,
9 constituted a disamenity. And perhaps most
10 interestingly, if you estimate the model using the
11 square root of distance rather than this particular
12 form, not only does the plant show up as a
13 statistically significant disamenity, but if you
14 calculate the total impact on property values within
15 the area around the plant using that alternative model
16 you get an estimate that's almost identical to the one
17 I estimate using my repeat sales analysis. So, if you
18 use the square root and calculate the square root as
19 a way of measuring proximity, and calculate the impact
20 on property values, the estimate is about a 25 percent
21 impact on property values; whereas, my analysis
22 suggests a 27 percent impact. But to obtain such close
23 agreement between two very different ways of looking
24 at the problem makes me very confident in my own
25 analysis that that represents what's going on.

1 JUDGE WARDWELL: What would the plot look
2 like as a square root?

3 DR. SHEPPARD: Actually, it looks quite a
4 bit like that first plot that we looked at in Dr.
5 Tolley's report. In my rebuttal testimony I did
6 provide some plots. We can perhaps pull --

7 MS. TAYLOR: Perhaps I could clarify.

8 DR. SHEPPARD: Can you help?

9 MS. TAYLOR: I believe that Dr. Sheppard
10 may be referring to New York State 453.

11 DR. SHEPPARD: And can we call that up?
12 That may show these plots.

13 JUDGE WARDWELL: What's the number again,
14 153 did you say, or 453?

15 MS. TAYLOR: 453, although my colleague
16 thinks I may have misunderstood what Dr. Sheppard was
17 about to refer to, page 74 of the exhibit we're
18 looking at now. That's New York State 453, if I can
19 see that far across the room.

20 DR. SHEPPARD: Yes, that's testing --
21 that's an eye test. Perhaps we could -- if we could
22 look quickly at New York State 453.

23 JUDGE WARDWELL: I don't have a 453.

24 DR. SHEPPARD: I beg your pardon then.

25 JUDGE WARDWELL: Is it Entergy's 453?

1 MS. TAYLOR: Oh, I'm sorry, I transposed
2 the numbers, 435. I apologize. New York State 435.

3 DR. SHEPPARD: Right. So, the blue line
4 that's shown, this particular graph shows three lines.
5 These lines represent a calculation that I undertook
6 in which I imagined a home that had -- using Dr.
7 Tolley's MLS data, imagined a home that had the
8 average level of characteristics for all of the
9 characteristics in Dr. Tolley's data, so an average
10 age, an average income in the area and so on. And then
11 varied the distance from the plant, from IPEC from
12 zero miles at the lefthand side of the graph out to
13 five miles.

14 The violet colored line in the middle
15 represents the result of that experiment using the
16 parameters estimated in Dr. Tolley's original model.
17 If you just reestimate that model and change nothing
18 other than measuring proximity using the square root
19 of distance rather than distance, rather than distance
20 plus distance squared you get a line like the blue
21 one. So you can see it does look quite similar to the
22 one Dr. Tolley put forward as emblematic of a
23 disamenity.

24 JUDGE WARDWELL: Using the same type of
25 equations that he used would be just Y is equal to A

1 the square root of X. Nothing else?

2 DR. SHEPPARD: No. So, this is using all
3 the same variables as he uses in his analysis except
4 instead of using distance and distance squared as
5 separate variables, that's his -- that's the way that
6 he characterized proximity in his original model. Drop
7 those and substitute the square root of distance as a
8 way of characterizing proximity.

9 JUDGE WARDWELL: One of those is squared so
10 then you'd be back just a distance -- then you'd have
11 a linear function --

12 DR. SHEPPARD: No. So, I'm dropping two.
13 So, he's including two variables, distance from the
14 plant and the distance squared, so he's estimating two
15 parameters. Drop both of those and include only the
16 square root of distance, not also square root of
17 distance squared, just the square root of distance.

18 JUDGE WARDWELL: I thought that's what I
19 said originally.

20 DR. SHEPPARD: Oh, I beg your pardon. I may
21 have misunderstood.

22 JUDGE WARDWELL: So Y is A times the square
23 root of X.

24 DR. SHEPPARD: Times the square root of X,
25 yes. And this -- I beg your pardon, I just

1 misunderstood. This is the shape that you get. The
2 resulting model is statistically significant. It shows
3 that this -- the impact of proximity has a
4 statistically significant impact on house values. And,
5 as I said, if you apply that analysis to the values of
6 homes in the region you'll get an estimated impact of
7 about 25 percent.

8 JUDGE WARDWELL: Is there a parameter that
9 judges the relative fitness between the two models,
10 between the Tolley model and the square root Tolley
11 model?

12 DR. SHEPPARD: There are a variety of such
13 parameters. One is the standard error of the parameter
14 estimate itself. Using this approach that improves the
15 precision of the estimate of proximity significantly.
16 You're getting a much better fit on the impact of
17 proximity. The overall fit of the model is almost
18 identical using only the variable square root of
19 distance, it's small -- the fit is reduced relative to
20 the two variables in Dr. Tolley's model in the second
21 decimal place.

22 MR. TENPAS: Your Honor, I'm sorry. Could
23 I ask just for a clarification. The witness used his,
24 I think, at one point about one model being better.
25 I'm just trying to clarify who he, or which model he

1 was referring to initially as the better. I'm sorry,
2 we just couldn't pick it up on the speaker and the
3 mike.

4 DR. SHEPPARD: I beg your pardon. There are
5 b-

6 JUDGE McDADE: His model, you were
7 referring to your own model, or Dr. Tolley's?

8 DR. SHEPPARD: When I said his model I
9 think I was referring to Dr. Tolley's model, but just
10 to make sure that it's clear let me restate it.

11 So, I'm comparing or contrasting two
12 models here, Dr. Tolley's original model which tries
13 to capture the impact of proximity using these two
14 variables, the straight line distance and the square
15 of the straight line distance contrasted with my
16 suggested alternative that captures proximity using
17 just the single variable the square root of distance.

18 JUDGE McDADE: Okay. Dr. Tolley, why do you
19 think using the distance plus the distance squared is
20 the better approach?

21 DR. TOLLEY: Okay, let's see. Well, a
22 couple of comments. One, I used a so called quadratic
23 utility function. That just means that people have
24 diminishing margin utility as we're all familiar with,
25 the more we consume of something the less we want an

1 additional unit. And then the idea that margin of
2 utility diminishes at a diminishing rate. And it is
3 perhaps the most well known utility function in the
4 literature. It's certainly one of the most well known.
5 And then there are other more standard forms, log
6 forms and so forth, I would like to point out that
7 those -- that kind of functional form is used, again,
8 I would say overwhelmingly in the literature. And I
9 would say that Dr. Sheppard has used -- has never used
10 the square root of distance in any of his writings
11 that we can find. He advised his Student Prest who I
12 think his undergraduate thesis is an exhibit here, he
13 didn't use the square root of distance. One would ask
14 why didn't Dr. Sheppard advise this student, or why
15 didn't he use that?

16 JUDGE WARDWELL: But why wouldn't you use
17 it?

18 DR. TOLLEY: Because I was following state-
19 of-the-art. I was following what most people do. I've
20 just done, in that sense, a very standard analysis.

21 JUDGE WARDWELL: Theoretically, do you
22 think it would work to give an appropriate analysis?

23 DR. TOLLEY: It does work. Let me continue.
24 So, it's true that if you search around enough and
25 you're looking for an answer, some people, I don't

1 like to be unkind, call it cherry picking. You choose
2 the hypothesis that shows what you're trying to prove.
3 Now, I didn't do that. I did a straight standard
4 analysis of things.

5 If you look at the literature, there are
6 hundreds of hedonic analyses, more than Google knows
7 how to count actually. If you go to the square root of
8 distance out of all those thousands, probably hundreds
9 if not thousands, there are seven studies that have
10 used the square root of distance. And of those seven
11 studies, several of them were testing alternative
12 functional form. They were somewhat unusual studies,
13 like it was -- one was the affect of a power line, and
14 because of various physical obstacles they wanted to
15 test various functional forms and so forth. So, they
16 threw in a whole bunch of functional forms to this,
17 not usually done in hedonic analysis, at all. So, then
18 I think there were two or three where they actually
19 came out and said well, that was the preferred
20 functional form.

21 Now it is certainly true that you can find
22 a functional form that will suit the hypothesis you're
23 looking for. But if we have a thousand, let me says
24 hundreds of functional forms that don't fit the data
25 and you find this paltry few down here, paltry one

1 that's used by a very fraction, 1 percent of
2 investigators, are you going to conclude that
3 therefore Indian Point is a disamenity, when most of
4 the functional forms don't fit it. So, that would be
5 the kind of thing. It's not, as Dr. Sheppard, it's not
6 an obvious alternative at all. I don't like to call it
7 cherry picking, but that what it seems like to me,
8 because why was this only one picked up, why has Dr.
9 Sheppard not used it before, why didn't he advise his
10 student to use it before? So, it's true you can find
11 a functional form that will fit the data, but is that
12 the test of scientific inquiry?

13 JUDGE McDADE: Okay. I'd like to move on to
14 a different area here while we still have some time.
15 And first to Dr. Sheppard, and then to Dr. Tolley.

16 MS. MIZUNO: Excuse me, JUDGE McDade, if we
17 could take a break shortly, that would be much
18 appreciated.

19 JUDGE McDADE: Okay. Let us go for just a
20 few minutes here, if we could, and then we'll take a
21 break. Let me just get through this one little area.

22 Dr. Sheppard, Indian Point is located in
23 a mature community. It has historical land use, it has
24 zoning. Even if Indian Point were to close in 2015, is
25 there any reason to believe that an industrial site,

1 an electric generating facility wouldn't, given the
2 historical use of the property and the zoning continue
3 to be the best and highest alternative for the use of
4 that property?

5 DR. SHEPPARD: So, I've undertaken no
6 separate evaluation of what might constitute the
7 highest and best use. But I don't think we need to
8 assume that it would be the highest and best use.
9 There are many examples of reclaiming brownfield sites
10 for use as residential property. One that I've studied
11 very carefully and extensively is in Kenosha,
12 Wisconsin which is similarly on the edge of water, in
13 that case Lake Michigan rather than the Hudson River,
14 but it's an industrial facility that was closed, taken
15 over by the city and completed rehabbed into
16 residential use and a museum. So, I don't think we
17 need to -- I wouldn't necessarily assume --

18 JUDGE McDADE: Would you necessarily assume
19 the contrary?

20 DR. SHEPPARD: No, I have not undertaken a
21 study of what's likely to happen there.

22 JUDGE McDADE: Given the fact that Indian
23 Point as an industrial facility in this area is not
24 unique, it's not the only facility in the area, is it
25 not reasonable to expect, and again even if Indian

1 Point were to close, it's still an area zoned heavy
2 industrial. Is there a reason to believe that that
3 would change, and that the land use would change?

4 DR. SHEPPARD: There's certainly reason to
5 believe that the land use would change whether that's
6 accommodated or could change, and that's driven by the
7 estimates of changes in property values. So, if the
8 value of residential property at a particular location
9 increases rapidly, then land owners who own property
10 that's not currently in residential use will have a
11 strong economic incentive to alter the use and alter
12 that land use. If it's not currently zoned for
13 residential use, they will begin petitioning to have
14 it zoned for residential use. They'll begin pressing.

15 JUDGE McDADE: Would that vary whether or
16 not it was closed and decommissioned, or simply closed
17 and the decommissioning was delayed for a period of
18 10, 20, 60 years?

19 DR. SHEPPARD: It's quite possible that it
20 could vary between those. I haven't undertaken an
21 estimate of the separate effect. What I've really
22 undertaken is an estimate only of the effect of
23 closing. But even that alone appears to generate a
24 statistically significant change in property values.

25 JUDGE McDADE: Actually, wouldn't a closed

1 plant which would then have security issues and
2 pollution issues be more of a disamenity than an
3 operating plant?

4 DR. SHEPPARD: It's not -- my analysis
5 contradicts that, actually, I would say. My analysis
6 does not support that. Let me just say that. I think
7 that's a better or more fair characterization. My
8 analysis does not support that.

9 JUDGE WARDWELL: How does your analysis
10 even address that?

11 DR. SHEPPARD: My analysis focuses on the
12 effect of commencing commercial operation at the
13 plant, and that generated a diminution in the property
14 values nearby.

15 JUDGE WARDWELL: So, it has no information
16 in regards to what would happen in the future as it
17 closed, and then not necessarily decommissioned.

18 DR. SHEPPARD: Well, it has information for
19 p-- I think as a -- I think my analysis has
20 information for what would be -- what the impact would
21 be property values of the cessation of commercial
22 operations.

23 JUDGE WARDWELL: I believe, did you not,
24 that you testified that you just assumed it was going
25 to be the same as what dropped when it was started up.

1 So, it wasn't -- you didn't have an analysis of it.
2 You made an assumption. Is that correct, or not?

3 DR. SHEPPARD: This is -- it is correct
4 that I made an assumption of that, but it's -- but I
5 guess what I'm suggesting is that's a standard type of
6 assumption in evaluating these sorts of impacts. And
7 as I've just testified in the discussion of the
8 previous issue, it's an assumption that's supported by
9 a version of hedonic analysis using Dr. Tolley's data.

10 JUDGE WARDWELL: At nuclear power plants?

11 DR. TOLLEY: I beg your pardon?

12 JUDGE WARDWELL: At nuclear power plants?

13 DR. TOLLEY: At Indian Point.

14 JUDGE McDADE: Dr. Tolley, what would you
15 anticipate would happen to land use in the event
16 Indian Point were to close given the historical uses
17 of the land, and the zoning, and what is surrounding
18 it. Would it remain an industrial site? Do we have any
19 data to draw conclusions as to what would happen one
20 way or the other?

21 DR. TOLLEY: We're speaking about what
22 happens after the decommissioning period?

23 JUDGE McDADE: Well, the first is just when
24 it closes. If it were to close in 2015, what impact
25 would that have in the short run on land use? And by

1 the short run I'm talking 10 years out. It's closed,
2 it's not decommissioned. The facility is still there.
3 It's just not generating electricity.

4 DR. TOLLEY: Well, I'm not an expert on the
5 theories of the state of plant when it's operating and
6 when it's in a decommissioning period so I really
7 didn't distinguish that.

8 MR. REAMER: Your Honor, Bill Reamer for
9 the Applicant. Maybe I can help on that. The first
10 point I'd make is included in the exhibits are
11 planning development documents from Village of
12 Buchanan, Westchester County prepared in a time frame
13 that would be relevant to Your Honor's questions.
14 What's the planning for the future including perhaps
15 no plant.

16 JUDGE McDADE: Which suggests except for a
17 small treed area it would be continued to be zoned
18 heavy industrial. Correct?

19 DR. TOLLEY: That's correct.

20 MR. REAMER: That's correct, Your Honor.

21 JUDGE McDADE: And are you in a position to
22 offer an opinion as to -- and, again, any of the
23 representatives here, the effect on land use and the
24 surrounding area if you have a operating plant
25 generating electricity as opposed to a closed but not

1 decommissioned facility that's sitting there. Would
2 there be a difference on the impact on land use, and
3 is there any data that you would point us to to
4 demonstrate that?

5 DR. TOLLEY: I would have to defer to
6 others on this.

7 JUDGE McDADE: Okay.

8 MR. CLEARY: Your Honor, Donald Cleary for
9 the Applicant. The Pilot payments and tax payments to
10 localities would go down, and that certainly would be
11 a significant --

12 JUDGE McDADE: We're going to get into that
13 quite a bit later.

14 MR. CLEARY: Okay.

15 JUDGE McDADE: I'm just talking about just
16 the fact of the plant itself either being there and
17 generating electricity versus being there, just being
18 there.

19 DR. TOLLEY: No, employment and --

20 MR. REAMER: Let me help on that, Your
21 Honor. The plant will still be there. The spent fuel
22 will still be there. The --

23 JUDGE WARDWELL: For 60 years, it won't be
24 there forever.

25 MR. REAMER: I believe we're addressing the

1 time frame of when it shuts down.

2 JUDGE WARDWELL: Okay.

3 MR. REAMER: That's what I am addressing,
4 the time frame of when it shuts down, what would be
5 the comparison at that point.

6 JUDGE WARDWELL: Sorry.

7 MR. REAMER: The plant will remain, the
8 spent fuel will remain, the impacts like view of the
9 plant, noise, traffic remain unchanged, small, so in
10 those terms there's not a significant change that
11 happens the day the plant shuts down.

12 Also, the property, of course, remains
13 under license, the site remains restricted. It's not
14 available at that point for alternative uses to --
15 that have been discussed by the state.

16 JUDGE McDADE: Okay. We've been here for
17 about two hours. A break was requested. It might be a
18 good time to take a break. It's 4:00 right now. Why
19 don't we take 10 minutes and come back at 4:10. Thank
20 you.

21 (Whereupon, the proceedings went off the
22 record at 3:59 p.m., and went back on the record at
23 4:12 p.m.)

24 JUDGE McDADE: Please be seated. Dr.
25 Sheppard, at least the takeaway that I got from your

1 testimony was that the property values around Indian
2 Point since the 1970's have been held down by a sort
3 of a nuisance-type disamenity.

4 Even if Indian Point closed, and the
5 facility were still there, wouldn't that same
6 disamenity or a disamenity significant approaching it
7 continue to exist until the plant was decommissioned,
8 and if not, why not?

9 DR. SHEPPARD: I think it's correct to
10 say, Your Honor, that there would be disamenity of
11 some type that would continue there, as long as the
12 plant were there. The question is not would there --
13 would cessation of operations remove all disamenity of
14 any sort.

15 The question is would cessation of
16 operations result in impacts on property values that
17 would in turn generate changes in land use. The
18 current Environmental Impact Statement says that no
19 significant land use changes are expected, and what my
20 analysis shows is not that all amenities would be
21 eliminated if the, you know, at the point of closure
22 of the plant.

23 What my analysis shows is that when the
24 plant closes, there will be some disamenity effect
25 that will generate, or that I think it's reasonable to

1 assume it will generate consequences for residential
2 property values, that will then in turn generate
3 changes in land use.

4 I'm not arguing that 100 percent of the
5 disamenity will be removed, just that there will be
6 some change in the pattern of disamenity that will
7 result in changes in property value, and hence,
8 changes in land use.

9 JUDGE McDADE: Okay. For the
10 Environmental Impact Statement, the staff is charged
11 with making a reasonable estimate. They're not
12 charged with being clairvoyant. Aren't the actual
13 effects on land use in the area of a shutdown
14 extremely speculative?

15 DR. SHEPPARD: I think anticipating land
16 use changes that may result from significant policy
17 decisions, and in particular anticipating those land
18 use changes well out into the future, I think that is
19 intrinsically -- it involves estimation, and that you
20 might -- it might be sensible to characterize that as
21 speculative.

22 But I don't think it's speculative in the
23 sense that it's impossible to make a reasonable
24 estimate, nor do I think that it's speculative in the
25 sense that the error that's intrinsically associated

1 with such estimates is so immense as to make the
2 exercise unreasonable.

3 My understanding of what staff are charged
4 with is trying to make a reasonable analysis of the
5 land use consequences of various decisions, and one of
6 those would be to try to analyze the land use
7 consequences of both the no action or the renewal, and
8 given -- that's going to require some estimation,
9 because we're talking about events that haven't
10 happened yet.

11 JUDGE McDADE: Okay, and putting this
12 question to whoever from Entergy thinks they're best
13 capable of answering this, as I understand it right
14 now, there are PILOT payments, payments in lieu of
15 taxes, and those are --

16 JUDGE WARDWELL: Can I ask one question of
17 Dr. Sheppard before we leave him, because we're going
18 to get into another area? Have you tried to benchmark
19 this latest model approach, looking at other plants
20 that are currently closed and even decommissioned, to
21 see if this actually works at other facilities, such
22 as Connecticut Yankee or Maine Yankee?

23 DR. SHEPPARD: I have not, Your Honor. I
24 have, in conjunction -- I have compared the overall
25 impact that I estimate with other hedonic approaches,

1 both the hedonic approach that Dr. Tolley used and
2 that we've discussed, and the hedonic approach that my
3 student has used, and it was referenced in my report.

4 The magnitude of impacts that I'm
5 estimating from my analysis is of the same general
6 range as those other hedonic estimates that impact,
7 but I haven't actually tested it in the scenario that
8 you suggest, looking specifically at closed and
9 decommissioned plants.

10 JUDGE WARDWELL: Thank you.

11 JUDGE McDADE: Okay. With regard to these
12 payments in lieu of taxes, I assume that these are not
13 just purely a voluntary contribution on the part of
14 Entergy. How were they determined? How was that
15 amount of 22 million a year calculated?

16 MR. REAMER: Bill Reamer for the staff
17 (sic), Your Honor. They are determined by an
18 agreement that was reached between Entergy and the
19 local jurisdictions in around 2000, an agreement that
20 extends until, I believe, the end of tax year 2014.

21 JUDGE McDADE: What happens in 2014?
22 Could Entergy just simply stop making these payments?

23 MR. REAMER: Well, the agreement will, at
24 that point cease, and we won't make any assumption for
25 purposes of my answering the question at this point,

1 I guess, about the status of the plant.

2 But the options at that point would be a
3 new agreement between Entergy and the nearby
4 jurisdictions; that would be one. Or the other option
5 would be that the nearby jurisdictions exercise their
6 jurisdiction to assess, for purposes of collecting
7 taxes, from Entergy. That would be another way to go.

8 JUDGE McDADE: It's my understanding that
9 they're already collecting real estate property taxes
10 based on the Indian Point facility, are they not?

11 MR. REAMER: My understanding is that
12 Buchanan, the Town of Cortlandt, the school district
13 and the fire district, receive their real estate taxes
14 through the payment in lieu of tax vehicle. Now there
15 may be other taxes that they receive, for example,
16 real estate taxes from businesses that cater to
17 Entergy's needs.

18 There may be other tax benefits that the
19 local jurisdictions receive. But the real estate tax
20 for those jurisdictions, as I mentioned, my
21 understanding is it comes through the agreement.

22 JUDGE McDADE: Okay, and Entergy 15B, my
23 recollection of that is that there was 1.9 million in
24 property taxes paid to Buchanan, in addition to what
25 they receive through the payments in lieu of taxes.

1 Is that incorrect?

2 MR. REAMER: I'll have to get back to you
3 on that question. I'm not able to answer that in a
4 fashion. I'm going to ensure the accuracy of my
5 answer.

6 JUDGE McDADE: Okay. Would anyone, if you
7 have any way of knowing, one, what the assessed value
8 of the property at Indian Point is, and what the tax
9 rate would be with taxes from Buchanan or Cortlandt or
10 Westchester County?

11 MR. REAMER: Bill Reamer for the staff
12 (sic). Would need to get back to you on that as well.

13 JUDGE McDADE: And as I read the
14 testimony, one of the thoughts that I had was that in
15 the event Indian Point closed, there would be a
16 significant reduction in payments to these surrounding
17 localities, and I believe there was testimony that we
18 received, that Buchanan received approximately 40
19 percent of its revenues from Indian Point, that the
20 school district about 35 percent of its revenue.

21 One question, follow-up question that I
22 had is if the plant were to close, what would be the
23 payments from Entergy to these surrounding
24 communities, and how that change would impact property
25 values and derivatively from that, land use?

1 In other words, as I understand Buchanan,
2 it's a relatively small town of about 2,000 people.
3 So one could assume, just from the \$2 million that
4 they're getting, it's about \$1,000 per person.

5 So I had assumed, and my take on that was
6 that the payments in lieu of taxes were in addition to
7 some basic tax. So what I'm trying to figure out is
8 if the plant closed, how much revenue would no longer
9 be paid to Buchanan, Cortlandt, Westchester County?
10 Does anyone have that information available?

11 MR. REAMER: Bill Reamer for the
12 applicant, Your Honor. We took a look at several
13 other plants that had shut down, Maine Yankee,
14 Connecticut Yankee, Yankee Rowe, to look at tax
15 payments after the plant had shut down, and those are
16 exhibits, Entergy exhibits. I don't have the numbers
17 right now, but I'll get them for you.

18 But we did an estimate that taxes could
19 reasonably assume to be approximately 18 percent of
20 the amount that Entergy currently pays under the PILOT
21 payment agreement. So that -- now that, those
22 payments we made an assumption, that they would
23 continue at that level, from the shutdown point when
24 the plant ceases to operate.

25 It's now no longer generating revenue.

1 Clearly, its value has declined. We thought the Maine
2 Yankee plant, Yankee Rowe, Connecticut Yankee would
3 represent reasonable proxies. They were in the same
4 situation, and we looked at -- and then that amount,
5 that 18 percent, we said, we assumed would continue
6 throughout the period of decommissioning, up to 60
7 years.

8 And we looked at the Maine Yankee,
9 Connecticut Yankee, Yankee Rowe examples there, and
10 felt the 18 percent figure enveloped what had happened
11 at those sites.

12 JUDGE McDADE: Okay. So if that were the
13 case, then the payment to the surrounding localities
14 would drop from about 22 million a year to about 4
15 million a year?

16 MR. REAMER: I take Your Honor's
17 calculation --

18 JUDGE McDADE: Approximately, okay. Dr.
19 Sheppard --

20 MR. RUND: Your Honor. This is John Rund
21 for the applicant. I just want to, for the record,
22 just point out Mr. Reamer was referring to Entergy
23 Exhibits 164, 165 and 166.

24 JUDGE McDADE: Okay, thank you. Dr.
25 Sheppard, have you factored in that lost revenue, and

1 the impact it would have on tax rates in the area, and
2 how that would affect land values and thereby affect
3 land use?

4 DR. SHEPPARD: I certainly considered that
5 issue, Your Honor, in several different ways. First,
6 as noted in my report, to the extent that these PILOT
7 payments and/or real estate tax payments commenced at
8 the time of operation of the plant, or were
9 anticipated at that time, they would factor in
10 specifically. They would already be accounted for in
11 my analysis. So whatever effect --

12 JUDGE McDADE: Explain that. How would
13 that be accounted for?

14 DR. SHEPPARD: Because -- so suppose that
15 we have a new facility opening up, that's expected to
16 generate a large amount of tax revenue for the town,
17 and that people who are, homes that are located in the
18 town or nearby, will be the recipient of a -- I don't
19 want to characterize it as a windfall, suggesting that
20 it's in some sense undeserved.

21 But it would have an impact on the quality
22 and extent of public services made available to those
23 houses. So if that were a significant factor, then
24 buyers of houses would take that into account in
25 figuring out how much they would buy, and that would

1 be adjusted for, in my estimates, of the impact of the
2 treatment that we've discussed at length before we
3 took the break.

4 The second way I've taken that into
5 consideration is by consulting FERC, I mean just
6 thinking through the implications of these PILOT
7 payments for what would be the consequences of those
8 payments for house values.

9 So for example, in the discussion that you
10 were just having, you put forward, you made note of
11 the fact that this amounted to something on the order
12 of \$1,000 per person.

13 And if we figure, okay, so three or four
14 people per household, that sounds like three or four
15 thousand dollars per house in the community, and we
16 capitalize that at some reasonable rate.

17 Whether it would take four or five or a
18 government-ordered seven percent, that's going to
19 generate an impact on the typical value, once that's
20 capitalized into the value of houses, that will
21 generate an impact on the value of houses on the order
22 of 40 to 60 thousand dollars.

23 That's much smaller than the estimated
24 impact that you see either from variations of the
25 hedonic model, using Dr. Tolley's data, or from my

1 own.

2 So for example, if you consider measuring
3 proximity from using linear distance, which is -- if
4 you object to the use of the square root of distance
5 as a measure of proximity, the most widely used way to
6 measure proximity would just be straight-line
7 distance.

8 If you used Dr. Tolley's data to estimate
9 that effect, the impact is about \$46,000 on the value
10 of a home for each mile. So that would suggest that
11 the PILOT payment impact is, would be on the same
12 order of magnitude as moving the typical home one mile
13 further away from the plant. And finally, if I may --

14 MR. TENPAS: Your Honor, at this point,
15 could we have a clarification of the analysis he's
16 referring to? If it's a document, we'd like to know
17 what it is. We believe that this may be analysis
18 that's outside the record that we've never seen.

19 JUDGE McDADE: You'll have a chance to ask
20 him about that. Dr. Sheppard.

21 DR. SHEPPARD: Finally, in Dr. Tolley's
22 own analysis, presented in his report, reiterated in
23 his testimony and verified by myself, the impact of
24 PILOT payments, they explicitly include the impact of
25 PILOT payments, and it is not -- the resulting

1 estimate is that PILOT payments are not statistically
2 significant.

3 That is, we cannot reject, using Dr.
4 Tolley's data, Dr. Tolley's analysis cannot reject the
5 hypothesis that the true effect of PILOT payments on
6 property values is essentially zero. I'm not sure I'd
7 go that far, but that's the result of his analysis.

8 So the PILOT payments, I don't want to
9 minimize them. I think they're a very helpful thing
10 for the community. But their impact on property
11 values is modest, when compared to other impacts that
12 appear to be being generated by the IPEC facility.

13 JUDGE McDADE: Dr. Tolley, would you
14 respond?

15 DR. TOLLEY: Well to my mind, this result
16 shows up the weakness of the repeat cells estimators
17 (ph), which in my opinion should not be taken
18 seriously. So you were talking about the remarkable
19 coincidence of the 27 and 28. I say that's remarkable
20 coincidence to a meaningless number. I'm just putting
21 that on the record.

22 Now the puzzle here is that let's take the
23 supposed disamenity effect, and suppose we accept this
24 value of about 1.7, \$1.07 billion, and that's the
25 estimate of the disamenity effect. So let's take the

1 disamenity effect first.

2 That's going to occur 60 years out in the
3 future after the closure, because the plant, as we've
4 said, is going to be there and having disamenity
5 effects.

6 The present value of a billion dollars 60
7 years from now is on the order of one percent of a
8 billion dollars, and that's about, I guess, \$10
9 million. Let's not get into the fine print. It's
10 something like that.

11 Meanwhile, we have the present value of
12 the PILOT payments, and the PILOT payments, if they
13 plan -- if there's a renewal, will continue at their
14 present level for 20 more years, and then they'll fall
15 to 18, 19 percent for the 60-year decommissioning
16 period.

17 Whereas if you, in the no action
18 alternative, PILOT payments fall immediately, so to 19
19 percent and stay that way for 60 years. So the effect
20 on land values from the PILOT payment is the
21 difference between the present value of the PILOT
22 payments with renewal, and with no action.

23 And because those are big losses in the
24 present, they are not so heavily discounted. So you -
25 - but you do discount them, of course, and you'll pay

1 a lot more for an annuity that's going to begin right
2 now and last for several years, than you will for
3 something that's not even going to begin for 60 years,
4 which is probably really beyond the horizon you're
5 thinking about. It would be less than seven percent.
6 So you have those two things.

7 The present value of the PILOT payments
8 is, as I recall, about \$180 million, as compared to
9 something on the order of \$10 million, as the present
10 value of the property that you're going to realize
11 supposedly in 60 years for this \$1 billion, which I
12 don't believe.

13 But suppose we accept that. Even if you
14 accept that, it's just -- the property value increase,
15 when you subtract the thing that's going to happen 60
16 years out there, subtract the present value of that
17 from the present value of the PILOT payments is \$162
18 million, and that far swamps this \$10 million present
19 value that you're getting.

20 So to me, I believe in these figures.
21 They ring true. Dr. Sheppard says that it doesn't
22 ring true at all. The idea that in the face of that,
23 the disamenity effects would overcome the power
24 effects, is not believable.

25 JUDGE McDADE: Okay. Dr. Sheppard

1 hypothesizes that the diminution in the disamenity
2 will begin as soon as the plant shuts down, not at
3 decommissioning. It seems that you reject that
4 hypothesis. Why?

5 DR. TOLLEY: Well, my hypothesis has been
6 the certain disamenity effects are continuous for the
7 whole period. But Dr. Sheppard never does have the
8 analysis of this. All he says is that property values
9 are going to rise on the first day, and they'll keep
10 rising. He doesn't make any quantitative statement
11 about what's going to happen.

12 In my analysis, property values rise by
13 \$16 million, and they rise only gradually if we want
14 to go up there, and if we really believe this is going
15 to happen in 60 years.

16 Finally, in the 60th year, it will have
17 risen to this \$1 billion, but most of that rise takes
18 place in the last eight years. Half of the rise takes
19 place in the last eight years. It's the way compound
20 interest works.

21 So I would just say, I have another
22 calculation. In the first place, Dr. Sheppard in his
23 testimony has shown no calculation. He's just
24 assumed, as a qualitative matter, that this will
25 happen, because he's talking now. He's saying yes,

1 there will be these; this amenity will not be quite as
2 great.

3 I'm still saying, excuse me, if I may just
4 continue my thought, and that is that disamenity will
5 still have to not be very great at all from the
6 decommissioning for this effect to outweigh itself.
7 We'd have to get into the numbers. But he hasn't
8 gotten into numbers. We're getting into speculation
9 now. Excuse me for going on.

10 JUDGE McDADE: Okay. Let me throw out
11 another unsupported hypothesis here and let you opine
12 with regard to it. In the testimony we've received,
13 Entergy points out and the staff points out that there
14 no obligation on their part to decommission the
15 facility for 60 years after the close.

16 So we're not talking decommissioning in
17 2015. We're talking about decommissioning in 2075.
18 As an economist, is it reasonable to assume that this
19 piece of property that would generate costs for
20 Entergy, real estate taxes, security, maintenance to
21 prevent contamination and lost opportunity costs, is
22 it realistic that this piece of property on the Hudson
23 River would continue to generate those costs for 60
24 years, prior to a decommissioning that has to occur at
25 some point anyway?

1 Wouldn't there be an economic incentive if
2 the license is not renewed, for Entergy to
3 decommission the facility as soon as practicable, so
4 that the holding costs would be gone, and it would be
5 able to take advantage of various other opportunities
6 with the property?

7 DR. TOLLEY: Well, maybe so. But the
8 plant, as I understand it, it's been approved by the
9 NRC for a 60-year decommissioning period, I don't know
10 what would happen if Entergy tried to do it sooner.
11 But I've been going by the Entergy plan and the 60-
12 year plan.

13 JUDGE McDADE: I mean the NRC has
14 authorized, from their standpoint, they've authorized
15 Entergy to take up to 60 years. There's not going to
16 be, as things stand right now, a regulatory
17 requirement on Entergy to decommission the plant, to
18 have it decommissioned before 2075.

19 But I'm not asking about a regulatory
20 requirement. I'm asking as an economist, isn't there
21 a significant economic incentive for Entergy, instead
22 of having this economic drain for the next 60 years,
23 to turn it into a current asset?

24 DR. TOLLEY: Well, I suppose there is. It
25 depends on the cost of more rapid decommissioning,

1 among other things.

2 JUDGE McDADE: But isn't it reasonable to
3 anticipate that it's going to cost more 60 years from
4 now, than if they get to it promptly? I mean is there
5 any reason to believe that the decommissioning costs
6 would be less in 2007, and even in 2016?

7 DR. TOLLEY: Well, I don't know. I'm just
8 pointing out there is the cost side of more rapid
9 decommissioning. Again, that would be out of my area.
10 I frankly haven't gone into the calculations.

11 JUDGE McDADE: Okay. To the other
12 representatives from Entergy, doesn't your company
13 have an economic incentive, although from a regulatory
14 standpoint you've got 60 years to decommission, in the
15 event the license was not renewed, to turn this into
16 an asset?

17 MR. REAMER: Your Honor, Bill Reamer for
18 the applicant. The decision on the decommissioning
19 strategy has been made by Entergy, for purposes of its
20 decommissioning cost estimate.

21 So the documents in the record show that
22 Entergy has considered the cost projected out through
23 2073 as a decommissioning date, and has provided in
24 its decommissioning trust fund sufficient funds, that
25 if it's sufficient in its view, and sufficient, I

1 believe, in the staff's view, because the staff did
2 accept the Entergy cost estimate.

3 JUDGE McDADE: Now does this plan
4 contemplate a slow and steady decommissioning over the
5 60-year period of time, or does it envision a period
6 of inactivity, followed by significant decommissioning
7 activities on the back end?

8 MR. REAMER: Bill Reamer for the
9 applicant. The latter.

10 JUDGE McDADE: And if that's the case, Dr.
11 Sheppard, again please explain to me why do you
12 believe that a derelict plant which contains toxic
13 materials, would be less of a disamenity than a
14 maintained, secured at a very high level, industrial
15 facility?

16 DR. SHEPPARD: So two points. First, so
17 we were talking about PILOT payments, and you've asked
18 about the disamenity. I don't know if we're still on
19 the PILOT payments or not. I mean Dr. Tolley's own
20 analysis suggests that the PILOT payments have no
21 effect on property values.

22 DR. TOLLEY: Excuse me. That's not true.

23 JUDGE McDADE: Okay. You'll have an
24 opportunity to respond.

25 DR. TOLLEY: Sorry, sorry.

1 DR. SHEPPARD: But the -- so that's what
2 his estimates, his hedonic function estimates show.
3 But in terms of the disamenity, so as I understand it,
4 and according to the testimony that had been given, it
5 will be secured in either event.

6 So it will remain secured. It will, it
7 has toxic substances on the plant now. It will
8 continue to have toxic substances on it. So many of
9 these classic indicators of disamenity or nuisance
10 would remain the same. But there will be some that
11 would or could remain, would or could be decreased.

12 So there would be -- there won't be the
13 regular refueling that involves, you know, an annual
14 process of moving fuel into the facility and taking
15 care of that sort of thing. There may be fewer alarms
16 going off and less traffic of workers going in and
17 out.

18 So I don't think that we can conclude
19 automatically that the level of disamenity would not
20 go down, and the data seem to be consistent with there
21 being a disamenity associated with the commencing of
22 commercial operations at the plant.

23 JUDGE WARDWELL: But haven't you stated
24 that your assumption is that the disamenity ceases the
25 minute the plant closes? Isn't that a far stretch or

1 did I misinterpret what you said?

2 DR. SHEPPARD: I think perhaps I failed to
3 communicate clearly.

4 JUDGE WARDWELL: Good. It's not my fault.

5 DR. SHEPPARD: I just didn't -- I don't
6 want to go there.

7 JUDGE WARDWELL: Good. I don't want to be
8 there.

9 DR. SHEPPARD: Let me just be clear. My
10 testimony and the conclusion of my analysis is not
11 that all disamenity will cease. Think in terms of
12 levels of disamenity or degrees of disamenity, and
13 what I'm --

14 I think the conclusion in my analysis and
15 the assumptions that underlie it are that some of the
16 disamenity will cease. It will be turned down a
17 notch, but not go away all together.

18 JUDGE WARDWELL: And how much is that and
19 how do you project that over the 60-year period, and
20 have you discounted it?

21 DR. SHEPPARD: I haven't done any
22 discounting. I'm just estimating the impact of
23 cessation of commercial operations.

24 JUDGE WARDWELL: And how did you stretch
25 that out in regards to the reduction of the disamenity

1 after shutdown?

2 DR. SHEPPARD: So after shutdown, I
3 haven't undertaken any analysis that says well, what
4 will be the dynamic process of drawdown of disamenity
5 or increase in property values.

6 JUDGE WARDWELL: So you, when you're
7 throwing out the \$11 billion estimate, you have
8 nothing to regards -- there's no time value of that
9 associated with that number? That's just the number
10 that you calculated for the difference in the property
11 values associated with a start-up, and assuming that
12 that is recouped at some time in the future, within no
13 defined time frame?

14 DR. SHEPPARD: Right, associated with the
15 start-up that was experienced over, let us say roughly
16 a ten-year time period, because that's the average
17 duration of home ownership.

18 So really a nine-year time period is the
19 average, and so the disamenity effect that my analysis
20 discovered and documented, that was associated with
21 the start-up, I would think it would be reasonable to
22 say that it would be over a similar period of time
23 that it would be drawn down.

24 Not that the disamenity would go away all
25 together. There still would be disamenity associated

1 with the plant.

2 JUDGE McDADE: So five years out, are we
3 talking about a \$1 billion increase in land values or
4 half billion dollar increase in land values, or \$100
5 million increase in land values?

6 DR. SHEPPARD: I think a fair way to
7 characterize it, I mean if you'll allow me to speak in
8 generalities, I would say a decade after closure of
9 the plant, we could expect about a 20 -- let me just
10 round everything to the nearest five, okay.

11 A decade after closure of the plant, it
12 would be reasonable to expect a 25 percent increase in
13 property values. That's basically \$1 billion, if
14 we're talking about the area within five miles --

15 JUDGE McDADE: But you're basically saying
16 that all of the increase would be within that first
17 decade, even though there would be significant
18 disamenities remaining?

19 DR. SHEPPARD: Yes. There may be
20 additional increases that would be experienced, as the
21 full panoply of disamenities associated with storing,
22 the safe store status of the plant, etcetera. As all
23 of those are eliminated, there may be yet further
24 appreciation in property values. I haven't attempted
25 to estimate those.

1 Just as there were, and this goes back
2 what we were discussing earlier in the afternoon,
3 about there may -- there could well be disamenities
4 associated with the construction. There may be
5 disamenities associated with the construction
6 equipment required to remove the building and remove
7 the plant from the site.

8 JUDGE McDADE: Okay. Dr. Tolley, Dr.
9 Sheppard has suggested that you believe the
10 termination of the PILOT payments would have no impact
11 on land values. Is that accurate?

12 DR. TOLLEY: Well, if I heard Dr. Sheppard
13 correctly, he said that I said that my statistical, if
14 I may talk for a couple of minutes here. My estimates
15 show that their estimated, there was an impact. But
16 it's true. In my hedonic analysis, it was not
17 statistically significantly different from zero.

18 I would like to point out that it was much
19 closer, a much higher level of significance of being
20 close to a reasonable value. This is saying before;
21 we have to not be a slave to the statistics. If we
22 look at a great body of literature, started with
23 Allison and Metz (ph) and people probably about 1980,
24 they established very clearly that taxes, local taxes
25 do get passed through, and they are borne by the

1 property owners in the -- where the taxes are levied.

2 So if you don't accept this, you don't
3 accept the body of received public finance literature
4 on this point, and we have to look at this as
5 reasonable human beings, as an economist, that there
6 is such an effect, if we believe the literature.

7 This estimate is not significantly
8 different from that. In fact, it's quite significant.
9 It's quite consistent with it, because it is a
10 reasonable value. However, what Dr. Sheppard did not
11 do is deal with the analysis on his own data. If we
12 do the analysis on his own data, the PILOT payment
13 variable in my regression becomes highly significant.

14 So I'm sorry for the outburst, but I
15 completely reject the idea that I am saying that
16 there's no effect on property value, of PILOT payments
17 on property values.

18 JUDGE McDADE: Okay. Dr. Sheppard, in his
19 testimony, Dr. Tolley cited studies by Clark,
20 Michelberg (ph), Allison and Metz, of Diablo Canyon
21 and Rancho Seco, Entergy Exhibits 155, 156, as well as
22 studies of Plymouth and Three Mile Island, Exhibit
23 145, which in his view showed no correlation between
24 the presence of a nuclear facility and depressed
25 property values surrounding it.

1 Do you think those studies are wrong, or
2 do you think his interpretation of those studies is
3 wrong?

4 DR. SHEPPARD: I think that those studies
5 contain flaws, but --

6 JUDGE McDADE: But you disagree with their
7 conclusion?

8 DR. SHEPPARD: I disagree with their
9 conclusion. I think that -- so let me say two things.
10 One is I disagree with their conclusion. I cite other
11 studies that do show a positive impact, and Professor
12 Tolley, in his comments on my own analysis, disagrees
13 with those studies as being flawed or having, missing
14 variables or econometric issues.

15 So in all of these, one can identify
16 issues and say well, I'll take the results I like and
17 I'll endorse those, and take the results I don't like
18 and find the flaws in those. I think actually what I
19 would suggest is the best approach for the present
20 proceeding, is to focus on the analysis of the data we
21 have, and as I said, Dr. Tolley's MLS data in his own
22 data suggest a statistically significant impact of the
23 presence of the plant on property values, and a
24 statistically insignificant impact of PILOT payments
25 on property values.

1 My own analysis is a different method, but
2 it also is supportive of a significant disamenity
3 impact on property values.

4 JUDGE McDADE: Okay, and I'm trying to get
5 a feel for the degree of precision in these kinds of
6 studies. For example, another one cited, Entergy
7 Exhibit 235, would indicate that the proximity to
8 chemical weapons storage facilities and hazardous
9 waste storage facilities have a positive effect on
10 land values.

11 That seems, from just an intuitive
12 standpoint, to be illogical. Are these studies
13 precise enough to be relied on for any purpose?

14 DR. SHEPPARD: I think that they are
15 precise enough to be relied upon. However, I think it
16 would be completely reasonable to ask this question.
17 It's completely reasonable to say what is the
18 precision of this analysis, and how much faith can we
19 put in it? That seems a reasonable question to me.

20 And I agree with you. Part of the
21 problem, Dr. Tolley did summarize some of the issues
22 in undertaking hedonic analysis, that you're trying to
23 adjust for a variety of impacts that may be present in
24 a location. If you're taking data all from a
25 particular point in time, there may be several sources

1 of disamenity that have to be, that should in
2 principle be considered, and ideally you would add
3 variables for those to the model.

4 Some of these studies to which you refer
5 miss certain disamenities. Some of them fail to
6 account for the attractiveness of the facility as an
7 employment location. So there are -- my student,
8 Brian Press, has studied this. A big part of the, of
9 the important contribution of his study was to
10 separate out the impact of green space and open space
11 and its attractive features from the proximity to the
12 nuclear power plant.

13 So this is difficult. It is subject to
14 error. To me, the most important part of the analysis
15 that's come forward from all the experts in this case
16 is to find two completely different approaches that
17 come up with somewhat similar numbers.

18 JUDGE McDADE: Okay. Dr. Tolley suggested
19 that an inability to control for certain small area
20 influences affect the precision of these studies. How
21 do you, in your study of Indian Point, control small
22 area influences?

23 DR. SHEPPARD: So I don't disagree with
24 that statement, by the way. I think that that is a
25 correct statement that you have to worry about, small

1 area influences. So I control for those influences in
2 two ways in my analysis.

3 One, by using repeat sales analysis, I'm
4 focusing on a particular time period, as we've
5 discussed. And so that has the effect of controlling
6 for or excluding those changes that don't happen at
7 that point in time.

8 So small area changes, like the building
9 of a waste incinerator or an alternative roadway or
10 whatever, if they happen at completely different
11 times, then my analysis isolates them from the effect
12 that I'm looking at. So that's one method.

13 The second method is that my analysis
14 controls for distance of the property from the Indian
15 Point Energy Center. So that again focuses attention
16 on the role of being proximate to IPEC, not just in
17 the general neighborhood. So with those two --

18 JUDGE McDADE: Doesn't the Diablo Canyon
19 and Rancho Seco studies use that same analysis?

20 DR. SHEPPARD: They don't use the -- they
21 don't do exactly the same analysis, because they don't
22 use the repeat sales approach, going over time to
23 isolate the change at that point in time.

24 JUDGE McDADE: Okay, and other than the
25 repeat sales analysis, again, how else do you control

1 for small area influences?

2 DR. SHEPPARD: In the course of my repeat
3 sales analysis, the model that I used to estimate the
4 impact, I'm using the distance from the IPEC facility
5 for each property as a control variable. So that
6 helps to focus attention only the effect that's
7 related to proximity to the plant.

8 JUDGE McDADE: Okay. Dr. Tolley, do you
9 think those are adequate to control those small area
10 influences, and if not, why not?

11 DR. TOLLEY: Well no, I don't. I don't
12 think that they -- we went through part of this
13 before. It's a meaningless analysis, because there
14 are all these other events that are influencing land
15 values.

16 You know, if it were such that you just
17 had a constant rate of return, and then it was going
18 up, property values were increasing at that rate, and
19 then you have this one event that suddenly it will go
20 down, and then it would continue up on a smooth line,
21 those are the conditions under which the repeat sales
22 analysis would be valid.

23 That's not at all what's going on here.
24 This is a complex time; it's a complex area. Not all
25 houses are the same. There may have been different

1 influences. We went over it. We talked about this
2 before. So as I say, to me, it's a meaningless
3 exercise. It may be valiant, but it violates all the
4 rules of a good investigation.

5 Then the other point is this distance.
6 This is a technicality, but possibly very important.
7 Dr. Sheppard includes this in his regression distance
8 from the plant. But he says, in his own words, that
9 distance from the plant is not in there to pick up the
10 effects of disamenity.

11 In fact, he says that it's in there in
12 order to pick up influences on the general rate of
13 return; not on the level, but on the rate of return
14 from being different distances from the plant. That's
15 kind of a strong relationship.

16 How could, what could possibly cause that?
17 Why should if I buy near the plant, I should get a
18 seven percent return, but if I buy a little further
19 away, I should get an eight percent return and that
20 kind of thing? If I find one out at 12 miles, I'll
21 get a bigger rate of return.

22 That's not what his control group does.
23 His control group is an either/or situation. Either
24 you're within the scope of the plant and you take this
25 hit, or you're not. That's what the treatment group

1 and the control group are. So as he himself says, I
2 believe he says exactly that.

3 But it's not intended to control for this
4 hit in property values. So to me, this is just an
5 example to really understand these property values
6 over time. It could be your life's work.

7 Anyhow, it's not anything that anybody's
8 done, and all these problems just point out to me the
9 fact that this is meaningless, and that we should have
10 to have a much deeper analysis of events before we
11 could start doing things over time.

12 I would like to get to a point you were
13 asking about earlier, about comparing hedonic analysis
14 with repeat sales analysis. Hedonic analysis again is
15 overwhelmingly used. The repeat sales technique, if
16 it's properly done, which Dr. Sheppard violates the
17 rules in the literature of how he's supposed to do
18 these things.

19 We can go into that. He's supposed to
20 have similar houses, similarly affected and so forth.
21 It's common sense but it's in the literature there.
22 You have to isolate the phenomenon that you're trying
23 to do, and you have to isolate that effectively.

24 So it's a neat technique, but it's almost
25 never used. Dr. Sheppard, in discovery, was able to

1 send me two repeat sales analysis, one of which was in
2 not a very recent article, and not a very prominent
3 journal. The other article, I had reviewed that
4 article years ago, and it was an excellent article.

5 Very few people use it because it's very
6 hard to use, and it's not applicable at all to this
7 Indian Point situation.

8 JUDGE McDADE: Okay. Dr. Sheppard, the
9 way you describe the land values increasing
10 significantly after the plant closes, does that
11 suggest to you that this amenity is the result of a
12 perception of nuclear power, as opposed to being based
13 on any actual physical impact on the environment?

14 DR. SHEPPARD: No, it doesn't suggest that
15 to me, Your Honor, and the reason why I say that is
16 because the effect that I'm estimating, okay, is an
17 effect that sets in at the beginning of commercial
18 operations of the plant.

19 So this is happening -- the initial impact
20 is happening, the impact on the treatment group, as it
21 was happening in '74-'76, over this reasonably short
22 amount of time, and it's not a time period when there
23 may have been undue additional alarm. We're not
24 spanning necessarily the Three Mile Island accident or
25 other accidents.

1 We're focusing on that time period and
2 estimating an impact from then. In order to support,
3 in order to come to the conclusion that this was
4 really just capturing a fear of nuclear power or
5 something like that, we would have to accept the
6 interpretation that suddenly the fear of nuclear power
7 wasn't present and then emerged in 1974-'76. I don't
8 accept that hypothesis, and so I don't think it's
9 correct.

10 I think it's fair to say I haven't
11 undertaken a separate evaluation or interviews with
12 buyers or sellers to consider why they paid what they
13 paid for houses. But I don't think my analysis can be
14 laid at the foot of simple fear of nuclear power.

15 JUDGE McDADE: If Entergy were to replace
16 the Indian Point facility with a new gas fuel
17 electric-generating facility, in your view would that
18 have the same disamenity as the nuclear facility there
19 now, or would there a material difference?

20 DR. SHEPPARD: I have no professional view
21 on that, because -- but I would say that I think that
22 would be a really interesting question. I mean as a
23 scholar and an economist, we study these sorts of
24 things. I'd be quite interested to know what the
25 impact of that would be.

1 JUDGE WARDWELL: I don't any research
2 dollars for you, I'm sorry.

3 DR. SHEPPARD: Okay. Well, I'll look
4 elsewhere. But so I would hesitate. I would just say
5 that's an open question. It's an interesting
6 question, and one that is amenable to research using
7 the methods that I've employed. I just don't have an
8 answer for you.

9 JUDGE McDADE: Okay, and the Rancho Seco
10 study, which suggested that there was no adverse
11 impact on property values, why is that study not
12 analogous or relevant to Indian Point, and why do you
13 think it's flawed?

14 DR. SHEPPARD: Well, I don't think it's --
15 it's not an analogous. I don't want to say it's
16 completely irrelevant, because I think that we do
17 learn things from these studies, and all studies have
18 areas where they fall short and areas where they pose
19 interesting problems and discover interesting things.

20 As I say, my view is that that study is
21 failing to pick up an effect or is not directly
22 analogous, because they didn't look carefully at the
23 evolution of property values over time, and track them
24 -- you know, they didn't have as clean of an
25 experimental design as I have in my analysis.

1 JUDGE McDADE: Okay. Dr. Tolley, do you
2 view that as a well-designed study?

3 DR. TOLLEY: I'm sorry, sir. I'm having
4 trouble hearing you.

5 JUDGE McDADE: I'm sorry. The Rancho Seco
6 study. Do you view that as a well-designed and
7 executed study?

8 DR. TOLLEY: As I recall, yes it is. It
9 was a multi-year study, a very expensive study done by
10 quite able scholars, and it was -- we evaluated all
11 these regressions step by step, and it's certainly one
12 of our, one piece of evidence among -- we looked at
13 seven nuclear plants in several different studies.

14 JUDGE McDADE: And then concluded that
15 there was no adverse impact from the location of the
16 nuclear facility?

17 DR. TOLLEY: Yes.

18 JUDGE McDADE: Okay. Dr. Sheppard, a
19 factor of difference between you and Dr. Tolley, you
20 did not consider in your analysis renters as opposed
21 to owners; is that correct?

22 DR. SHEPPARD: I think it's correct to say
23 -- well, I considered all properties, without regard
24 to whether they were occupied by their owner or a
25 renter. So I do include renter-occupied. There may

1 well be included renter-occupied properties. I have
2 not undertaken a separate valuation of renters.

3 JUDGE McDADE: Would the fact that the
4 housing was rental property as opposed to an owner-
5 occupied property affect your analysis at all? In
6 other words, would it be reasonable to anticipate that
7 the rental price would be higher, because renters
8 would not view disamenities in the same way as owners?

9 DR. SHEPPARD: I think that would be
10 reasonable. I think that renters are as subject to
11 disamenities as owner occupiers.

12 If there is a disamenity, that does affect
13 how much a renter would be willing to pay for the
14 property, and that changes, that will change the
15 market equilibrium rent that's paid, and that will in
16 turn have an impact on the actual market value of the
17 property.

18 JUDGE McDADE: Yeah. Well actually isn't
19 the increase in market value to a degree a self-
20 fulfilling prophecy? If people believe the market
21 value of a property is going to go up, they'll buy it,
22 which in turn causes the market property value to go
23 up?

24 DR. SHEPPARD: There can be times in the
25 housing market where that psychology is quite

1 operative and an important factor. But it's not
2 operative at all times.

3 So if that becomes an important factor,
4 where the price is going up simply because people
5 believe it's going up, that will usually -- that
6 process comes to an end, as we've learned to our
7 discomfort in recent years.

8 JUDGE McDADE: Okay. Dr. Tolley, in your
9 testimony, Entergy Exhibit 132, you did three
10 analyses, on page 101, 105 and 112. Mr. Wilkie, could
11 you put up Exhibit 132, page 101?

12 JUDGE McDADE: Doctor, could you walk --
13 what I'm going to ask you to do is to walk us through
14 each of these three, and explain to us the differences
15 in the assumptions that are operating here in each.
16 So could you start with page 101?

17 (Pause.)

18 DR. TOLLEY: Well --

19 JUDGE McDADE: And if this is something
20 you feel comfortable doing here, great. If not, don't
21 feel obligated to. We can muddle through it
22 ourselves. But I thought you might --

23 DR. TOLLEY: Well, let me give it a try,
24 sir. I just wanted to make sure I was -- this seems
25 to have taken Dr. Sheppard's analysis from the

1 Blomquist report and used that as his estimate, in
2 this case, of what this distance or disamenity effect
3 of it is. If we take that estimate, we get the
4 difference between the action, no action and renewal.

5 That comes out to a loss of \$7.37 million.
6 That again is just subtraction of the supposed rebound
7 of one situation from the other. So you get a loss
8 there of \$7.37 million. Then, there is kind of a
9 little multiplier effect here, if you will. But the
10 local governments are going to have their tax revenues
11 affected, to the tune of a few million dollars.

12 So those two things really go together,
13 and it's a loss of minus 7.37 and minus 2.49, which is
14 something like about ten million. Then we come to the
15 PILOT payment effect, and Dr. Sheppard assumes that
16 the PILOT payment effect is zero. Therefore, he comes
17 out that there's this loss of approximately \$10
18 million, \$9.86 million.

19 So that's the calculation of a present
20 value effect of Sheppard's assumptions, based on
21 Blomquist. Is that okay?

22 MR. REAMER: Your Honor, if I can, Bill
23 Reamer for the staff. The Blomquist is New York State
24 Exhibit 226, and it's a report prepared by Dr.
25 Sheppard in 2007.

1 JUDGE McDADE: Okay, thank you.

2 DR. TOLLEY: Yeah, thank you.

3 JUDGE McDADE: Okay. What I'm trying to
4 get at, this is part of a critique of Dr. Sheppard and
5 the methods, and I'm trying to get at, from your
6 standpoint, to walk us through what assumptions here
7 are valid, what assumptions here are invalid, what
8 conclusions here do you agree with; what conclusions
9 here do you disagree with?

10 DR. TOLLEY: Well, okay. Thank you. This
11 is an illustration of disagreement with Dr. Sheppard.
12 He uses the Blomquist. I'm going too fast, so
13 Blomquist did an analysis of a coal plant in 1974, and
14 it was a very -- in the first place, it was a coal
15 plant, and it shouldn't -- that's not applicable to
16 a nuclear plant.

17 JUDGE McDADE: This is the facility in
18 Winnetka, Illinois?

19 DR. TOLLEY: Yeah, uh-huh.

20 JUDGE WARDWELL: And is this a critique of
21 his 2007 report?

22 DR. TOLLEY: Yes, it is. That's --

23 JUDGE WARDWELL: Didn't we have in
24 testimony that in fact the only report of interest
25 before us is the 2011 now?

1 JUDGE McDADE: Well, I was trying to get
2 at how they change. We have three separate analyses
3 here on page 101, 105 and 112, and they each represent
4 a critique of the studies. I wanted to make sure I
5 understood the critiques, and how they changed over
6 years, with 112 being the last -- page 112 being the
7 last one. Can you flip ahead to that, Dr. Tolley?

8 DR. TOLLEY: Okay. So this did, this was
9 the earlier time, and this was a criticism of the 2007
10 report. Now are we --

11 JUDGE McDADE: If we flip ahead to page
12 112.

13 DR. TOLLEY: Page 112, okay.

14 (Pause.)

15 DR. TOLLEY: Okay. This analysis is what
16 happens if we accept Dr. Sheppard's estimate, one of
17 his estimates. I would have to look up others; the
18 Blomquist estimate of the estimate based on his repeat
19 sales. I think it's the Blomquist estimate at this
20 point, because this was written before the other.

21 So let's say it's an estimate of Dr.
22 Sheppard's -- it's the present value of Dr. Sheppard's
23 estimate of the property value effect, and we see that
24 that's a \$14 million loss, because of the difference
25 in this big revenue out there, 60 years or 80 years in

1 advance, because the property is going to rise in
2 value, according to him, at an earlier date if there's
3 no license renewal, if there's no action.

4 Then that adds into this this little
5 kicker of the government revenue effect. Is that
6 clear? When the property values go down, then the
7 assessed value of the property will go down, and
8 therefore the local governments will also take in a
9 little less money.

10 So it's the total of these two things
11 which is really the total loss to taxpayer property
12 owners here. So the sum of those is the minus 13,
13 minus 14.6. Then we come down to the PILOT payment
14 effect, and we've talked about the PILOT payment
15 effect. That's the difference in the present value of
16 the reduction of the continuation of pilot payments
17 for 20 years, plus the falling for 19 years.

18 If there's renewal plus immediate fall to
19 19 percent for 20 years, and then fall, oh, I guess
20 for 60 years, I'm sorry, and then falling to zero.
21 But that's the big -- we talked about this before.
22 That's the big present value loss of the PILOT
23 payments, and they're overwhelming the loss in
24 property, in the property value rebound, because the
25 property value rebound isn't felt for so many years in

1 the future. So I don't know if that's adequate, but
2 that's --

3 JUDGE McDADE: Okay. Now you used a seven
4 percent discount rate?

5 DR. TOLLEY: This uses a seven percent
6 discount rate.

7 JUDGE McDADE: Is that appropriate?

8 DR. TOLLEY: Well, that's used, as we get
9 back to this conservative idea, the definition of
10 conservative. My personal feeling is that nobody
11 cares about, no real estate person, no property owners
12 cares about 60 years from now, because he doesn't
13 necessarily believe it.

14 But he's much more concerned in the near
15 term. I was just choosing 25 years as a cutoff, and
16 probably we should really value that at zero after 25
17 years. But the NRC recommends a seven percent
18 interest rate. I don't want to get into a big
19 argument about just exactly what it is.

20 So I used a seven percent interest rate.
21 That's clearly far lower than should really be used,
22 and that would only -- if I used a higher discount
23 rate, it would strengthen these results, could
24 strengthen them quite a lot.

25 JUDGE McDADE: Okay. To any of Entergy's

1 witnesses, you've anticipated that the -- between the
2 PILOT payments and the property taxes, they would --
3 it is unlikely that they would remain at their current
4 level, that they would go down.

5 You indicate that the assessed value, in
6 your view, of the Indian Point facility would diminish
7 after it ceased operations. While it would have
8 significantly less value to Entergy, what is your
9 rationale for believing that the local governments
10 would assess it significantly lower, simply because it
11 no longer was producing revenue, when it would be
12 available for decommissioning and sale or development,
13 either after sale or by Entergy, at any time?

14 MR. REAMER: Bill Reamer, Your Honor. I
15 guess two things I'd say. One, you ought to look at
16 the other three plants that I mentioned earlier, where
17 the 18 percent figure that we arrived at as kind of a
18 reasonable proxy for what it would be after PILOT
19 payments ceased. It seemed reasonable in light of the
20 experience at those three plants.

21 Then there is also a study that was done
22 for Westchester County by a group, I believe, called
23 Levitan. I'm not sure what the full name of the title
24 was, but they -- this was approximately 2004, and I
25 believe it dealt with a number of issues that are not

1 relevant here today.

2 But it did address PILOT payment taxes and
3 reductions, and it laid out the very kind of approach
4 that we're talking about here, which is its value is
5 going to be reduced, because it's not generating
6 electricity. It's not going to have the value that it
7 had before.

8 And I don't have the terms immediately in
9 front of me, but it basically characterized the
10 remaining value as a fraction of what it was before,
11 when the plant was generating.

12 JUDGE McDADE: Would it be unreasonable or
13 illegal, and let me just go with reasonable; I don't
14 worry about the latter word myself. Would it be
15 unreasonable for the surrounding governments to tax
16 the facility, based on the best and highest use of the
17 property, even though Entergy was not choosing to use
18 it for that purpose?

19 DR. TOLLEY: Well, I would just certainly
20 make a comment that if it has waste, undisposed of
21 waste, it's hard to see that it would have very much
22 value for any other use, until that waste is removed.

23 MR. REAMER: Well Your Honor, I hesitate
24 to speculate. But of course you know I know that any
25 assessed value is contestable by the other party, and

1 I do recall in looking at the Maine Yankee facility,
2 that there was a dispute, as to how that facility was
3 going to be valued after shutdown. Ultimately the
4 matter, I think, was taken to court and maybe
5 ultimately was dealt with in an agreement of the
6 parties. But it stayed at less than ten percent.

7 JUDGE McDADE: I think that pretty much
8 answers the questions that the Board came here with.
9 I thank you. I would ask if Entergy could get back to
10 me with some information with regard to what the tax
11 rate is if, and the assessed value of the facility.

12 MR. BESSETTE: So Your Honor is looking
13 for the current assessed value of the facility.

14 JUDGE McDADE: Yes.

15 MR. BESSETTE: And whether there's any
16 taxes charged other than PILOT payments? Is that what
17 Your Honor's looking for?

18 JUDGE McDADE: Well, it's are there taxes
19 charged in addition to the PILOT payments, but also if
20 the PILOT payments were to terminate, is the tax rate
21 on that property \$1 per hundred, \$5 per hundred, \$10
22 per hundred. Just to find out, so that I know whether
23 or not the change in payments from Entergy to the
24 surrounding government entities would be materially
25 different.

1 The consequences of that are still to be
2 determined in my own mind, but I would like at least
3 to know what that information is, and if you could
4 furnish that in a form of a declaration from somebody,
5 so that it would be in evidence.

6 MR. BESSETTE: Yes, Your Honor, and I have
7 not consulted with the company. But the assessed
8 value, I don't know if that's confidential or not.
9 We'll handle it at that point.

10 JUDGE McDADE: Okay.

11 MR. SIPOS: And Your Honor, John Sipos for
12 the State of New York. Just a point of order, and I
13 didn't want to jump in while their colloquy was going
14 on.

15 But just so that the record is clarified,
16 I think, and it may be something akin to a scrivener's
17 error or a speaker's error. I thought I heard Mr.
18 Reamer twice say that he was speaking for staff, and
19 maybe that's an artifact for his previous career.

20 But I understand he's here testifying for
21 Entergy, and just so that Mr. Toby Walter, our court
22 reporter, can at least know the State's calling that
23 to the attention in the record.

24 JUDGE McDADE: Okay, and I have to confess
25 I didn't notice, if that were made. But you are

1 testifying here on behalf of Entergy?

2 MR. REAMER: Bill Reamer on behalf of the
3 applicant.

4 MR. SIPOS: And it wasn't a criticism at
5 all, Your Honor.

6 JUDGE McDADE: I know. You want it, and
7 as you should, for the record to be clear, and now it
8 is.

9 MR. SIPOS: Thank you very much.

10 JUDGE McDADE: At this point, what I would
11 propose to do, it's about 5:25. If we stand in recess
12 for 10 minutes, 15 minutes, and does New York
13 anticipate a desire to interrogate any of these
14 witnesses?

15 MR. SIPOS: Yes, Your Honor. Could we
16 have until 5:45 please?

17 JUDGE McDADE: Would that be enough time
18 for Entergy?

19 MR. TENPAS: Yes, Your Honor. We'd
20 actually join in that, and appreciate a few more
21 minutes. Our room is, you know, for folks is
22 downstairs, and so there's a little delay getting up
23 and down the stairs.

24 JUDGE McDADE: That's fine.

25 MR. TENPAS: Thank you.

1 JUDGE McDADE: Is that sufficient for the
2 staff?

3 MR. HARRIS: Yes, Your Honor, thank you.

4 JUDGE McDADE: Okay. We will stand in
5 recess, then, until 5:45.

6 (Whereupon, a short recess was taken.)

7 JUDGE McDADE: Does New York have any more
8 questions? Apparently not?

9 (Pause.)

10 MR. TENPAS: I apologize, Your Honor. We
11 had a little way to walk.

12 (Pause.)

13 MS. TAYLOR: I'm sorry, Judge. Our room
14 is not just downstairs; it's across the hotel and
15 halfway to the city it feels like.

16 JUDGE McDADE: We all set?

17 MS. TAYLOR: Yes.

18 JUDGE McDADE: Okay. Then the same sort
19 of general guidance, as far as non-repetitive, trying
20 to clarify. You can ask questions of both your own
21 witnesses and the others, in an effort to clarify if
22 you think there's something that we perhaps might have
23 misunderstood, or some part of the record that has yet
24 to be clarified.

25 Let's try to keep it 15-20 minutes, and

1 New York, are you ready to go?

2 MS. TAYLOR: Yes, and I'm confident we can
3 do that, Judge. Susan Taylor for the State of New
4 York. If I could ask that Entergy Exhibit 144 be
5 brought up. I have a question for Dr. Tolley. Can
6 you hear me, Dr. Tolley?

7 DR. TOLLEY: Yes, I can.

8 MS. TAYLOR: Thank you. We want to look
9 at page five of Entergy Exhibit 144, paragraph two,
10 the third sentence. That is the paragraph that begins
11 "the findings from previous studies." If I could have
12 Dr. Tolley read the third sentence, which commences
13 with "The analysis"? If you could read that out loud
14 to us, sir please?

15 JUDGE McDADE: Well perhaps -- I don't
16 know if the screen is too far away for him.

17 DR. TOLLEY: I can see it.

18 MS. TAYLOR: That could be. It's too far
19 away?

20 DR. TOLLEY: No, it's fine. I can see it.
21 Thank you. "The analysis used asking prices for
22 Multiple Listing Service (MLS) properties in 2011."

23 MS. TAYLOR: Thank you. That's all.

24 DR. TOLLEY: Okay.

25 MS. TAYLOR: Does that accurately describe

1 the study that you did?

2 DR. TOLLEY: Yes.

3 MS. TAYLOR: Thank you. Then I have a
4 couple of questions, just to clarify Dr. Sheppard's
5 testimony. These questions are for Dr. Sheppard. Dr.
6 Sheppard, in your opinion, is the Indian Point -- does
7 the Indian Point facility have a statistically
8 significant impact on property values?

9 DR. SHEPPARD: Yes, it does. That is my
10 opinion.

11 MS. TAYLOR: To follow up on that, are Dr.
12 Tolley's data, in your opinion, inconsistent with your
13 conclusion?

14 DR. SHEPPARD: No, they're not. To my
15 surprise, they're quite consistent. His data, when
16 estimated using one of several different ways of
17 representing proximity to the Indian Point Energy
18 Center, are consistent with my own analysis, that they
19 show that the Indian Point Energy Center constitutes
20 a disamenity that has a statistically significant
21 impact on property prices.

22 MS. TAYLOR: Thank you. If I understand
23 Dr. Tolley's testimony correctly, he has accused you
24 of cherry-picking. Do you have a response to that?

25 DR. SHEPPARD: Yes, I do. That phrase,

1 which I think he hesitated to use, but nevertheless
2 was mentioned, that phrase came up in connection with
3 my suggestion of using the square root of distance, as
4 a way of measuring or characterizing proximity of a
5 property to IPEC.

6 I've actually, using Dr. Tolley's data as
7 part of the process of just double-checking the
8 results that he included in his report, in which he
9 uses the quadratic representation of proximity, I
10 looked at what is probably truly the most common
11 representation, which would be a straight linear
12 measure of distance only.

13 I looked at the linear structure. I
14 looked at representing distance using the square of --
15 proximity using the square of distance. I looked at
16 using the square root. All of those are completely
17 consistent with each other and with my own analysis.

18 They all show that property values
19 increase as you move away from the Indian Point Energy
20 Center, and the estimate is very statistically
21 significant.

22 MS. TAYLOR: Thank you, Dr. Sheppard.
23 This may get us into a little difficulty with our
24 colleagues. Without discussing, Dr. Sheppard, the
25 substance of the analysis that you did on October

1 19th, could you please tell the Board what you did,
2 when you did it and why you did it?

3 DR. TOLLEY: Okay. Could you refresh me
4 on what I did on --

5 MS. TAYLOR: I'm sorry. Did I say "Dr.
6 Tolley"? I mean Dr. Sheppard. I'm sorry. I'm tired.
7 I'm talking about Dr. Sheppard's October 19th work.

8 DR. SHEPPARD: Sure. So what I did, so as
9 you know, I was here last week. On Monday, I first
10 received the disclosure of Dr. Tolley's analysis, that
11 used the square root of distance as a measure or a way
12 of characterizing proximity of property to Indian
13 Point.

14 I took that as being an attempt to be
15 responsive to my suggestion in the rebuttal testimony,
16 except that it wasn't fully responsive, in that I had
17 suggested that he apply that approach in estimating
18 his own hedonic.

19 He had actually applied that to a subset
20 of my own data, which were collected for a different
21 purpose and had different characteristics. So when I
22 next had the opportunity, I wanted to evaluate or
23 consider what would happen if he had used the square
24 root of distance applied to his own data, that he used
25 as the basis of his analysis in his report.

1 Tuesday, I was teaching class. Wednesday
2 and Thursday, I was here, as part of preparing for
3 Contention 16 testimony, and being available in case
4 Contention 16 was able to come onto the agenda.

5 Friday, I had to return and teach my
6 classes. So Friday at four o'clock was my first
7 opportunity to sit down and using Professor Tolley's
8 data; this wasn't using any new data, but I wanted to
9 apply, wanted to follow up the suggestion and actually
10 apply the square root of distance measure of proximity
11 to Dr. Tolley's own data.

12 And so, and I also at the same time
13 considered using just linear distance, just the
14 distance from IPEC as a measure of proximity, or the
15 square of distance as a measure of proximity. I
16 undertook those analyses at that time, wrote that
17 analysis out to a document and contacted Ms. Taylor,
18 to let her know that I had undertaken a response to
19 Dr. Tolley's analysis that I had received the previous
20 Monday.

21 MS. TAYLOR: Thank you, Dr. Sheppard. The
22 State would like to move Board Exhibit 5 into
23 evidence.

24 MR. TENPAS: Objection, Your Honor.

25 JUDGE McDADE: Okay. What would the next

1 New York State exhibit be?

2 MS. TAYLOR: 446.

3 JUDGE McDADE: That's the next one?

4 MS. TAYLOR: That would be the next
5 available number.

6 JUDGE McDADE: Okay. It's objected to?

7 MR. TENPAS: Yes, Your Honor. Can I be
8 heard?

9 JUDGE McDADE: Please.

10 MR. TENPAS: Two things as to that.

11 First, I think as Dr. Sheppard has just nicely
12 clarified for the Board, what he was doing was what he
13 offered as a critique in his rebuttal, that he thought
14 Mr. Sheppard -- that he believes Dr. Tolley ought to
15 have done. That evidences the fact that this work
16 could have been done and should have been done by him,
17 if he thought it was useful at the time of his
18 rebuttal.

19 Instead, we are now some, you know, four
20 or five months down the road from that, getting the
21 fruits of a critique that he says, he pointed out was
22 a problem at the time of his rebuttal, that he says
23 this is the work I wish Dr. Tolley had done, and now
24 he has undertaken to do it. So there is a huge
25 timeliness issue here, and a huge sandbagging issue

1 bluntly.

2 The second point is that the description
3 you have just heard applies only to two pages of the
4 whole of the exhibit. The document, as I described
5 and started with the Board, has two other pages
6 towards the back of it, that have nothing to do with
7 the analysis that Dr. Sheppard just described.

8 So again, they are trying to get in the
9 whole of the document, having only described a half of
10 the work of it, and thereby slip it into the record,
11 and those second two pages again contain analysis that
12 could have been done, should have been done and was
13 capable of being done at the time of the original
14 response. Thank you.

15 MS. TAYLOR: If I may be heard, Judge? I
16 must disagree with Mr. Tenpas' characterization. It
17 probably will not surprise the Board to hear. First,
18 though, I think we have a concession that at least the
19 first two pages of what Dr. Sheppard did are in fact
20 a direct response to Dr. Tolley.

21 I think we also have a goose and gander
22 problem, for lack of a better phrase. Energy seems to
23 think that it is entitled to new eleventh hour
24 analyses, and no response time from the State of New
25 York. That just strikes me as patently unfair. What

1 they've accused --

2 JUDGE McDADE: Okay. I don't need to hear
3 anymore on it. New York State Exhibit 446 is
4 admitted.

5 (Whereupon, the document
6 referred to as New York State
7 Exhibit 446 was received in
8 evidence.)

9 MS. TAYLOR: Thank you, Judge.

10 JUDGE McDADE: You need to file a copy of
11 that through the EIE, and also file a revised exhibit
12 list that includes that through the EIE.

13 MS. TAYLOR: We will do that promptly.

14 JUDGE McDADE: Let me suggest don't bother
15 doing it before Wednesday, because there may be more
16 exhibits that come in before Wednesday, and that way
17 you'll only have to redo the exhibit list once.

18 MS. TAYLOR: We appreciate that, Judge.

19 Thank you.

20 JUDGE McDADE: So we don't need it before
21 then, and if you wish to discuss with Dr. Tolley any
22 of the aspects of that, to have him explain any of it
23 or why it doesn't matter, you're going to be given an
24 opportunity to do that in a few moments.

25 MR. TENPAS: Thank you, Your Honor. Could

1 I make one note for the record, in terms of the
2 exchange that went on. We did make a request earlier
3 today for all of the supporting, underlying
4 documentation beyond simply the document itself, the
5 analyses. I indicated there appears to be a data set
6 that we have not seen, that went to certainly the
7 latter part of that.

8 I'd simply note for the Board that we have
9 made our request, and our ability to respond
10 presumably would be calculated to first having
11 received that material. Thank you.

12 JUDGE McDADE: Wasn't this based on Dr.
13 Tolley's data sets?

14 MS. TAYLOR: Yes Judge, it was. I'm
15 prepared to respond, and I would invite Mr. Tenpas to
16 voir dire Dr. Sheppard on it if he would like to.
17 There is no undisclosed data.

18 JUDGE McDADE: Do you have a reason to
19 believe that there is -- as I said, from listening to
20 Dr. Sheppard, it was my understanding that this was
21 his analysis, based on Dr. Tolley's data. So this
22 would have been data that he received from you through
23 New York. Am I incorrect in that?

24 MR. TENPAS: No, Your Honor. Just to be
25 clear, again, this goes to the issue that there are

1 two different analyses. One, the first couple of
2 things you've heard, is an analysis based on MLS data,
3 which was -- that was Dr. Tolley's data, and as we
4 understand it, they have used the full collection of
5 that data.

6 That is different than the second part of
7 the analysis, which is analysis based on assessor
8 data, where it appears that Dr. Sheppard now has
9 removed some of the data that he originally used from
10 that assessor data sample. So it's gone from, you
11 know, a sample in the 1500's to a sample of about
12 1222.

13 We do not know and we have not received
14 any of the data, to know what now is missing, what he
15 took out in the process of shaking the sample and
16 doing that second, unrelated analysis.

17 JUDGE McDADE: Well you know, and I don't
18 want to confess this for my colleagues, but without
19 the explanations and testimony from Dr. Sheppard,
20 those last two pages are somewhat meaningless to me,
21 just looking at these printouts standing alone,
22 without the benefit of his testimony.

23 From the standpoint of New York, the
24 exhibit, is there any reason, other than the fact that
25 they are attached by a staple, that the back two pages

1 should be associated with the front two pages?

2 MS. TAYLOR: Yes. They are not a
3 different analysis, Judge, and I would be happy to do
4 some redirect of Dr. Sheppard to bring that out, if it
5 would be helpful, or I would be happy to let Mr.
6 Tenpas examine him on the subject, if he would like
7 to.

8 JUDGE McDADE: Well, I'm sure he will and
9 he will. Is there data that goes into these last two
10 pages, that has not already been furnished to Entergy?

11 MS. TAYLOR: No. Entergy has all of the
12 data, and Dr. Sheppard, I believe I am correct in
13 saying, used Dr. Tolley's data when he did these
14 analyses. He corrected for, as best he could, for two
15 of the three errors that Dr. Tolley, criticisms that
16 Dr. Tolley levied at him on October 12th. Have I
17 stated that correctly, Dr. Sheppard?

18 DR. SHEPPARD: Essentially yes.

19 JUDGE McDADE: Essentially is a big word.
20 Can you elaborate?

21 DR. SHEPPARD: Yes. So the analysis that
22 I undertook on Friday was to consider these
23 alternative ways of representing proximity, and to in
24 particular show -- so Dr. Tolley's analysis that was
25 submitted to us, that I received on Monday, attempts

1 to look at the use of square root of distance as a
2 measure of proximity, but applies it not to his own
3 data, but to a particularly handpicked subset of my
4 own data.

5 So what I've done is looked at the impact
6 of these different ways of representing proximity
7 applied to Dr. Tolley's data. But since a major point
8 of my testimony delivered today, and of my thesis is
9 that using the square root representation in
10 particular results in an estimated total impact on
11 property values, that's very close to the estimated
12 impact that I supplied in my own analysis.

13 I want to supplement that by noting that
14 that analysis is robust to the other criticisms that
15 Dr. Tolley has raised.

16 JUDGE McDADE: Okay. But the data that is
17 used on the second two pages of this exhibit --

18 DR. SHEPPARD: Those data have been
19 submitted to -- they've been disclosed, they've been
20 submitted. Dr. Tolley has used them, and in fact
21 Doctor --

22 JUDGE McDADE: But those are data that you
23 generated?

24 DR. SHEPPARD: They're actually a mixture,
25 actually. On the second two pages, the original data

1 are data that I generated, and then Dr. Tolley added
2 some additional data to that data set, and submitted
3 it back. I received that back from Dr. Tolley.

4 JUDGE McDADE: Okay. The objection is
5 noted. The exhibit is admitted. Please continue.

6 JUDGE WARDWELL: And that data set you
7 just talked about is the 1,200 numbers?

8 DR. SHEPPARD: It's actually 1,500.

9 JUDGE WARDWELL: 1,500 is the first two
10 pages.

11 DR. SHEPPARD: Actually, the whole data
12 set -- sorry, just to be clear. The first two pages
13 make use of Dr. Tolley's data that were used in his
14 report, and then to show continued consistency between
15 my own analysis and a revised version of Dr. Tolley's
16 analysis, I've used these data, the data that started
17 out as data that I collected, were provided to Dr.
18 Tolley.

19 Dr. Tolley augmented those data, with
20 indications of whether or not the sale had included a
21 vacant lot and some other information, and I've just
22 used those data that we received back from Dr. Tolley.
23 So it's data that they -- it's most assuredly data
24 that they have, and an expert in using this data
25 program like Dr. Tolley or myself, can easily read

1 these statements and see exactly what I've done, and
2 double-check the analysis.

3 But I'll be happy to supply my copies of
4 copies of the data set back. But these are not new
5 data in any sense.

6 MR. TURK: Your Honor, may I speak for the
7 staff?

8 JUDGE McDADE: Mr. Turk.

9 MR. TURK: I have to admit that I'm not
10 intimately familiar with the data that are represented
11 in this exhibit. But if you look at the first two
12 pages, each of the lists, each of the data set lists
13 begin with a statement of the number of observations.

14 Three times on page one, it's indicated
15 that the number of observations was 296. On page two,
16 the chart or the summary of statistics again was 296
17 observations. But then when you turn to page three,
18 it gets to 1,511 observations, and then the next two
19 tables are listed as 1,222.

20 Dr. Sheppard just explained that the data
21 he used comes from the set of 1,522. I haven't heard
22 him explain what the 1,222 is, or better, let me
23 express that better. What is excluded from the 1,511
24 to get to the 1,222? He simply said that Entergy has
25 all the data.

1 Well, I don't know what data these numbers
2 represent, and I think if the Board were to rely on
3 them in its decision, the record would be very
4 confused and unreliable.

5 JUDGE McDADE: Okay. Well, in a few
6 minutes you can ask him, and we'll clear that up.
7 Continue.

8 MS. TAYLOR: Perhaps it would help if we
9 pulled the new exhibit up onto the screens, New York
10 446. New York 446. Dr. Sheppard, I direct your
11 attention to the right-hand column, Dr. Tolley's
12 original model. Can you tell us what this analysis
13 shows?

14 DR. SHEPPARD: Yes. This is simply
15 double-checking the estimation of the model that Dr.
16 Tolley used and presented in his report, Entergy 144,
17 I believe Table 1.

18 I don't have the table here in front of
19 me. But anyway, it's just double-checking the
20 analysis that Dr. Tolley did, and you'll find if you
21 compare the estimates listed under the heading
22 "Coeff." for coefficient, those match, at least to
23 some decimal places, the numbers that are presented in
24 Dr. Tolley's report. That's why I label it in the
25 right-hand column "Dr. Tolley's Original Model."

1 MS. TAYLOR: Right, and scrolling down --

2 JUDGE McDADE: Excuse me one second. The
3 296 there, that comes from Tolley report at 15,
4 Entergy 144, the 296 observations?

5 DR. SHEPPARD: That's correct, Your Honor.

6 JUDGE McDADE: Okay, continue.

7 MS. TAYLOR: And scrolling down on the
8 same page, page one, where it says "Model with IPEC
9 Impact Proportional to Linear Distance," could you
10 explain what that analysis shows?

11 DR. SHEPPARD: So this considers an
12 alternative, which is truly the most frequently used
13 way of measuring, of characterizing proximity, which
14 is just the linear distance between the property in
15 the sample, and the proposed or to be tested source of
16 disamenity.

17 It's just using the number of miles from
18 IPEC to the property as the measure of proximity. In
19 this case, we see that that very first -- all the
20 other variables are the same. That's the only change
21 that has been made here, is to change the way the
22 proximity is characterized, and this shows an estimate
23 of that coefficient of 46.89.

24 What that means is for a typical house,
25 based on these data, moving it one mile away from IPEC

1 would increase its value by nearly \$47,000.

2 MS. TAYLOR: Thank you. Moving, scrolling
3 down to the next page, which is page two of this
4 exhibit, "Model with IPEC Impact Proportional to
5 Square Root of Distance." Could you explain how this
6 analysis differs from the others?

7 DR. SHEPPARD: Sure. So this is an
8 analysis, again using Dr. Tolley's data. Again, all
9 the variables in the model are the same, except the
10 way that we've measured or characterized proximity to
11 the facility. That's measured by this first variable,
12 which is printed out here, with the difficult to
13 pronounce name "Distsquareptilde T." (ph)

14 But this is the square root of distance
15 from the subject property to IPEC. You can see that
16 the coefficient estimated is 149. The T statistic
17 listed there is a test of statistical significance.
18 It's highly significant. This shows that we are 99.8
19 percent, we can be 99.8 percent confident that the
20 true value of this parameter is not zero.

21 And in order to interpret it, one way to
22 think about it would be to say well, suppose we were
23 to move a house that was right next to IPEC, move it
24 four miles away. The square root of 4 is 2, and so
25 this suggests 2 times 149 would be 398,000, or sorry,

1 298,000.

2 So this says if you moved a house from
3 next door to IPEC to four miles away, its value would
4 go up by \$298,000. That's very precisely estimated.

5 MS. TAYLOR: Thank you, and the last
6 analysis on this page, "Model with IPEC Impact
7 Proportional to the Square of Distance." Could you
8 explain what that analysis shows?

9 DR. SHEPPARD: This analysis is yet
10 another, just for completeness, to consider all the
11 different possibilities. Dr. Tolley himself, in his
12 report, notes that the linear distance term is not
13 statistically significant; only the square of distance
14 term is significant, and alludes to the fact that a
15 common econometric practice would be to drop the
16 linear term.

17 So what this particular model does is do
18 just that. It drops the linear and distance term and
19 includes only a measure of proximity that's based on
20 the square of distance. Again, it's very precisely
21 estimated. It's positive, which is indicating that
22 property values increase as we move away from IPEC.

23 That is statistically significant. The
24 interpretation of the parameter there, roughly 7.9.
25 What that would mean is if we rounded that just for

1 the sake of discussion to eight, if we were to move
2 two miles away from IPEC, 2 squared would be 4; 4
3 times 8,000 would be 32,000.

4 So this particular model suggests moving
5 a house two miles away would add about \$32,000 to its
6 value. But again, it's completely consistent. All
7 three of these alternatives are consistent with my own
8 analysis, that the presence of IPEC constitutes a
9 statistically significant disamenity that has an
10 impact on property values.

11 MS. TAYLOR: And Dr. Sheppard, why is it
12 that each of these four analyses has the same number
13 of observations?

14 DR. SHEPPARD: They were all done using
15 the same data set, Dr. Tolley's data set, the MLS data
16 that he collected for his report.

17 MS. TAYLOR: And does that distinguish
18 them in some way from the next set of analyses on the
19 following two pages?

20 DR. SHEPPARD: Yes. The next set of
21 analyses make use of the data that I collected from
22 the property tax records, as augmented by Dr. Tolley.
23 So each of these is estimated using the same data set,
24 which has something over, has over 1,511 observations.

25 JUDGE WARDWELL: Excuse me, Dr. Sheppard.

1 That 1,511 I thought was what you used in your
2 analysis, without any augmentation from Dr. Tolley?

3 DR. SHEPPARD: Correct. The 1,511 is what
4 I used without any augmentation, and that first table
5 of estimates exactly duplicates the table of estimates
6 that's presented in my December 2011 report.

7 But part of the point that I'm trying to
8 consider or evaluate here is the continued consistency
9 between my own results and a version of Dr. Tolley's
10 hedonic model, that would be estimated using his data.
11 So I go back to my own data, double-check my own
12 estimates. That's what's in the first table.

13 Then the subsequent tables check that
14 result for continued consistency, with the hedonic
15 estimates based on Dr. Tolley's data.

16 JUDGE WARDWELL: So Dr. Tolley took your
17 data set and excluded the vacant lot one, and ran a
18 hedonic? Is that what you're saying?

19 DR. SHEPPARD: Rather, what he did was he
20 created a variable that had the value 1, if he thought
21 the lot, the property included a vacant lot. So I've
22 made use of that variable, just accepted it from Dr.
23 Tolley, and said "Okay, we'll accept that, and
24 consider what would be the effect of excluding those
25 observations from the analysis?"

1 That's why the number goes from 1,511 down
2 to 1,222, because the regression analysis that's
3 started with the command numbered line eight in the
4 document, includes a statement that follows the word
5 "if," "If sale with lot equals zero."

6 So that command has the effect of
7 excluding the subset of observations identified by Dr.
8 Tolley as involving a vacant lot. I wanted to see if
9 that would affect my asserted consistency between the
10 square root measure of proximity and my own analysis.

11 If we scroll down there, what this shows
12 is my own analysis survives intact. It remains
13 statistically significant. In fact, it's a little bit
14 stronger. But the coefficient remains negative on
15 there in the first line.

16 The T statistic remains large, and the
17 probability number is zero, indicating we can be more
18 than 99.9 percent confident, that the true impact of
19 being in the control group is a negative 1, even for
20 that subset of properties, even excluding any sales
21 involving vacant lots.

22 That shows that it remains consistent,
23 that my analysis remains consistent with the measure
24 of proximity based on square root of distance.

25 JUDGE McDADE: Okay. Do you have much

1 more?

2 MS. TAYLOR: Just a couple more questions,
3 Judge. So Dr. Sheppard, is it accurate to say that
4 the descriptions in the far right column tell us
5 something about the data that has changed in each
6 subsequent analysis?

7 So model with any vacant lot data excluded
8 is a model excluding the vacant lot data, about which
9 Dr. Tolley complained? Is that accurate?

10 DR. SHEPPARD: That's accurate.

11 MS. TAYLOR: And the last one is model
12 with vacant lot data excluded and indicator variables
13 for what he characterized as "housing bubbles"? Is
14 that accurate?

15 DR. SHEPPARD: That is accurate.

16 MS. TAYLOR: Okay, and just my last
17 question. I think I speak for all the English majors
18 in the room, when I say it might help us if you would
19 walk us through the columns from left to right --

20 DR. SHEPPARD: On any of the tables.

21 MS. TAYLOR: On any of them.

22 DR. SHEPPARD: Okay.

23 MS. TAYLOR: What they mean.

24 DR. SHEPPARD: Okay. Yes, I can apologize
25 for the somewhat technical nature of this. But the

1 short amount of time to respond to -- these are in
2 essentially the same form as the ones that were
3 received from Dr. Tolley earlier in the week.

4 So the very first column is really giving
5 us variable names. So the very first, if we can just
6 stick with this page, the very first variable name
7 there, "Nomreturn" is a mnemonic for the nominal
8 return per annum to holding the house.

9 So that's the dependent variable, and the
10 variables listed below it are explanatory variables in
11 this case. So I'm explaining the nominal return for
12 holding a house, as a function of the first variable,
13 is whether or not it's in the treatment group. The
14 second variable is the distance and so on and so
15 forth. I can explain more of those variables if you
16 wish.

17 The next column is the coefficient
18 estimated by the statistical procedure. So it
19 combines all the data and estimates the effect of each
20 one of those variables, and that's the estimated
21 coefficient.

22 The third column is labeled "Robust STD."
23 That really means robust standard error. So this is
24 an estimate of the precision with which the effect of
25 each variable is estimated, and this is estimated in

1 what's called a robust way. I could explain more
2 about that if you wish.

3 The fourth column is labeled "T." That is
4 a statistic that's calculated as the ratio of the
5 coefficient divided by the standard error, and it can
6 be shown to give us a way of assessing the confidence
7 that we can have, that the true value of that
8 coefficient is not zero.

9 And the fifth column is the probability
10 associated with that T statistic. So for example in
11 this first line, probability of .011 tells us that we
12 can be 98.9 percent confident, that the true value of
13 being in the treatment group is not zero, and the
14 generally accepted standard for statistical
15 significance is that the probability in that column
16 should be certainly smaller than ten percent, and
17 preferably smaller than five, and that is .05.

18 The final two columns are really just
19 giving confidence intervals. So it's using the T
20 statistic and the standard error to estimate the range
21 where we can be 95 percent confident that the true
22 value of that variable falls within the range, and it
23 provides that for each of the variables. Is that
24 responsive to you?

25 MS. TAYLOR: Yes, it is. Thank you, and

1 that's all I have, Judge.

2 JUDGE WARDWELL: If this last analysis
3 excluded some additional variables, in '84, '88, '99
4 to 2009, how come we still have the same number of
5 observation of 1,222?

6 DR. SHEPPARD: Because it doesn't exclude
7 them. It actually accounts for them by including an
8 indicator variable. The two indicator variables are
9 named in the far left-hand column, "Dummy_80SBpE."
10 That's a variable that was created by Dr. Tolley. It
11 takes the value 1.

12 If the property was sold in this period
13 '84 to '86, when property values were -- or '84 to '88
14 perhaps, when property values were increasing rapidly,
15 and then the second one is the '99 til the end of the
16 sample time period, when house prices have also been
17 increasing rapidly.

18 So rather than exclude those observations
19 all together, it's econometrically much more sound to
20 adjust for them. The estimates show that indeed, as
21 Dr. Tolley suggested, those time periods are times
22 when the rate of return to holding a house as an asset
23 was much greater, five or six percent per annum
24 greater during those time periods.

25 But even accounting for that effect

1 doesn't change my basic analysis. The impact of being
2 in the treatment group is a statistically significant
3 decline in value, in the rate of return to holding a
4 house as an asset, of about three percent per annum.

5 JUDGE McDADE: Okay, thank you. Before
6 Entergy gets started, let me mention a couple of
7 things. One, you're going to have an opportunity to
8 ask questions of Dr. Sheppard now. Also ask questions
9 of your own witness, to explain, in your view, where
10 you believe his analysis may be flawed.

11 However, given the fact that this
12 testimony has come very late, and the exhibit has come
13 very late, what I will also do is allow, within 30
14 days, which I guess is about November 21st; if that
15 falls on a weekend or holiday, then the following
16 Monday, to supply a brief statement, testimony, if you
17 wish, that will offer a fuller explanation or
18 rebuttal, if you think that that is appropriate or
19 necessary, in order to fully develop the record.

20 So one, go ahead and get started with Dr.
21 Sheppard if you wish. I realize that, you know, Dr.
22 Tolley has not had a lengthy opportunity to review
23 this. If you want to ask him questions now while it's
24 still fresh, please go ahead. But, as I said, you
25 will have an opportunity to present a written

1 submission within 30 days, in the form of a
2 declaration, sworn testimony.

3 MR. TENPAS: Thank you, Your Honor.

4 JUDGE McDADE: Are you ready to proceed?

5 MR. TENPAS: Yes, Your Honor. Dr.
6 Sheppard, could we just start with New York 446, the
7 document we've been on, which is, I believe, the four
8 pages. Simply to again, to clarify, you've sometimes
9 used the phrase "your data" and "Dr. Tolley's data."

10 Is it fair to say between you and Dr.
11 Tolley there were two basic data sets that were being
12 used?

13 DR. SHEPPARD: Yes, I think that is fair.

14 MR. TENPAS: And one of those data sets
15 that was originally developed by Dr. Tolley drew on
16 data from the MLS listing; correct?

17 DR. SHEPPARD: That is correct, as I
18 understand it.

19 MR. TENPAS: And then you had a data set
20 that was developed by looking at assessor card
21 information through the process you described with
22 your graduate student; is that right?

23 DR. SHEPPARD: Just let me -- it's
24 basically right, Mr. Tenpas. I just wanted to say
25 that, and combined with data from the Office of Real

1 Property Services in New York.

2 MR. TENPAS: Okay. Fair enough. Thank
3 you for that. Now a moment ago, so as we turn to the
4 analysis on the final two pages, the 15 -- where
5 there's a first table with 1,511 observations and then
6 after that the 1,222; correct?

7 You describe that 1,222 number as coming
8 from a set that Dr. Tolley had augmented; is that
9 correct?

10 DR. SHEPPARD: That's correct.

11 MR. TENPAS: Now in your experience, does
12 the word "augmented" usually convey the idea of
13 increasing something?

14 DR. SHEPPARD: I think I see where you're
15 going.

16 MR. TENPAS: Does that word usually imply
17 the idea of increasing?

18 DR. SHEPPARD: Increasing something, yes.

19 MR. TENPAS: Okay, and in fact, what
20 happened here, would you agree, is that when Dr.
21 Tolley saw your report, your 2011 report that drew on
22 assessor's data, he reviewed, he and his staff
23 reviewed the assessor's cards; correct?

24 DR. SHEPPARD: That is my understanding.

25 MR. TENPAS: And in the course of that

1 review, would you agree that he identified 425 errors
2 that were contained in the assessor's cards?

3 DR. SHEPPARD: Now you're getting to an
4 area where we have to be a little careful, I think, in
5 understanding what we mean by "error." He identified
6 different categories of what he regarded as errors, as
7 I understand from his rebuttal testimony.

8 Some of those were simply concerns, were
9 concerns about whether a sale involved a vacant lot.
10 Others were more vaguely stated, concerns about
11 whether there were misspellings on the property card,
12 presumably misspellings of a street name or address.
13 It's not clear from his rebuttal testimony what all of
14 those sources of error were.

15 MR. TENPAS: Could I ask the Clerk to call
16 up Entergy 144 at page, I guess it's PDF page 38? And
17 if you could zoom in on that middle -- well first, if
18 we could go up above, to the paragraph above. Now you
19 had an opportunity to review -- this is Dr. Tolley's
20 report; correct?

21 DR. SHEPPARD: This is Dr. Tolley's
22 report.

23 MR. TENPAS: And did you review that
24 report at the time it was submitted in this
25 proceeding?

1 DR. SHEPPARD: Yes.

2 MR. TENPAS: Okay, and so that top
3 paragraph there identifies a variety of information
4 that he found on the assessor's cards; correct?

5 DR. SHEPPARD: That he alleges to have
6 found, yes.

7 MR. TENPAS: And so for example, on the
8 assessor's card, if you just took F, for example,
9 there are places on the assessor's card where the
10 sales price is marked as "unverified" by the assessor;
11 correct?

12 DR. SHEPPARD: I'm reading that along with
13 you, yes.

14 MR. TENPAS: And there's a place in G
15 where actually the assessor's card itself reflects
16 that a purchase was not indicative of market value;
17 correct?

18 DR. SHEPPARD: Yes. I see that he has
19 written that.

20 MR. TENPAS: And so now scrolling down to
21 the next paragraph, would you agree that focusing in
22 on that third line there, that Dr. Tolley reported
23 that of the 1,511 observations in your original data
24 set, 425 of them were ineligible for inclusion in the
25 regression for the variety of reasons set out above;

1 correct?

2 DR. SHEPPARD: I don't agree with what Dr.
3 Tolley's alleging there, but I agree that that's what
4 Dr. Tolley wrote.

5 MR. TENPAS: Okay. So what did you do --
6 let's start here. So can we agree on some basic math,
7 that 1,511 minus 425 is something less than 1,222?

8 DR. SHEPPARD: Yes.

9 MR. TENPAS: Okay. So is it fair for us
10 to understand that the 1,222 number reflected in the
11 two tables towards the back of 446, involve you
12 putting back in some portion of the 425 that Dr.
13 Tolley had identified, in his view at least, as
14 erroneous?

15 DR. SHEPPARD: Yes, and it's really clear
16 in that document which ones. So it's very clear to
17 get to the 1,222, what I've done is simply excluded
18 the ones he identified as involving a vacant lot. I
19 haven't excluded the others.

20 MR. TENPAS: Okay. So to be clear,
21 although you have referred to the 1,222 as Dr.
22 Tolley's augmented data, that is not -- 1,222 is not
23 a number of records that Dr. Tolley ever himself
24 agreed was the correct number of records for this kind
25 of analysis, is it?

1 DR. SHEPPARD: I never said that, and you
2 can check the testimony. I agree; it's not the number
3 that he said would be his preferred number.

4 MR. TENPAS: Okay. I'm just trying to
5 understand what you mean when you say that 1,222 was
6 Dr. Tolley's augmented numbers.

7 DR. SHEPPARD: So can I respond to that,
8 just to make sure that I'm clearly communicating?

9 JUDGE McDADE: Sure. Excuse me. First of
10 all --

11 JUDGE McDADE: Excuse me. First of all,
12 there was no need for the comment. Ask questions,
13 give answers.

14 MR. TENPAS: Thank you, your Honor.

15 JUDGE McDADE: If you have a question, ask
16 it.

17 MR. TENPAS: Your Honor, I guess I don't
18 have an objection. If he'd like to clarify, he
19 requested that, or I'll go on with the questioning.

20 JUDGE McDADE: Well, then, ask him to
21 clarify.

22 MR. TENPAS: Okay. Why don't you go ahead
23 and clarify, as you wanted to, Dr. Sheppard.

24 DR. SHEPPARD: So when you've emphasized
25 the fact that in my testimony I used the word

1 augmented to describe these data, I don't know if you
2 meant to suggest it, but I took you as suggesting that
3 there was some paradox between the number of
4 observations that show up in my analysis and the use
5 of the word "augmented."

6 The augmentation happened not by adding or
7 subtracting observations, but rather adding variables
8 to the data set. So my original data set did not have
9 a variable that flagged vacant property. Dr. Tolley
10 added that as part of his evaluation of things that he
11 thought could use improvement in my analysis. And
12 what I've done in this most recent document that we're
13 discussing, that contains my evaluation of different
14 measures of proximity and the consistency of my own
15 analysis with them, what I've done is I've said "Well,
16 let's accept Dr. Tolley's characterization of the
17 vacant lot as something that should be excluded." So
18 then I exclude those sales with vacant lots, and that
19 gives me 1,222.

20 I don't accept Dr. Tolley's
21 characterization of the other problems as obvious
22 problems because many of them were corrected or
23 supplemented with additional data. So even if the
24 assessor's data card had an incorrect price or some
25 typo, often those data could be corrected from other

1 sources, such as the Office of Real Property Services.

2 So it is for that reason that I haven't
3 taken on board all of Dr. Tolley's suggestions to
4 consider dropping every variable. But I have tried to
5 be forthcoming on saying "Well, it's an interesting
6 point about whether we could use sales that involved
7 a vacant lot. Let's try excluding those."

8 MR. TENPAS: You describe this as taking
9 account of every variable. Isn't the issue here with
10 respect to the assessors' data and the information
11 reflected on the cards whether those cards can be
12 fairly expected to represent a sale value that would
13 be achieved in an arm's length transaction, and thus
14 be the market value?

15 DR. SHEPPARD: In general, we hope to
16 obtain that from the cards. It's not always possible.
17 Sometimes we used other --

18 MR. TENPAS: How do we find out which are
19 the cards and the data that you had to augment through
20 other sources, versus the ones that the assessor's
21 data was just fine as far as you were concerned?

22 DR. SHEPPARD: We worked hard to make
23 those as consistent as possible, but we drew data from
24 the Office of Real Property Services and the
25 assessor's card both. And I can't tell you at this

1 point whether there was an indication in the database
2 -- I know we disclosed the Access database into which
3 the data were entered, and I cannot recall at this
4 point whether there was a separate indication of
5 whether a correction had been applied to that or not.

6 MR. TENPAS: Now, you indicated -- I guess
7 we agreed that Dr. Tolley had suggested he found 425
8 observations that he thought were problematic. You
9 have -- if math serves me right, you have taken the
10 number of observations down by 289. I believe that's
11 the difference between 1,511 and 1,222. Is that
12 right?

13 DR. SHEPPARD: I'll take your word for it.
14 I haven't checked it, but it is on that order, yes.

15 MR. TENPAS: It's either 289 or 291. I
16 get confused each time, but I think -- well, let's try
17 289. If that's --

18 JUDGE McDADE: Approximately 290.

19 MR. TENPAS: Terrific, your Honor. Thank
20 you. So if it's approximately 290, and Dr. Tolley had
21 suggested 425 observations be removed, would you agree
22 with me that that means you've left in approximately
23 135 to which he objected?

24 DR. SHEPPARD: Yes, I think that's a fair
25 statement. And it also meshes with the statement he

1 made in his report that the vast majority of his
2 objections focused on sales that involved vacant lots.
3 Those are the ones I removed.

4 MR. TENPAS: Well, that remaining 135,
5 again, just in terms of basic math you'd agree that's
6 a little over 10 percent of the remaining 1,222
7 observations. Correct?

8 DR. SHEPPARD: Yes.

9 MR. TENPAS: And are you aware of any
10 disclosure to Entergy in connection with the
11 preparation of this report that demonstrates to
12 Entergy which are the 135 that you left in, but to
13 which Dr. Tolley would have objected?

14 DR. SHEPPARD: That is easily discernible
15 from an expert's reading of this last New York State
16 exhibit and the data commands that I've included. If
17 they're sitting at a computer with that program and
18 with, for lack of a better word, permit me to use it,
19 with Dr. Tolley's augmented version of my data set.
20 Because he does have variables indicating those
21 observations he objects to.

22 MR. TENPAS: So just in terms of getting
23 this Saturday night, we would have had to have had
24 access to the data set, gone back in, and looked at
25 all those variables. Is that true?

1 DR. SHEPPARD: You certainly need access
2 to a data set and the computer.

3 MR. TENPAS: Thank you. There were some
4 questions, I think, from the Board about this notion
5 that -- is it fair to say that your notion is that in
6 the 1974 or '76 period, with the commencement of
7 operations, the actual producing of electricity out of
8 the facility, that the property market responded to
9 that in a negative way, and that that caused a
10 depressive effect on the property values in the
11 vicinity during that period?

12 DR. SHEPPARD: That's correct.

13 MR. TENPAS: Now, I think you were asked
14 a question about whether, to some degree, a fear of
15 nuclear power might account for that. And did I
16 fairly understand you to say you thought that
17 couldn't, because you saw no reason why people were
18 more generally afraid of nuclear power in 1973 than
19 they were in 1974?

20 DR. SHEPPARD: That's just a slightly too
21 strong, I think, interpretation of my view. If I
22 might just nuance it a touch, I would say I don't
23 agree with that assertion, and I also juxtaposed to
24 that comment the observation that I had not conducted
25 a survey or anything that could directly test the

1 proposition.

2 MR. TENPAS: Do you think it would be
3 unreasonable to hypothesize that people in the
4 community might be more fearful of an operating plant
5 than one that, the day before, is sitting there and,
6 in colloquial terms, hasn't been turned on yet?

7 DR. SHEPPARD: I think it's reasonable to
8 think that people might react to an operating plant
9 that's generating more traffic in and out, one that is
10 commencing the process of accumulating waste that is
11 stored on the plant site. All of those sorts of
12 things. I think that it's reasonable that they might
13 respond to that.

14 And of course, it's also possible that
15 they don't respond to it. I'm open to the hypothesis
16 that they don't, but my statistical analysis suggests
17 that they did respond to it.

18 MR. TENPAS: I didn't ask about traffic.
19 I want to ask whether you think people -- it might be
20 reasonable to hypothesize that people would be more
21 fearful that a nuclear accident might occur, a nuclear
22 release might occur once a plant commences operation
23 than the day before, when the plant was not operating.
24 Might they not reasonably think in that way?

25 MS. TAYLOR: I'm going to object, judge.

1 This is outside the scope of the testimony, and
2 outside Dr. Sheppard's area of expertise.

3 JUDGE McDADE: Sustained.

4 MR. TENPAS: Did you not hypothesize that
5 there might be some generalized fear of nuclear power?

6 MS. TAYLOR: Objection.

7 JUDGE McDADE: Sustained. Actually, I
8 asked the question whether or not that could be
9 differentiated, and I believe the witness indicated
10 that he didn't know how. Is that correct, Doctor? Is
11 that your recollection?

12 DR. SHEPPARD: I think that that's a
13 correct statement, and I think I elaborated in
14 response to your question that, for it to be
15 attributed to that, we would have to maintain the
16 hypothesis that some change in fear or concern about
17 nuclear power would have to be coterminous with that
18 '74 to '76 time period. And so I think that you've
19 correctly characterized that.

20 MR. TENPAS: You've indicated that you
21 think these disamenity effects might be cumulative, or
22 build on one another over time.

23 MS. TAYLOR: Objection.

24 MR. TENPAS: Is that correct?

25 MS. TAYLOR: Objection.

1 JUDGE McDADE: I'm going to overrule the
2 objection. He's stated it. If Dr. Sheppard doesn't
3 agree, that has to be testified to. He's free to
4 disagree. He seems capable of doing that.

5 DR. SHEPPARD: I hope not unreasonably.
6 But in any event, I wouldn't agree that my analysis
7 shows these are cumulative over time necessarily. But
8 what I do think is true is you observe an effect, and
9 my analysis has detected an effect, that's associated
10 with this location and this time period.

11 My analysis does not show that there is --
12 my analysis would be consistent with the suggestion
13 that there is a maintenance of this effect, but not a
14 continuing-in-time increase of this effect.

15 MR. TENPAS: In terms of that effect that
16 you discern to be there, your analysis does not
17 further disaggregate the degree to which that effect
18 is from people reacting to traffic, noise, aesthetics,
19 or greater fear of a nuclear risk because of
20 operation, does it?

21 DR. SHEPPARD: No. I have not done that.

22 MR. TENPAS: Thank you.

23 JUDGE McDADE: Are we getting close to the
24 end?

25 MR. TENPAS: We are, your Honor. Doctor

1 Tolley, there was -- if I could request that the clerk
2 take us to Dr. Sheppard's testimony, which I believe
3 is --

4 JUDGE McDADE: Direct or rebuttal?

5 MR. TENPAS: I'm sorry, Dr. Tolley's
6 testimony. So it will only be direct, your Honor. I
7 apologize. 000132, and around page 112 or
8 thereabouts, on the -- 114, I think, on the PDF. Dr.
9 Tolley, do you recall being asked some -- could I
10 request that we go to the beginning of the question
11 area in this section? There you go. If you could
12 highlight question 140?

13 Dr. Tolley, do you recall being asked some
14 questions about your analysis right around this
15 section by the Board members?

16 DR. TOLLEY: Yes, a couple of hours ago.

17 MR. TENPAS: Yes, it probably seems that
18 way. And do you recall being asked some questions
19 about which of Dr. Sheppard's several analyses this
20 critique was responding to?

21 DR. TOLLEY: Yes.

22 MR. TENPAS: Okay. And can you just,
23 looking at that now, clarify to the Board which of the
24 Sheppard analyses this critique was directed at?

25 DR. TOLLEY: Yes, this was his final, 2011

1 figure. I looked at this too quickly and I wasn't
2 sure, but that's what this was. This was is 2011 107
3 billion dollar figure from, it looks like his repeat
4 sales analysis.

5 MR. TENPAS: So if your testimony at any
6 point indicated this might have been a response to Dr.
7 Sheppard's Bomquist-based analysis, that would have
8 been mistaken?

9 DR. TOLLEY: Yes, it would have. I was
10 not clear at the time. I hope I said I wasn't.

11 MR. TENPAS: Thank you. I guess for
12 anybody on the Entergy panel, there have been some
13 questions about how quickly and when alternative uses
14 might emerge for the Indian Point location. Can
15 anybody there speak to what might be constraints,
16 regulatory, physical or otherwise, on a faster
17 decommissioning than 60 years, or even if
18 decommissioned faster than 60 years, then a conversion
19 to other uses, industrial or otherwise?

20 MR. REAMER: Bill Reamer for the
21 applicant. For the site to be available for
22 alternative uses, it needs to be released by the NRC,
23 and that would come after decommissioning of the
24 facility, decontamination of the site, to a point that
25 it could be used for alternative uses. But that's

1 only with respect to the power plant that's being
2 decommissioned.

3 Separately from the power plant is an
4 independent spent fuel storage installation that is
5 also on the site, and that ultimately -- as I
6 understand Entergy's plans -- will contain all of the
7 spent fuel from Unit 1, all of the spent fuel from
8 Unit 2, and all of the spent fuel from Unit 3. And
9 that facility, looking at other plants that have
10 completed decommissioning, will remain on the site.
11 Notwithstanding that the plant has been
12 decommissioned, that spent fuel storage installation
13 will remain on the site.

14 And I guess you ask about alternative
15 uses, it remains under a license and the area inside
16 the fence remains subject to all regulatory controls.

17 MR. TENPAS: Thank you. Dr. Tolley, there
18 was some testimony and discussion about an analysis
19 that you performed, that Dr. Sheppard then described
20 himself as sort of responding to. Can you just
21 describe for the Board what the nature of that
22 analysis was, and why you undertook to do it?

23 DR. TOLLEY: Tell me if I'm wrong, but I
24 think this is the square root of distance regression
25 that I undertook on Dr. Sheppard's data. Am I correct

1 that that's what you're asking about?

2 MR. TENPAS: Do you recall doing a one-
3 page document that focused on square root of distance?

4 DR. TOLLEY: Yes, I do.

5 MR. TENPAS: Okay. Can you describe for
6 the Board what that document was, why you prepared it?

7 DR. TOLLEY: Well, Dr. Sheppard had
8 performed his square root of distance analysis on my
9 data, the MLS data, alone and not done it on his own
10 data. And following the original testimony, we wanted
11 to do it on both data sets to get the total body of
12 evidence that would throw light on this, so that's why
13 we did that.

14 Do you want me to talk about the results?

15 MR. TENPAS: Can you indicate why you
16 undertook to do that analysis?

17 DR. TOLLEY: Because I wanted to see if
18 his data confirmed the conclusions that he drew from
19 my data.

20 MR. TENPAS: And to be clear, which data
21 set were you then doing this analysis with? Was it
22 the MLS, or was it the assessor data?

23 DR. TOLLEY: The new analysis I did was on
24 the assessor data. It was on his cleaned data, fully
25 cleaned data.

1 MR. TENPAS: Your Honor, at this point
2 we'd move what the Board had marked as Exhibit 4 for
3 identification on behalf of Entergy.

4 JUDGE McDADE: What is the next entry
5 exhibit number?

6 MR. TENPAS: I believe it's 590, your
7 Honor.

8 JUDGE McDADE: Okay. Entergy Exhibit
9 000590 is admitted.

10 (Whereupon, the document referred to was
11 marked as Exhibit 000590 for
12 identification, and was received into
13 evidence.)

14 JUDGE McDADE: Okay. The same directions:
15 one, submit a copy through the EIE, and also a copy of
16 revised exhibit lists with that on it through the EIE,
17 but wait until we conclude on Wednesday, so we don't
18 have to just keep doing new exhibit lists in the event
19 something else comes up.

20 MS. TAYLOR: If I might, judge? I'm
21 sorry. If the State could have the same courtesy that
22 has been extended to Entergy, the extra 30 days to
23 respond to that new testimony? We have had no
24 opportunity to respond in writing or to have Dr.
25 Sheppard do any detailed analysis of the October 12th

1 document to which we are currently referring, and
2 which was served on us less than a business day before
3 this hearing was scheduled to commence.

4 JUDGE McDADE: Okay. I think Dr. Sheppard
5 has responded, but I will allow you again the same
6 date, November 21st, or if that's on a weekend or a
7 holiday, the Monday after that, focusing just on this
8 one narrow area.

9 MS. TAYLOR: Absolutely. Thank you,
10 Judge.

11 MR. TENPAS: All right. Dr. Tolley, do
12 you have the page in front of you that has your --
13 what's been called the square root of distance
14 analysis?

15 DR. TOLLEY: I probably have it in here.
16 Should I look for it?

17 MR. TENPAS: All right. We'll have the
18 clerk pull it up. If you could go to the next page,
19 past the -- there you go. And perhaps -- Dr. Tolley,
20 can you now see that in front of you on the screen?

21 DR. TOLLEY: Yes.

22 MR. TENPAS: All right. Can you simply
23 walk the Board through what you did here, and why you
24 did it?

25 DR. TOLLEY: Okay. I believe this to be

1 correct. I'm doing it from recollection, but I'm
2 quite sure about it. This takes Dr. Sheppard's square
3 root of distance functional form, the same one that he
4 used on my MLS data, and it applies it to the
5 assessors' data that he used. And it's showing that
6 the square root of distance is no longer -- it's not
7 significant in this regression.

8 It also shows, I would note, we looked at
9 the PILOT -- I'm looking at square root-dist, the
10 first line. We see the t-coefficient of 1.22, which
11 is not statistically significant. Then we look down
12 to the third-to-the-last line, and it has PILOT
13 payment-2011, and there we look at that t-coefficient,
14 and it's 2.37.

15 So here the PILOT paid very well, but Dr.
16 Sheppard has been claiming it should be valued at
17 zero, because of an application of a mechanical
18 statistical rule. Here we have PILOT payments that
19 are highly significant, and so this supports the
20 contention that PILOT payments are a significant
21 variable here.

22 MR. TENPAS: In the line PILOT payment-
23 2011, there's a 19.408. Can you discuss what that
24 number represents, or is shorthand for?

25 DR. TOLLEY: Let's see. That number says

1 that if PILOT payments go up one dollar, the value of
2 the house will go up \$19.40, which is a not
3 unreasonable number for capitalization rates. You're
4 going to receive these PILOT payments over many years,
5 so you capitalize them, and this is not an
6 unreasonable capitalization rate.

7 JUDGE McDADE: I'm sorry, Doctor. You're
8 saying it is not unreasonable?

9 DR. TOLLEY: It is reasonable. Sorry
10 about that.

11 JUDGE McDADE: Okay. I just wanted to
12 make sure I didn't hear exactly the opposite of what
13 you were saying. Okay.

14 MR. TENPAS: Dr. Tolley, there's been some
15 testimony by Dr. Sheppard focusing in on particular
16 analyses of particular data sets showing statistical
17 significance, largely rooted in the MLS. There are
18 other analyses based on the assessors' data.

19 Overall, can you summarize for the Board
20 your view of how to put both of those studies, all of
21 that analysis, together from the two data sets and/or
22 put it in context with the broader literature in this
23 area about nuclear plants?

24 DR. TOLLEY: Okay. Well, this is about
25 the square root of distance formulation. It shows we

1 have two bodies of evidence here. If we're looking at
2 the square root of distance, as I was saying before,
3 it's a very unusual formulation. It might
4 conceptually be consistent with economic theory, but
5 it is only one out of hundreds of functional forms.
6 And then I say that I don't see how we can conclude
7 that Indian Point has a depressing effect on land
8 values from one, highly unusual, functional form, when
9 there are so many other functional forms that don't
10 give this result.

11 I'm also commenting on the rest of this.
12 The four regressions that Dr. Sheppard submitted on
13 the first two pages of what we were looking at before,
14 when we do that, what do we find? We find that
15 there's nothing new there. If you -- I don't know how
16 to put it. If you think like an economist and not
17 like a slave statistician, you will choose these
18 functional forms on the basis of good economic
19 thinking.

20 The only two serious contenders on there
21 are the quadratic -- that was what I ran -- and the
22 square root of distance. Those are consistent with
23 shapes of these functions that you would expect based
24 on analysis of economic theory. The other two things
25 are just window dressing. To me, they show nothing,

1 because they're not good economics.

2 Then if we come to the PILOT payments
3 situation, we find that the MLS data that I used show
4 a reasonable coefficient also, but it is not
5 statistically significant. Then the assessors' data
6 here shows a highly significant coefficient on PILOT
7 payments. It's what we expect from economic theory.
8 The finest economists around have examined this effect
9 of local property taxes on property values, and they
10 have ascertained that that is an expected effect. One
11 flies in the face of the best economic literature if
12 you don't accept that.

13 And I would say further, on the square
14 root of distance, if we look at Dr. Sheppard's
15 estimate, I believe we're going to see a much lower --
16 it's not only nonsignificant, it's much lower. And so
17 if we use this coefficient, we wouldn't approach this
18 27 percent figure, which as I said before is a
19 meaningless figure anyhow, but it would be much -- I
20 think, although I'm doing this from recollection, the
21 amount is about one quarter of that amount, because
22 this is a lower coefficient. I think that's the kind
23 of comments that I would have on this.

24 JUDGE McDADE: Okay. Thank you, Doctor.

25 MR. TENPAS: Thank you, your Honor.

1 Nothing further.

2 JUDGE McDADE: Ms. Mizuno?

3 MS. MIZUNO: Yes, your Honor. There's one
4 matter that I think the staff may be able to assist
5 the Board in, in terms of decommissioning issues. So
6 this question goes to you, John Boska. There was some
7 testimony earlier about decommissioning, and there was
8 a discussion about Entergy's plans to use safe store.
9 That allows Entergy to delay decommissioning
10 activities, so long as the decommissioning is
11 completed within 60 years of the cessation of
12 permanent operations.

13 And at one point, Judge McDade asked
14 whether there was an economic incentive for Entergy to
15 decommission as soon as possible, and the economists
16 were having some difficulty with the question. And so
17 I'm going to ask you, John, Mr. Boska, about
18 radiological reasons, technical reasons, with respect
19 to whether or not you should move forward as soon as
20 possible --

21 MS. TAYLOR: Objection. I'm sorry, she's
22 leading the witness. Is there a question here?

23 MS. MIZUNO: I'm going to ask --

24 JUDGE McDADE: There's going to be.

25 MS. MIZUNO: There is going to be. I'm

1 going to ask the question in a slightly different way.
2 Is there any radiological reason for Entergy to delay
3 decommissioning and not enter into the decommissioning
4 process as soon as possible?

5 MR. BOSKA: Yes, this is John Boska for
6 the staff. Safe store does have the benefit of
7 allowing radionuclides to decay over time, and that
8 makes it easier to decommission a plant, because you
9 don't have as many radioactive isotopes that you have
10 to deal with. It makes it easier to send the waste to
11 a waste site, and it makes it easier for the radiation
12 control technicians to monitor the work during
13 decommissioning.

14 MS. MIZUNO: Does it also decrease dose?
15 What effect does it have on dose?

16 MR. BOSKA: Yes, it does decrease the
17 overall dose for the workers who are performing the
18 decommissioning.

19 MS. MIZUNO: No further questions, your
20 Honor.

21 JUDGE McDADE: Okay. Thank you. We are
22 going to start tomorrow at 2:00 on EC-3, and we are
23 then going to start at 9:00 on Wednesday on New York-
24 37. We are going to go as far as we can on New York-
25 37 on Wednesday. We will, at that point, recess

1 without completing New York-37. We will ask the
2 parties, and specifically ask New York, within two
3 weeks to inform the Board and the other parties with
4 regard to the physical condition of your witness, so
5 that we can get an estimate of by when he would be in
6 a position to travel.

7 It doesn't seem that it makes much sense
8 to pick a date randomly at this point, until we have
9 some idea of his medical condition. So within two
10 weeks from today, if you could report that. If you
11 have information earlier, please do that earlier.
12 What we will attempt to do, then, is to find a date
13 when we can accommodate all of the parties in
14 Rockville, some day either in November before
15 Thanksgiving or in December before the December 10th
16 hearing.

17 I would anticipate -- and let me rephrase
18 that, more than anticipate -- that hearing in
19 Rockville would take place on a single day. I don't
20 envision that it would take the whole day.

21 Mr. Sipos, anything based on that?

22 MR. SIPOS: Thank you, your Honor.

23 JUDGE McDADE: Okay. From Entergy?

24 MR. BESSETTE: No, your Honor. We have no
25 further questions.

1 JUDGE McDADE: Riverkeeper?

2 MS. BRANCATO: Nothing further.

3 JUDGE McDADE: From the staff?

4 MS. MIZUNO: No, sir.

5 JUDGE McDADE: From Clearwater, Ms.

6 Greene?

7 MS. GREENE: Yes, your Honor. I just
8 wanted to let you know that Dolores Guardado will
9 definitely be here tomorrow, and is going to try to
10 get here by 2:00. And the reason I mention that is in
11 case you had scheduled the translator later in the
12 afternoon. She's not sure that she can, but she's
13 going to make that request of her employer.

14 Other than that, I have nothing else this
15 evening.

16 JUDGE McDADE: Okay. Please notify the
17 parties by email in the morning no later than 10:00.
18 Based on your earlier representations, we had directed
19 the interpreter to be here at 4:00, on the
20 representation that your witness would not be here
21 before 4:30. So if she is going to be here as early
22 as 2:00, then we need to try to make arrangements to
23 get the interpreter here earlier, and it may be that
24 there won't be an interpreter here for her at 2:00,
25 but we will make our best efforts to do so.

1 MS. GREENE: Given that she may not be
2 able to get an answer from her employer, if we get a
3 favorable answer I will -- is it all right to just
4 leave it as it is if you don't hear back from me?

5 JUDGE McDADE: I would appreciate it if
6 you could notify us one way or the other. Let us know
7 if you've heard; let us know if you haven't heard.

8 MS. GREENE: Will do.

9 JUDGE McDADE: We are in recess. Thank
10 you.

11 (Whereupon, the hearing in the above-
12 entitled matter went off the record at 7:07 p.m., to
13 resume the following day.)

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CERTIFICATE

This is to certify that the attached proceedings
before the United States Nuclear Regulatory
Commission

Proceeding: Entergy Nuclear Operations, Inc.
Indian Point Units 2 and 3

Docket Number: 50-247-LR and 50-286-LR

ASLBP Number: 07-858-03-LR-BD01

Location: Tarrytown, New York

were held as herein appears, and that this is the
original transcript thereof for the file of the
United States Nuclear Regulatory Commission taken
and thereafter reduced to typewriting under my
direction and that said transcript is a true and
accurate record of the proceedings.

Neal R. Gross

Official Reporter
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