UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD PANEL

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HEARING

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

Wednesday, October 24, 2012

DoubleTree by Hilton Hotel Tarrytown

Westchester Ballroom

455 South Broadway

Tarrytown, New York

BEFORE:

LAWRENCE G. McDADE, Chair

MICHAEL F. KENNEDY, Administrative Judge

RICHARD E. WARDWELL, Administrative Judge

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P R O C E E D I N G S

9:02 a.m.

JUDGE McDADE: On the record. Before we get started, there are a couple of housekeeping matters that I wanted to discuss very briefly. One, I believe at the conclusion of Riverkeeper-TC-2, I had indicated that the pending motion in limine that we had held in abeyance until the conclusion of the testimony so we would have a fully robust record on which to decide was denied. My recollection I'm not certain whether or not I made the announcement or not. But in the event that I did not do it then, I'm doing it not in sort of a belt-and-suspenders approach. But the motion in limine is denied.

The second thing that I wanted to do is to raise an issue and have the parties contemplate it during the course of today. And we will take it up before we close this evening.

In our scheduling order of July 2010, we indicated that post-trial briefing, findings of fact and conclusions of law, your proposals, would be due 60 days after the close of the evidentiary hearing. At that time, we certainly didn't anticipate a bifurcated and here a multi-bifurcated proceeding that we have.

So what I would like you to do is to consider and then offer your views as to what the trigger date should be for that 60 days. In other words, were all of the contentions but 37 that we've heard in the past two weeks should it be today? Alternatively, should it be for all of these first contentions after we hear from that session with Commissioner Bradford? Or alternatively should it be at the end of our December hearing for the track 2 or the track 1 contentions? Or if you have some other alternatives to express those?

But what I would like to do at the conclusion of today's session to get input from all of the parties as to what that trigger date should be. As I said, our scheduling order just says 60 days from the conclusion of the evidentiary hearing.

Are there any other housekeeping matters to be taken up before we get started here today?

MR. SIPOS: Your Honor, John Sipos for the State of New York. There are recently some documents, two documents in particular, which have been issued. And the State has disclosed them shortly after they had been issued. And the State believes that they are relevant or could pertain to Contention 37.

I have informed counsel for Entergy and

counsel for NRC Staff that the State's experts have reviewed these two documents. One is dated I believe October 11 or 12. And it is a report issued by Synapse Economics that was commissioned by Riverkeeper and the Natural Resources Defense Council. And the second is a blueprint document issued by the New York State Energy Highway Task Force that was issued this past Monday, October 22nd.

The State disclosed each of those documents within a day or two after they were issued. And the State also recognizes that both those dates were either at the very eve of the first day of the hearing or in the midst of the hearing.

The State also recognizes that Entergy's counsel and experts and likewise NRC's counsel and experts likely have not had an opportunity to review those documents. In addition, the State wishes to inform the Board that the State's experts have reviewed those documents and it is possible that discussion of them could ensue today.

But as of this time we have not tendered them formally to Your Honors. And we have paper copies of them with us. And we also have the electronic copies as well, PDF copies. And in the interest of full disclosure, I wanted to put that on

the record.

JUDGE McDADE: Okay. At this point, we haven't seen the documents. We don't know what, if any, significance the documents are going to have. I'm certainly not going to delay the proceedings here today because of those documents recently coming into existence. We will go through it at the conclusion.

If Entergy believes that they have not had an adequate amount of time to have their counsel and their experts review the documents and to comment on the significance of it, I would anticipate that we would give Entergy an opportunity after the hearing to supplement the record either through the introduction of documents that would tend to in their view explain or contradict those documents or by the way of a declaration of testimony from their experts that could give their contrary opinion or elaboration on the import of those documents.

But at this point it's difficult to assess not having seen them, not having hear how that testimony is going to be addressed or come from the witnesses. Any objection to that by Entergy?

MR. TENPAS: Well, Your Honor, we appreciate that being extended. I will note just briefly we do object to any reference by the witnesses

to these documents at the hearing, notwithstanding any later opportunity we might have. We are prejudice in our ability to deal with follow-up today on the spot with the witnesses as any comments that they may make about these.

I would like to clarify for the record the precise dates of the disclosure. The Synapse report was disclosed or received by Entergy on Friday, the 12th of October. So that is the Friday immediately before these proceedings began. This is what's sometimes called the Synapse Report. It's approximately 168 pages.

I believe it's worth noting also that in the second sentence of that document in the Executive Summary it makes reference to the fact that the hearing will be commenced on the 15th. It was also a document that references the fact that Riverkeeper, one of the parties to this proceeding, is the party who initiated the report.

And finally, I think it's worth noting that Dr. Schlissel who will be testifying today was with Synapse when he prepared his original report and this report indicates that it's a follow-on. So the sequence suggests very closely that this is intimately related to his prior work.

And if he then references it today we'll be prejudice as to the Entergy Highway document. Again simply for the record that is a document that we first received by email Monday night, October 24th. It is sufficiently large in its composition that we understand there has actually been difficulty in trying to transmit it electronically. And so I think that largely speaks for itself in terms of our inability to have any meaningful time to prepare for review and be able to examine witnesses today with respect to any reference they make.

Thank you, Your Honor.

MR. SIPOS: And, Your Honor, could I? Sorry.

JUDGE McDADE: Well before you do, two things. One, you indicated you received it on Monday, the 24th. Monday is the 22nd. Mr. Sipos indicated it was the 22nd.

MR. TENPAS: I'm sorry, Your Honor. Yes, Monday the 22nd. And very late in the evening, roughly 11:30 p.m.

MR. BESSETTE: 11:30 p.m.

MR. TENPAS: 11:38 p.m.

JUDGE McDADE: The other thing I was going to say is I recognize the late arrival because of the

late existence of these documents does create issues for Entergy. But yet if these documents in some way inform the opinions of the experts who are going to be testifying here today, I don't see how I can direct the witnesses to give us your opinion but exclude information that you have and try to give us your opinion but not accurately, not fully, but based on just some of the information you have.

I think that would be inappropriate. I think it would put the witnesses in an impossible position. And I think that the only way we really can handle this in an equitable way is to have them testify on their basis of knowledge as of today when they're testifying, but then to allow Entergy the opportunity after you have fully reviewed the documents and have your experts fully review the documents if you believe it appropriate.

Now it may turn out -- I've not seen these documents -- that they're not going to add anything or significantly change the landscape at all. But in the case that you do, you'll have the opportunity both through the submission of additional exhibits and/or through the submission of additional testimony to fully develop the record in this area.

MR. SIPOS: Thank you, Your Honor. We

understand the Court's ruling.

MR. TURK: Your Honor, for the Staff.

JUDGE McDADE: Yes, Mr. Turk.

MR. TURK: The Staff as a party in the proceeding and as the publisher of the EIS also has a stake in this issue. We would request the same opportunity that you're affording to Entergy. We would also like to receive immediately a paper copy or two paper copies of the documents that Mr. Sipos referred to so we can understand what it is that his witnesses may be citing.

JUDGE McDADE: You didn't receive the email copies back on the 24th and on the 12th.

MS. MIZUNO: We did, Your Honor. The problem is downloading and printing very large documents. It's very difficult and some of us prefer paper copies.

JUDGE McDADE: Particularly since you're offsite and you're here. It appears that Mr. Sipos is prepared to furnish the hard copies to the Staff and now has. And certainly the Staff would be given the same opportunity as Entergy after you've had an opportunity to review these documents and have your experts review the documents to, if you believe, an appropriate supplement the record in the same way I

explained for counsel for Entergy.

MR. TURK: For the record, Your Honor, Mr. Sipos handed me one document entitled, "New York Energy Highway Blueprint." He did not hand me the other document.

JUDGE McDADE: Do you have the other document available in hard copy, Mr. Sipos?

MR. SIPOS: I believe we do. And I will go look in my litigation bag.

Your Honor, may I just briefly clarify a couple of points. Okay. When we speak of the size of the second document, it's not so much the number of pages. I count them at approximately 111. But the documents contains several photographs and charts which makes it large from a PDF memory size, not it's volumes and volumes. And the first document, the Synapse document I believe is approximately 64 pages.

JUDGE McDADE: Okay. Thank you.

Are we ready to proceed?

MR. TENPAS: Your Honor, could we simply ask for the courtesy of a hard copy that was also provided to the NRC?

MR. SIPOS: Yes, we will arrange to do that.

JUDGE McDADE: Okay. And to see if we can

do that at the first break.

Good morning.

(Chorus of good mornings.)

Before we get started here, let me just explain a couple of things. We have a new panel of witnesses here. Some people we haven't seen before.

Basically, what the purpose of this hearing is to allow us to ask you questions. We have had the opportunity to read through the testimony that you have submitted. We have read through the documents, the exhibits, that have been submitted along with that testimony. And our purpose now is to ask you questions so that we can make sure that we accurately understand the impressions you are trying to convey and that we fully understand the issue that is being presented.

In that regard, this is going to be a dialogue between you and us. We're going to ask you questions. You're going to give answers to us. In some instances, the opinion offered by one expert may significantly differ from the opinion offered by another expert.

But you're not arguing back and forth between each other. You're going to be directly your answers to us. And if we feel a follow-up is

necessary, we will do the follow-up questioning to the other witnesses. You're not going to be asking questions back and forth and among yourselves.

Likewise, counsel are going to be addressing their questions to us even if they're really intended for you. But in any event, the dialogue is basically through us, your statements to us, counsel statements to us, and us, the members of the Board, talking to you and to counsel.

The other thing I just want to mention is we are in a somewhat formal setting here. But if for any reason you feel that a recess is necessary, don't sit there and suffer in silence. Either ask us directly if you could have a few moments and we can go into recess. Or alternatively if you can't catch our eye, try to catch the eye of your counsel who then won't be shy about bringing that to our attention.

Are there any questions at this point by any of the prospective witnesses?

PARTICIPANT: No sir.

JUDGE McDADE: Okay. The testimony that you will here today will be under oath. Would you please raise your right hand? Do you swear that the testimony you will give in this proceeding will be the truth, the whole truth and nothing but the truth so

help you God?

(Chorus of I dos and yeses.)

Okay. Thank you.

It's been our practice before we begin with the taking of testimony on a contention to go through it and summarize it a little bit at least so you all understand what we think the contention is about and putting your testimony then in that context to the degree that you can.

This contention is brought under NEPA, the National Environmental Policy Act. Now NEPA is not intended to direct a decision. Rather it is intended to ensure that the decision maker and the public are accurately informed of the environmental consequences of a proposed Federal action.

Here that proposed Federal action is the licensing or relicensing or not of the Indian Point facility for an additional 20 years. To comply with NEPA and the circumstances present here, the NRC is required to prepare an Environmental Impact Statement and part of that Environmental Impact Statement is a discussion of the No Action Alternative. In other words, what is the environmental impact in the event that the proposed license is not granted.

New York is challenging the adequacy of

NRC's analysis of the No Action Alternative in the Environmental Impact Statement. Specifically, New York claims that the NRC did not adequately identify and analyze the cost benefits and feasibility of energy conservation and the availability of other energy sources in their analysis. And, as a result, the Environmental Impact Statement improperly skews the environmental analysis in favor of relicensing by basically overstating the demand for electricity and understating the generating alternatives.

Also New York has alleged that the Environmental Impact Statement, the Draft Environmental Impact Statement, on which public comments were solicited does not adequately address those public comments. That's the contention, the issue, as we view it, whether or not these issues have been adequately addressed in the Environmental Impact Statement so that the decision makers and the public will be properly informed of the environmental consequences of the action or the proposed action.

That said let's get started with the questioning. Judge Wardwell, do you want to start?

JUDGE WARDWELL: I would be happy to. I've got a series of questions that are broken down really into about eight different categories. And

I'll quickly go through them just so you see where we're going with this this morning.

We're going to start off by talking about the need to replace Indian Point's base load generation of the 2158 megawatts of electric under the No Action Alternative.

Then we'll probably group a bunch of questions into a discussion of the challenges if there are any for the need for power and whether that's relative or not.

We'll move on then to looking at what were Entergy's alternatives and components of combination alternatives for the license renewal.

The fourth topic area will be the significance of renewables and their environmental impacts.

Five, we'll talk about some of the energy market forces and the importance of minimizing costs.

Six, I'll kind of look at the combination between what is baseline conditions and what is the No Action Alternative to discuss that a little more in depth. Then just concentrate next on alternative actions under the No Action Alternative actions associated with it.

And then just finish up with a short

section dealing with the particular model that was used, the NEMS model, and what was involved with that and why that was used. It's kind of a footprint of where we're going this morning.

I'll start off with the need to replace Indian Point's base load generation of 2100 megawatts of electric other than a No Action Alternative. And I'll start off with New York referencing New York 000046 which I believe Mr. Schlissel.

MR. SCHLISSEL: Schlissel. Don't worry. By lunchtime, you'll be saying it great.

JUDGE WARDWELL: How about Mr. S.

MR. SCHLISSEL: That's fine. If it were proper, you could call me David. But I'm sure that's probably not allowed.

JUDGE WARDWELL: Oh, it's allowed. We call -- We're pretty loose up here. I would like to try to call you Mr. S.

On page eight of your testimony, that's New York-046, you state that the Synapse Report concluded that the capacity and energy provided by Indian Point Units 2 and 3 can be replaced if the units are not relicensed. You agree that Indian Point 2 and 3 provide approximately 2100, close to 2200, net megawatts electric of base load generation capacity.

And that base load power would need to be replaced in the No Action Alternative.

MR. SCHLISSEL: Yes.

JUDGE WARDWELL: Do you think it's realistic to assume that demand could reduce sufficiently to lower that base load power?

MR. SCHLISSEL: Yes.

JUDGE WARDWELL: And to what degree?

MR. SCHLISSEL: Both the power and also the energy that the plant produces.

JUDGE WARDWELL: And do you have -- To what degree do you think that might be reduced? Could all of it be replaced by that?

MR. SCHLISSEL: I think in the long term the answer is yes. In the short term, the answer is no. I don't think that it's feasible to think about retiring a large generating unit or in this case two large generating units in three or four years and instantly replacing them by energy efficiency.

I think that there needs to be more -- There needs to be a realization that electric grids and resource planning are dynamic, not static. And with all courtesy and respect to Staff witness, I think that's a problem with the scenarios he set up is that they're static. One of them -- The combination

has -- One of the combinations has a new gas CC, some renewals, some energy efficiency and it stays the same over time. And that's not the real world.

What will actually replace Indian Point will change over time as new resources are added, as there are outages of some plants. So electric system operation and planning as I say is a dynamic process.

JUDGE KENNEDY: Judge Wardwell. Could I? A couple of questions based on that statement. This is Judge Kennedy. You used a couple of terms that I'm wondering if you could provide some definition to.

First of all, you used the concept of power and the concept of energy in regard to the capacity of Indian Point Units 2 and 3. And the other thing is the concept of short term versus long term. If you could give us a time frame on which in your mind is short term and what would constitute in the long term.

MR. SCHLISSEL: Sure. With regards to power and energy, power is the capacity of the plants, the 2158 megawatts we're talking about, the instantaneous output from the plant.

Energy is power over time. The simplest way of thinking of it is power times time. But actually it's integrated because the power levels of

any power plant change fluctuate over time. So you're really integrating over a time period.

When look at resource planning you need to consider both. You need to have capacity so that when people turn on their lights or want to start a motor, you have enough power at that moment. But you're also concerned with how much energy is being used.

JUDGE KENNEDY: So capacity is measured in terms of power. Is that your concept?

MR. SCHLISSEL: Yes, sir. Megawatts.

JUDGE KENNEDY: Megawatts. And the power concept, does that get to the reliability of the station or? I mean I haven't quite thought of it in terms of energy I guess.

MR. SCHLISSEL: They're both related to energy. With regards to the power level, reliability will affect whether the plant can operate at its full power and whether there are extended periods when the plant operates either in a derated mode which means for Indian Point let's assume 1,000 megawatts for each unit.

So reliability will affect whether the plant operates, each unit operates, at 1,000 megawatts or whether there are forced or unforced outages or deratings that the plant either doesn't operate or

operates at lower outs.

JUDGE KENNEDY: So as we look at the No Action Alternative, is it your testimony that we need to be considering both power and energy?

MR. SCHLISSEL: Yes, sir. I believe you do.

JUDGE KENNEDY: All right. Thank you.

JUDGE McDADE: And the short term versus long term.

MR. SCHLISSEL: Thank you. Short term, well, it depends on the context.

JUDGE McDADE: As you used it.

MR. SCHLISSEL: As I used it, I would say three to five years is short term. Five to ten is medium term. Long term can be ten. In some context, short term is a lot shorter and long term is a lot closer in time. So it's really context.

JUDGE McDADE: As you used it in your context, short term three to five years. Long term greater than 10.

MR. SCHLISSEL: Yes, and a medium term in the middle.

JUDGE WARDWELL: So in the short term how would you consider replacing the 2100 megawatts of power if, in fact, the license renewal wasn't to

proceed?

MR. SCHLISSEL: Well, I believe that replacement power in the short term could come from any number of sources, some existing generation, some new generation that's in the licensing process now, energy efficiency that is being developed as part of the various efforts that the State of New York has already taken and is in the process of taking.

And the same is true for renewables, either renewables that are in place, renewables that are in the pipeline or renewables that will be developed over the next three to five years as a result of the New York State 45 by 15 Plan.

JUDGE WARDWELL: I'll hold off on that for later. Of those renewables, which do you believe are suitable to handle base load replacement power?

MR. SCHLISSEL: The renewables in my mind are mostly for energy as we talked about. But also wind does have some contribution to capacity. I don't know if you're familiar with the term "capacity credit." The Staff witness included the concept in his rebuttal testimony.

It's basically analyses are done and find that if you build 100,000 megawatts of wind depending on where you are maybe you can count for 10 megawatts

to be available on peak. Some places it's up to 20. Some it's a little bit lower than 10. So you get what's called a capacity credit of 10 percent.

You do get some -- You can rely on wind for some contribution to peak. But basically wind is with -- Wind is a contributor to replacing energy.

JUDGE WARDWELL: If I understand you correctly, if wind had a 30 percent capacity factor and a nuclear power plant had a 90 percent capacity, meaning there's a difference of a factor of about three, that means in order to generate, say, 2,000 megawatts of base load power you would have to actually generate somewhere in the neighborhood of 6,000 megawatts of wind power to replace it. Is that a good understanding of how that works?

MR. SCHLISSEL: With all respect, yes and no. Your numbers are correct. Given your example, you would probably need three times as much wind.

JUDGE WARDWELL: That's what I was driving at.

MR. SCHLISSEL: But capacity factor is a measure of energy. It's how much does a power plant actually produce in a year compared to what it would produce if it generated 100 percent power for 100 percent hours. So it's not capacity factor I'm

talking about. It's capacity credit.

JUDGE McDADE: But talking about base load, what is --

MR. SCHLISSEL: So -- Sorry.

JUDGE WARDWELL: But still isn't it correct that you would have to have three times as much wind generating capacity over what a nuclear power plant would if you're using wind to replace it entirely for base load power?

MR. SCHLISSEL: That's correct, but that's not a real world situation, certainly not in New York where there's plenty of dispatchable capacity. So again my view of the wind is some contribution to capacity, but a big benefit in terms of replacing energy.

JUDGE WARDWELL: But still you could only take credit for the 30 percent of whatever wind you did have to add to the mix to get 2100 if you were mixing it with other sources.

MR. SCHLISSEL: Yes. And actually I think the Staff witness is correct. In New York, it's somewhere around 10 percent rather than 30 actually.

JUDGE WARDWELL: Okay.

JUDGE McDADE: But getting back to the concept of base load, you're talking about the use of

wind as energy, power over time. But base load is just what could be generated at particular point in time. Wind doesn't have that capacity as a reliable source of base load power, does it?

MR. SCHLISSEL: Base load really means the power -- A base load power plant is one that you want to run as much as you can because of operating costs. That's base load. Your power plants are divided generally into three kinds of bins. Base load of the plants you want to operate as much as you can, flat out. Indian point if it's in operation.

The second bin of intermediate plants that you kind of turn on and off, you increase or decrease the power level depending on the load.

And then the third bin are your peakers that you run during the hottest hours of the summer or in some places in the U.S. the coldest hours of the winter.

Indian Point, yes, is a base load plant. You want to get as much energy out of the plant as you can while operating it safely and efficiently.

JUDGE McDADE: Okay. But looking at it as a source of supply, a base load source of supply, the facility at Indian Point provides that base load. Wind would not. Wind may be available at some point.

It may be unavailable at other points.

If you have an access capacity on one day, it doesn't make up for the fact that you have a shortage on another day. So when you're looking in the Environmental Impact Statement of comparing Indian Point as a source of base load power to wind, what was wrong with the way that the Staff did it?

MR. SCHLISSEL: Well, I agree that you can't replace a base load power plant only with wind. I've got no argument with that. As I mentioned before, wind does make some contribution to meeting power needs. But I have no argument with saying that it's got to be wind plus something else.

JUDGE WARDWELL: Wind is eligible as a component of that base line taking into account its appropriate capacity factor. Is that a fair assessment?

MR. SCHLISSEL: Yes, sir. Capacity credit, yes.

JUDGE WARDWELL: Capacity credit, I can remember that. On page 11 of your testimony, I believe you said that "Moreover, New York's projected energy requirements and peak demand have been reduced significantly since November 2007's Synapse Report was submitted as a result of the ongoing economic

recession." In your testimony that you submitted, how much and for how long did you take credit for this economic recession and the lower demand associated with it?

MR. SCHLISSEL: I hope I don't get credit for the recession.

JUDGE WARDWELL: They're going to blame you if you have projected it out too far.

MR. SCHLISSEL: Then I would be a presidential candidate. I think it's effected demand -- The immediate effect is for three or four years. But what it means is that as we sit here today in 2012 and look towards the future, the loads we project both megawatts of power and megawatt-hours of energy, those loads are a lot lower than we would have predicted in 2006 or 2007 before the recession. So it had an immediate short-term effect in that loads in New York State were flat, sometimes decreased others. But it will have a long-term impact compared to what the world would have been -- the world in New York State would have been prior to 2007.

JUDGE WARDWELL: Just by having a lower amount for a finite period of time will be reflected on as we move forward.

MR. SCHLISSEL: And a lower base. I don't

know anyone -- Sometimes when you have an economic recession, there's a prediction that energy sales will pop to where they would have been before. I don't know anyone who is predicting that energy sales especially not in New York State and especially not with its 45 by 15 plans -- I don't know anyone who expects loads and energy sales to pop back to where they would have been as they were projected in 2007.

JUDGE McDADE: Putting aside the 45 by 15 program for a moment and focusing just on the impact of the recession I believe that you anticipated or testified that there was about a 4.1 drop in demand that would be directly attributable to the recession. Wouldn't it be prudent to view that only as a short-term, temporary setback and that any draw down due to the recession would be basically absorbed by the coming recovery?

MR. SCHLISSEL: I would hope that the economy will pick up and that, in fact, what you suggest will happen. But again, it's not that the -- I agree the economy will grow and electric use absent the 45 by 15 would increase. My point is that it's going to increase from the lower level.

So if it increased, say, 1.5 percent back from 2007 on without an economic recession you'd have

one set of growth lines and projections. But now that it's been flat or gone down for a few years you get a different set of lower projections even if it still grows in the future at the 1.5-1.6 percent per year.

JUDGE McDADE: But much of this involves speculation, anticipation, of what is going to occur. How should the Staff have taken this into consideration in the preparation of their FSEIS given the speculative nature of it?

MR. SCHLISSEL: Well, all resource planning is speculative because we're talking about the future. Yogi Berra must have said something like that. I think the way you deal with -- I don't think it's speculation. I think of it in terms of uncertainty and in terms of risk.

Yes, there's uncertainty in the future. And the way you deal with uncertainty is you look at range of possible futures. You don't say, "I know what the answer is..." I'm not suggesting Staff did this. But you don't say, "I know the answer to what the future is going to be." If I'm questioned about this, my joke is "If I knew what the future is going to be I would be in Las Vegas and not in Tarrytown."

But the reality is you look at a range of possible futures. And I think that in order to inform

the Commission that that's a process that should be done in these kinds of analyses by Staff is to say we don't know what the future is going to look like. We think it's going to be bounded. It's reasonable to expect it will be bounded by certain conservative or nonconservative scenarios.

JUDGE WARDWELL: So if I understand your testimony correctly, as we move forward, you would take advantage of the slower energy demands that we've had during this recession, but then grow them through the period of an extended operation starting from that lower base level that has been achieved because of the recession. But you would grow them at some rate that wouldn't accelerate such to the degree that we'd pop back up to get back on the old line that we may have been on in the previous forecast.

MR. SCHLISSEL: That's correct except it would have to be measured and would be affected by the State's 45 by 15 plan.

JUDGE WARDWELL: We might as well talk about this. I ran across this 45 by 15 just recently. I knew of the 30 by 15 and I knew of the 15 by 15. And I'd ask you to explain both of those, but then explain the 45 by 15. Is it merely the addition of those two?

MR. SCHLISSEL: Yes, you can think of it that way. The 15 by 15 is energy efficiency.

JUDGE WARDWELL: And what do the 15s stand for?

MR. SCHLISSEL: Produce energy usage by 15 percent over what it would have been in 2015.

JUDGE WARDWELL: By using energy efficiency.

MR. SCHLISSEL: Energy efficiency. There's an energy efficiency portfolio standard. Prior to that, the State had energy efficiency programs as well. Think of it as saving 15 by 15.

Did Judge Kennedy want to ask something?

JUDGE KENNEDY: I guess I just want to have you clarify. Are we talking about electrical energy or energy?

MR. SCHLISSEL: I apologize. Every time I use the word, I'm talking about electric energy unless I mention natural gas energy.

JUDGE KENNEDY: Thank you.

MR. SCHLISSEL: The 30 by 15 are renewables. The State of New York prior to the initiation of the 30 by 15 plan I think had something like 16-17 percent of its energy came from renewable sources, mainly I believe the dams along the Niagara

and St. Lawrence Rivers. Now the State has a plan to increase that to 30 percent again by 2015. You add them together and it's 45 by 15.

JUDGE WARDWELL: You add the 15 by 15 and the 30 by 15.

MR. SCHLISSEL: 30 by 15.

JUDGE WARDWELL: Thank you. Regardless of the recession, isn't base load generation capacity pretty insensitive to long range changes in recession effects? We still need that base load. Have we seen much of a drop in the base load demands during the recession?

MR. SCHLISSEL: You would have thought -- I would have thought the answer would be no. You don't see much drop. But at the same time we've had the recession, we've had a game changing collapse of natural gas prices. And both of those are acting in -- are complementing each other such that a lot of base load coal plants and now it seems a base load new Dominion's Kewaunee plant are falling victim to the economics of not being used as much as they had been prior.

So I don't think Indian Point itself has been effected. But I think that when you generally talk about base load the combination impact of the

recession and the collapse of natural gas prices has affected a lot of base load plants around the country.

JUDGE WARDWELL: So if Indian Point hadn't been affected, then there's probably not much reason to consider that should be affected by the recession and that we'd be looking under the No Action Alternative to replace all of the 20-81 as we move forward.

MR. SCHLISSEL: That's correct, sir. But you're looking at replacing it and this is another criticism I have of the Staff methodology is you really don't look at isolation at replacing one unit with one unit or even three units. You're talking about replacing a resource plan, a resource system, that includes Indian Point with a new resource system that will not include Indian Point.

And as I mentioned before that will change over time. Even if Indian Point continued to operate for the next 20 years, new plants would be built as load grows, as older plants get older. Transmission lines will be added. Things will happen.

What you want to do is you want to then compare that resource future with the resource future that would develop if Indian Point is not relicensed.

JUDGE WARDWELL: Thank you. On page 27 of

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JUDGE McDADE: Judge Wardwell, before you move on, one quick question. You talk about the New York Control Area.

MR. SCHLISSEL: Yes, sir.

JUDGE McDADE: What do you mean by the New York Control Area?

MR. SCHLISSEL: The State of New York.

JUDGE McDADE: The entire state.

MR. SCHLISSEL: The entire state.

JUDGE McDADE: Not just the down state area.

MR. SCHLISSEL: Correct. Generally, you would talk about -- New York is divided into 11 zones. Generally down state you might include G, but generally you would include zones H, I, J and K, K being Long Island, J being the City, H and I being the area around here. And J is north of us. I used to live here, but I can't remember. Is that Dutchess County area?

JUDGE McDADE: But when you're talking about statistics, generally speaking you're talking about the entire New York Control Area, not just down state unless you state otherwise.

MR. SCHLISSEL: That's correct, sir.

JUDGE McDADE: Okay. Thank you.

JUDGE WARDWELL: On page 27 of your testimony, you talk about the State's current energy goal is to reduce the electrical use by 15 percent as we talked about primarily through the expansion of energy efficiency activities while simultaneously meeting percentage of the State's electrical supply needs through renewable resources. Do you have a handle on what percentage of the 30 by 15 goal has already been met with hydro or other renewables when it was first proposed?

MR. SCHLISSEL: When it was first proposed, I think it was 16-17 percent. It might have been a little bit higher. And again the goal is to get it up to 30 percent by 2015.

JUDGE WARDWELL: So the 16-17, a little over a half has already been reached. Is that correct?

MR. SCHLISSEL: Yes, if you go further down that page, I cite a document as indicating that the amounts of energy generated from in-state renewable resources had increased from 16 percent to over 23 percent by 2009.

JUDGE WARDWELL: And during the same period, of course, Indian Point is still operating,

right?

MR. SCHLISSEL: That's correct.

JUDGE WARDWELL: And so that 16-17 percent can't really be used, can it, in a future projection for replacing the Indian Point should the No Action Alternative take place?

MR. SCHLISSEL: Well, it might operate differently. That's why you need to do a system simulation as I mentioned before of two different sets of resource plans, one with Indian Point and one without Indian Point, to see what the model would tell you as to what the system looks like without Indian Point.

There might be instances where renewable generation is higher with Indian Point than without. I've not done the analysis. I can't vouch for that. But that's the kind of analysis that you would want to do.

JUDGE WARDWELL: I guess you've confused me a little bit.

MR. SCHLISSEL: I apologize, sir.

JUDGE WARDWELL: No need to. People would be apologizing to me forever.

MR. SCHLISSEL: I am apologizing to people forever.

JUDGE WARDWELL: It's more on this end I believe. If Indian Point is operating now and there's 16-17 percent being produced of that 30 percent, even if the State moved ahead and was successful in achieving the 30 percent at the end of the current licensing period, if we are trying to just do a tabulation of what additional energy resources we needed, we could not take into account, could we, that 17 percent of the 30 percent goal that we're trying to achieve under the assumption that even that goal is 100 percent met?

MR. SCHLISSEL: Okay. I can agree with that. But what I'm saying is that without Indian Point those same renewable resources might have generated 19 percent using your example of 16-17. Without the power from Indian Point, the market would be more open and perhaps other renewable -- I mean those same renewables would operate more hours of the year. A model could answer those kinds of questions.

JUDGE WARDWELL: Do you know of any renewables that are not operated because the energy is not needed from them?

MR. SCHLISSEL: I've not done that study. No, sir.

JUDGE WARDWELL: Would you expect that, in

fact, the renewables are probably putting out as much as they possibly can and that they would keep on trying to do that as often as they can given it wind or solar or whatever else was being used?

MR. SCHLISSEL: Yes, I would expect --

JUDGE WARDWELL: When the sun is shining, they're going to produce electricity. And when the wind is blowing, they would want to put electricity and put it into the grid. They wouldn't shut down and say, "A nice windy day, but we're shutting down because." They're operating.

MR. SCHLISSEL: That's true. That's what I would expect. And at the price they're bidding into the market they probably are operating at almost full.

JUDGE WARDWELL: Are they involved with any subsidies associated with it? And how does that enter into all of this mix? Any subsidies that are provided to the renewable companies from any governmental policy, more economic recovery program?

MR. SCHLISSEL: Well, there's the Wind Production Tax Credit, but all energy sources are in this country subsidized. Nuclear as well. Nuclear, coal, oil, they're all subsidized.

JUDGE WARDWELL: And how are those subsidies provided to say nuclear or coal? And then

how do they relate to the renewables in regards to percentages of the cost or something?

MR. SCHLISSEL: I don't have the numbers in my head, but I've read that the subsidies to the nuclear industry and the coal industry dwarf what has been given to the wind industry. The nuclear through the governmental research. A cap on liability for accident insurance. I know there are others. I'm sorry. I didn't prepare. I didn't think I'd be talking about that subject today.

JUDGE WARDWELL: That's fine. You gave me a feeling for that.

MR. SCHLISSEL: But all energy sources are subsidized.

JUDGE McDADE: Before we move on, I just want to clarify one thing. You said already achieved are 17 percent of the 30 percent.

MR. SCHLISSEL: Roughly.

JUDGE McDADE: Okay. Does that mean almost half? Or does that mean one-sixth? In other words, 17 percent of 30 percent is more than half.

MR. SCHLISSEL: No, I apologize. The numbers here are of the 30 percent, 23 percent had been achieved by 2009. So that's roughly -- What's that? It's roughly 70 percent, say, closer to 80

percent.

JUDGE McDADE: Of the goal.

MR. SCHLISSEL: Of the goal had been achieved by 2009.

JUDGE McDADE: Okay. I just wanted to be sure of what the percent was a percent of.

MR. SCHLISSEL: Confusing percent percentage points, yes.

JUDGE McDADE: Okay.

And, Judge Wardwell, are you going to getting into the Demand Response Program?

JUDGE WARDWELL: I believe so. If I don't, then chime in. I'll touch upon it, but I don't know if it's to the degree you want or desire or have other questions.

Does New York State provide any direct subsidies for the 30 by 15 program?

MR. SCHLISSEL: I believe they do.

JUDGE WARDWELL: Are you knowledgeable on those and can you speak to those?

MR. SCHLISSEL: No, I'm not knowledgeable on those.

JUDGE WARDWELL: Is there anyone else here on the panel that is knowledgeable about any subsidies that the New York State does provide for that? Yes,

Mr. Meehan.

MR. MEEHAN: Yes, Eugene Meehan for Entergy. The State provides subsidies to renewables by NYSERDA. The New York State Energy Research and Development Authority holds RFPs. And essentially the bidders into those RFPs bid for the subsidy that they require to build the plant.

So they'll build the plant under a long-term contract. They'll get $1 per megawatt-hour subsidy for each megawatt-hour they generate. In addition, they'll sell their capacity and their energy to the market. But NYSERDA will pay them above what they get from the market sales of their products. NYSERDA will pay a fixed dollar per megawatt-hour subsidy over the long-term life of the contract. And the way this ran with contracts in December 2011, that subsidy was $28 per megawatt-hour.

JUDGE WARDWELL: Do you have any reason to doubt that representation?

MR. SCHLISSEL: No.

JUDGE WARDWELL: Why don't you go into your demand now?

JUDGE McDADE: Could you just briefly explain the concept of the Demand Response Program? How it's established? How it works?

MR. SCHLISSEL: Yes, sir. Demand Response means that people get paid to stop consuming power when the call goes out from the New York ISO. There are two programs, one in which it's voluntary. So they get paid some amount in order to be willing to turn off their power if the State says so.

And the other is a I guess you'd use the word compulsory. The power level goes up. New York ISO says shut off your power and your lights go out. So one is voluntary. The other one is required. And they bid in prices and are selected.

JUDGE McDADE: Who bids in the prices?

MR. SCHLISSEL: The company that is willing to participate in the Demand Response Program. I believe some of them are aggregations of they find a number of other businesses to participate. And they all get paid for being willing to shut their power.

JUDGE McDADE: And how much of that is on the voluntary side and how much is on the involuntary side?

MR. SCHLISSEL: I think most of it is voluntary. But the New York ISO still counts on them as to help meet peak loads.

JUDGE KENNEDY: And how much of the decrease in demand would you attribute to these Demand

Response Programs?

MR. SCHLISSEL: Well, the Demand Response Programs, I think there are little over 21oo megawatts in total. New York State's peak in 2011 was I think 33,000 and change without calling on demand response. They're only called upon in situations when they really need it. So potentially it's two-thirty-thirds which is six percent. A way to reduce peak load by six percent when necessary.

JUDGE KENNEDY: This is Judge Kennedy. I wonder if you could explain the relationship between the concept of peak loads versus a base load number and how we would relate those two concepts.

MR. SCHLISSEL: Peak loads are as the name suggests the loads during the highest hours of the year. In New York State, I think it's generally late afternoon in July and August in down southeastern New York. The office buildings, machineries running in factories, homes with air conditioning, I think that's generally the highest loads.

You're not talking about a single peak hour. You're talking about maybe a significant number of hours over a significant number of days. That's one definition of peak hours.

Now it gets a little confusing because you

sometime talk about market prices being either peak hour or off-peak. And that's a different concept of peak hours that I don't think is relevant here.

So when I'm using it, I'm really talking about the hottest hours of the year in New York State when you use the most power. And I'm sorry. What was the second?

JUDGE KENNEDY: The concept of base load and its relationship to the peak load.

MR. SCHLISSEL: When the load is the lowest, you're going to operate your base load units. Those are the units you want to operate as much as you can.

When the loads go up some more, you'll add some intermediate units, units that have the ability to -- It's called load following. They ramp up and they ramp down in power fairly quickly so that if the power goes up you can turn the switch and you get power from them.

When it starts to get the hottest hours of the day, of the year, excuse me, they will then go to peaking units. Generally, they're your less efficient units and the most expensive to operate. But you need them for that short period of time. So the base loads again are the ones you want to keep operating as much

as you can.

JUDGE KENNEDY: Earlier you talked about I guess I think of it in terms of developing options or scenarios. I think I have a two part question. One is you introduced the concept of risk in terms of scenarios. And I believe we're talking about scenarios to meet some objective. And I guess I'm wondering if you're doing resource planning in the nature of this No Action Alternative and trying to identify what the replacement power options would be is the scenario development focused on or the option development focused on the peak loads, the base loads?

I know we've been talking a lot about base load here. But I guess you've now introduced the words "the peak concept." I guess I'm wondering if you could walk through this concept to developing scenarios to meet certain demands. And then talk to us about what risk means in that concept.

You introduced the word "risk" when you started talking about scenario or option development. That sounds confusing.

MR. SCHLISSEL: Okay. Let me try to explain. Basically when you're doing resource planning you've got to do everything you mentioned. The electric system operator has to have enough power

to provide -- Sorry. Has to have enough resources to provide enough power to meet the peak demand while having an adequate reserve. New York State used to be 18 percent. Now I believe it's down to about 15.5 percent.

What that allows for is that it's hotter than normal, hotter than you expect in the summer. Or some power plants are offline when you have your peak loads. So you need to meet the peak demand and you need to have a reserve.

At the same time, you want to have a low cost system. So you plan to see what is the lowest cost units you can operate and you want to operate those as much as possible.

JUDGE KENNEDY: And the concept of risk.

MR. SCHLISSEL: I actually said risk and uncertainty. Uncertainty is you don't know the future. You don't know what the weather is going to be. You don't know when power plants are going to be out. You don't know if you're going to have transmission problems. When they're going to happen. How long they're going to be. Where they're going to occur.

So far we've been talking about uncertainty. Risk is financial and economic.

JUDGE KENNEDY: Not risk of meeting the objective of your scenario development.

MR. SCHLISSEL: I guess you could think of it that way. I generally think of it as financial or economic. But yes. You could consider it as what's the risk that one of the scenarios -- I mean different scenarios have different risks associated with them. That's a fair way to look at it.

JUDGE KENNEDY: And I guess what I was trying to do is take us back to the No Action Alternative and the replacement power. I mean we're really talking about a range of scenarios to meet an objective. And maybe if you could bring us back around to how the options and the development of scenarios or plans to meet a certain objective is relevant in this proceeding. I mean how it factors back into what we're here to discuss the remainder of today.

My concern is I'm hearing a lot of cost discussion. And ultimately we're going to be I think talking about balancing environmental benefits for various scenarios. So I'm worried we're starting to drift into cost and all that sort of thing.

And I'd like to bring it back to developing scenarios that have a high probability of

meeting an objective. That's where I picked up on your risk concept. And then trying to refocus it back to scenarios that we're going to ultimately I believe balance -- At least what I perceive the Staff has done is tried to balance the environmental consequences of various scenarios to meet an objective.

And I don't know if risk entered into it or not. But you brought it up and it made me think of it. I'm not sure there was a question in there. I guess to bring your scenario development in this whole concept of the 15 by 15, 30 by 15. Can you talk a little bit about how that plays back into the development of scenarios to be investigated as part of the Staff's Final Supplemental Environmental Impact Statement.

MR. SCHLISSEL: Yes, sir. Clearly, with the different options there are different risks that either a new plant will be built or that goals will be achieved. And you can't pretend there's not a risk associated with alternatives. At least I can't.

I think there's a high probability that new capacity would be built if Indian Point were not relicensed. I think there's a high probability that the goals that have been established by the State of New York will be achieved. Maybe they won't be

achieved exactly by 2015. But I think looking at the work that's done and the commitment that's been made I think it's reasonable to expect that they will be achieved. Again, I'm not staking my retirement funds on the exact time line.

JUDGE KENNEDY: I think that begins -- That's where it starts to trouble me. And I look at some of the options that have been put forth by the State and there's to-be-built, to-be-developed, to-be-to-be-to-be. And it seems to me that there's a risk component to everything that isn't as existing capacity.

I mean if you're talking about enhancing the capacity of say a hydro facility on the Niagara River or the St. Lawrence, maybe that's more doable than siting and building a new gas turbine facility somewhere in the State of New York or somewhere in New Jersey.

I guess I'm really struggling a little bit. We've got sort of a battle of scenario development here going on. Ultimately, it's going to be balanced by a series of economic benefits. I guess I was really trying to get your perspective of do you think risk should enter into any of the development of scenarios.

MR. SCHLISSEL: And the answer is yes. To reassure you, power plants are retired all the time. Maine Yankee retired. Shoreham I guess you could say it retired, but it barely was operating. But it was in the resource plans. Connecticut Yankee. Yankee Atomic in Western Mass., but they were tiny. SMUD, Rancho Seco, it retired. Large coal plants are being retired now.

The system accommodates retirements. So, yes, there is risk. But it's nothing out of the ordinary and especially here. The benefit here that reduces the risk is that the State of New York is taking a very proactive approach. They are trying to develop the Energy Highway which is a series of steps to improve the grid, make sure new capacity is built both fossil-fired and renewable. Combine that with the 45 by 15 program and you've got a very large commitment to improving the electric grid and making it capable of handling a non-relicensing, if that's that right term, of Indian Point without undue risk.

JUDGE KENNEDY: So I take from that testimony that it would be your position that the renewed license would not have to be granted and that the State is ready and sees no risk in replacing that capacity. Is that what I just heard?

MR. SCHLISSEL: Not no risk. Little risk. Entergy could decide tomorrow that they don't want to relicense the plant for their own reason for whatever reasons they wanted. And the State of New York would not close up shop and go away. The State would make an effort and with NYISO and with other generators, transmission owners.

A plan would be evolved to deal with the absence of Indian Point. I think that that would happen if the -- The same exact thing would happen if Indian Point were not relicensed. Except again here, we're talking about having a state already taking action several years in advance of the event.

JUDGE KENNEDY: And to bring it back into this proceeding and to move away from risk, there is an environmental consequence or benefit of those actions. And I guess as we move through the day I presume we'll look at that balancing of the environment benefit or the environmental consequences of the various actions.

MR. SCHLISSEL: Yes.

JUDGE KENNEDY: Is that where we need to be here today?

MR. SCHLISSEL: Well, I think that's ultimately where you want to be. But I still think

there's a question of whether Staff looked at reasonable set of ultimates especially in terms of today's conditions, today's circumstances and likely future circumstances from today's perspective.

JUDGE KENNEDY: I have a lot of confidence we're going to walk down that path as we keep going. It seems like we're starting to creep into some cost. And I just wanted to bring us back to the environmental. Thank you.

MR. SCHLISSEL: I've been trying to stay away from cost.

JUDGE WARDWELL: Follow-up questions on this thought. You mentioned about the new capacity that you were confident that would be built should Indian Point shut down. Do you agree that the environmental impacts associated with the construction of that new construction should be considered in the Environmental Impact Statement under the No Action Alternative?

MR. SCHLISSEL: Sure. The environmental impacts of all alternatives have to be considered.

JUDGE WARDWELL: A question for Staff. I don't care who necessarily addresses it.

MR. STUYVENBERG: I'm actually the only Staff member. So I'll be answering the question.

JUDGE WARDWELL: I was going to say "Dr. Harrison, are you with Staff or Entergy?" And so we've got that narrowed down pretty much, Mr. Stuyvenberg.

MR. STUYVENBERG: Stuyvenberg. But you can call me Mr. S. also if you'd like.

JUDGE WARDWELL: No. I'm going to get some of these. I'm going to get Mr. Schlissel's pronouncement right.

MR. SCHLISSEL: Getting better.

JUDGE WARDWELL: Getting better. Guess I wasn't there. Damn. Stuyvenberg.

MR. STUYVENBERG: Wonderful. That was pretty good.

JUDGE WARDWELL: Mister, comma mister. Just a quick question before I get back to the main train of thought and that is do you remember whether or not and to what degree you might have incorporated any grid constraints as you prepared the EIS for Indian Point.

MR. STUYVENBERG: Certainly. It was an issue that we had I think addressed in more depth in the Draft SEIS. But based on some comments that we received particularly from the State of New York about the notion that there were improvements anticipated to

the grid, in the Final SEIS we ultimately didn't hold grid constraints against any alternatives. We didn't rule any alternatives out because of grid constraints.

I hope that's a responsive answer. It's to say that it was not something that prevented us from considering alternatives.

JUDGE WARDWELL: So you considered that was why you had all the capacity of the grids that you needed to transmit any of the energy sources and ignored any potential constraints that may occur.

MR. STUYVENBERG: We did have a discussion about some of the hypothetical types of projects that could occur to relieve grid issues and where historically there were some grid issues. But we ultimately didn't again use the grid to rule anything out.

JUDGE WARDWELL: Thank you. In the Staff's testimony, the Staff's 000133 answer 14 on page 10, they state that "New York State's 2009 comments on the DSEIS were the primary drivers of Staff's inclusion of a conservation energy efficiency alternative and that these comments also strongly influence the Staff's combination alternatives which included substantial quantities of energy efficiency and conservation."

Mr. Schlissel, say it again for me.

MR. SCHLISSEL: Schlissel.

JUDGE WARDWELL: Say it louder.

MR. SCHLISSEL: Schlissel. When I think about saying, I mess it up, too.

JUDGE WARDWELL: So you can't say it louder.

MR. SCHLISSEL: Don't be embarrassed please.

JUDGE WARDWELL: Schlissel, okay. I'm going to just hack away at it anyhow. I refuse to give up. With that statement, have you read the statement and did you hear what I was saying as I read it also?

MR. SCHLISSEL: Yes.

JUDGE WARDWELL: What, if any, is a residual problem that you might have with the EIS if it, in fact, did consider your comments and seemed to incorporate much of those into the analysis?

MR. SCHLISSEL: Residual concerns about the EIS are the following. It's dismissal of combined heat and power. There's no scenario that looks at a combination of energy efficiency and renewables perhaps with a small amount of gas at least initially.

Hold on one second. I had a feeling you

were going to ask me this. And not enough renewable capacity in combination alternative 2.

JUDGE WARDWELL: And alternative 2 not enough what? Say it again.

MR. SCHLISSEL: Renewable capacity.

JUDGE WARDWELL: But they did have some capacity.

MR. SCHLISSEL: They did have some.

JUDGE WARDWELL: Just you thought there should be more.

MR. SCHLISSEL: They did have some. And then as I had discussed earlier I think you need to have scenarios that reflect that circumstances will change over time and that what you start out with as the replacement for Indian Point I believe will change over time.

I believe that to not coin a phrase that gas will be a bridge to a renewable future. So that over time the contribution of renewables and the contribution of energy efficiency to the New York State grid including the replacement of Indian Point will increase.

JUDGE WARDWELL: You first mentioned something about heat and power.

MR. SCHLISSEL: Combined heat and power.

JUDGE WARDWELL: What did you mean by that?

MR. SCHLISSEL: Combined heat and power is a facility that generates electricity and then rather than wasting the excess heat by releasing it to the environment either directly or through a condenser you use that for heating.

JUDGE McDADE: Did the Staff exclude that and, if so, why?

MR. STUYVENBERG: The Staff did exclude combined heat and power. And they excluded combined heat and power because it serves in part a purpose they need not serve by the current Indian Point facility. And that would be providing heat.

JUDGE McDADE: But doesn't it serve the base load electric generating capacity that Indian Point does? The fact that it does something else as well, why would that cause it to be excluded?

MR. STUYVENBERG: One thing I would point out is that combined heat and power facilities are often purposefully built to supply certain balances of heat versus power. So in many cases it may not simply be that you have the highly efficient prime mover front end to which you simply capture waste heat. Although that certainly can be an option for combined

heat and power.

So it's not necessarily as efficient as solely in terms of producing electricity as a solely say gas-fired alternative because most electrical sector combine heat and power plants are gas-fired as we looked at it in the natural gas combined cycle.

I'm sorry. I think I'll stop right there. I think that's responsive but please follow up if there's something additional.

JUDGE McDADE: If the issue is what are the environmental impacts of alternatives to Indian Point and this generates base load capacity electricity, why wouldn't you just look at it and look at all of the environmental impacts of it, not subtracting out those that may be more related or less related to the heat aspect of it? But just look at how much electricity it generates base load and what its economic impact is or its environmental impact is and compare it to Indian Point?

MR. STUYVENBERG: I think you can say that's what our first alternative is in the scenario just presented. As I said, we're looking at natural gas combined cycle facility. And so if you were to subtract off the heat portion of that facility, it would look a lot like a natural gas combined cycle

power plant if you wanted a very efficient gas-fired power plant that perhaps you could also harvest some waste heat from to do something else. So I would say the base load aspect of that has been addressed in our EIS.

MR. SCHLISSEL: Could I --

JUDGE McDADE: Yes. Thank you.

Sir.

MR. SCHLISSEL: I have a problem with that approach. The usage of the waste heat is a major environmental benefit. It's not something that you kind of take out of the process. It's something that is a major benefit to combined heat and power plants.

Instead of just wasting the excess heat, you're using it. That's good. So just kind of considering the natural gas portion of it, one of the alternatives is not enough. It's not the right way to go. You need to look at heat.

I'm trying to figure out how to articulate this. And I was watching the Giants beat the Redskins on Sunday and I was --

JUDGE WARDWELL: You don't have to bring that up.

MR. SCHLISSEL: Actually, I do because it think it's a great -- I won't tell you who I rooted

for though.

JUDGE WARDWELL: I could tell by the gleam in your eye.

MR. SCHLISSEL: You got me there. This wonderful quarterback of the Washington Redskins, RGIII, is a wonderful quarterback. Okay. You don't take away from him the fact that he also runs like the wind. It's an added benefit.

What Staff's done and what he's proposing is that you only look at the quarterback part of RGIII and you don't count the benefit of this kid's incredible ability to run. And that's just not the way you do it. You count all of the benefits.

JUDGE WARDWELL: But do you know of any combined heat and power plant that is producing their power at full efficiencies and just tapping off the residual heat or do they, in fact, sacrifice some of the their abilities for the power aspect in order to make it more cost effective approach to capture the heat?

MR. SCHLISSEL: The City of Holland, Michigan has a coal plant. And in the winter they use the excess heat to melt the snow on the streets and the sidewalks. I don't have sitting here the names of them, but I've heard of power plants that use the

excess. The excess heat is then used in refineries that are next door to drive the refining process.

Combined heat and power is widely used. It's not a new technology. It's just combining two technologies into one.

JUDGE McDADE: And as part of the decision making process, you're saying that if you look at the environmental consequences it is appropriate in making a decision to look at both the negative environmental consequences and the positive environmental consequences.

MR. SCHLISSEL: Yes, sir. If it's providing heat that would otherwise have to be provided by some other source, then that's a benefit to combined heat and power.

JUDGE McDADE: Okay. And in context your analogy was of the Redskins playing the Giants, not of the Giants beating the Redskins.

MR. SCHLISSEL: That's correct. I correct the record. Yes, I correct the record. How about the Redskins almost beating the Giants?

JUDGE McDADE: Just playing. I'll stick with playing.

JUDGE WARDWELL: Staff, could you explain a little bit of how you run this No Action Alternative

and consider the environmental impacts compared to the differences in the various alternatives that you looked at specifically in relationship to the fact that these are really incremental impacts because whatever alternative you are selecting when we're dealing with license renewal has the potential and may very well likely occur at the end of the period of extended operation? So we're really only looking at, aren't we, an incremental period between the termination of their current license and the end of the period of extended operation for any of these potential alternatives that are evaluated including the No Action Alternative? So how does your analysis incorporate that?

MR. STUYVENBERG: If I understand the question you just asked, it's how does the Staff evaluate that one of these alternatives would essentially operate for approximately 20 years. Is that correct?

JUDGE WARDWELL: No. I'll give you an example. One of the alternatives, not under your No Action -- Well, it may have fallen under your No Action. I can't remember. But one of the alternatives is to replace this power need with a gas-generating plant.

One of the environmental impacts of course is the construction of that plant if it was a new plant. However, those environmental impacts are going to be felt at the end of the period of extended operation if you assume the same alternative was going to be adopted or if you were evaluating the same alternative once the period of extended operation was over.

And so the difference between the environmental impacts now occurring should only be assigned to the license renewal period for the integral period during that period of operation because those same environmental impacts are going to be felt then. Does that make sense to you or do you want me to say it again in another fashion?

MR. STUYVENBERG: I think I understand. But let me be sure. What you seem to be saying is that at some point somebody will build or operate or do something with an alternative to replace the current Indian Point facility. And the question is does it happen at the end --

JUDGE WARDWELL: The Indian Point facility has to be replaced in some time frame.

MR. STUYVENBERG: Sure.

JUDGE WARDWELL: It's either going to

happen in 2015 or it's going to happen in 2035 in rough numbers.

MR. STUYVENBERG: Sure. The action we're considering right now -- this will be a little bit of a roundabout answer and I apologize -- is whether the license should be renewed for the 20 year period of extended operation. So we're looking at impacts that would occur during that time period.

When we look at what might otherwise happen to address to replace that plant, we look at the impacts that might be incurred in an alternative to the Indian Point unit. So I think you could say that that could be an accurate characterization, although at this point I don't know for sure whether that's accurate because certainly things may change by 2035. But certainly I think you could say that if we were to do another analysis 20 years from now we'd be looking at alternatives as well at that time. I think that your premise that it has to be replaced at some point based on our approach would be correct.

JUDGE WARDWELL: I'm still not clear that you have any factor in there to account for the situation I'm presenting and then you're saying the situation I'm presenting is a bogus approach or that we just haven't analyzed for. And that situation is

the fact that we're really looking at the incremental difference, are we not, between the fact of the plant closing now or closing 20 years from now which we all know is not that long in the future anymore the way these decades go by?

If you have something to contribute that may help because in your response it may clarify what I'm driving at.

MR. HARRISON: Yes. David Harrison. I think I understand what you're saying. You're saying if you looked solely at the construction impacts there would be a difference in construction impacts between say 2015 or 2035. I guess what that of course doesn't take into account is the fact that over those 20 years there would be differences in the generation. So the environmental impacts of the No Action Alternative are really due in large part to the generation that would replace Indian Point generation over that 20 years.

And so I think what you were focusing on as I understood it was the fact that the construction impacts would be in 2035, if there were to be a replacement generation for example. Suppose you just took the assumption of one unit replacing the Indian Point capacity in energy. The construction impacts would be similar, but it would be pulled forward in

time.

Of course, that doesn't take into account the fact that you've got the 16.3 million megawatt-hours that would need to be replaced over that 20 years. So it's the environmental impacts of those 16.3 million megawatt-hours that would be different in that case. There would be no energy alternative -- The No Action Alternative is really looking or at least in terms of the analysis that we were doing primarily at those differences in the generation.

Is that getting at the issue that you're referring to?

MR. SCHLISSEL: If I might take a stab. It's a great question. It's akin to do cost analyses. There's a time value of money.

JUDGE WARDWELL: Exactly.

MR. SCHLISSEL: A dollar today is worth more than -- $1.00 in 2015 is worth more than $1.00 in 2035. And your point that there will be construction consequences impacts in 2035 is absolutely true.

There's a whole literature of how do you discount future impacts to today's circumstances. I'm not an expert in there. But I do know that all sides agree that you do need to discount them somehow. You should consider them. And, of course, as with

everything there's an argument about exactly how you do that.

But, yes, you're right. There are construction impacts. Something will replace Indian Point at some point.

JUDGE WARDWELL: And that's where I'm driving at. I think maybe we'll get into it more when I talk the baseline versus the No Action. But again, just to say it another way is under the baseline condition if we're looking at one alternative replacing it with natural gas, under baseline we will do it in 2035 if we move forward with the proposed action. That's going to have an impact.

Under the No Action Alternative, we're going to terminate the license. That means in 2015 we will build that same. That has an impact. However, whatever that impact is should not we subtract off the present worth of the construction costs of those impacts in 2035 as it brought back to this date because we will have to build it anyhow in the future some time?

We certainly wouldn't want to ignore saying we have no impacts because we're building it now because we've got to build it later. Fine. We're building it sometime. There's no impacts. Well,

there is. But isn't it the difference between what it would cost, the impacts associated with the building now, compared to the present worth of the costs that would be in the future? And have you considered that in your analysis?

MR. STUYVENBERG: No, the present worth of the future potential impacts have not being considered.

JUDGE WARDWELL: So you've considered it only as the total impacts that are occurring right now.

MR. STUYVENBERG: That's correct. And in doing so we've followed the approach taken in the license renewal GEIS, NUREG-1437, where it describes construction and impacts from operations of those alternatives.

JUDGE WARDWELL: Does that prohibit you from considering the present worth of the impacts in the future with the same alternative knowing that it's potentially going to have to be replaced anyhow?

MR. STUYVENBERG: No, Your Honor.

JUDGE WARDWELL: Okay. So the GEIS is silent on that. You could have still used the GEIS and used this approach. Is that fair to say?

MR. STUYVENBERG: That's correct.

Although I would also point out that during the course of our Environmental Impact Statement process, no commentors had raised that particular issue to us either. So it's something that perhaps we could have considered had it come up during the process. And it hasn't yet. But I appreciate Your Honor's question.

JUDGE WARDWELL: So I should have read that and commented.

MR. STUYVENBERG: No, not you by any means with all due respect.

JUDGE WARDWELL: And by doing it your way it will show more impacts associated with terminating a license against the No Action Alternative than you would if you discounted some portion of the cost from the future.

MR. STUYVENBERG: I'd say hypothetically that's correct. But I would also point out that when we look at the impacts that we assigned to No Action they were small in all areas but one. And that was with regard to issues that had to do with payment specifically from Indian Point to the surrounding communities.

And certainly it would have been possible to apply the particular approach that you suggested here. But in general No Action was a very low impact

alternative. And we found similarly that conservation energy efficiency was a very low impact alternative.

JUDGE WARDWELL: Thank you.

Moving on now just so if you wonder where we are I was going to charge into discussing this need for power and how it relates to the license renewal. Let me start again with Mr. Schlissel. I'll go back to the Giant fan and ask him a question.

MR. SCHLISSEL: Probably the only one in the room.

JUDGE WARDWELL: I think there is probably a lot charge of them. We may even be outnumbered. Although I did grow up as a Giant fan I must confess in the Y.A. Tittle days.

On page five of your testimony, that's New York-046. You stated that "I have also reviewed and analyzed that section of FSEIS and identified significant deficiencies in its consideration of conservation, renewable energy, purchased electric power, transmission constraints and the need for power as these relate to the No Action Alternative." And I might point out that similar comments were made in Mr. Lanzalotta's -- Did I get that right?

MR. LANZALOTTA: Absolutely.

JUDGE WARDWELL: Lanzalotta, good.

Testimony and yours was Exhibit 047 I believe. And then Mr. Bradford's who is not here with us on page five of 08.

So I ask both of the two witnesses present for New York these questions. Are you aware that the current regulations under 51.95(c)(2) states that "a Supplemental Environmental Impact Statement for license renewal is not required to include a discussion of the need for power"?

MR. SCHLISSEL: I am. But to be honest which I guess I have to be because I'm under oath.

JUDGE WARDWELL: As opposed to what you've been doing earlier.

MR. SCHLISSEL: I know that's the problem. Now I have to apologize. I'm somewhat confused by exactly what is excluded from the discussion of need for power and what we've been talking about for the last hour and forty minutes.

JUDGE WARDWELL: Hopefully, these lines of questioning will bring you to the land of instant clarity.

MR. SCHLISSEL: Enlightenment, yes. Because in my work in resource planning, everything we've talked about so far is within the domain of need for power and reasonable alternatives, retirement

versus life extension of any power plant.

JUDGE WARDWELL: Mr. Lanzalotta, are you aware that the regulation has this prohibition against discussing the need for power?

MR. LANZALOTTA: I'm not intimately familiar with the regulation. I was looking at it from the perspective of the system planner, the transmission planner. And from that perspective, need for power is always relevant.

JUDGE WARDWELL: Do you believe you're challenging this regulation in any fashion in some of the comments and objections you have in regards to the No Action Alternative?

MR. LANZALOTTA: I'm approaching this as an engineer.

JUDGE WARDWELL: And this is from a technical -- This is not from a legal basis.

MR. LANZALOTTA: Okay.

JUDGE WARDWELL: I'm doing it strictly as from a technical basis. What does that mean to you and how are you approaching it? And do you believe you are not following those words that you are not required to include a discussion of the need for power?

MR. LANZALOTTA: I've already said I

wasn't familiar with the regulation and exactly what is stated. But when you look at system adequacy, the need for transmission, the need for system reinforcement, the need for power is an intimate factor. And I felt it difficult to do this without addressing at least to some extent whether there was a need or what was happening with it.

JUDGE WARDWELL: I'll turn to Staff. What's your interpretation of that prohibition against discussing the need for power? And how is it applied in license renewal?

MR. STUYVENBERG: My understanding of that prohibition is that it means that when Staff considers alternatives, Staff does it without regard to establishing a particular need for power or some amount of power. And so our alternatives then tend to focus on a placement for the existing facility.

JUDGE WARDWELL: And so is it still fair for one to look at demand side activities that may reduce the demand associated with power and not really violate this prohibition against justifying the need for power?

MR. STUYVENBERG: In my view you can. And in my view you can do that for a variety of reasons. First of all, the GEIS, the License Renewal Generic

Environment Impact Statement, considers that it is an option available to planners. It looks in some way at the issue. Also in this particular EIS we received a lot of comments and input from various parties, but particularly from the State of New York about the value and the extent to which the State viewed that to be an important part of its energy policy and its processes.

I think in light of that kind of input especially from a party like the State we thought it was appropriate to consider as an alternative. And I think in this case because we looked at it as a complete replacement we didn't go into specific amounts that would be needed. We simply relied on their assertions about the effectiveness of their programs and the types of plans that they had and their clear interest in it to say "Let's consider this."

JUDGE WARDWELL: Thank you.

Entergy, any of the witnesses feel free to chime in on this. But is it possible that the purpose of this regulation was really to prevent any discussion of the original need for the plant being or for the plant's existence and then specifically for the plant's existence right where it is? Isn't that

really what is possibly the intent of that regulation and not to address looking at alternatives that may affect the amount of energy that's required in a given time frame?

MR. CLEARY: Donald Cleary for the Applicant. The intent of omitting need for power as a requirement in the regulations goes back to concerns that the states had raised on the Draft GEIS. And basically the intent is to do an environmental impact -- look at the environmental impacts of relicensing against the environmental impacts of a reasonable set of alternatives that could replace the capacity. And then to leave the decision as to whether the plant continues to operate, whether there really is a need, whether it's cost effective to energy planners including the utility, that was the intent of eliminating need for power as part of the relicensing exercise.

JUDGE WARDWELL: Would you agree that if there was a reduction in demand that could be pointed out and it could be reasonably projected to exist in the long term that it should be included as part of the mix of the alternatives and not be assumed to be an attack on a need for power? Say, energy efficiency, isn't that a viable alternative? Is that

a part of the mix in the alternatives as we do the EIS?

MR. CLEARY: Well, conservation is looked at.

JUDGE WARDWELL: I guess it's a reasonable one.

MR. CLEARY: But it's the environmental impacts associated with conservation programs that are compared.

JUDGE WARDWELL: Sure. Whatever is being done still needs to be looked at for the environmental impacts associated with that.

MR. CLEARY: Right.

JUDGE WARDWELL: But that does not cause a violation of addressing the need for power that is prohibited by that regulation. Was that your impression?

MR. CLEARY: That's correct.

MR. MEEHAN: If I could add to that though.

JUDGE WARDWELL: Sure.

MR. MEEHAN: I think, Your Honor, you may want to --

JUDGE WARDWELL: You're Mr. Meehan, right?

MR. MEEHAN: Yes, I'm Mr. Meehan for

Entergy.

JUDGE WARDWELL: You might just want to introduce yourselves the first couple times around. Then the court reporter gets pretty comfortable with your voice.

MR. MEEHAN: Sure. I apologize. Eugene Meehan for Entergy. There's a distinction there between conservation or energy efficiency programs that are already planned, already scheduled, already funded and are going to take place whether or not the plant retires. We may be hopping ahead here to your baseline issue. But I don't think they really can realistically be looked at a replacement alternative. They are a part of the baseline and they're going to happen. Additional conservation programs that would occur just because the plant retires could fit into that replacement mix.

JUDGE WARDWELL: I think that completes. And I'm ready to move onto a third section. But it might be a good time to break now.

JUDGE McDADE: It's about 10:50 a.m. Would a ten minute break be sufficient?

(No verbal response.)

JUDGE McDADE: Okay. We'll stand in recess. And also if during the break if New York

could take care of getting those documents on the Synapse Report and the New York State Highway report documents to make sure we get copies to the parties.

MR. SIPOS: Yes, Your Honor.

JUDGE McDADE: We are in recess. Off the record.

(Whereupon, a short recess was taken.)

JUDGE McDADE: Mr. Sipos?

MR. SIPOS: Your Honor, just a housekeeping detail. The State has provided paper copies of the two reports to NRC Staff counsel, Entergy counsel. I've also provided copies to the two law clerks which are here. I also have three more copies of them in paper for Your Honors.

JUDGE McDADE: And you'll be selling them in the lobby?

(Laughter.)

MR. SIPOS: I will at a special price, Your Honor. And I look for Your Honor's direction if I may approach the bench and hand them up. I'm also trying to get --

JUDGE McDADE: If you just furnish them to the law clerks.

MR. SIPOS: Thank you. And I'm also trying to get electronic copies for Mr. Wilkie should

that need arise.

MR. TENPAS: Your Honor, if I could, one other housekeeping matter, really by way of apology and clarifying the Board's record. I did make reference to the Synapse report. I was speaking too quickly and misread my own notes and said 168 pages. It is 68 pages. Mr. Sipos corrected that and I just want to acknowledge that is the correct characterization. It's 68 pages. I apologize and thank him actually for correcting my error.

JUDGE McDADE: No problem. Thank you. Anything else?

Judge Wardwell?

JUDGE WARDWELL: Starting in on a look at the alternatives that were evaluated, I'll then go to New York 000046, page 16, where you say that the FSEIS impact analysis of conservation does not consider New York's demand response.

And I'll start off with Staff. Is that a correct statement?

MR. STUYVENBERG: That does not consider a specific demand response.

JUDGE WARDWELL: Right.

MR. STUYVENBERG: It's correct insofar as there's not a specific consideration of demand

response. To the extent that demand response is included in New York State's other plans and supported the comments New York State made to the Staff in asserting that energy efficiency or conservation should be considered in greater depth in the FSEIS, to that extent it's considered.

JUDGE WARDWELL: Mr. Schlissel, how did you intend for that demand response to be included?

MR. SCHLISSEL: It's separate than the general energy efficiency programs. The demand response program is administered by New York ISO, not the State of New York. It should be evaluated on its own potential and environmental impacts.

JUDGE WARDWELL: Is that quantified each year in regards to the amount of energy that's been conserved in the process of this demand response?

MR. SCHLISSEL: I don't know each year, but I know that a number of the New York ISO reports will talk about events during which the participants were called upon to reduce their loads, so if you go through the New York ISO annual reports, you can come up with a history.

JUDGE WARDWELL: Staff, is there any reason that couldn't have been incorporated in?

MR. STUYVENBERG: You mean we couldn't

have specifically estimated the amounts of demand response available from the reports, Mr. Schlissel just described?

JUDGE WARDWELL: Right.

MR. STUYVENBERG: I don't have a reason that it could not have been included. I think it's something we could have included and tried to specifically account for.

JUDGE WARDWELL: Thank you. New York, on page -- well, I won't necessarily address you. I will eventually. But this will be a question for Staff, but New York on page 25 stated that "Because NRC Indian Point FSEIS does not define what energy efficiency and/or energy conservation programs it anticipates will be available to replace the power generated by Indian Point, it is impossible to determine site-specific impacts for the reasonableness of, or the viability of NRC's energy efficiencies, conservation, no action alternative."

And so staff, the question I have for you is what energy efficient and conservation programs do you anticipate being available to replace Indian Point and have you included those in your analysis of no action alternative?

MR. STUYVENBERG: Frankly, we didn't do a

specific analysis of all of the programs that could potentially be used. We looked to in terms of establishing New York specific viability or the assertions from New York State about the effectiveness and the reach of the programs, we did note that there were at the time the FSEIS was published, a wide variety of programs that had already been proposed or potentially proposed at that point. And in previous EISes, we did take a closer look at the specific types of efficiency and conservation programs that typically form the foundation for those kinds of reductions.

So the short answer is we didn't look specifically at those programs, but based on our experience in evaluating energy efficiency and conservation in which -- starting with the GEIS and going into the Three Mile Island SEIS and the Shearon Harris SEIS, we've always found those impacts to be small and we would anticipate that the impacts would be small in this case as well, with the exception of the loss and lost revenues to some communities around Indian Point.

JUDGE WARDWELL: Sorry, could you say the last bit again, except for?

MR. STUYVENBERG: Except for the potential effects of some lost revenues from the plant itself

right around Indian Point, given that the targeted effects of a plant retirement versus the more diffuse effects of conservation programs that likely span a much larger area than just the Town of Buchanan, the Hendrick Hudson School District and a few other areas that are particularly reliant on Indian Point's pilot and tax payments.

JUDGE WARDWELL: Thank you. New York, any of the witnesses, would you like to comment on what you heard in regards to suggested alternatives that you think should have been done?

MR. SCHLISSEL: Yes. I think -- this point came up before when we talked about combined heat and power. I think there are a lot of positive benefits of energy efficiency. It's hard to imagine how energy efficiency can have a small to moderate impact. It may be a negative impact because of all the positives that occur from it. Jobs are created. Less energy is used. Perhaps houses are improved. Maybe that leads to a property tax increase -- property base increase. That's more speculative, but there are jobs and socio-economic impacts.

Energy efficiency is done where people work and live, so you'd have major positive benefits in New York City, Long Island, Westchester County,

other areas of the State. I think that those positive impacts should be considered if you're going to look at environmental impacts. If you're going to consider the negative, you ought to consider the positive as well.

JUDGE WARDWELL: Staff, how would you respond to that? It seems to me that a lot of people have put an awful lot of effort into this area and it's liable to continue. Why is it now time to start really seriously evaluating things like energy efficiency in your analysis?

MR. STUYVENBERG: I'm sorry, could you please repeat the question?

JUDGE WARDWELL: Mostly you've heard what New York has stated and it seems to me it was a selling point for the consideration of energy efficiencies being looked at and the positive benefits from them incorporated into the EIS. Is it not time to take a look at that seriously in regards to being a viable option as it's moved forward?

MR. STUYVENBERG: We definitely considered it a viable option. We considered it as a stand-alone alternative to license renewal. So yes, it should be considered and we did consider it.

In terms of the specific benefits Mr.

Schlissel named, when we look at some of the underlying analyses for our conservation and energy efficiency findings, if you go to the Shearon Harris Final Supplemental Environmental Impact Statement, or the Three Mile Island Final Supplemental Environmental Impact Statement, both of which are in evidence, you'll find that we indicated that especially energy efficiency programs that say increase efficiency of homes can have positive benefits that can be disproportionately good for minority and low-income populations because they're specifically targeted to those populations.

So one of the challenges with the Staff's approach to impacts is presenting them because we have a small, moderate, and large impact system. It's presenting them in a way that tries to make them comparable, but not to make it appear that a positive benefit is somehow a bad thing. So typically small is very good.

And we found in these cases that the small impacts included those potential positive benefits to some groups and from some programs and we looked at things like appliance replacement programs.

So anyway, I think some of the things Mr. Schlissel has discussed are actually baked in the

Staff's analysis and we discussed -- I may have to check the specific exhibit to be sure, but I do believe at least one of those analyses also considered jobs that could ensue from those types of programs. So again, those were incorporated by reference in this EIS. Just because those specific words didn't appear here, didn't mean it wasn't something that went through the Staff's mind as it reviewed this issue.

JUDGE WARDWELL: Okay, but where would it be articulated in the report? In the appendix?

MR. STUYVENBERG: I'm going to take a step back, actually. One of the things we did and one of the things NEPA encourages is incorporation of pre-existing analyses by reference. So we incorporated in our analysis of conservation and energy efficiency by reference the analyses of impacts that went into Shearon Harris Final Supplemental Environmental Impact Statement and the Three Mile Island Final Supplemental Environmental Impact Statement. Those two Environmental Impact Statements considered conservation or energy efficiency, I don't remember specifically which name it was under, as stand-alone alternatives to license renewal. And so there's some more discussion about the specific inputs to those impacts there.

JUDGE WARDWELL: Okay, but would the decision maker be able to glean that from your discussion of those two reports?

MS. MIZUNO: If I may, Your Honor, we're looking at the FSEIS Section 8.3.3. I think that's the section of the FSEIS that we're talking about and that would be at pages 8-41 to 8-43. I don't have the Adobe page numbers.

JUDGE WARDWELL: Do you have the exhibit number?

MS. MIZUNO: For the FSEIS?

MR. TURK: New York 000133B, I believe, Your Honor.

MS. MIZUNO: Thank you.

MR. TURK: In particular, if you look at page 8-43, in that section that Ms. Mizuno just referenced, you'll see a discussion of Shearon Harris and Three Mile Island FSEISes that Mr. Stuyvenberg had just referred to.

MR. STUYVENBERG: So I'm sorry, it appears you're looking for something more. I think what we indicated here was the analyses in recent NRC license renewal SEISes and we pointed specifically to those SEISes had indicated those impacts from conservation were small and we adopted those analyses. So I think

we expressly indicated that. I would hope a decision maker could go see those, especially as the NRC decision maker here has access to those documents.

And again, we used it because it was something NEPA practice kind of encourages, incorporation by reference.

JUDGE McDADE: But just simply looking at your Environmental Impact Statement, the thought process that you just went through, that you just described, it isn't expressly articulated in the Environmental Impact Statement for Indian Point. You do believe that it would be referenced through the Shearon Harris and the TMI, correct?

MR. STUYVENBERG: I believe that's correct. I would point out however, Your Honor, that in the combination alternatives and I'm going to flip to there so give me just a moment, we actually did briefly discuss and I may have to find a pin site for you, but I did briefly discuss there can be positive impacts from energy efficiency and conservation. I think we specifically mentioned environmental justice.

JUDGE McDADE: The thought process that you just went through, the description of what the Staff considered in developing the Environmental Impact Statement, that doesn't appear expressly in any

of the language in the Environmental Impact Statement.

MR. STUYVENBERG: That's correct.

JUDGE McDADE: Okay, and we'll probably be getting into later some of the differences, for example, I believe New York talks about the Shearon Harris, that being whether it's a regulated electric market or not a regulated electric market and we'll be talking about other issues of why TMI may or may not be an applicable analogy. I just wanted to get that out.

JUDGE WARDWELL: And so if I understand you correctly, two points, one when you said it ends up to be a small impact that could very well mean that it's no impact to a positive impact, in addition to being a small impact. There's no way to discriminate between those three items?

MR. STUYVENBERG: That's correct, Your Honor.

JUDGE WARDWELL: And that you've adopted Shearon Harris without any -- and Three Mile Island, I believe, without any consideration of adapting it to any degree to reflect Indian Point's situation?

MR. STUYVENBERG: What we've done, Your Honor, is we've adopted the analysis of impacts and insofar as we did it with regard to the impacts,

that's correct. Insofar as the analysis deals with viability of the alternative, that's been New York State's specific determination and it's based in large part on input we've received from the State of New York in that process.

JUDGE WARDWELL: Thank you. Moving on, on page 46 of 000046, Exhibit 000046, New York says that "NRC Staff assumed with no supporting analysis of the specific impacts that the environmental impacts of a natural gas combined cycle plant would be essentially the same for a repower facility as for a facility constructed at Indian Point."

My question to Staff is what's the basis for this opinion? Why do you feel that the impacts would be the same for a repowered one as would be for one started from scratch?

MR. STUYVENBERG: I would say that -- let me start by saying it's not the same as one started from scratch. The Indian Point site is not a greenfield site. It's a facility that has existing transmission, switchyards, it's already being converted to industrial use. It also happens to have a rather large natural gas pipeline that crosses it. It has access to water. And it also has preexisting structures that access the water.

So there are advantages to the Indian Point site that are similar to the advantages I would expect at a repowered site in that I could reuse -- one, I'm not specifically building a power plant, but one could reuse many of the elements at the plant site. So that's part of the thinking.

I would also note that in, I believe it's the 2007 SYNAPSE report, with all due respect to Mr. Schlissel, he presents two alternatives for repowering which could include either taking existing facility and repowering that facility or building right next to an existing facility a new power plant that would take advantage of the existing site infrastructure.

And in his presentation as well, it appears to be, I don't want to put words in his mouth, but it appears to be an implication that those are similar types of activities and both would constitute repowering for the purposes of our analysis.

JUDGE WARDWELL: Thank you. Switching over to New York Exhibit 000047 of Mr. Lanzalotta's, page 21, it says that "the FSEIS conclusion that substantial new capital investments will be needed to address reliability and transmission constraints in the event the Indian Point units are retired, ignores the developing realities of utility planning."

My question for Staff is won't the need for new capital investment be needed in two short years, even with license renewal in this situation?

MR. STUYVENBERG: We didn't do a specific analysis of that so I don't know for sure.

JUDGE WARDWELL: So similar to our earlier discussion before the break in regards to the present worth of impacts, likewise, the need to have capital investment in -- at my advancing years, 20 years doesn't seem so far in the future any more. You have not incorporated that in your --

MR. STUYVENBERG: No, sir. And also I would point out that we didn't hold any capital investments as a reason not to consider an alternative.

JUDGE WARDWELL: And you're further testifying it has nothing to do with the differences in our ages either?

MR. STUYVENBERG: I'm sorry --

JUDGE WARDWELL: Strike that question. In Mr. Schlissel's rebuttal, that's Exhibit 000437 on page 17, "Entergy assumes that the following older, dirtier, and less-efficient coal and oil-gas-steam capacity that would be retired in the baseline analysis would not be retired in the no action

alternative."

I'll ask New York of this. Didn't Staff conclude that at least in their testimony on 000133, page 21, that coal plants would not be restarted or used in the future?

MR. SCHLISSEL: Page 21 of?

JUDGE WARDWELL: Of Staff's testimony on -- Exhibit 000133, page 21. Maybe we can bring that up. I should be bringing that up, too, so I can point you to where it is.

(Pause.)

Just search for something like baseline.

MR. SCHLISSEL: It's near the quote, I believe.

JUDGE WARDWELL: Here it is, yes. Bring the arrow down, good, across, across, too far, back. There we go. Highlight that, starts with "The Staff." That's one area that talked about remove the coal analysis from the range of reasonable alternatives. Should say something about not restarting, too. I'll have to pull up mine.

Roll down further, search for restart. It doesn't say it specifically.

MR. SIPOS: Your Honor, this is John Sipos, excuse me. Is the premise of the question

something Entergy said or something Staff said?

JUDGE WARDWELL: It was something New York says that these older plants would not be retired in the no action alternative. And my question is was Staff's conclusions on page 21 that plants would not be restarted, would not lead one to believe that the plants would not be restarted or used in the future. Or either the no action alternative or for any of the other baseline studies. That's the heart of the question. Does that make sense to you?

MR. SIPOS: And so it's going to what Staff said as opposed to what Entergy said in its Environmental Report?

JUDGE WARDWELL: Right.

MR. SCHLISSEL: If I might, maybe I can clear this up?

JUDGE WARDWELL: Yes.

MR. SCHLISSEL: I don't want to put words in the Staff's mouth and if I misinterpret, my understanding from this quote was a new generating unit, not a continued operation of an existing unit. I thought that that was what Staff was excluding the building of a new coal plant somewhere.

JUDGE McDADE: Now when you say new coal plant, are you talking about new from the ground up or

restarting existing plants or both?

MR. SCHLISSEL: My interpretation was building a new unit. I assume you could also do the same --

JUDGE McDADE: I'll ask Staff, from what analysis do the coal plants -- what's the status of the coal plants in your analysis? That's the heart of this question.

MR. STUYVENBERG: The notion here was to remove from consideration a new coal-fired plant as Mr. Schlissel indicated. That is correct.

JUDGE McDADE: So this makes no reference either to the continued operation of existing plants or the restart of a closed plant or I guess furloughed plant?

MR. TURK: I'm sorry, Your Honor. You say "this makes no reference", you mean this part of the testimony?

JUDGE McDADE: Yes.

MR. STUYVENBERG: That's correct.

JUDGE McDADE: Do you have something further?

MR. SCHLISSEL: Yes, sir. I was just going to point out that the section of my rebuttal testimony that you cited refers to an analysis of the

outputs from the two computer runs that Entergy gave us. One was their base case and then one was the no action alternative. And in those runs --

JUDGE WARDWELL: Are these the economic runs?

MR. STUYVENBERG: Well --

JUDGE WARDWELL: Pricing market runs or what runs are you referring to, what model?

MR. STUYVENBERG: I mean they can talk about their own modeling, but it was -- they ran two scenarios and it showed -- the results of that show emissions, generation, and cost from the different plants year by year. And in terms of these conclusions on page 17 of my rebuttal testimony that you referenced, those are the conclusions that I pulled -- I mean if you compare how much coal capacity is operating in one versus retired in the other, it's easy to do these calculations and come up with these conclusions. It's directly out of their model ones.

JUDGE WARDWELL: Thank you. And I'll turn to Entergy, what model runs and what were you using in this analysis?

DR. HARRISON: Yes, that -- the references to the model that we used which is referred to as the NEMS model, it's a model that was developed by the

U.S. Department of Energy, Energy Information Administration over -- for many years. And as Mr. Schlissel said, we use that model to estimate the likely effects if Indian Point generation were not available.

So one was a run that was the baseline run and we did a second run where everything else was the same, except that we removed the two units, the two Indian Point units. And so that allowed us to estimate what the effects would be of not having Indian Point generation available.

So I guess one word that is different in Mr. Schlissel's testimony, he says that we assume that these various changes would occur, but as he has now just said they're not assumptions, they're the results of the model analysis. So what those differences were were in terms of different types of generation that would be replace the generation of 16.3 million megawatt hours of Indian Point generation.

And relates to the issue of retirements, the issue is that in some of the baseline cases, that is the run with Indian Point in, there would be units that would retire because of some of the developments we've talked about, the lower natural gas prices. We haven't talked about the environmental regulations,

but those are major costs that someone else would choose not to bear and therefore they would retire.

So but when you take Indian Point out, you increase electricity prices. You make it more easy. You make it possible for some of those units that otherwise would have retired to stay in operation. So it's those --

JUDGE WARDWELL: So in that statement on page 17 is not an assumption of input parameters, but as a statement of really the output of the model.

DR. HARRISON: That's precisely --

JUDGE WARDWELL: The model retired them because of the cost analysis that was being done --

DR. HARRISON: That's precisely correct.

JUDGE WARDWELL: -- and they didn't do the no action alternative.

DR. HARRISON: That's correct.

JUDGE WARDWELL: Thank you.

MR. SCHLISSEL: Could I respond for one moment?

JUDGE WARDWELL: Sure. Please do.

MR. SCHLISSEL: I disagree that it's not an assumption. Maybe acceptance is a better word. It's at older, dirty, inefficient plants, some of which have announced retirements and that the New York

ISO is taken out of its most recent reliability needs assessment that they are anticipating would be retired. Entergy assumes and again it is assuming that these plants would be able to run for the next 20 years in an economic weight. And so I think it is an assumption on Entergy's part. I think it's a very incorrect assumption and it's one that very much distorts the results of their analysis.

DR. HARRISON: I wonder if I could just comment.

JUDGE WARDWELL: Please do.

DR. HARRISON: As I mentioned, the NEMS model is developed by the Department of Energy. So this is an objective model. It's not our assumption about what units would be available and what units would retire under different market conditions. It's what's embedded in this model that is widely regarded as a state-of-the-art model for these in this case.

So -- and this, by the way, this issue of retirement, what units would retire, this has been the subject of a great deal of interest, partly because of the lower natural gas prices, lower energy demand, and the potential very expensive environmental regulations. So this is an area that when, for example, the U.S. Department of Energy runs this

model, they run different scenarios and they get different retirements of different units under different scenarios. That's the kind of analysis that was done here and that's the usefulness of having an objective model driven by markets. We're trying to reproduce the effects of market conditions under these circumstances.

JUDGE WARDWELL: When you ran this model, did you dictate that certain older plants be retired or that was what the model ended up selecting for this run?

DR. HARRISON: Not at all. Just to be clear, we did not dictate anything. We used the results from the model under the baseline conditions, the baseline conditions that are developed by the U.S. Department of Energy have a certain number of retirements, not just in this region, but in other regions and so that was a result of the analysis in the baseline conditions and then we re-ran it. The results were the differences based on this objective market analysis.

JUDGE WARDWELL: And under that re-run and that was a re-run where you retired Indian Point in essence, is that correct?

DR. HARRISON: That's right. And the only

difference between those two runs was that Indian Point, the two units were not in the analysis. Everything else was exactly the same.

JUDGE WARDWELL: I assume you saw some output where you could see that, in fact, here are the plants that were running with that and included some of the older ones. Is that correct?

DR. HARRISON: We were sort of focused on the environmental impact, so we didn't look at individual plants, but what we did look at was the mix, how the generation mix changed over time. So what we saw between these two runs, not looking so much at individual plants, but what we saw was that virtually all of the replacement generation was fossil fuel, a combination of some coal, and some natural gas.

So that allowed us then and again as output for the model to look at what that meant from an environmental perspective. And so the model included output, for example, in CO2 emissions. So we could look at the increased CO2 emissions, due to Indian Point's 16.3 million megawatt hours not being available and replaced by this other generation.

JUDGE WARDWELL: Thank you. Mr. Schlissel --

MR. SCHLISSEL: Yes, sir.

JUDGE WARDWELL: I'll just let you comment on that rather than me ask a question.

MR. SCHLISSEL: With respect to Dr. Harrison, the idea that coal plants which are already old today, 50, 60 years old, 40, 50, 60 years old are going to continue to operate for another 20 years is quite honestly absurd. Coal plants today in the U.S., many, many of them are under attack due to the market. It's not the EPA. It's the low price of natural gas.

And these -- this 323 megawatts of coal capacity in Upstate New York, the outputs don't list the exact plants, but that doesn't matter because just about the owners of all the coal plants in Upstate New York have announced they want to retire their units. They've put a notice to New York ISO.

As I mentioned before, the reliability needs assessment of 2012 that ISO just issued, excludes some 1700 megawatts of capacity from its analyses going forward because the owners have put in notice that they want to retire their units.

Well, Entergy's modeling doesn't reflect that. And I just think it gives an unrealistic picture of what is likely to happen.

JUDGE WARDWELL: And do you believe that

that unrealistic picture is a result of how Entergy provided input parameters or that the model is not the appropriate -- is not performing the appropriate analysis based on modern-day situation?

MR. SCHLISSEL: I think it's both the fact that when Entergy got the -- I hope one of the Entergy witnesses will correct me if I'm wrong, but my understanding from their testimony report was they used the same run that the -- the baseline was the same run -- the base case was the same run that the Department of Energy had used and the Department of Energy didn't reflect the retirements or planned retirements. So therefore, when Entergy ran it, the units were still in there.

Part of it also is the NEMS model, I don't want to jump ahead in your questions, but the NEMS model is a nationwide model. Actually, it's used for all of North America, has thousands of power plants and what they do is they -- because it's such a large geographic area, they simplify it. They bunch some units together. They have very simplistic transmission links between units, so that the results of the NEMS model, the Entergy results, no action alternative, you have really -- bizarre is about the only word that pops in my mind -- results. You end up

building capacity. You retire Indian Point and you don't build anything in Downstate New York. Instead, you build it in New England.

Other results of the NEMS model, you retire Indian Point and renewable generation in the Midwest goes down, and coal generation in Texas goes up. I mean the model is good for its purpose which is evaluating proposed regulations, changes in policy. You read DOE's website, you look at -- read the studies they've used. They predict gas prices on a nationwide basis.

As I mentioned in my testimony, I've seen nobody use it to model the retirement of one or two units. I looked. I've been involved in a lot of cases involving a lot of retirements of plants the last seven years. Nobody has used NEMS. No utility or plant owner has used NEMS. It's a good model for its stated purpose which is not what Entergy has used it for.

JUDGE WARDWELL: Thank you. Some last comments on this?

DR. HARRISON: Yes. In terms of the model as we talked about before, the assumptions that we made were objective. They're based on DOE's assumptions, not assumptions that we made.

In terms of the appropriateness of the model, there's one term that I wanted to add to the discussion which is market. In order to determine what the effects would be if Indian Point generation were not available, you need to understand market conditions and what the results of those changed market conditions mean for generation.

So you need a model like NEMS that models new editions, that models replacement. And it does include replacement decisions. But it takes the point as you see in the real world that decisions on retirements can change if market conditions change. And that's what we see. So we see retirements changing, announced retirements changing as market conditions change including natural gas prices and other factors.

So what you need in order to understand what will happen in a market setting, really that's what we're talking about. We want to describe scenarios, alternative scenarios, but at the end of the day what would replace Indian Point generation if it were not available in 2013 and 2015 would be determined by the market. And so we need a model that looks at market conditions.

We've talked about the need -- what's

happening in natural gas markets. You also need a market, a model that incorporates those interactions with natural gas prices and with coal prices and retirements and new generation. So if -- and we would be glad to discuss more of the issue of models, but we think that for purposes of this analysis with this large unit, 16.3 megawatt hours, about 10 percent of New York City's electricity demand, you need a model that reflects these various market conditions and that we think in terms of the analysis that was made that the bulk of replacement generation would come from fossil fuel generation is a very robust conclusion based on those market conditions.

JUDGE WARDWELL: Would that fossil fuel be natural gas?

DR. HARRISON: Well, we did look at what -- we did the model generates changes in natural gas and coal, so the fossil fuel was a -- in the model run that we did, the difference was represented by some natural gas generation and some additional coal generation.

MR. MEEHAN: And if I could add, I just would like to say I disagree with the characterization that the model is inappropriate and that the results are not reasonable results. As Dr. Harrison stated,

this is going to be a market response.

And Mr. Schlissel said, one of the things the model shows is that units that are retired with Indian Point are not retired without Indian Point. That really contradicts his basic premise that the model doesn't have retirements. It does have these retirements in, but when you take Indian Point out, the economics change and those units are able to change their decision to retire.

Additionally, I think it's eminently sensible that given the situation in the Northeast, the amount of capacity that exists, that the basic thing the NEMS is going to show is that the energy replacement for Indian Point comes from increased generation at existing plants. That is something Mr. Schlissel said early on in this testimony that the mix was going to include increased generation at existing plants as well as new gas generation. The model shows both those things.

And to model this without a model of the scope of NEMS that could look at what happens on a broad, regional basis, international basis, and could look at what happens with respect to relative gas and coal prices wouldn't be appropriate. You wouldn't get the proper response.

Today's gas prices are extremely low. They're under coal. But when you look in the model, and you look at forward markets as well and most of the forecasts, you don't see that situation lasting out to 2015 or '16. The expectation is that gas prices are going to rise, not to historically high levels or anything near those levels, but back up to around $4 to $5 to $6 eventually and be above coal prices in the time frame when we would look at Indian Point not operating in the no action alternative.

JUDGE WARDWELL: Thank you.

MR. SCHLISSEL: Since they've used my name, could I just respond once more? Yes, I think it's good to use a model. Again, I think NEMS is the wrong model. Because it's so national in scope, it simplifies. It doesn't replicate the New York system or the New England system, transmission-wise, plant-wise.

One reason why there's so much generation at fossil -- existing fossil units is after I got the Entergy testimony I called the people at the DOE who develop and use NEMS. And I said how did you include the New York 15 by 15 or 45 by 15 energy efficiency and renewable goals? They said we didn't. We don't. It's not included in there. Okay?

They said that they couldn't do it. That the way -- I don't want to -- it's a tangent to describe how they -- they have a module that does an econometric analysis to come up with the load, the projections of peak demand and energy efficiency. I said well, how would you model whether going forward there's more energy efficiency put in? And they said the model doesn't do that. The model -- the NEMS model, unlike a lot of other models, strategists, PROMOD, the MAPS model that these gentlemen used in 2003 --

MR. TENPAS: Your Honor, objection at this point. We're well beyond anything in evidence. We've had no disclosures about any of these conversations.

JUDGE McDADE: Okay, the objection is noted and overruled. Continue.

MR. SCHLISSEL: So the model -- these other models do exactly what Mr. Meehan said and I agree with him 100 percent, and Dr. Harrison, too. These models do what they're saying they want to do. NEMS is just not a good model at doing it because it's simplifying things so much and you get these results, plus it doesn't include the New York energy efficiency and renewable goals and you cannot put in energy efficient additional energy efficiency as a new

resource into NEMS.

JUDGE WARDWELL: I'll go to Entergy. Do you agree that NEMS can't handle the energy efficiency component for this?

DR. HARRISON: Well, let me address a couple of those points. One is --

JUDGE McDADE: Let me just interrupt you for a second, Dr. Harrison.

DR. HARRISON: Yes.

JUDGE McDADE: And again, try to mention your names just so we make sure that the court reporter puts the appropriate statement to the appropriate expert.

DR. HARRISON: Yes, my apologies, Your Honor. David Harrison for Entergy.

Let me address a couple of those issues. One is whether the NEMS model accurately reflects the electricity demand in New York based on the 15 by 15 goals. We actually looked at that and the sales goal for the 15-15 program is 141 million megawatt hours.

Then we looked at what NEMS had as New York's energy demand in 2015. It was 143 megawatt hours, a difference of only 2 megawatt hours. So in terms of the modeling, and again we'll get to perhaps where you're going later in the baseline conditions,

in terms of whether the baseline condition --

JUDGE McDADE: Excuse me, Dr. Harrison, and I may have just misheard. Did you say 115 and 143 or was it 145 and 143?

DR. HARRISON: I believe I said that the sales goal, the goal for sales was 141 million megawatt hours.

JUDGE McDADE: One forty one.

DR. HARRISON: One forty one. And that the NEMS projection for 2015 was 143 million megawatt hours.

JUDGE McDADE: Okay, thank you. I just misinterpreted or misheard. I just wanted to make sure --

DR. HARRISON: My apologies if I misspoke. So the point is that in terms of the baseline conditions in NEMS, and that's what this relates to, that the 15 by 15 program is part of the baseline for doing an analysis of what would replace Indian Point if the Indian Point generation were not available, the baseline is similar.

In terms of the NEMS model does incorporate the effects of various federal and state energy efficiency programs. What it doesn't do is have a separate -- assume, it doesn't assume that

there will be new state energy efficiency programs put in place. So it does track the effects of higher prices on energy consumption.

So as we reported in our results under the no action alternative, there are some increases in energy prices. Those result in lower energy demand or conservation. So I guess I would conclude that the model does appropriately take into account the current baseline conditions in New York. It does take into account the possibility of energy conservation in an appropriate way.

MR. MEEHAN: And if I could add one thing? Dr. Harrison talked about the small difference --

JUDGE McDADE: Mr. Meehan.

MR. MEEHAN: This is Mr. Meehan for Entergy. Dr. Harrison talked about the small difference between 145 million megawatt hours and 143 million megawatt hours. That's the difference in what we're looking at at the baseline versus the 15 by 15 goal.

But if we look at what the real forecast is, the New York ISO, the Independent System Operator, who makes the forecasts for the State, would look at over 160,000 megawatt hours for 2015 because based upon their assessment of the programs, that's where

the demand is going to be. So I think to criticize NEMS because it has 2,000 more gigawatt hours is unrealistic. Doesn't recognize the fact that, in fact, the NYISO has a much higher forecast.

JUDGE McDADE: Thank you.

JUDGE WARDWELL: Still staying with Exhibit 000437 on page 23, Mr. Schlissel, you made the statement that "I believe that the new generating capacity that would be added would be clean and efficient natural gas combined with combined-cycle units."

My question to you, wouldn't natural gas plants still have a higher impact than just continuing with the operations of Indian Point?

MR. SCHLISSEL: They would emit some CO2. They have very small emissions of NOx. So that's true. They emit some small particulates, so that's certainly true. They would use a lot less water. As for Indian Point going forward, there are environmental impacts. You have another 20 years of radioactive waste that's likely to be stored on site for anyone's guess how long. There are other environmental impacts of continued operation of the power plant. There's the uranium cycle, fuel cycle. So I think there's no free lunch for any alternative.

JUDGE WARDWELL: Staff, did you evaluate the construction of the plant also in addition to the no action alternative or just merely the impacts associated with the plant itself as it is operating?

MR. STUYVENBERG: Let me make sure I understand your question. You're asking whether we analyzed the impacts of construction of Indian Point as part of --

JUDGE WARDWELL: No, no. Construction of a new gas plant in the no action alternative.

MR. STUYVENBERG: We assessed the impacts of a natural gas combined-cycle facility both as a stand-alone alternative and indicated that as a stand-alone alternative it could also be a consequence of no action. So it's something that can be included in no action. It's not specifically in that impact level that we report for the no action alternative.

And the Staff takes this approach to alternatives analysis because of comments it received when it first promulgated it's license renewal rules where Staff had initially posed alternatives as merely consequences of the no action alternative based on comments we received from a wide array of stakeholders, including states, among them New York State.

We took their comments into consideration and decided to consider those alternatives as stand-alone alternatives to the license renewal rather than a solely consequences of no actions. So we acknowledged the consequence of no action, but we considered them as stand-alone alternatives.

JUDGE WARDWELL: But my question is do you include the construction of them also or just the operational impacts of those plants?

MR. STUYVENBERG: We include construction and operation, but we separate those out in how we describe them. So we talk about what the impacts would be from construction and what the impacts would be from operation.

JUDGE WARDWELL: Thank you. Entergy's Exhibit 000479 on page 16, it's Answer 24. I think you stated that "Indian Point baseload generation would be replaced primarily by fossil fuel generation from existing natural gas and coal facilities."

The question I have is don't your results show in part that coal facilities would be developed to compensate for Indian Point shutdown -- strike that whole question. That's misinterpretation.

Let's go to page 29, Answer 24, where New York states that "Section 8.3.1 of the FSEIS evaluates

the environmental impacts of natural gas fire generation." Table 8-3 of the FSEIS summarizes the environmental impacts from natural gas fire generation.

And my question is to Staff is there any requirement for any federal agency to issue an EIS for natural gas plants that you're aware of? And if so, do you have any information about what an EIS for natural gas plant might look at when it compares to say a nuclear power plant in it's alternative analysis?

MR. STUYVENBERG: To the first question, I'm not aware of a requirement to use -- to implement EIS. Now if it's a federal agency, for example, like Tennessee Valley Authority who might be undertaking the action, they would have to consider it -- the NEPA ramifications of its action. I'm familiar with a TVA environmental assessment for a natural gas fired plant where it conducted extensive mitigation and got to a mitigated Finding of No Significant impacts. But there's not a specific EIS requirement per se.

MR. SCHLISSEL: If I might just add, if you look at the State of New York, Wisconsin, numbers of states do equivalence of the Federal Environmental Impact Statements in licensing of gas-fired units.

JUDGE WARDWELL: I was just curious --

JUDGE McDADE: And also again preface by saying Mr. Schlissel.

MR. SCHLISSEL: Oh, I'm sorry. Mr. Schlissel.

JUDGE WARDWELL: On page 31, this still is with Entergy's testimony that Section 8.3.4 of the FSEIS discusses alternative generated sources that were eliminated as reasonable alternatives that a proposed action has stand-alone alternatives.

And have you limited any alternatives to the one single source when dealing with a no action alternative?

MR. STUYVENBERG: I'm sorry, is this a question for Staff?

JUDGE WARDWELL: I was addressing it to Entergy in regards to their input that you took, but if not, then we'll move on to you if they have no contribution to this question.

MR. CLEARY: Donald Cleary for the Applicant. Would you rephrase that question?

JUDGE WARDWELL: Yes, I was wondering, you stated that the FSEIS discusses alternative generation sources that were eliminated as reasonable alternatives to the proposed action as stand-alone

alternatives. Just a single stand-alone alternative.

I was wondering whether you've eliminated any of those when dealing with the no action alternative?

MR. CLEARY: In the Entergy ER we did.

JUDGE WARDWELL: Can you reference where that list -- the numbers that you had and what you did eliminate from the no action alternative?

(Pause.)

MR. CLEARY: That would be -- let's see. I believe that would be in the ER which --

MR. TENPAS: Your Honor, could I suggest perhaps the witness might want to review Section 8.3 of the ER which identifies various sources that were considered, but eliminated as reasonable alternatives.

MR. CLEARY: Yes, that's where it's from.

MR. TENPAS: I'm sorry, that's Entergy 000479 to assist the Court. I believe if the PDF page 29 were brought up -- I'm sorry, there's relevant testimony that may be helpful around page 29.

JUDGE WARDWELL: But the section -- again, I don't think we need to look at them now. The Section is 8.3 of the ER would list those that were eliminated.

MR. CLEARY: Correct.

JUDGE WARDWELL: And Staff, did you follow along with the same approach that was presented in the ER in regards to this?

MR. STUYVENBERG: In terms of this thing from consideration from potential no action alternatives?

JUDGE WARDWELL: That's correct.

MR. STUYVENBERG: I'm trying to think about the question, Your Honor. Just one moment.

What the Staff determined under the no action alternative was that other steps were likely to be necessary and would be similar to the types of alternatives considered in this section.

I don't recall the Staff specifically excluding all of the considered, but dismissed alternatives from being things that could potentially happen. But we didn't expressly include them as part of the no action alternative. So our attempts to consider combinations, our attempts to consider sole source replacements were efforts to address some possible range of alternatives, certainly as the GEIS noted to consider all of the possible alternatives or all of the possible combinations is unwieldy and outside the scope of this inquiry.

I apologize for kind of a long response,

but I hope that gets to --

JUDGE WARDWELL: That helps. Thank you.

MR. TENPAS: Your Honor, referring back to the assistance of the Court in terms of the document reference, the ER is Entergy 000015B discussion of the alternatives at Section 8.3 is found at PDF page 1116. That is 1116 of the PDF. On the document itself it would be the page labeled at the bottom 8-50.

JUDGE McDADE: Thank you.

JUDGE WARDWELL: Would you mind coming to my office as we're writing up our opinions so that when I'm searching for something I can find it?

(Laughter.)

MR. TENPAS: Happy to assist in whatever way the Board requests.

JUDGE WARDWELL: On Staff's Exhibit 000133, page 13A14 and Andy, it might be worthwhile to bring this up at this point. I'll need it for this question anyhow, so bring up page 13A14, if you could.

(Pause.)

MR. STUYVENBERG: Did you mean New York 000133, Your Honor. Are you looking at the FEIS?

JUDGE WARDWELL: No, hang on just a second. No, Staff 000133 is what I'm after. I believe that's actual page number, not PDF page

number. There you go. And yes, that whole middle paragraph.

My question to New York is in that paragraph it describes what they've done for various combinations. I was going to read it, and I thought that's silly, I'll just bring it up and show what's here in regards to the various combinations. And my question to you is, for both of you, why isn't this a reasonable attempt to address conservation and efficiencies in a NEPA analysis? Isn't this a pretty good whack at it?

JUDGE McDADE: Is that for Mr. Schlissel?

JUDGE WARDWELL: It's for either one. It's for both in essence. Both can answer or one can answer. None can't answer.

MR. SCHLISSEL: David Schlissel. As I indicated before, I believe, NRC Combination 2 is a good step in the right direction, that I would think that it would include perhaps some additional renewable generation, but it is a good step in the right direction.

JUDGE WARDWELL: Is Staff required to look at all possible combinations of alternatives in a NEPA analysis?

MR. SCHLISSEL: I don't know for a fact,

but I imagine the answer is no, they are not.

JUDGE WARDWELL: In fact, they're just reasonable alternatives as a requirement for NEPA?

MR. SCHLISSEL: That's what Staff's witness said in his testimony. I have no reason to doubt it.

JUDGE WARDWELL: Mr. Lanzalotta, do you have any reason to doubt the statement that a set of reasonable alternatives is what's required of NEPA?

MR. LANZALOTTA: I have no reason to doubt that.

JUDGE WARDWELL: And this is their list of their reasonable alternatives that they evaluated. Do you have any comments on those particular combinations that they used?

MR. LANZALOTTA: That's more Mr. Schlissel's area.

JUDGE WARDWELL: Thank you. Let's go to page 19A, Table 9. This is kind of a summary -- Staff, this is a summary table of the environmental significance of license renewal and alternatives?

MR. STUYVENBERG: That's correct.

JUDGE WARDWELL: Is this the best table to look at after that summary? Is this the key table that kind of presents the results of your analysis or

is there a better one out there?

MR. STUYVENBERG: I think this is the best table.

JUDGE WARDWELL: And as we look at this we see over the top that there's proposed actions of license renewal, the no action alternative where the plant is shut down is the next column, and then license renewal with closed-cycle cooling is the next one, and IP site or repowered site under the natural gas alternative and then as a new site for natural gas. Those are the columns that we're dealing with, right?

MR. STUYVENBERG: Yes.

JUDGE WARDWELL: And for each impact category that runs along the lefthand side, you have a qualification for the significance of any impact. And I look at those and I say boy, that's all over the place. Some of these range fairly widely. How do you deal with that?

MR. STUYVENBERG: What we go back to, Your Honor, is the decision standard for NRC in this process. Really, what an Environmental Impact Statement does is provide in comparative format the potential impacts of various alternatives for achieving a certain purpose and need. And so in that

process as codified in 10 CFR 51.95.(c)(4), we look to whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.

So it looks like they're all over the place because in different areas we found different kinds of impacts for different alternatives. We use this then as a way to are those impacts so great that preserving the option of license renewal would be unreasonable. And in so doing whether license renewal's impacts are really different than way what some of the alternatives are.

JUDGE WARDWELL: So you take land use, let's not take land use. Let's take ecology and aquatic. The license renewal is moderate and it's small to large. Now there's a footnote and what does that footnote say to that?

MR. STUYVENBERG: I think it refers to the differences in impingement and entrainment impacts versus thermal shock impacts. So that because of the specific issue breakdown for license renewal as contained in the GEIS and codified in Table B1, there are several separate issue areas that fall into aquatic ecology. So we captured that because they

were different and we thought it was important to present that for different issues those impacts varied.

JUDGE WARDWELL: When I look at this table, so you've got a full range, moderate, small to large aquatic impacts. And I look at no action alternative and gee, everything there is small except the socio-economics is small to moderate. Well, if I was quantifying that as an engineer, I might actually put some numbers on these and add up the numbers and see and if I did, it would show that the winner would be the no action alternative. So how do you reach a different conclusion?

MR. STUYVENBERG: I don't think we reached a different conclusion. I think the conclusion we reached was that the no action alternative had smallest impacts, but may necessitate other actions.

Now remember that the Staff's decision isn't which alternative to implement, but whether to preserve license renewal as an option that other energy planning decision makers may consider or may rely upon. So if we were to -- so let me take that back a step. NRC isn't in a position to say you must do just plant shutdown and nothing else. Certainly as we've heard testimony from the other witnesses today,

there are potentially a variety of other things that occur if a plant shuts down. None of those are under NRC's control.

We look at alternatives, other alternatives, other ways of reaching the same purpose and need to compare what other types of impacts might occur in replacing that power plant. And so our analysis is really to say if it goes away, what are the other likely impacts from that decision?

So it's not simply if the plant shuts down, but it's all the other things that might come after it which are contained elsewhere in this table that the Staff also has to consider. Does that answer your question?

JUDGE WARDWELL: So are you saying that, in fact, it's the no action isn't by itself, but in fact, you're evaluating what happens if Indian Point disappears by, for instance, the impacts associated with a new closed-cycle cooling?

MR. STUYVENBERG: What I would propose is if we go to the Staff's Final Supplemental Environmental Impact Statement on page 820.

JUDGE WARDWELL: And what's the exhibit number for that?

MR. STUYVENBERG: I think it's one of the

NYS000131s, but I'm not sure which one. I know there are a number of alphas that come after that.

MR. TURK: New York 000133B, Your Honor.

MR. STUYVENBERG: 000133B, Your Honor.

JUDGE WARDWELL: Can we pull that up.

MR. TURK: Your Honor, if I may point something out, maybe this will get us to the bottom line quicker. This table continues on page 20 of Mr. Stuyvenberg's testimony. That first footnote that you referenced, that footnote A which talks about the aquatic impacts, that's explained at the bottom of the table on page 20. And then also the no action alternative which has, you'll notice at the top of page 19, there's a reference to footnote B. If you look on page 20, you'll see what footnote B and that's where the statement that Mr. Stuyvenberg just referred to that no action alternative does not exist apart from other things. You'll see that testimony. There are other things that would happen in the event that no action was the chosen alternative.

So perhaps we can look at this table still in the testimony without having to go to the EIS.

JUDGE WARDWELL: And what are those other things?

MR. STUYVENBERG: At page 822 of the

FSEIS, we talk about what those might be. And I can read them if we'd like to go to that exhibit which is again NYS000133B.

JUDGE WARDWELL: Have we got it up? What's the page number?

MR. STUYVENBERG: I'm after page 8-22. It might be in one of the subsequent 000133s. It was broken into several pieces. I don't know if any one of my counsel can help.

MR. TURK: Your Honor, with your permission may I hand the FEIS to the witness so he can find what he's looking for.

MR. STUYVENBERG: I have the FEIS.

JUDGE WARDWELL: And what page number are you after?

MR. STUYVENBERG: It's page 8-22 of the FSEIS.

JUDGE WARDWELL: 8-22?

MR. STUYVENBERG: That's correct.

JUDGE WARDWELL: So we've got to get to Section 8. What's the last page of B, is this the last page of B, Andy? No.

MS. MIZUNO: The last page of B is in Section 5. This is Beth Mizuno, so we're going to need to C.

JUDGE WARDWELL: We've got to go to at least C.

MR. STUYVENBERG: I apologize for the confusion.

JUDGE WARDWELL: No problem.

MR. TURK: I think I'm responsible for that. I apologize as well.

JUDGE WARDWELL: That had crossed my mind.

MR. TURK: You can point the finger at me whenever you want, Your Honor.

MR. STUYVENBERG: So let's go to the paragraph beginning at line 5. And here we discuss what else happens in case of no action.

JUDGE WARDWELL: And this discussion is not reflected in the Table 9-1 under no no action alternative?

MR. STUYVENBERG: That's correct, and if the primary reason it's not reflected is because these other types of alternatives are the other items we considered throughout Chapter 8.

JUDGE WARDWELL: And where that would be reflected would be in the full discussion of Chapter 8. Does Chapter 8 have a similar chart just for the no action alternative and various components of it, options for it, or however else you might word it?

MR. STUYVENBERG: Well, to be clear, Staff didn't develop a range of potential combinations or scenarios that would occur, only in the instance of no action. Staff developed that range of alternatives and those combinations and considered them as alternatives in whole and also has been indicated there are potential consequences of no action as well.

JUDGE WARDWELL: Thank you.

JUDGE McDADE: Can we focus out on this for a second? What page number is this again?

MR. STUYVENBERG: I'm sorry, this is 8-22 of the Final Supplemental Environmental Impact Statement.

MS. MIZUNO: Beth Mizuno for the Staff. You are looking at Adobe page 49 of 153 of New York State 000133C.

(Music playing.)

JUDGE WARDWELL: Music moves some people more than others.

JUDGE McDADE: Do we know where that's coming through?

JUDGE WARDWELL: I thought it was celebrating your coming up with the site so quickly.

(Laughter.)

MS. MIZUNO: Or so slowly, Your Honor.

JUDGE WARDWELL: Okay.

JUDGE McDADE: I thought you were still --

JUDGE WARDWELL: I was waiting for you.

JUDGE McDADE: We could have sat here for a long time.

(Laughter.)

JUDGE WARDWELL: Moving on, that's all the questions I have on that, thank you.

MR. STUYVENBERG: Thank you.

JUDGE WARDWELL: Moving on to page 21 and I believe I'm in Staff's 000133 page 21. Strike that. Pages 859 to -- I'm sorry. Answers A59 to A72 on pages 44 to 55. So just go to 44 for now, Andy, A59.

You might just zoom out because I think people will want to refer to their own. Come all the way up. Fill the page. Now scroll through to page 55. There's a number of issues that Staff addressed that covered many of the concerns that New York State raised. And my question to New York State is and I think I'll ask the question and then maybe we will break and you can answer it after the break. This will be a good way to do it because from 44 to 55, Staff addressed many of your concerns.

My question is has not Staff commented on most of your specific concerns and shown how they've

addressed them? It just may take you a while to look through that again to refresh your memory and rather than sit here and wait, I perceived there was some interest in breaking for lunch at this time, so maybe it's an appropriate time.

JUDGE McDADE: Okay, it's now about 12:20. Shall we break until 1:20? Any matters to be taken up before we break?

From the Staff?

MS. MIZUNO: No, sir.

JUDGE McDADE: Clearwater?

MS. RAIMUNDI: No, Your Honor.

JUDGE McDADE: Riverkeeper?

MS. BRANCATO: No, Your Honor.

JUDGE McDADE: New York?

MR. SIPOS: Your Honor, I'm endeavoring to get that second report PDF file out to the folks here in the room. I'm breaking it up into smaller sizes, but we seem to have some Internet connectivity issues as well. I'll endeavor to continue that throughout the lunch.

JUDGE McDADE: Entergy?

MR. TENPAS: No, Your Honor. Nothing from Entergy.

JUDGE McDADE: Okay, so we'll stand in

recess then for lunch until 1:20. Thank you.

(Whereupon, at 12:21 p.m., the hearing was recessed, to reconvene at 1:20 p.m.)

JUDGE McDADE: Okay. The hearing will come to order. Any administrative matters before we get started?

MR. SIPOS: Just briefly, Your Honor, John Sipos for the State of New York. At the lunch break I was able to provide that document in four parts to Mr. Andrew Wilkie on a stick and so he does have it in electronic form.

JUDGE McDADE: Okay, thank you. Okay. Judge Wardwell.

JUDGE WARDWELL: I think we left off at Staff Exhibit 133, pages 44-55 where Staff addressed many of New York State's concerns. And I'm asking New York State to comment on whether or not they have addressed most of your concerns. And if not, why not.

MR. SCHLISSEL: David Schlissel. Sorry. Thank you. I agree with a lot of what Mr. Stuyvenberg says. I can't see where in the FSEIS he explains how he considered a lot of these factors. Let me go through them quickly, if I might. That might be the best way to do it.

I agree that if you're doing a need for

power analysis --

JUDGE WARDWELL: What page are you on now?

MR. SCHLISSEL: Sorry.

JUDGE WARDWELL: If you can just reference us, we can just go on.

MR. SCHLISSEL: Pages 44-47.

JUDGE WARDWELL: Okay.

MR. SCHLISSEL: I agree with his comments about the need to consider a capacity credit for wind as you and I discussed this morning. Also, to consider wind capacity factors if you're doing a need for power analysis. I did not see, and I apologize if I missed it, how he explained, or the FSEIS explains how those were taken into consideration. But I agree that if you're going to do a need for power analysis where you're looking at the economics of different alternatives and the need for power from those alternatives that you do consider those factors.

At page 47 Mr. Stuyvenberg discusses that he believes the outlook for future wind power development may soon be somewhat less rosy due to the expiration of the production tax credit at the end of 2012. And he may be right. I would just -- in response I would note that the -- as Mark Twain said, his death was greatly exaggerated, and the death of the wind

production tax credit has been greatly exaggerated each time it's come up for renewal.

It's a large industry that has production facilities in many Congressional districts, including Republicans and Democrats both, so I'm not so sure it's going to be expire, or not be renewed.

With regard to Mr. Stuyvenberg's comments about my mistake about the Beacon Flywheel Facility, he's absolutely correct, and I apologize to everyone for that mistake.

I'm just trying to highlight the most important comments here because I generally, again, do agree with what he's saying. As to whether my September 2007 Synapse report was or was not submitted a comment on the DSEIS, I'm sorry. I only wrote it. I believe it was either attached or quoted in the comments. That's the state of my knowledge with regard to that.

As to solar, I don't understand his comments. I don't think that he misstates anything from my analysis. My analysis was just that solar should be part of the portfolio of renewables. And I think from looking at the combination scenario that he may agree with that, that it's part of the portfolio. But certainly not a standalone alternative, and I did

not mean to imply that. I apologize if he took it that way.

As to -- on page 52 of his testimony regarding the difference between repowering at Indian Point versus repowering at another site, I think there could be significant differences in two ways. First, repowering an existing site in New York City or on Long Island is sitting right in the middle of the load. Some of the sites that are now being considering for repowering in Astoria or on Long Island are right in the middle of major loads. I think that is different than Indian Point, which while close to the loads is not exactly in them. And the second is --

JUDGE WARDWELL: Excuse me, if I may interrupt.

MR. SCHLISSEL: Sorry.

JUDGE WARDWELL: And that's a problem being right in the middle of the loads?

MR. SCHLISSEL: No, I don't think it's a problem. I think it's a benefit that you would get from repowering a unit in the city or on Long Island versus at Indian Point. And that that would provide additional environmental benefits, or avoid environmental impacts.

And the second major difference is that if

you repower an existing unit at an existing site in New York City or Long Island, you take that existing dirty, inefficient unit out of the mix and replace so it's not going to be running to any extent. Whereas, if you built a new gas-fired unit at Indian Point, those older units on Long Island, Barrett, Port Jefferson, I forget the name of the third one that's being considered for repowering, they would still be potentially operable as dirty, inefficient units.

With regard to pages 53-59, I'm not sure -- or 53-54, I apologize. I'm not exactly -- I don't believe I disagree with what he's saying. The Champlain Hudson Power Express is a potential -- a new potential transmission improvement. It's going through licensing now. I understand that it's in the briefing stage, that many of the parties have discussed settlement, so a permit may be issued for that. That Hydro-Quebec has indicated an interest in perhaps purchasing up to 75 percent of the capacity of the line for maybe 40 years, so that is a real possible transmission alternative. And that's why I mention it in my testimony Other than that, I don't think I disagree with his comments.

JUDGE WARDWELL: Thank you, Mr. Schlissel.

MR. SCHLISSEL: Schlissel. Staff, would you

like to respond?

MR. STUYVENBERG: I would like to say one thing, and certainly appreciate Mr. Schlissel's comments. I would like to say one thing regarding repowering at the Indian Point site versus sites in the city. I would note that if you repower at the Indian Point site you also end up reusing a retired power plant site at that point. That retired plant site would be the Indian Point site, so in some ways the notion that you're reusing land and thus reducing impacts applies to repowering Indian Point, as well.

As concerns locations in New York City, I don't have any particular disagreement with that. I would note, however, that one of the things we came across as we wrote the EIS was that having some generation at the Indian Point site was potentially important for transmission reasons, and it was something that we noted, it was something that the National Academy of Sciences had identified. It was one of the reasons why we had considered it there, as well. So, that's not to say that's to the exclusion of sites in New York City necessarily, but to say that was one of the reasons we had considered that site.

JUDGE WARDWELL: Thank you. Moving on to New York State Exhibit 046, or back to it --

MR. STUYVENBERG: I'm sorry, Your Honor. Your Honor, my apologize. I was just looking through my notes that I took while Mr. Schlissel was talking. Could I follow-up one other item, too?

JUDGE WARDWELL: Sure, please do.

MR. STUYVENBERG: One of the issues that he raised at the start was the notion that capacity factors might be important only if you were looking at need for power. One of the challenges Staff has is trying to find a replacement for Indian Point, and finding a way to consider something like wind power where there's a lot of public interest in it. We receive a lot of public comments about it. We also receive corresponding comments saying you can't count that for its nameplate value.

So, one of the ways we attempt to address those issues is by using something like either a capacity factor, or a capacity credit to consider how that amount of wind power might factor into the combination or contribute to replacement for that power plant. So, while I respect his comments that in some cases you look at those things if you're doing need for power. We also use those as a way to determine how much wind power we might be able to rely on in the combination of alternatives in those cases

where we consider a combination. Thank you. That was my only other follow-up.

JUDGE WARDWELL: Yes. Thank you. New York 046 on page 29 states that, "The NRC Staff adopts DOE EIA's conclusion that coal generation is forecast to decline but ignores the DOE EIA's conclusion that renewable generation is forecast to sharply increase over the time period relevant to license renewal." And I just mention to New York State on page 828 of the FSEIS -- can we pull that up, Andy? It's the same -- must be D of that 133. It would be page 828. Is that the one we were on? There we go. And we want 828. Yes, the first paragraph after the heading there. It's either EIA or FIA, EIA Projections. And in there you'll see where the various percentages, "While coal fire will account for approximately 12 percent of generating capacity additions through 2035, EIA projects that renewable energy sources will account for 36 percent of capacity additions through 2035, and new nuclear are expected to account for only about 3 percent." And that breaks down renewables about 26 percent, coal about 12 percent, and nuclear power to about 3 percent with gas resulting in 46 percent left over. So, doesn't that appear that Staff did actually adopt the conclusions in DOE EIA showing that through

2035 those are the respective percentages that would be anticipated?

MR. SCHLISSEL: The numbers are correct. I believe Mr. Stuyvenberg quotes this paragraph, or at least the essence of this paragraph is his rebuttal testimony. When I wrote my testimony, my direct testimony which is New York State 046, I believe.

JUDGE WARDWELL: Yes.

MR. SCHLISSEL: I didn't see how Staff had taken this and applied it to New York State and to the Indian Point situation. I wasn't saying that they didn't quote the statement. I just didn't see how they had taken it -- the significance of the statement and applied it. I understand better now having read his rebuttal testimony, or his testimony which came in what he did.

JUDGE WARDWELL: And you're satisfied with what he did?

MR. SCHLISSEL: Yes.

JUDGE WARDWELL: Thank you. Moving on to energy market forces and what I call importance of minimizing cost. Entergy, in your testimony on 479 it seems like much of the testimony seems to be focused on analyzing current pricing economics rather than focusing on the incremental impact analysis associated

with the difference between Indian Point and the No Action Alternative. Is that a fair observation? And, if not, correct me if that's an unfair observation.

MR. HARRISON: David Harrison for Entergy. What page are you on?

JUDGE WARDWELL: I wasn't on any page. I was just looking over your entire testimony in 479. You got into great detail and talked about lots of cost projections and economics that seem to focus on the analysis of current pricing economics for energy resources. And at least to me I didn't see how that could apply very easily to what we're doing in an EIS which to me is an incremental impact analysis associated with the difference between continuing the operation of Indian Point and the No Action Alternative. Is that a fair observation? And, if not, why is it unfair, and how could I apply all that stuff you talked about on what plants are going to get accepted, and lots of economic numbers floating around that I didn't really see much use for myself in evaluating this contention.

MR. HARRISON: I see. This is David Harrison for Entergy. Well, I think some of that analysis that you saw was doing two things; one is providing a context for the analysis. So we're looking

at the market forces that were relevant. For example, we talked about the changes in natural gas prices. But the other was to comment on the observations that the State witnesses had made that these factors were not included in the FSEIS. And, in fact, looked at what the significance of those factors would be. So, the bulk of our analysis was actually to do exactly what you said we should do, which is to look at the potential changes in electricity generation or environmental impacts between the baseline and the No Action Alternatives. So, that was the focal point of our analysis.

And as I mentioned earlier, when we were -- the key issue for us was, was the State correct in its judgment that that additional generation, replacement generation would be primarily natural gas -- excuse me, would be primarily energy efficiency or renewables. So, that's why in the context of doing our analysis we developed the modeling.

So, the economic analysis, I'm not sure exactly what you're pointing to, was to provide a context for that. And also to point out that if you looked at some of those factors, for example, changes in electricity demand growth over time, or the increases in renewables or energy efficiency, and you

looked at the issue of whether changes in the baseline due to those conditions would change your estimate of whether the replacement generation would be primarily fossil fuel, our conclusion was that changes -- those changes in baseline as whether natural gas prices are likely to be higher or lower would not change the fundamental conclusion that the bulk of the replacement generation would be from fossil fuel. And, therefore, the likely environmental impacts of a No Action Alternative should not be evaluated based on an assumption that it would be energy efficiency and renewables, but rather the market based result that it was more likely -- it was likely to be primarily fossil fuel. So, we were trying to keep our eye on the ball which is to look at the likely environmental impacts of the No Action Alternative, but the report is sort of lengthy because we're providing some context and some commentary on the arguments that the New York State witnesses made.

JUDGE WARDWELL: Is there a good summary of your results as it applies to the EIS in regards to focusing specifically on your assessment of that as it relates to NEPA analysis?

MR. HARRISON: Well, we have it both in our report. Would it be easier to stay with the testimony,

Your Honor?

JUDGE WARDWELL: No, you can go to your report. That's fine. As long as -- what's the exhibit number? That's all we need to know.

MR. HARRISON: Because we have an Executive Summary in our report that summarizes the conclusions of our analysis.

MR. TENPAS: Your Honor, I believe the report may be Entergy 481.

JUDGE WARDWELL: Can we pull that up, Andy, and we'll just make sure this is what you're referring to, and we won't have to read the whole summary.

MR. HARRISON: Yes, that's right.

JUDGE WARDWELL: And put it as a full page, Andy, so we can go to the Executive Summary. I assume it's probably several pages long.

MR. HARRISON: Yes. So, if we go to page E3.

JUDGE WARDWELL: And that starts with one being conclusions regarding the power mix that was be dispatched if IP based generation were lost.

MR. HARRISON: That's right. So, here this is where we developed our conclusions regarding the generation. So we said, as I mentioned, that the replacement energy would come primarily from natural

gas and coal power plants rather than renewables or additional energy efficiency. Then we noted that in order to get additional energy efficiency or renewables, additional subsidies would be required.

Then our second conclusion was the one I mentioned, that if you look at the various developments that were listed by the State, those would actually -- if you go through it, some of those results may be considered counterintuitive. That actually would make less -- would be less likely that renewables and energy efficiency would be replacements for energy -- for Indian Point's generation.

JUDGE WARDWELL: And that's what confused me a little, statements like -- I ran across several ones like that when I was going through your analysis.

MR. HARRISON: Right.

JUDGE WARDWELL: And that's when my eyes started glazing over --

MR. HARRISON: The issue of whether those developments -- what effects they would have on the results. Well, I think -- let me just give you one example of renewables. So -- and this may be counterintuitive. So, we're saying suppose that you have a baseline that has a relatively small number of renewables, and then you change that to a baseline

with more renewables. What we know is that in general you'll start by adding the least expensive renewables. So, as you add more the cost of adding additional renewables is going to go up. So, if the baseline level of renewables is larger, that means the incremental renewables, the cost of additional renewables to replace the 16.3 million megawatt hours from Indian Point would tend to be even greater. And a greater cost would make it less likely that the market would choose those renewables. So, it sounds kind of -- it sounds a little counterintuitive that success in achieving renewable goals makes it less likely that renewables were going to be replacement energy. But if you think through it, it's sort of logical.

MR. SCHLISSEL: Could I comment?

JUDGE WARDWELL: Yes, you may.

MR. SCHLISSEL: First, maybe I misunderstood Dr. Harrison, but I just looked through my testimony and I didn't mention the word "cost" at all. I didn't address cost, not a bit. He said that they did it in response to the State's witnesses, and maybe Commissioner Bradford did, but I don't see anything in my testimony that I did.

Now, with regard to renewables, Dr.

Harrison starts his explanation by assuming that the least expensive will be taken first. No evidence for that. In fact, the evidence we develop in any new technology is over time they generally become cheaper economies of scale. If as expected there's more wind development in New York State and around the nation, the cost of building wind will go down, the capital costs of building wind will go down, economies of scale. So, I don't think it's necessarily fact that the cost of renewables will go up over time as Dr. Harrison assumes.

And, again, the model comes up with this counterintuitive results because the model doesn't faithfully replicate the New York State electric system. Yes, it has gas prices, but all the models, MAPS, Strategists, they're all -- gas prices are an input. NEMS, again, is a very simplified model for New York State and the neighboring regions, so you're going to get results that seem counterintuitive, anomalous, maybe perhaps wrong from the modeling result.

MR. MEEHAN: Could I comment, on page -- in Exhibit 479 on page 71 we do show the actual cost of the subsidies.

Judge McDADE: Excuse me, Mr. Meehan. Where

is that?

MR. MEEHAN: It's Exhibit 479 of Appendix A, page 71 of the report.

JUDGE WARDWELL: That's one we have up, Andy? It should be the same document, page 71.

MR. MEEHAN: And the top table shows the actual cost of the renewables, the subsidies. And as I mentioned this morning there was a December 2011 solicitation that had a weighted average subsidy of $28 per megawatt hour. So, after going down from the initial solicitation, they've been on the rise since January 2008 with a quite significant increase in the last solicitation.

Now, remember these subsidies are in addition to the production tax credit or investment tax credit from the federal government. And they're payments that NYSERDA and the State have to give to the renewable energy producers because the revenues from the market, the energy revenues and the capacity revenues that those units earn in the market are not enough to induce that investment. They're not competitive on a cost basis even after the federal tax subsidies, so they're taking significant state subsidies going up to $28. And the report with the $28 also notes that there's factors which are causing them

to rise potentially even more in the future, including lower gas prices. So, as the market prices go down the subsidy goes up.

JUDGE McDADE: How are these determined?

MR. MEEHAN: So, contrary to the theory -- these are determined from the actual results of the RFPs that NYSERDA has issued. These are actual numbers that the State is committed by contract to pay to the renewable energy producers. So, the cost of these renewables -- this economies of scale, underlying fuel markets are all baked in here. We know for a fact they're rising, not going down. And I think that's what Dr. Harrison is referring to. They could be rising for a lot of different reasons, like quality resources are developed first. But the fact is, the subsides that are required over the market price for renewables in New York State are on the increase.

JUDGE McDADE: Okay. My question, how are those subsidies arrived at, the level of those subsidies?

MR. MEEHAN: These are -- the wind producers, it's largely wind, there could be other renewable resources, as well, but it's predominantly wind submit bids for the level of subsidy that they require in order to build the facility.

JUDGE McDADE: So, it represents what they believe is --

MR. MEEHAN: It represents what their -

JUDGE McDADE: -- right now what their cost factors are compared to what the revenue would be.

MR. MEEHAN: Yes, and what they need over time in terms of support above the market.

JUDGE McDADE: Okay. But going back, and I think the question that was raised to Dr. Harrison, as technology develops, if I'm trying to build a wind farm in 2011, I've got a certain cost benefit based on today's technology. Isn't it reasonable to assume as I'm no longer at the cutting edge of technology but using stuff that is off the shelf, that has already been developed that building a wind farm with the same capacity 10 years from now would be a significantly less expensive proposition, just as building an automobile in 1910 was a much more expensive proposition than building an equally reliable or more reliable in 1930?

MR. MEEHAN: I don't think significantly. I wouldn't say significantly would be appropriate to use. The NEMS model, for example, has a learning curve and has some decrease due to technical progress. But

there has been a lot of wind built, a lot of the technical progress comes from making the towers higher and the blades bigger, but there's limits on how much you can do that and still find an acceptable site.

I would think probably yes, the cost of technology is going down, but it's going to be limited by that. And then there's the transmission issue. So, as more and more wind is added, more transmission is going to be required to transmit it, and the producer has to pay for that transmission if they want to have the energy and capacity deliverability rights.

JUDGE McDADE: So, you're factoring in, as was discussed earlier, if you have the generating facility in the middle of the load, if you have it in Queens, then you have significantly less cost and significantly less impact in order to get that to where it's needed than if you have it up someplace in the far north.

MR. MEEHAN: No, I think all I was talking about is that if you add more wind in the far north or in the west, you're going to require more transmission. It's not going to be able to use the existing transmission, and that's going to raise the cost of the project.

JUDGE McDADE: And the environmental impact

of the project.

MR. MEEHAN: Probably would raise the environmental impact, as well. But the only point I'm making here is that the market tells us that the amount that has to be paid above market prices to get this wind is increasing.

JUDGE McDADE: Dr. Harrison, did you have something to add to that?

MR. HARRISON: Not on that particular point, but just to go back to the issue of cost, or markets. When we were discussing what our conclusions were and how we came to them, we were not critical of New York State for addressing cost, quite the opposite. Our criticism was that they did not address cost enough, that they did not look at market conditions, and ask the question not what could replace Indian Point generation, what variety of alternatives could, but what in the context of a market setting would likely replace Indian Point generation.

So, later on in the Executive Summary we note a number of criticisms of the New York State analysis, or ask ourselves the question why did they come to different conclusions about what would replace Indian Point generation? And our conclusion was that

their analysis had four major flaws, the first of which was not to take into account market conditions, so not to look at market -- the second was to confuse these developments that we're talking about in terms of natural gas prices and renewable requirements with what would replace Indian Point generation if it were not available. So, there's lots of things going on in the energy markets, but those go on regardless. And I think this is one of the issues you're planning to come to in the baseline regardless of whether Indian Point is in it or not.

The third was the hard to explain counter -- somewhat possibly counterintuitive results associated with how changes in the baseline might affect indirectly the generation that would replace Indian Point. That was the complicated example that I was giving about -- and that Mr. Meehan expanded upon in terms of changes, likely changes in renewable, the cost of renewables, making it less likely.

And the final -- the fourth criticism was that there was no modeling that in the context of markets, and the fact that markets are what will determine replacement generation. It is important to develop some modeled results for -- at least in terms of our ability to assess the proposition that the

replacement generation would come primarily from energy efficiency and renewable. We really needed to put that proposition to a market test to not go in more coulds, but looks at one potential series of woulds under these market conditions, and that's what we tried to do in our modeling.

JUDGE WARDWELL: Thank you. Any final comments on this issue before we move on?

MR. SCHLISSEL: Yes, sir. We would have loved the opportunity to have done the type of analysis Dr. Harrison discusses; however, when we talked to the State of New York and developed what was the scope of the hearing, the hearing was not to deal with need for power, which in my mind included economics, so we didn't do the analysis because we thought it was outside the scope of this hearing. And now we're being criticized for not doing the analysis.

MR. BESSETTE: Objection, Your Honor. He's mischaracterizing the testimony.

JUDGE McDADE: Sustained. Actually, it's difficult to sustain because there really wasn't a question, but I think you've explained your position.

JUDGE WARDWELL: In your testimony, New York, on page 13 of 046 you're referencing drops in the price of natural gas that we've already talked

about. Your experience or knowledge, do you believe that the long-term forecast of natural gas will remain at the current low levels? And, if so, for what reason?

MR. SCHLISSEL: Yes, I do believe they will remain relatively low. I don't know if I'm allowed to use demonstratives in response, but I have yesterday's Henry Hub futures prices which can illustrate my answer to your question.

JUDGE McDADE: If you can do it orally, it'll make it easier.

MR. SCHLISSEL: Okay.

JUDGE McDADE: If you feel that it's not possible to convey what you're trying to convey orally, then --

MR. SCHLISSEL: As of -- actually not yesterday, I apologize, Monday, the 22nd, Henry Hub was projecting roughly $4 MMBtu price in 2013, increasing to $5 by about 2018, $6 by 2022. I think those are approximate what the DOE EIA projects. I've not seen any credible projection which has much higher gas prices, something like $5 in MMBtu by 2020 or 20 thereabouts is generally what I've seen from a number of sources. I think that that's probably the ballpark. There's a lot of shale gas. And even if New York State

doesn't produce a drop of it, there's still plenty of gas in the market. And I don't see any evidence that it's going to go away, or that the demand is going to come and overtake supply or catch up to supply to such an extent that the prices will go up much higher.

JUDGE WARDWELL: Thank you. Moving on to talking about the comparison of baseline conditions and No Action Alternatives. On New York Exhibit 046, page 18, you say that -- you talk again about the 15 by 15 Clean Energy Plan is all we really need to highlight there. And my question is to New York, isn't it correct that the existing and any new conservation projects up to 2013 and 2015 cannot be considered as replacement to the Indian Point baseload power under the No Action Alternative? And we talked about that earlier this morning in regards to the 30-15 program. I just wanted to confirm that same conclusion for the 15 by 15.

MR. SCHLISSEL: The answer is yes --

JUDGE McDADE: Excuse me. Let me interrupt just a second.

MR. SCHLISSEL: Sorry.

JUDGE McDADE: Again, if you can, just say your name as you start.

MR. SCHLISSEL: I'm sorry.

JUDGE McDADE: Because the worst thing that we want to have happen is that when we wind up reading the transcript that something you say gets attributed to Entergy or vice versa, and we wind up thinking gee, that's not my recollection, but here's the transcript. So, we want to make sure that we understand later on when we're making the decision whose position what is. Please continue.

MR. SCHLISSEL: I'm sorry. David Schlissel. I'm sorry, I forgot the question.

JUDGE WARDWELL: Did you pronounce your name right?

MR. SCHLISSEL: Yes.

(Laughter.)

MR. SCHLISSEL: That was the question? I got it.

JUDGE WARDWELL: That was the question. That new and existing conservation projects up to the point of the termination of Indian Point's licenses in 2013 and `15, and probably you're talking IP2 and IP3 cannot be considered as replacements for Indian Point's baseload power under the No Action Alternative.

MR. SCHLISSEL: And the answer is yes, but -- and the but is -- and this is where I agree with

Dr. Harrison, is that modeling is important. And I discussed it this morning. Doing an analysis of what does the resource plan look like with Indian Point, and what does the resource plan look like without Indian Point. That I think it's too simplistic to say that energy efficiency or that's in the pipeline doesn't replace Indian Point. You need to look at the whole system, and you need to see what the system tells you it would generate in place of Indian -- what facilities and resources supply and demand side would be used if Indian Point was out of the system.

I think in that respect what my fellow witnesses here have done is the right kind of -- there's a step in the right direction with the wrong model. But I think that the concept of doing that kind of analysis is a right way to think of it. So, you can't just say that existing energy efficiency won't displace Indian Point, or that existing renewables, or renewables that would be existing in 2015, in some hours they might. It just -- it depends on what's happening on the interrelated system at the time. And the answer to that is probably going to come out of a modeling.

JUDGE WARDWELL: And as you stated, you haven't performed any modeling on the renewables, or

the --

MR. SCHLISSEL: That's correct, we did not do that.

JUDGE WARDWELL: -- energy efficiencies. Likewise, have you attempted to estimate any environmental impacts of the resources that would likely replace Indian Point?

MR. SCHLISSEL: Just not in any kind of quantitative way. As I believe you and I have discussed on some -- there would be more air emissions from natural gas in some areas. There would be construction impacts both positive and negative. Certainly there's dust, there's truck traffic, but there would also be workers getting paid in construction, socio economic impacts, positive socio economic impacts. For wind and renewables there are similar costs and benefits, environmental costs and environmental benefits.

JUDGE WARDWELL: Thank you. Staff, just quickly, who has the burden of proof in regards to demonstrating the adequacy of the EIS?

MR. TURK: Your Honor, that's a legal question.

MS. MIZUNO: Mr. Stuyvenberg is not a lawyer yet.

JUDGE WARDWELL: I'll rephrase -- I understand that.

JUDGE McDADE: The operative word there is "yet?"

MS. MIZUNO: Yes, sir.

MR. TURK: If he's allowed to take exams in December we'll get him closer to his goal.

JUDGE WARDWELL: Which I think we've been bending over backwards to achieve, haven't we?

MR. TURK: Yes, you have.

JUDGE WARDWELL: So he could answer that question. Is there any -- never mind all that. It's not worth it.

Looking at Entergy's 479 testimony, on page 50, answer 65, shows some changes in generation renewables and conservation with a baseline in the No Action Alternative. And it might be worthwhile to pull that up if you could, Andy. 479, should be page 50. I'll ask Entergy, aren't these changes likely to occur both under the license renewal and the No Action Alternative?

MR. HARRISON: Would you like me just to -- in terms -- what this graph is trying to show, Your Honor -- David Harrison for Entergy, is just conceptually how to evaluate the resources that would

be different between the baseline and the No Action Alternative. I'm not sure of your question because this was just conceptual so you can see that the red is negative in the change, so that is the effect of the loss of Indian Point generation. So, what the other bars represent on the right are the changes in generation to make up for that lack of the Indian Point generation.

JUDGE WARDWELL: And my question to you is that needs -- that will have to take place either in the No Action Alternative somewhat soon, or if the bsaeline continues through license renewal will take place in 20 years from now.

MR. HARRISON: Well, I'm not a lawyer but my understanding was that when we looked at these -- the No Action Alternative, we were looking not at -- at Indian Point not being available for the foreseeable future. And then in our assumption about the baseline, our assumption of the baseline illustratively here is that Indian Point would continue to generate electricity in the baseline conditions. So, that's what we --

JUDGE WARDWELL: Not forever.

MR. HARRISON: Well, within --

JUDGE WARDWELL: That isn't the action --

MR. HARRISON: -- the time period that we're evaluating.

JUDGE WARDWELL: Which is 20 years from now, approximately. I mean, from 2033 to `35.

MR. HARRISON: If the license were granted for 20 years we could look at an assessment. I think in our analysis we actually reported results for 10 years, for example. In our empirical results we showed the change in generation mix over 10 years. We could have 20 years or a different number of years.

JUDGE WARDWELL: But the point that I'm asking for the question is that this same change that you show on this diagram will either, given all things being equal, change -- demonstrates a change that will take place in the 2013 to 2015 time frame if Indian Point isn't renewed. Correct?

MR. HARRISON: That's right. And I think what you're saying is if it were renewed, it may retire in 20 years after that period. And would there be --

JUDGE WARDWELL: And, again, we're facing something very similar to the same situation.

MR. HARRISON: So, if we were looking at this baseline making that assumption -- again, I'm not a lawyer so I don't know the context for what needs to

be assumed in the No Action Alternative, but if we then for sake of this hypothetical moved forward to 2035, then we would see these kinds of results if Indian Point were retired at that point.

JUDGE WARDWELL: And I'm not sure how it's a legal question in regards to the definition of No Action Alternative. That you've defined here.

MR. HARRISON: Right, yes. We've been looking at -- I think we said in our -- we take the baseline as a situation with Indian Point generation in place.

JUDGE WARDWELL: Thank you.

MR. MEEHAN: If I could add, Your Honor, this graph is intended to be illustrative, so what we're trying to show going back to your discussion with Mr. Schlissel, that purple slice and the green slice that are in the baseline are there. And it's only by how much they get bigger that they become replacements for Indian Point. You can't take the amount that's in the baseline and say that it is a replacement for Indian Point.

JUDGE WARDWELL: I understand. Thank you.

JUDGE McDADE: Mr. Meehan, even though you represent the same party as Dr. Harrison, state your name so when we get the transcript --

MR. MEEHAN: Sorry.

JUDGE McDADE: -- it will attribute what you say as opposed to what Dr. Harrison does.

JUDGE WARDWELL: On page 89, answer 116, you state that, "Thus, a baseline with higher levels of conservation that New York State 37 argues are more accurate and the FEIS would make it more expensive and, therefore, less likely that substantial amounts of additional conservation would be used to replace Indian Point's baseload energy." I think that's what we were talking about in regards to this unusual conclusion from your modeling.

I guess my question is, if hypothetically energy conservation/less demand, whatever we want to call it was sufficient enough to account for the loss of the full capacity of Indian Point, then wouldn't, in fact, the impacts of the No Action Alternative with Indian Point being shut down be much less than continued operation of the plant? Nothing more would be needed.

MR. HARRISON: Yes. This is David Harrison for Entergy. Well, just to be clear, in terms of the discussion in this part, it's not related to the modeling. It's just looking at the conceptual issues. What we found in the modeling was that there was

relatively little additional conservation that would be added; that is, if Indian Point were shut down the modeling suggested that there would be relatively small response of lower demand, so conservation was relatively small. That was the empirical result.

JUDGE WARDWELL: But how did that come about? I mean, that must have been either an input or it's built internally into your model.

MR. HARRISON: It is built -- I mean, the NEMS model which we may have a chance to go to is a very detailed model, so it has -- demand for energy is what they call in the trade endogenous, that is, it's determined in the model. So, the major factor at least that's relevant here is that the energy demand, whether it's for residential, commercial, or industrial depends on prices. So, what's happening in the modeling is that if Indian Point is not available electricity prices go up. If electricity prices go up some consumers use less electricity, so that's the demand -- that's the effect of the higher prices. That's the effect of Indian Point generation not being available in the market setting. And that's what we were modeling. That's the nature of the NEMS modeling of energy conservation, effects of Indian Point being not available on the overall demand for electricity.

Now, as I said, you can have different hypothetical settings. You could say suppose we can imagine where there would be this additional conservation, or additional renewables, or additional natural gas units, given the nature of the electricity market we thought it was important to put those hypotheses to a market test. And that's what we're doing.

I think what you are suggesting is a hypothetical, and under a hypothetical where all of the Indian Point generation were conservation yes, of course, there would be different environmental consequences than what we predict, or what is predicted based on these market conditions.

JUDGE WARDWELL: And you agree that there would be very little environmental impact associated with that if conservation could, in fact, match the capacity of Indian Point.

MR. HARRISON: Well, actually -- we didn't actually look at that, but my understanding is that they're relatively small environmental impacts of energy conservation. But, again, I would go back just to clarify, there are a variety of coulds, and we were, as I mentioned before, looking at the woulds, what would likely occur.

JUDGE WARDWELL: Well, let me just continue with this train of thought a bit more. On the opposite end if there was no conservation, and no associated reduction in demand then, in fact, all the power would have to be made up from some other energy source, which it sounds to me is what you've modeled, in essence.

MR. HARRISON: Well, we -- as I said, we did model the possibility or the amount of energy conservation that would take place. So --

JUDGE WARDWELL: What dictated that?

MR. HARRISON: Well, the overall structure and parameters of the model.

JUDGE WARDWELL: Okay, so that's what I'm saying, something built into the model --

MR. HARRISON: Yes, built into the model --

JUDGE WARDWELL: -- that will allow some sort of conservation.

MR. HARRISON: Yes, and the technical term or the price elasticity of demand for electricity. So those are the parameters that are added in the model. And what that is is just a way of trying -- of measuring when the price goes up by 10 percent, for example, how much does the overall electricity demand

go down.

MR. MEEHAN: Can I add something? This is Eugene Meehan for Entergy. I really think the hypothetical is missing something. Let's say Indian Point we can agree produces 16.3 million megawatt hours a year. If all of a sudden in 2016 we had 16.2 million megawatt hours a year come on the system, if Indian Point was still there, that would not replace Indian Point, and it would not replace Indian Point because the way that the New York market works and the system works is the low-cost facilities get dispatched first. So, your zero cost facilities, your wind, your hydro essentially, nuclear is a zero short-term variable cost all run at their full capacity. After that you start to dispatch the coal and gas resources. And in that stack when you put anything on you reduce demand, it's the fossil resources, the dispatchable resources that reduce their consumption. So, even if a conservation program came in that was equal in size to Indian Point, I don't think you can consider it a replacement for Indian Point unless it came in particularly just because Indian Point was shut down and wouldn't come in otherwise, because if Indian Point was there, Indian Point would continue to operate as it did. And you'd go from the top of that

stack and displace fossil resources with conservation.

And just to elaborate on this, if we have -- could we pull up --

JUDGE WARDWELL: Oh, let's not. I don't really want to take the time.

MR. MEEHAN: Okay.

MR. SCHLISSEL: Could I comment?

JUDGE WARDWELL: No, not just yet. I want to fix this point. Who wanted to comment?

MR. SCHLISSEL: David Schlissel.

JUDGE WARDWELL: Okay, we'll get back to you. I just want to fix the point here.

The hypothetical I was bringing up does miss something. It's a hypothetical, absolutely. It's not a statement of reality. And it's not a statement of if it came on while Indian Point was operating, it was a statement made, if Indian Point is not granted its license renewal and there was conservation available to match it what would be the impacts, and we're reached they would be very minimal. That's all I wanted to assure that I had the same thinking as the experts here.

The other hypothetical is there's none available at the point of when Indian Point license now terminates. What would happen? Well, now all of it

has to be replaced with some other energy source. What I'm interested in is we're probably somewhere in between those two extremes in reality, and how was that evaluated in your ER, and then likewise for Staff I'm going to go and ask how -- what's their understanding of how it was addressed in the EIS based on the information --

MR. HARRISON: This is David Harrison for Entergy. Well, I think you put it very well in terms of -- but I think what I was trying to say earlier was that the modeling we did incorporated both of those. So, we don't really have to guess or throw up our hands. I mean, models are not perfect, but the model took into account the possibility of additional conservation.

JUDGE WARDWELL: And how much additional conservation was being added in your ER?

MR. HARRISON: Well, what we found that within -- on the first 10 years, so we looked at the period from 2016 to 2025, about the vast majority, 98 percent of the replacement was fossil -- additional fossil fuel generation with a small amount of additional conservation, and a small amount of additional renewables.

JUDGE WARDWELL: And do you remember what

that number was for the small --

MR. HARRISON: It added up to 2 percent, because the 98 --

JUDGE WARDWELL: Percent of 2100?

MR. HARRISON: Yes, 98 percent. We have a chart which we could refer for you to if you'd like, but that approximately 98 percent was additional fossil fuel generation, and the other 2 percent was a combination of energy conservation and renewables.

JUDGE WARDWELL: You didn't break that down between renewables and --

MR. HARRISON: We did, and I could probably find that.

JUDGE WARDWELL: Yes, if you know it quickly.

MR. HARRISON: Let's see. It's on page -- well, in our report, let's see. Well, this may be -- on page 38 of our report.

JUDGE WARDWELL: And what's the exhibit number of your report?

MR. HARRISON: That is --

MR. MEEHAN: 481.

JUDGE WARDWELL: I'm sorry, say again.

MR. MEEHAN: 481.

JUDGE WARDWELL: 481. And that page number

is? Do you have a page number for that? I'm sorry.

MR. HARRISON: Excuse me. David Harrison for Entergy. Page 38, and then the replacement generation is on page 39.

JUDGE WARDWELL: Is this the page you're referring to?

MR. HARRISON: That's right.

JUDGE WARDWELL: Okay.

MR. HARRISON: Actually, it's a slightly -- two-part response, actually. It's probably easier to see in this. What this shows is IPEC's generation at least in the modeling is about 16.7 million megawatt hours. These are annual numbers over this period from 2016 to 2025. So, to make up that difference you can see there's a sum of these four factors, one of which is reduced sales. So, you can see the reduced sales represents about .3 million megawatt hours of the total replacement.

Now, you have -- because of the additional line losses and the change in net imports you actually have to add additional increased generation more than the total that you -- that Indian Point represents. This is because the model takes into account the fact that the replacement generation could be in different locations so, therefore, the transmission line losses

change. That's a relatively small effect.

So, you can see that what -- the main point from this is to make the point that conservation is a relatively small part of the response if Indian Point generation were not available. That's point number one.

So, then point number two is well, how much of the replacement generation would be fossil versus non-fossil? And that's what's on the next page. So, if we can just look at this Table 7, so the bottom part of the chart shows the replacement over this period. So, we have these various replacement types, coal, natural gas, oil, nuclear, and renewables. And you can see if you just add up those percentages, the coal and the natural gas represents about, as I said, 98 percent with the oil and the renewables making up the additional 1.5 percent or roughly 2 percent.

JUDGE WARDWELL: And these parameters were used in your ER to arrive at -- and to be used to then estimate what impacts these might have to compare to impacts of --

MR. HARRISON: Well, just to be clear, this is not in the ER. This is in our report that was done responding to New York State. David Harrison for Entergy, excuse me. So, this was in our report, the

NERA report done. So, this --

JUDGE McDADE: And who did the NERA report, N-E-R-A?

MR. HARRISON: Yes. National Economic Research Associates.

JUDGE McDADE: Is that a private entity?

MR. HARRISON: Yes, it is. So, this represents then the generation. And this actually -- the reason that we needed the generation is then we used -- and the modeling also generates estimates of the changes in air emissions.

JUDGE WARDWELL: Now, was this modeling done in response to the initial testimony that was presented here, or was this done as an aid in writing the ER?

MR. HARRISON: No, it was not related to the ER. It was -- we were asked to comment on the New York State testimony. And, as I mentioned, they had --

JUDGE WARDWELL: Mr. Cleary, did you write the ER, or are you familiar with the ER?

MR. CLEARY: Donald Cleary for the Applicant. I'm familiar with the ER, and the way the ER treats conservation is that it takes a position that conservation as a resource does not meet the

primary NRC criterion that a reasonable set of alternatives s should be limited to analysis of a single discrete electric generation source, and only electric generation technologies that are technically feasible and commercially viable.

I would point out that Entergy does not have -- relative to Indian Point does not have control over conservation. Entergy generates and sells electricity, it does not distribute electricity.

JUDGE WARDWELL: Did you take the same position in regards to the No Action Alternative in your ER?

MR. CLEARY: Yes, I believe so.

JUDGE WARDWELL: Staff, what did you consider in regards to conservation in the No Action Alternative, assessing the difference between baseline and the No Action Alternative?

MR. STUYVENBERG: Well, Your Honor -- this is Drew Stuyvenberg for the NRC Staff. We considered that energy conservation, energy efficiency were a possible consequence of no action. And we analyzed energy conservation and energy efficiency as a standalone alternative to license renewal, as well as indicating that it could be a consequence. So, we addressed what we thought would be the impacts from

that. We'd also said it could be a consequence of no action. So, I think we tried to cover it in two different ways.

JUDGE WARDWELL: So, did you use the information to perform that analysis from the ER, or did you generate your own numbers in that regard?

MR. STUYVENBERG: In that regard we relied fairly heavily on information supplied by New York State about the state-specific viability of energy conservation and energy efficiency, including but not limited to its comments on the 2009 -- sorry, 2008 Draft SEIS. New York State's comments were filed in 2009 along with other New York State specific information to which they'd either referred, or to which the Staff had become aware.

JUDGE WARDWELL: In order to get our hands around the magnitude of the amount of conservation that you did consider in this, is there some parameter that you could say to us that would be meaningful that -- a number that might say oh, this is how they -- the degree to which they evaluated energy, I mean, conservation?

MR. STUYVENBERG: We considered it as though it could replace the entire facility, so that it would have offset the entire 2,158 megawatts. We

didn't limit it. Part of the reason for that is that getting into an analysis of the specific need for power would have been outside of what our regulations require, so once we felt that we had sufficient information to consider it as viable and based on, again, the large amount of information submitted to us we decided to simply consider it.

JUDGE WARDWELL: Okay, thank you. And your results are tabulated in Section 8, again, of the FEIS.

MR. STUYVENBERG: That's correct.

JUDGE WARDWELL: FSEIS. I promised you I'd be back.

MR. SCHLISSEL: Thank you.

JUDGE WARDWELL: I wanted to get through that, though.

MR. SCHLISSEL: Okay. Could we go back one page that's on the display.

JUDGE McDADE: And this is Mr. Steven --

MR. SCHLISSEL: David Schlissel.

JUDGE McDADE: Okay.

MR. SCHLISSEL: The 0.3 million megawatt hours of reduced sales are from what Dr. Harrison described as price induced conservation. Price goes up, people use less, price elasticity. What is not

done in NEMS and what DOE did not do in NEMS, and since the company has indicated -- I'm sorry, Entergy has indicated that they just took -- the only change they made was to take out Indian Point, is that in NEMS there's no assumption that there are further -- future programs on energy efficiency, or that energy efficiency is available as a resource. In typical integrated resource planning that looks at supply side and demand side, you give a price to different blocks of energy efficiency, and it's taken by the model or by the analysis, depending on the prices compared to other alternatives. That wasn't done in this analysis. That's why you see such a small amount of reduced sales.

Again, I have no dispute with the fact that the sales would be that -- the price induced conservation might be very small, but you can't say that there's not economic energy efficiency out there based on this analysis. This analysis didn't determine whether energy efficiency would be cheaper than continuing to operate those dirty old plants that continue to operate in Entergy's No Action Alternative.

JUDGE WARDWELL: Thank you. On page 90 of Entergy's 479 exhibit, and can we pull that up, Figure

6. And this is a question for Entergy. I was curious on what evidence is there that the relationship between subsidy and quantity of renewables in your line as shown here?

MR. HARRISON: David Harrison for Entergy. This -- by linear you mean it doesn't have a particular different slope over the course of the line. This was just meant to be illustrative.

JUDGE WARDWELL: But your analysis used these variations, didn't they, in some fashion, or did they not?

MR. HARRISON: No, it didn't. Really just to be very clear, this conceptual analysis we have here had nothing to do -- was not related to the empirical analysis that we did.

JUDGE WARDWELL: No, I'm aware of that, but I thought you had referred to this diagram in regards to demonstrating statements saying that either the incremental supply will be less as you get further along in the amount of quantity that you're trying to achieve or something like that.

MR. HARRISON: Yes. David Harrison for Entergy. Yes, I was saying that if you look at it conceptually as Mr. Meehan pointed out, if you look at the results from the New York State auctions, it does

look as though the price is going up. I know a study that was done in Massachusetts, for example, shows this increasing marginal cost of as you add more renewables. For one reason or another the less desirable sites get already used and so forth. But this was based -- this was really, again, just responding to what we viewed as a limitation of the New York State analysis by not considering not just these factors, but what the implications of these factors would be for the likely replacement generation. But this was not related, as we've said before, to the empirical analysis.

JUDGE WARDWELL: But you did use it in an argument to reach a conclusion of some fashion. I just don't remember exactly what it was.

MR. HARRISON: Yes. Our conclusion was that if you thought that the baseline should include more renewables, that perhaps counterintuitively that would make it less likely that you would have renewables to replace Indian Point just because you would be then having to select renewables that were more expensive. It's a little bit -- we recognize that that's a sort of counterintuitive result, and we're trying to use th is diagram just to illustrate the intuition behind our conclusion.

JUDGE WARDWELL: And you would agree that that intuition relies on the linear relationship that you assumed on this diagram.

MR. HARRISON: It just relies on the fact that it's going up, whether it's linear or non-linear. It does rely on the fact that it's increasing as you add more renewables. Whether it's linear or goes off, tails off one way or the other is not -- but it doesþ-

JUDGE WARDWELL: It could be an exponential function, and you --

MR. HARRISON: In which case --

JUDGE WARDWELL: -- the exponential function.

MR. HARRISON: In which case, if it was exponential then this conclusion would be even more þ-- would even be stronger.

JUDGE WARDWELL: Unless it was exponential the other -- anyhow.

(Simultaneous speech.)

JUDGE WARDWELL: I'm not going to spend any more time but that's based on the linear assumption made here.

MR. HARRISON: Yes.

JUDGE WARDWELL: Thank you. Staff, it might worthwhile if you could under the -- just talking

about the No Action Alternative some more to clarify better in my mind, what is the difference between alternatives evaluated as options to the proposed action here in this case license renewal, and that's generally in Chapter 4, is it, of the --

MR. STUYVENBERG: Chapter 8, Your Honor.

JUDGE WARDWELL: Sorry?

MR. STUYVENBERG: Alternatives are generally addressed in Chapter 8, Your Honor.

JUDGE WARDWELL: Oh, so with the No Action, the alternatives and the No Actions are together under Chapter 8?

MR. STUYVENBERG: That's correct. All of the alternatives other than the proposed action are considered in Chapter 8.

JUDGE WARDWELL: So, the difference between alternatives evaluated as options to the proposed action and those alternative options evaluated under the No Action Alternative itself, because you do handle them differently. Is that correct?

MR. STUYVENBERG: Let me try to explain how this works. One of the challenges that Staff had in initially putting together the rule -- and I have to apologize, I wasn't present at NRC when they were putting together the rule, so I can only look back to

evidence like Statements of Consideration for determining that information. Was the tension between NRC which has to evaluate environmental impacts and other entities that do things like energy planning, or energy system maintenance, energy projection, so initially the Staff had proposed that all alternatives would only be considered as consequences of the No Action Alternative, because NRC's decision was only whether to renew a license or not renew a license.

The Staff received what appears to be a fairly significant number of comments, or at least a fairly strong viewpoint from a number of participants, including New York State, the Council on Environmental Quality, and some other groups, so certainly some organizations that had some interest in how this presentation worked. And to say that the Staff should present energy alternatives as alternatives per se rather than simply as consequences of the No Action Alternative. So, a side effect of that presentation is that we don't -- we present the consequences of those alternatives within the No Action Alternative, but mention within the No Action Alternative, we indicate that those other alternatives we've considered can also then be consequences of No Action.

So, what we look at directly under No

Action is plant shut down. After that happens, any number of things could potentially take its place. All of the alternatives that we have considered in depth could conceivably, in our view, take its place. Now, there are some alternatives that we've excluded from in depth consideration because either some kind of resource limitation, because it's not commercially viable, because it's not technologically feasible, there are a variety of reasons to exclude something from detailed consideration. But of those alternatives we considered in a detailed way, we've indicated that any of those certainly could be consequences. It's also possible that some alternatives that maybe we've excluded from direct consideration could also end up as consequences of No Action. It's part of the reason that Staff retained a fairly lengthy consideration of coal-fired power in the alternatives considered but dismissed section. We wanted to be sure we had some coverage for that particular issue.

No Action is particularly challenging for the Agency since we don't make any determinations about what happens in the case of No Action. So, we look to cover a range of alternatives that could potentially occur in the case of No Action.

JUDGE WARDWELL: Thank you. I think that

was helpful.

MR. STUYVENBERG: Okay.

JUDGE WARDWELL: So, let me fix that point, if I might. In your testimony, 133 on page 20, answer 20 you state that the GEIS states, "The NRC has determined that a reasonable set of alternatives should be limited to analysis of single discrete electrical generation sources, and only generation sources that are technically feasible and commercially viable." That's what you state in talking about that.

But if I heard you correctly, you did not hold to that requirement under the No Action Alternative. So, would you agree that this limitation doesn't exist for the No Action Alternative, because the impacts of No Action would have to be based on some conditions after the plant shut down?

MR. STUYVENBERG: I would say, Your Honor, that we -- in the alternatives we considered we didn't rigidly adhere to that because of comments we received on the EIS. So, it's not just about the No Action Alternative, it's about the alternatives we considered to the proposed action. And because we didn't -- the way in which we addressed those other alternatives, for example, conservation and energy efficiency which is not a generation option, but one that the GEIS

deals with, anyway, so there's some tension about how specifically to address that. In this case we chose to address it conservatively and include it.

In terms of the combination, certainly we received a large number of comments suggesting that we should look at some combinations. So, the Staff considered those as alternatives to the proposed action, and also indicated that those could be consequences of No Action. I'm sorry, does that answer the question?

JUDGE WARDWELL: Let me rephrase it, as I think I heard it. And that is that you didn't hold to this requirement for either the alternative section or the No Action Alternative section. Is that correct?

MR. STUYVENBERG: That's correct, we didn't rigidly hold to this requirement.

JUDGE WARDWELL: Is this the first time that has ever happened in an EIS, to your knowledge?

MR. STUYVENBERG: No, Your Honor. If we go back through the program I've seen many EISs that at the very minimum will address a combination of alternatives. And I think quite frequently those combinations are formulated in a way that they're responsive to public input, or other groups' inputs to the EIS process.

JUDGE WARDWELL: Thank you. I shan't ask any more questions in this area.

MR. STUYVENBERG: Thank you, Your Honor.

JUDGE WARDWELL: Kind of last group of questioning I've got. Where are we at?

JUDGE McDADE: You want to take a 5 to 10 minute break before you get --

JUDGE WARDWELL: Yes, I'm at a good point because then all I've got is probably about a half hour. I want to spend a little on the NEMS model, and then that's it for me.

JUDGE McDADE: Why don't we take about a 10-minute break before we get into the next. It's now 2:45 so we'll come back at 5 minutes of 3:00.

(Whereupon, the proceedings went off the record at 2:48 p.m., and went back on the record at 3:00 p.m.)

JUDGE McDADE: We seem to be in a festive mood as we've turned third base. The hearing will come to order. Judge Wardwell.

JUDGE WARDWELL: Looking at New York 437, that's your rebuttal isn't it, I believe? Is it 437?

MR. SCHLISSEL: Let me make sure. Yes, it is.

JUDGE WARDWELL: You make a statement on

page two that NEMS is traditionally used to model the effect of proposed policy changes or alternatives. I've never seen it used as Entergy witnesses use here, to model the retirement of one or two specific generating units.

Is that really the question? Isn't what's important here is what did the staff do in its EIS, regardless of the NEMS?

MR. SCHLISSEL: I think that's for you to decide, with all respect. You may decide that the --

JUDGE WARDWELL: That's your contention, isn't it? Your contention is that there's an inadequate EIS here, that they haven't looked at the no action alternative?

MR. SCHLISSEL: That's correct, and nothing that the NERA witnesses did, their testimony report, causes us to change that conclusion.

JUDGE WARDWELL: Staff, to what degree did you use the results of the NEMS modeling in your EIS?

MR. SCHLISSEL: Not at all, Your Honor.

JUDGE WARDWELL: So all these questions I've got lined up here on the alternative models and everything else, we really don't need to cover, I don't believe? I think I'm done.

JUDGE McDADE: Sounds good to me. Judge

Kennedy?

JUDGE KENNEDY: I have no further questions.

JUDGE McDADE: We were further around third base than I thought. Entergy, do you wish to have the opportunity to interrogate any of these witnesses?

MR. TENPAS: Yes. We'd focus on certain redirect at our own witnesses, Your Honor.

JUDGE McDADE: New York?

MR. SIPOS: Possibly briefly.

JUDGE McDADE: The staff?

MS. MIZUNO: Yes, Your Honor.

JUDGE McDADE: Entergy, go ahead.

MR. TENPAS: Thank you, Your Honor. First by way of baseline, Mr. Meehan or Dr. Harrison, there was a moment in the testimony where some numbers were cast about. I think they were in the nature of 141, 143 and 160. My recollection was that we maybe went between millions and thousands of different units of measure.

So just to set in one place those, does either of you recall that discussion?

MR. MEEHAN: Yes, I do.

MR. TENPAS: Okay, and that was Mr.

Meehan.

MR. MEEHAN: Yes. I'm Mr. Meehan for staff.

MR. TENPAS: Just to get it in one place, could you go through those numbers again, keeping a common unit of measurement and associate them with the different items?

MR. MEEHAN: Sure. Since I think I was guilty of changing the unit there, but Dr. Harrison pointed out that the NEMS model has a forecast for 2015 of the electric sales of 143 million megawatt hours, and that the state goal under 15 by 15 is 14 million megawatt hours.

I think I had said that the comparable numbers used by the NYISO, the New York ISO, which does forecasts every year of what the sales will be, or they send out, was 160,000 gigawatt hours.

But to put that in a common term, the actual number on the same basis, on a sale basis, not a generation basis, the NYISO would be forecasting sales of about 156 million megawatt hours.

So roughly 15 million megawatt hours more than the 15 by 15 objective, which reflects NYISO's view of the progress being made towards that objective, and roughly 13 million megawatt hours more

than the NEMS model uses as its base.

MR. TENPAS: Thank you. Now as to the energy efficiency component of that New York program, Mr. Meehan, are you familiar with where New York stands at this point in achieving that, of meeting its objectives?

MR. MEEHAN: I am generally familiar with that, and particularly I'm familiar with the New York ISO's assessment, who assessed that based upon staff reports.

I believe the assessment of the New York ISO, obviously they only see them as half meeting the objective, because they don't see the forecast by 2015 getting down to that point, and I believe that the New York ISO sees taking until 2022, until that 15 percent energy efficiency goal could be met.

Which is one of the reasons why we're very skeptical that you could add additional energy efficiency on top of it, to replace Indian Point's generation, if you're already not making quick progress towards meeting the current goal, and having difficulty spending some of the money that has been authorized.

MR. TENPAS: Now in executing that program, are there some funds made available to a

state agency or such, to help promote or cause the carrying out of energy efficiency programs?

MR. MEEHAN: Yes. There's funds made available to the utilities and to the state agencies. Both receive about $180 million per year.

MR. TENPAS: Do you know, are those funds being fully expended at this point?

MR. MEEHAN: I do not believe those funds are being fully expended.

MR. TENPAS: And is there a generalized explanation for that?

MR. MEEHAN: Well, it would just be difficulty finding the programs.

MR. TENPAS: Again, just by way of quick clean-up, there may have been a moment when somebody referred to Indian Point as ten percent of New York City. That may have been Mr. Harrison. In case that was the case, is any clarification required as to the ten percent figure?

DR. HARRISON: Yes. This is David Harrison for Entergy. I may have misspoke. What I meant to say was that Indian Point generation represented about ten percent of New York State generation.

MR. TENPAS: And so I hate to do this to

you, Doctor. I know you had to go through a lot of things. There may have been a moment where you indicated as to certain wind, that the less desirable locations and projects have been identified. If you did say that, would that have been your intention?

DR. HARRISON: I don't recall, but if I did, no. What I meant to say was that the early -- the more desirable locations would be used first.

MR. TENPAS: And again, what would be the implications of that, in terms of your analysis?

DR. HARRISON: Well, the implication would be that the more desirable are relatively low cost. So as you have more and more wind resources, you'd use less desirable, and therefore higher costs.

MR. TENPAS: Thank you. Can one of the Entergy witnesses talk about demand response, what it is and how it fits or doesn't fit in your analysis, as you think through consequences of Indian Point not being relicensed?

MR. MEEHAN: Sure. Demand response is distinct from energy efficiency. This is Gene Meehan for Entergy, and demand response is different than energy efficiency. It's programs that generally qualify in the New York ISO markets, to receive either capacity payments or energy payments, and to cut their

usage at times of very high peaks.

So after the, all resources have been expended, when there's no more capacity, the NYISO will call upon demand response programs. So they are peaking programs, intended primarily for use during the very high load summer hours, not many hours per year, and they would in that way not make a material contribution to the replacement of Indian Point generation.

MR. TENPAS: Thank you. There were a number of questions in which there was a discussion about well, if a certain -- assume hypothetically that a certain unit would be, come in as a replacement in 2015, if Indian Point is not relicensed, and then sort of positing that the same unit or same set of generation resources would come in, say, in 2035, if that were the time of relicensing.

From your perspective, would it be sensible to make that assumption, that the mix or the units that might come in 2015 are likely to be the same, and so it's simply a matter of delaying impacts, rather than potentially changing them?

DR. HARRISON: This is David Harrison for Entergy. No, it's a good point. I mean if we think about just two hypothetical situations, one in 2015,

one is 2035, it is true that market conditions would be different in those two periods.

So it's why, if you were doing that you'd be doing -- you'd do another set of runs, another set of market models, to estimate what those replacement resources might be in 2035, versus 2015.

MR. TENPAS: Mr. Meehan, have you -- are you aware of any documents where any entities in the State of New York have recently reviewed potential new gas-fired generation and thought about whether that, an alternative to that would be renewables or some of the things that have been discussed here?

MR. MEEHAN: Yes.

MR. TENPAS: And can you identify what you have in mind?

MR. MEEHAN: One would be an exhibit in this proceeding. I believe it's Exhibit 444. I believe it's the State's exhibit, and that is the sheet rock for the Cricket Valley Energy Center, which I described in there as a thousand megawatt gas plant. I don't know --

MR. TENPAS: Can I request that the Clerk bring up New York State 444, and go to PDF page 29 to begin with?

(Pause.)

MR. TENPAS: Is this the document you had in mind?

MR. MEEHAN: This is the document I had in mind. The facility is described as a base load generation facility, and this is the SEQR that the New York Department of Environmental Conservation issued as the lead agency, and it's a final document and action of the State.

In discussing its alternatives, if we could blow up that demand side management alternative to start with. This essentially is what we've been calling here energy efficiency or energy efficiency programs, and it makes the point that a DSM was considered.

But I think it makes the same point we've tried to make, that while DSM has the potential to reduce energy consumption and optimize patterns of electricity through efficiency improvements, it does not replace base load electrical generating capacity that the project would supply.

That project in this place being the Cricket Valley Energy Center, but same of course would apply to Indian Point. But it also goes on to note that the project that is based on generation facility doesn't preclude DSM programs that are economic from

still being implemented at the state or local level.

So this was an official action of New York, in its review of the alternatives to a base load project. We also, I think if we scroll down, I'm not sure if it's down or up, but there's a statement on renewables.

MR. TENPAS: I think you may need to go in the other direction.

MR. MEEHAN: You may need to go in the other direction, I'm sorry. If we could go down, it's under the Alternative section.

MR. TENPAS: The bottom of PDF 29, I believe. I draw your attention, if the Clerk could highlight, the Alternate Electric Generation Technologies, one paragraph down from where you are, and perhaps scroll up a bit. The first paragraph is not, I think the paragraph. I'm sorry, scroll down.

MR. MEEHAN: Right. It notes that "Alternate generation technologies, including renewable energy, were looked at, and that wind and solar alternatives were not considered further for two reasons." They didn't meet the purpose to supply 1,000 megawatts of base load power.

Additionally, I think, as we talked about this morning, 6,000 megawatts required to replace

Indian Point, you'd probably need 3,000 megawatts of wind here to replace the 1,000 megawatts of Cricket Valley, and that would take thousands of acres of land, as this report points out.

MR. TENPAS: Thank you.

MR. MEEHAN: But not a report, I'm sorry. It's this final SEQR.

MR. TENPAS: Thank you. Now there was some discussion of combined heat and power as a possible emerging source of electricity in future years.

Just generally do you, based on your experience, have any observations and view on the likelihood of that as a likely scenario, by which new electricity would be produced?

MR. MEEHAN: My view is that it's not likely that there could be a material amount of generation coming from combined heat and power. That would be material to the amount that Indian Point generates, really for three reasons.

First, the general type of -- if you're talking about combined heat and power onsite, they're small installations that don't really have economies of scale, and have to be retrofitted into buildings, and they just haven't been developed to any

significant degree in New York.

So there's no -- or anywhere else in the country that I'm aware of. They are used quite widely in Europe. But it's hard to imagine what would cause that to change and why they would be developed.

The second type of heat and power would be like the steam systems, like the Con Edison steam system. But you have to go the whole pipe infrastructure for that in just maintaining that system is a challenge. A lot of utilities that had those systems have closed them down.

And then third would be like the large process co-generation facilities, like the refineries that Mr. Schlissel had talked about earlier, and combined cogeneration is already pretty widely used at those facilities, and you know, over several thousand megawatts were developed in New York in the late 80's or 90's.

So that potential would be pretty much exhausted. So I don't think combined heat and power would be a realistic alternative.

MR. TENPAS: Do you know whether NEMS includes new resources from combined heat and power as one of the kinds of generation that might emerge?

MR. MEEHAN: I believe it does. I'm not

sure the extent to which it represents that as an alternative, though.

MR. TENPAS: And let me turn to one other, I guess, area. Dr. Harrison, Mr. Schlissel made the observation that markets are dynamic, and that one doesn't think so much in terms of a one for one replacement, but how a system would respond. I mean generally, do you agree with that, disagree? How do you view that?

DR. HARRISON: David Harrison for Entergy. Yes, no, and what we were emphasizing the importance of markets, you know, getting beyond the possibility of "coulds," to looking at the "woulds," and therefore running, looking at what the market would likely generate, what would likely result if Indian Point generation were not available.

So yes, I would, as we have done, tried to determine what the implications of the market conditions would be, for replacement generation.

MR. TENPAS: Now with respect to wind, could one of those, you know, dynamisms potentially be technological change, in terms of winds, the cost factors that go into wind?

DR. HARRISON: Yes, that's right. I mean the NEMS model, the researchers at the Department of

Energy spend a lot of their time looking at the details of the NEMS model, and the detailed assumptions, and they do have these very detailed cost curves that they developed for different technologies, including wind.

So those do take into account how the different cost components could, not just for wind, but for all the technologies, change over time. And they do, and part of the modeling results that we did incorporate those changes in cost factors over time.

MR. TENPAS: And Mr. Meehan, beyond what the NEMS model incorporates, can you comment generally on sort of the notion that wind is nascent and therefore there are significant likely advances in the cost factors related to wind?

MR. MEEHAN: Sure. I think that there has been a lot of wind capacity that has been developed, and a lot of technical progress. But the NEMS model for all technologies, wind, solar and natural gas combined cycle, does factor in declining costs, and does factor in expected improvements as the EIA sees the technology's level of maturity and ability to improve.

I believe the wind improvement factor is sort of similar to the gas improvement factor,

reflecting the level of maturity of the technology. But it is in the model.

MR. TENPAS: Okay, and who's judgment is that? Was that your judgment or how does that factor get into the model?

MR. MEEHAN: No. That comes from the Department of Energy's Energy Information Administration, the people who put together that model and that report.

MR. TENPAS: If I could ask the Clerk to call up New York, I'm sorry, Entergy 481, and if we could go to PDF 11?

(Pause.)

MR. TENPAS: If you could move down to the section on overall conclusions. Thank you. Dr. Harrison, do you recognize this as another portion of the report that you prepared?

DR. HARRISON: David Harrison for Entergy. Yes, I do.

MR. TENPAS: Okay. Now you did an analysis that, based on markets, as to what you imagine would happen or will happen, not might. Is that fair?

DR. HARRISON: David Harrison for Entergy. Yes, that's correct.

MR. TENPAS: Okay, and in addition to simply reporting those results, did you then do any analysis or describe any conclusions about how that result matched or failed to match the kind of scenarios that were laid out in the FSEIS as the basis for its assessment of environmental impacts?

DR. HARRISON: Yes, yes we did.

MR. TENPAS: Okay. Is that reflected in where we're looking at here?

DR. HARRISON: Yes. David Harrison for Entergy. Yes, it is.

MR. TENPAS: Okay. Could you just point the, or direct the panel to, the section you're interested in, and quickly go through that?

DR. HARRISON: Well, this has to do -- this is the final section of -- David Harrison for Entergy.

This is the final section of the executive summary. So this is sort of the overall conclusion. I guess what we're doing, we're responding to the basic argument that was put forth by the New York State witnesses, that the FSEIS was inadequate for not considering renewables and energy efficiency as a major likely replacement for the generation from Indian Point.

So that really motivated our analysis, to look at that proposition. So what we found was that in fact, the likely replacement would not be energy efficiency, additional energy efficiency and conservation, but additional fossil fuel generation.

So that allowed us to answer the question, how do the various alternatives that were evaluated in the FSEIS stack up? Are they a reasonable set of alternatives. So our overall conclusion is that their analysis demonstrates that the range of scenarios considered in the FSEIS was sufficient.

That's probably the major conclusion, in a way. What we're saying is that there really is no argument for deciding that FSEIS is not sufficient to look at various alternatives, because it hasn't assumed that all of the replacement generation would come from energy efficiency renewables.

Quite the contrary. We go on to point out that in fact it's probably conservative, in the sense that our analysis suggests that the environmental effects would probably be, would be greater than the ones that were assumed in most of the scenarios that the staff used and developed in the FSEIS.

MR. TENPAS: Right. To the degree the FSEIS has thought about having established some

bounding scenarios to look at, and then looks at, based on your analysis and looking at the FSEIS and the results of all that you talked about and looked at, the NEMS and other points, in your view, does the FSEIS present a reasonable bounding analysis?

DR. HARRISON: That's right. That was our conclusion, that the range of alternatives that were presented in the FSEIS was reasonable.

MR. TENPAS: That's all. Thank you, Your Honor.

JUDGE McDADE: Mr. Sipos?

MR. SIPOS: Thank you, Your Honor. John Sipos for the State of New York. Mr. Wilkie, would you please call up Entergy Exhibit 000479, and specifically page 43, Figure 1?

(Pause.)

MR. SIPOS: Thank you. Dr. Harrison, the two power reactors, Indian Point Unit 2 and Indian Point Unit 3, they're located in Zone H; correct?

DR. HARRISON: Yes, that's correct.

MR. SIPOS: And that's outside of New York City; correct?

DR. HARRISON: Yes, it is.

MR. SIPOS: And it's also outside of Long Island; correct?

DR. HARRISON: David Harrison for Entergy. Yes, that's correct.

MR. SIPOS: Thank you. Now Dr. Harrison, Indian Point Unit 2 and Indian Point Unit 3, they send power to New Jersey; correct?

DR. HARRISON: David Harrison for Entergy. Well, they provide power to the grid, and where that is, it would come to New Jersey and other areas.

MR. SIPOS: So it does provide power to New Jersey; correct?

DR. HARRISON: David Harrison for Entergy. It's part of the larger energy system, yes.

MR. SIPOS: So the answer is yes? Is that correct, sir?

DR. HARRISON: As I've described it, correct.

MR. SIPOS: So power from Indian Point goes to New Jersey; correct?

MR. TENPAS: Objection, Your Honor.

JUDGE McDADE: I believe the witness has answered.

MR. SIPOS: Your Honor, excuse me. In Dr. Harrison's part of the larger grid, Indian Point Unit 2 and Indian Point Unit 3 also send power to New England; correct?

DR. HARRISON: David Harrison for Entergy. My sense is that it's appropriate to think of this as part of a grid, and that Entergy, that Indian Point generates about 16.3 megawatt hours per year. That Entergy, that Entergy goes, you know, to the system.

MR. SIPOS: And the system includes New England; correct sir?

DR. HARRISON: Well, there are different parts of the system. New York is its own part of the system. There is a New England that is part of a larger system, of which New York and New England are one.

MR. SIPOS: Thank you. Mr. Schlissel, would you agree that Indian Point sends power to New Jersey and New England?

MR. SCHLISSEL: You can't tell where the electrons that are generated at a power plant end up, as I think Dr. Harrison was trying to explain. Some of them could be in North Carolina, some could be in Montana. There's no way to -- there's no tracking.

So what's done is it's kind of like an accounting mechanism, to assume that the electrons from the plant, from any plant like Indian Point, end up in New York. But you really don't know where the individual electrons go. It's an integrated grid, at

least the eastern connection.

So anywhere in the east, they probably -- somebody, when they turn their light on tonight in suburban Chicago, may well have an electron from Indian Point going in there. There's no way to know.

JUDGE McDADE: Okay. There's basically three grids in the United States, one covering most of the eastern United States?

MR. SCHLISSEL: There's an eastern connection, then a western grid, and then Texas is kind of -- it's interconnected a bit, but generally it's off on its own. I think there are two or three connections between Texas and the rest of the country.

JUDGE McDADE: But once Indian Power pumps power into the grid, it could go anywhere within the eastern grid?

MR. SCHLISSEL: That's my understanding electronically, yes. Electrically.

MR. SIPOS: Mr. Wilkie, could we pull up New York Exhibit 000444? And this, I believe, is the CVE or Cricket Valley seeker statement?

(Pause.)

MR. SIPOS: Thank you very much, and this question is for Mr. Schlissel. Does Cricket Valley or CVE have the potential to provide some replacement

power in lieu of Indian Point Unit 2 or Indian Point Unit 3?

MR. SCHLISSEL: Yes. It's not -- I mean it will be -- if the schedule is met, I think it's due to come online in 2015 or 2016. I can't recall the exact date.

MR. SIPOS: And do you know if that was discussed in the FSEIS?

MR. SCHLISSEL: I believe the answer is no. Well, I believe the answer is yes. I do know and I believe it was not discussed.

MR. SIPOS: Thank you, Your Honor. I have no further questions.

JUDGE McDADE: The staff?

MS. MIZUNO: Yes, Your Honor. I have something to clarify. If we could see NRC Exhibit 133, page 20? That is NRC staff's testimony, page 20.

(Pause.)

MS. MIZUNO: There, on page 20 and 21, there is a chart. It goes over two pages.

JUDGE McDADE: Actually, 19 and 20?

MS. MIZUNO: I think that might be correct. I'm sorry, 19 and 20. Thank you.

JUDGE McDADE: And you want the second page of the first of the chart?

MS. MIZUNO: Both pages, but we'll just settle with whatever's on this screen. Mr. Stuyvenberg, have you had a chance to --

JUDGE McDADE: And just for the record, this is the first page, page 19, the top of Table 9.1, dash 1 rather. Please continue.

MS. MIZUNO: Mr. Stuyvenberg, do you recognize this table?

MR. STUYVENBERG: Yes, I do.

MS. MIZUNO: Can you tell, this is the table that was in your testimony, isn't it?

MR. STUYVENBERG: That's correct.

MS. MIZUNO: Can you tell us where you got it?

MR. STUYVENBERG: Yes. It's taken directly from the FSEIS at page 9-9. It's Chapter 9 of the final supplemental environmental impact statement.

MS. MIZUNO: And I think that is New York State Exhibit 133C. Can we have that up please? 133C, New York State.

(Pause.)

MS. MIZUNO: Great, and if you could go to page 117 please? Mr. Stuyvenberg, is that the table that you took from the FSEIS and put in your

testimony?

MR. STUYVENBERG: Yes, and also on the following page.

MS. MIZUNO: There was some talk earlier about combined heat and power plants, and also some talk about combined cycle gas, natural gas plants. Mr. Stuyvenberg, could you explain the relationship, if any, between combined heat and power, I mean yes, and combined cycle natural gas?

MR. STUYVENBERG: Sure. A combined cycle natural gas facility uses two different generators essentially, to produce electrical power. One is a gas turbine unit, and then the waste heat from that, in some cases it may be more than one gas turbine at a given NGCC, or natural gas combined cycle facility.

But waste heat from the turbine stage is sent to a second stage called a heat recovery steam generator, and in that stage, a portion of the waste heat, in some cases a significant portion of the waste heat, it used to boil water, to then drive the steam turbine as well.

What this does is it drastically increases the efficiency of the natural gas facility, and makes use of again, a portion of the waste heat from the gas turbine. In some cases, efficiencies may approach as

much as 60 percent.

Combined heat and power is a notion whereby the waste heat from a power facility is used for another purpose. In many ways, natural gas combined cycle, which is the type of alternative considered, a natural gas alternative considered in the FSEIS, is not unlike a combined heat and power facility, except it uses the heat to produce more electricity, rather than for other purposes.

The remaining heat from the power plant is a lower quality heat than what you would have had if you only had a single turbine cycle.

MS. MIZUNO: And this is the combined heat and power, the last one that you just spoke about, the example that Mr. Schlissel gave about that was what? Do you recall?

MR. STUYVENBERG: If I recall correctly, he had mentioned a coal-fired power plant in Holland, Michigan, and also -- while I'm not intimately familiar with that power plant, my understanding is it's actually a fairly small facility, I think on the order of, all units considered, something like 80 megawatts.

MS. MIZUNO: And how many megawatts does Indian Point produced?

MR. STUYVENBERG: 2,158 megawatts.

MS. MIZUNO: Thanks. So that gives us some idea of the perspective.

MR. STUYVENBERG: Certainly. Also, as concerns size of combined heat and power, I would note that New York State suggested that combined heat and power could make up 100 to 200 megawatts of a combination alternative in its comments on the draft SEIS, which would be somewhere on the order of five to ten percent of Indian Point's capacity. That was New York State Exhibit 134, Adobe page 39 of 62.

MS. MIZUNO: Can you back up a little bit and explain where did this come from? It came from what?

MR. STUYVENBERG: I'm sorry. You mean the 100 to 200 megawatts that I just mentioned?

MS. MIZUNO: Right.

MR. STUYVENBERG: Definitely. That was a set of comments submitted actually by New York State on the draft supplemental environmental impact statement, where they had suggested that the DSEIS should consider combined heat and power.

The combination of alternatives in which they submitted that contained 100 to 200 megawatts of combined heat and power, which again is a relatively

small portion of Indian Point's power.

MS. MIZUNO: And so what did they suggest to make up the difference?

MR. STUYVENBERG: The remainder, they suggested, should be energy efficiency and conservation, and renewable resources.

MS. MIZUNO: And what if anything did the NRC staff do about this comment that they received from New York State?

MR. STUYVENBERG: We chose to consider their Combination 4, which was the other combination they submitted as one of the combinations the staff would consider, because we found it to be rather similar.

But all elements that went towards satisfying the purpose and need for the action, of which combined heat and power provided heat which Indian Point doesn't currently provide.

MS. MIZUNO: I'd like to move to a different area, and this is going to the FSEIS. There was also some testimony earlier about alternatives that were eliminated from discussion.

I'm not sure that the record has a decent cite for that. So I'm going to ask you to pull up, if you would please, New York State Exhibit 133C. I'm

looking for page eight, seven-zero. I'm looking for page seven-zero, 70 please.

(Off record comment.)

MS. MIZUNO: No, that's Adobe page 70. Have you got it? Great. Mr. Stuyvenberg, can you see that?

MR. STUYVENBERG: Yes.

MS. MIZUNO: Can you tell us what that is?

MR. STUYVENBERG: That page contains the beginning of the section in which we address the alternatives that we dismissed from individual consideration.

MS. MIZUNO: And how long does that section run? By my count, it ends on page Adobe 86. Could you please go to that page sir?

MR. STUYVENBERG: Mr. Stuyvenberg, I think it's up on the monitors. Is that the end of the section in the FSEIS that discusses alternatives eliminated from consideration?

MS. MIZUNO: It does appear to be the case.

MR. STUYVENBERG: And you don't just list the alternatives, do you? I mean that's 16 pages. The list can't be 16 pages long.

MS. MIZUNO: That's correct. We provide

in each case a reason for its dismissal.

MR. TURK: And just for the purpose of the record's clarity, Your Honor, may I note that the pages referenced by Ms. Mizuno in the EIS appear as pages 8-43 to 8-59.

JUDGE McDADE: Thank you.

MS. MIZUNO: Mr. Stuyvenberg, earlier in the day, quite a bit earlier in the day, Judge Wardwell asked a question of you about state environmental reviews, and he asked whether you could provide us some information about natural gas facilities. Would you be able to do that?

MR. STUYVENBERG: Yes, and to the extent that the question was about state environmental reviews, I apologize. I believe I may have misunderstood the question. I am somewhat familiar with state statutes that call for environmental review for state level actions.

One of them is New York State's Environmental Quality Review Act, and certainly I think it's already been mentioned here, the Cricket Valley Energy Project has an environmental impact statement that was, that has the State's Department of Environmental Conservation, one of the executive agencies of New York State, as the lead agency, and

they prepared an environmental impact statement for that power plant.

MS. MIZUNO: And the environmental impact statement tracks NRC's practice, in that there is a draft environmental impact statement comments, and then a final environmental impact statement; correct?

MR. STUYVENBERG: Although I'm not intimately familiar with the process, that's how it appears to me.

MS. MIZUNO: My next set of questions are for you, Mr. Schlissel.

MR. SCHLISSEL: Yes ma'am.

MS. MIZUNO: They refer to the Cricket Valley Statement of Environmental Quality Review, the SEQR document. That's New York State Exhibit 444. You are familiar with that document?

MR. SCHLISSEL: Yes ma'am.

MS. MIZUNO: Mr. Schlissel, you have, in your testimony, in your pre-file testimony, criticized the NRC's analysis of conservation, efficiency and demand-side management, didn't you?

MR. SCHLISSEL: I don't know if criticize is the right word. It certainly said we believe there could be more.

MS. MIZUNO: Right. You believe that

conservation efficiency and demand side management should be considered as an alternate to license renewal, do you not?

MR. SCHLISSEL: As part of an alternative, yes ma'am.

MS. MIZUNO: And in fact, the NRC staff did consider conservation efficiency and demand side management as a stand-alone alternative to license renewal, did it not?

MR. SCHLISSEL: Yes, they did.

MS. MIZUNO: All right. None of these provide base load power, do they?

MR. SCHLISSEL: Well, they obviate the need for base load power.

MS. MIZUNO: That's correct, but they do not themselves provide power, do they?

MR. SCHLISSEL: No. They're supply side, not demand side.

MS. MIZUNO: Correct. They don't provide any power at all, base load or otherwise?

MR. SCHLISSEL: I think I've answered that question, and I don't know what else to answer.

JUDGE McDADE: The answer is yes or no?

MR. SCHLISSEL: The answer is yes or no. Do they provide any power? No, they're supply side

measures. They obviate, mitigate, eliminate the need for generation of power.

MS. MIZUNO: In Exhibit New York State 444, if we could have that on the screen please?

(Pause.)

MS. MIZUNO: Oh, I'm sorry. I don't have it.

MR. TURK: Just a minute, Your Honor. We're looking for the exhibit.

MS. MIZUNO: I misplaced them. I thought I had them in front of me, and I moved them. Thank you. I have it now. Oh, I'm sorry.

(Pause.)

MS. MIZUNO: Mr. Schlissel, does the SEQR document discuss demand side management?

MR. SCHLISSEL: I believe it does, as the discussion by one of the Entergy witnesses indicated a few minutes ago.

MS. MIZUNO: And what does it say about demand side management? Do you recall?

MR. SCHLISSEL: It said that it does not displace the base load power from the proposed Cricket Valley facility?

MS. MIZUNO: Right, and as a result, did New York State analyze demand side management as an

alternative to the project?

MR. SCHLISSEL: I don't know. We have to look at the order again.

MS. MIZUNO: If you could go to page 29 of New York State 444? Have we got that up?

MR. SCHLISSEL: It is up.

MS. MIZUNO: Very good. Under the first heading, "Demand Side Management," it states "while DSM has potential to reduce energy consumption and optimize patterns of electricity usage through efficiency improvements, it would not replace the base load electrical generating capacity that the project would supply." Have I correctly read that section?

MR. SCHLISSEL: Yes, you've read correctly.

MS. MIZUNO: All right, and yet you testified that these conservation, efficiency and demand side management should be considered as an alternative; correct?

MR. SCHLISSEL: That's correct. As part of a portfolio of measures not on its own. I don't know whether in Cricket Valley they just, they used the word "was considered." I don't know how they considered it, what they considered it? Was it a loan? Was it in tandem with other measures? I mean -

-

MS. MIZUNO: Would it be helpful to look at the Cricket Valley draft environmental impact statement? We have that in as an exhibit. It is NRC 166. Could we have that on the screen please?

JUDGE McDADE: If the witness is just going to be asked what it says, we've already got that in the record, and you can argue from it. Do you want to ask questions about his interpretation of it as well?

MS. MIZUNO: Well, I would like to ask him. No, Your Honor, that's fine.

On the need for power issue, or rather on determining what alternatives to consider, Mr. Schlissel in your testimony, which is New York State 46 at Adobe page 12 and actually at page 12, would it be fair to say that you criticized the NRC staff's analysis of alternatives, because its analysis starts with the assumption that the alternative that should be considered should produce an equal amount of power as Indian Point, isn't that correct?

MR. SCHLISSEL: I recall saying that. I can't find it on page 12. But I do recall saying that.

MS. MIZUNO: You disagreed with the NRC

staff's approach in that regard; correct?

MR. SCHLISSEL: Well, give me a moment to see the context.

MS. MIZUNO: Certainly.

MR. SCHLISSEL: It's in my direct testimony?

MS. MIZUNO: Yes, I believe so.

MR. SCHLISSEL: Page 12.

(Witness reviewing document.)

MR. SCHLISSEL: I'm sorry. I don't see this statement. Maybe I'm missing it, because it's late in the day.

MS. MIZUNO: Or I might have written it down incorrectly. Hold on. I'm sorry. I need to find the right page, Your Honor.

JUDGE McDADE: But rather than focusing on what he said in his direct testimony, why not just ask him a question now about his view, as opposed to what the staff's view is?

MS. MIZUNO: Yes. You would factor into your analysis a decreased need for power, would you not? And thus you would consider alternatives that produce less power than Indian Point. Is that a fair characterization?

MR. SCHLISSEL: I think so. The way I

would say it is that I would factor in conservation, and therefore would need to generate less power at other supply side alternatives.

MS. MIZUNO: Could we have Cricket Valley's DEIS, which is NRC 166 up, and this time I do have the right page? It's page five. In the document itself, it is page 7-3.

(Pause.)

JUDGE McDADE: Do you want us to call up NRC Exhibit 166?

MS. MIZUNO: Yes, and Adobe page 5. I think we can kill two birds with one stone. Have we got it up?

JUDGE McDADE: Not yet.

MS. MIZUNO: Okay, thank you.

(Pause.)

MS. MIZUNO: We're at Adobe page five? Right. There's a paragraph that starts "Under the no action alternative," the first full paragraph of this page. Do you see that, Mr. Schlissel?

MR. SCHLISSEL: Yes.

MS. MIZUNO: All right, and it was -- just to get back to where we were, because we had a little bit of time in between, you did state that you thought that an appropriate analysis would consider

alternatives that also, that produced less power than Indian Point, taking into account conservation and energy efficiency; is that correct?

MR. SCHLISSEL: Yes.

MS. MIZUNO: All right. So would you read the last sentence of that first full paragraph? It starts with the words "without."

MR. SCHLISSEL: You want me to read it out loud?

MS. MIZUNO: Yes sir, please.

MR. SCHLISSEL: "Without the project or a similar new facility developed elsewhere within the region, the electrical output of the project would likely need to be met through continued increased reliance on older, less efficient and higher emitting sources."

MS. MIZUNO: I'm sorry. I have the wrong cite. Try the first sentence on that page, please. First sentence.

MR. SCHLISSEL: "Under the no action alternative, the electrical generating capacity of the project would need to be met through construction of additional generation capacity elsewhere."

MS. MIZUNO: And if you could go on, please.

MR. SCHLISSEL: "As described in Section 7.4, development of a comparable facility at another location with adequate access to natural gas supply and the bulk transmission system (i.e., with minimal offsite disturbance), and adequate buffer from other land uses, would likely necessitate the use of a greenfield site, instead of an inactive industrial site."

MS. MIZUNO: So thus in Cricket Valley, New York rejected the demand side management -- sorry. Rejected the no action alternative, on the grounds that it was looking at -- New York State was looking for an alternative, in the same way that the NRC was, looking for one that would provide the same amount of power; isn't that correct?

MR. SIPOS: Objection, Your Honor.

JUDGE McDADE: Sustained.

MS. MIZUNO: In the Cricket Valley draft environmental impact statement, did New York State require an analysis of an alternative that provided the same amount of power as the project?

MR. SIPOS: Objection, Your Honor.

JUDGE McDADE: Sustained.

MS. MIZUNO: In the Cricket Valley --

JUDGE McDADE: You can ask him any

conclusions that the would draw or whether this would change conclusions that he has reached.

MS. MIZUNO: Yes, Your Honor.

JUDGE McDADE: But not to speculate as to what New York State did or why.

MS. MIZUNO: Yes, Your Honor. What is your view of New York State's approach in the Cricket Valley draft environmental impact statement, as compared to the NRC's final supplemental environmental impact statement?

MR. SIPOS: Objection.

MS. MIZUNO: I've asked for his --

JUDGE McDADE: Excuse me. All you do is ask a question.

MR. SIPOS: Objection, Your Honor.

JUDGE McDADE: This objection's overruled.

MS. MIZUNO: Would you please answer?

JUDGE McDADE: You can answer the question.

MS. MIZUNO: How would you compare them?

MR. SCHLISSEL: I can answer the question as follows. I've not read through all of the DEIS and the final EIS.

What I looked at with regards to Cricket Valley was they put in a modeling analysis using the

GE Maps model, which compared the generation cost and emissions, without Cricket Valley and with Cricket Valley, and they concluded that what they said in the last sentence, which was the first one you had me read, that they'd have to rely on older and less efficient power plants.

Now I have -- I'm not doubting that conclusion. I would just say that when I went back and looked at the basis for it, their modeling didn't assume anything about the New York State 45 by 15 plant. It wasn't even included in it.

So I can't really draw any conclusions about the results of their modeling, and that leads me -- basically, I don't know how to answer your question, other than that way.

MS. MIZUNO: But in the DEIS for Cricket Valley, New York State said --

JUDGE McDADE: Okay. I'm going to cut this off right now. This person didn't write the DEIS for Cricket Valley. He isn't proffering it as an example. If there's something about it that his expertise can help us understand or interpret, you can go ahead there. But it's not a situation of asking him just simply to critique it or adopt it.

MS. MIZUNO: Yes, Your Honor. I

understand. Do you have any questions?

MR. TURK: Your Honor, Sherwin Turk. I have a few additional questions. Virtually all of them will be redirect towards Mr. Stuyvenberg, with your permission.

Mr. Stuyvenberg, you mention on page three of your testimony, which is NRC Exhibit 133, that you manage the environmental review for the Indian Point Units 2 and 3 license renewal process; correct?

MR. STUYVENBERG: Yes. I managed that process from early in 2008 through late in 2011.

MR. TURK: And as part of that role, you were involved in preparation of both the draft EIS and the final EIS?

MR. STUYVENBERG: Yes, Volumes 1 through 3 of the final EIS.

MR. TURK: Do you recall when the draft EIS was published?

MR. STUYVENBERG: In December of 2008.

MR. TURK: And for the record, I believe that is New York Exhibit 132; correct?

MR. STUYVENBERG: I'll trust you.

MR. TURK: Thank you, and then following publication of the draft EIS, did the staff invite comments from the public and interested governmental

agencies on the draft EIS?

MR. STUYVENBERG: Yes.

MR. TURK: And did the staff in fact receive comments on the draft EIS?

MR. STUYVENBERG: We received comments on it, that's correct, many of them.

MR. TURK: Many comments?

MR. STUYVENBERG: Many comments.

MR. TURK: Would you say that there was an extensive amount of comments?

MR. STUYVENBERG: I believe it is the single largest number of comments that we've received on a license renewal EIS to date.

MR. TURK: Did the staff reproduce those comments in the final EIS?

MR. STUYVENBERG: We did, that's correct.

MR. TURK: And where would we go to see those comments in New York Exhibit 133, which is the final SEIS?

MR. STUYVENBERG: Well, I don't recall how it breaks down across the lettered portions of New York State 133. I can tell you it's in Appendix A, and the comments are specifically contained in Volume 2 and a portion of Volume 3.

MR. TURK: Your Honor, for the record, may

I just note that New York Exhibit 133C begins at 5-10 of the FSEIS, and goes to page A as in Alpha-23. New York 133 begins at A-24 --

JUDGE McDADE: 133D?

MR. TURK: New York 133D picks up at A-24 and continues to A-174. New York 133E picks up at A-175, continues to A-453. New York 133F picks up at A-454, continues to A-760.

New York 133G picks up at A-761 and continues to A-1043. And then New York 133H goes from A-1044 to A-1256. New York 133I goes from A-1275 to H as in Harold 6, and finally New York 133J goes from H-7 to I-87.

I apologize, Your Honor. We have such a large number of exhibits with different page references. In my questions of Mr. Stuyvenberg, I'm going to be referring to the pages of the FSEIS, because I don't have the PDF pages noted as well.

JUDGE McDADE: Is it going to be necessary for us to bring them up on the screen, or can you do it without that?

MR. TURK: I would like to bring a few pages up on the screen, and in that regard, I would ask that New York 133C be brought up to page A-1, and Mr. Stuyvenberg, if you have the FEIS in front of you,

I might ask you to refer to that as well.

MR. STUYVENBERG: I do. I have Volume 1, I should say.

MR. TURK: And I guess for the record, Your Honor, for anyone else who has the volumes of the EIS here in the courtroom, Volume 1 ends at A-174. Volume 2 begins at A-175 and goes to A-1043, and Volume 3 picks up at A-1044 and goes to the end.

So Mr. Stuyvenberg, the comments that were received on the draft EIS, those were reproduced in Appendix A to the FSEIS?

MR. STUYVENBERG: That's correct.

MR. TURK: And beginning at page A-2, you provide a listing of the comments received; am I correct?

MR. STUYVENBERG: It is a listing of comments and commenters, their commentary ID numbers, and in some cases, I'm sorry. Comment ID number start later, but there are commenter numbers that start in that table.

MR. TURK: All right, and is it Mr. Wilkie who's running the machine?

JUDGE McDADE: Yes.

MR. TURK: Could you please go to page A-46? I'm sorry. This is, I apologize, Your Honor.

This is a different exhibit. This is D volume.

(Pause.)

JUDGE McDADE: Do you have any questions about this?

MR. TURK: Yes, Your Honor. Mr. Stuyvenberg, looking at page A-46, what is on the screen now, this is a list or an outline by topic of comments received on the draft EIS; is that correct?

MR. STUYVENBERG: That's correct, and the outline continues on page A-47.

MR. TURK: And do you see on page A-47 Item A-214?

MR. STUYVENBERG: Yes.

MR. TURK: And what is that?

MR. STUYVENBERG: That's comments concerning alternatives.

MR. TURK: And that indicates that those comments are addressed, commencing at page A-150?

MR. STUYVENBERG: That's correct.

MR. TURK: Your Honor, may we please go to page A-150 of the same exhibit, 133D New York.

(Pause.)

JUDGE McDADE: Page 150?

MR. TURK: Yes, Your Honor. Now Mr. Stuyvenberg, looking at this page, Item A-214

indicates comments concerning alternatives. In this section of the FSEIS, did you address comments received on the alternatives to license renewal?

MR. STUYVENBERG: That's correct. It was in this section we addressed them, and just so that people who are looking at this know, there's a synopsis of the binned comments that appears on these pages, that refer to the full comments that appear elsewhere in the SEIS.

MR. TURK: Okay. Let me address that for a second. You had previously indicated that the entire discussion of alternatives, both the no action alternative and any other alternatives, is contained in Chapter 8 of the FSEIS; do you recall that?

MR. STUYVENBERG: I do.

MR. TURK: Does this section of the FSEIS also contain the staff's evaluation of alternative issues?

MR. STUYVENBERG: It does, to the extent that it responds to issues raised by commenters. That's correct.

MR. TURK: And then how -- to what extent are comments addressed within the FSEIS Chapter 8 versus in Appendix A to the FSEIS?

MR. STUYVENBERG: In some cases, we made

changes based on the comments to Chapter 8. In some cases we did not. This disposition's comments as to what we ultimately decided to do in response to those comments.

MR. TURK: And in front of this section are a series of numbers and letters. For instance, the first line begins 34 dash small A dash AL/EC. Do you see that designation?

MR. STUYVENBERG: I do.

MR. TURK: Could you explain what that refers to?

MR. STUYVENBERG: Certainly. If we go to the -- there's a table in the FSEIS, Appendix A.

MR. TURK: And I don't think we need to call it up on the screen. If you would just explain the numbering system that you used.

MR. STUYVENBERG: So the number, the first number refers to, I'm sorry. It's the only number in each one, refers to the specific commenter. I think we can -- if you look at it, there are a number of different ones. 34, we could find out who that is if you wanted to.

But the small A describes the first comment that whoever 34 is made. The next alpha identifiers indicate the subject matter to which the

comments pertain. So that that first one would have been AL as alternatives; EC I believe is energy costs.

So in this case, it was a comment from whoever 34 was. It was that person's first comment or that organization's first comment, and it was pertaining to alternatives and energy costs.

MR. TURK: And then this same pattern continues for all the other numbered comments. There's the commenter's identifying number, followed by the type of comment that you're addressing?

MR. STUYVENBERG: That's right. It's the commenter's identifying number, followed by a letter that identifies which comment made by that person it was, and then letters that describe what the subject matter of the comment was.

MR. TURK: Thank you, and by the way, yesterday we had testimony concerning environmental justice. You were involved in the preparation of the EIS on that section as well?

MR. STUYVENBERG: I was involved in preparation of environmental justice for alternatives.

MR. TURK: For alternatives, and Mr. Rikhoff was involved with respect to the actual discussion of environmental justice impacts of license renewal?

MR. STUYVENBERG: As well as --

MS. RAIMUNDI: Objection, Your Honor.

JUDGE McDADE: Sustained.

MR. TURK: Your Honor, Mr. Stuyvenberg coordinated and oversaw the whole process, and I'm not going to ask him for any testimony on environmental justice issues, simply to explain the process that was used.

JUDGE McDADE: Okay, very briefly. I believe we've heard a lot about the process and are familiar with it, but briefly summarize it.

MR. TURK: The one quick question I would ask is in the same manner that comments concerning alternatives are presented in Appendix A, is there a section that addresses comments on environmental justice issues?

MR. STUYVENBERG: There is, and it begins at page A-110. The section number is A.2.7.4.

MR. TURK: Thank you, Your Honor. I have nothing else on that particular issue. But I do have a few more questions.

JUDGE McDADE: Please proceed.

MR. TURK: Mr. Stuyvenberg, the purpose of the FSEIS in which you were involved for Indian Point, was it to consider resource planning issues?

MR. STUYVENBERG: No sir.

MR. TURK: Is that something that the NRC staff becomes involved in?

MR. STUYVENBERG: No. NRC staff has no role in energy resource planning.

MR. TURK: And for that reason, is it correct to assume that you weren't trying to analyze on behalf of New York State or any other entity, which resource is best used to replace Indian Point?

MR. STUYVENBERG: That's correct.

MR. TURK: And that would be something that New York would do or some other agency, apart from the NRC?

MR. STUYVENBERG: Somebody other than NRC, that's correct.

MR. TURK: Now Mr. Stuyvenberg, there was a question about the point in time at which your analysis assumes certain conditions exist, whether you're looking at the present or 20 years hence. Do you recall that?

MR. STUYVENBERG: Yes.

MR. TURK: And you had indicated that you looked at, I believe, the year 2015.

MR. STUYVENBERG: We looked for alternatives to replace the facilities when they

retire.

MR. TURK: When they retire, 2013 and 2015.

MR. STUYVENBERG: Correct.

MR. TURK: If you had to look at a future period, such as 2035, would that be something that you could easily forecast?

MR. STUYVENBERG: I'm not sure whether we could easily forecast it, but we'd have to make a number of assumptions about what would occur at that time period, about various technologies and situations and the viability of various resources.

MR. TURK: Included in an analysis of such future needs or power supply, energy supply --

MR. STUYVENBERG: To clarify, we wouldn't do a need for power analysis for that time period.

MR. TURK: If you're going to do an analysis for the year 2035, I believe it was Dr. Wardwell who asked about doing an analysis now, versus the incremental period 20 years later, would you have to know something about what plants will be built, what plants will be decommissioned, what energy demand would be 20 years hence? You want me to restate that?

MR. STUYVENBERG: I would like you to restate that. I'm not sure I understand the question.

MR. TURK: Okay. If you were trying to assess what replacement power might be necessary for Indian Point in the year 2035, what would you have to know about the existence of plant capacity and demand at that time?

MR. STUYVENBERG: I would be looking to replace the capacity that Indian Point would supply at that time.

MR. TURK: Would you have to know what other plants would be in existence?

MR. STUYVENBERG: No.

MR. TURK: How would you then be able to tell whether existing supply in the year 2035 was adequate without Indian Point, adequate to meet the demand in 2035?

MR. STUYVENBERG: I would not do an analysis of need for power in 2035. I'm sorry. I don't think I understand the question. I don't know if there's something more you're looking for.

MR. TURK: No, it's probably my problem in phrasing it incorrectly. If you're looking at alternatives in the year 2035, alternatives to Indian Point, would you have to make certain assumptions regarding what other capacity existed at that time, as an alternative to Indian Point?

I think I'm going to withdraw the question, Your Honor, because my witness doesn't understand it, and if he doesn't understand it, I probably don't.

JUDGE McDADE: That's fine. We'll let you withdraw it. Any more?

MR. TURK: Just very briefly, Your Honor.

(Pause.)

MR. TURK: Your Honor, I have nothing more, but Ms. Mizuno indicated that she has one more item she wants to get to.

MS. MIZUNO: Mr. Stuyvenberg, I'm turning back to the comment process, and New York State submitted a number of comments on the DSEIS; isn't that correct?

MR. STUYVENBERG: That's correct.

MS. MIZUNO: Right, and among their comments were discussions of combination alternatives; correct?

MR. STUYVENBERG: Yes.

MS. MIZUNO: How would you characterize those combination alternatives, in terms of active versus static alternatives?

MR. STUYVENBERG: Let me clarify that. I assume you're talking about static versus dynamic,

which is an issue Mr. Schlissel raised earlier, that they would change over time; is that correct?

MS. MIZUNO: That's correct, thank you.

MR. STUYVENBERG: Okay. I would characterize the alternatives they submitted as combinations in their comments on the draft SEIS as static. They didn't indicate that those combinations should change over time. They indicated that they were two defined combinations that the staff should consider.

MS. MIZUNO: And by "they," you mean New York State?

MR. STUYVENBERG: That's correct. I'm sorry to use a pronoun.

MS. MIZUNO: I'm finished.

JUDGE McDADE: Okay, and I think for right now, we are as well. Thank you very much. We appreciate your testimony. A couple of housekeeping matters before we break for the day and for the week, and actually for the month as well.

You know, first of all, I had asked earlier, with regard to a proposed schedule as far as post-trial briefing, the filing of proposed findings of fact and conclusions of law. Our July 2010 scheduling order anticipated a 60-day period, but

didn't anticipate a bifurcated proceeding.

Let me just sort of run down the line. Entergy, what would you suggest as the trigger date for the proceeding that we've gone through today? Should it be 60 days from today, should it be 60 days from when we finish with the 37 at some as yet to be determined date in November or December, or at the end of our December hearing?

MS. SUTTON: Kathryn Sutton for the applicant, Your Honor. It should be 60 days, triggered 60 days after the termination of the Track 1 hearings in December. But we would ask for some additional accommodation for the holidays in that period of time.

JUDGE McDADE: New York?

MR. SIPOS: Your Honor, John Sipos for the State of New York. We have discussed this amongst ourselves, the parties, Entergy, NRC staff and the State of New York, and we are in general agreement, I'm pleased to report.

JUDGE McDADE: Okay, and the staff agrees. Clearwater, Riverkeeper?

MR. TURK: Your Honor, for the staff may I just note we do agree, and I would point out that we'll also be busy getting out the supplement to the

FSEIS, either at the end of December or possibly January, and we'll be working on the SER supplement as well.

So we'll be doing other things, in addition to the hearing --. So yes --

JUDGE McDADE: And including, as Ms. Sutton said, celebrating the holidays?

MR. TURK: If we're allowed to, yes.

JUDGE McDADE: Okay. I think that --

MS. BRANCATO: Your Honor, I just wanted to know. Riverkeeper is in general agreement. But a thought that occurred to me that if the parties are given an opportunity to propose transcript errata, that potentially a trigger date could tie or it would be logical to tie it to when an official transcript with corrections is issued?

But generally, Riverkeeper does agree that the end of the Track 1 period is a reasonable trigger date.

JUDGE McDADE: Item No. 1 is just the trigger date. So we will use the end of the hearing in December, December 15th, for right now as the trigger date. There is a question, given the fact that it falls over the holiday season, whether or not 60 days will be adequate.

Rather than making a ruling on that right now, what we would do is ask the parties to get together, and see if they can come to an agreement as to what they think an appropriate period of time would be, and again, focusing, it is because it's over the holidays.

So if the suggestion is a year and a half, that may not be something that the Board is going to acquiesce to. But we would, in the first instance, ask for your views as to how much additional time, given the fact that it does fall over the holidays.

The next thing has to do with transcript corrections. First of all, what we would like the parties to do is to take into consideration what we anticipate by transcript corrections. It is things that are necessary in order to have a clear record.

It is not if you used an adjective and you should have used an adverb, or a definite article, or you should have an indefinite article. We're not looking for those kinds, or if you believe a comma is in the wrong place, unless for some reason it changes the meaning and could confuse the Board.

We're only looking, and again not "gee, I wish I said it -- I'm sure I must have said it clearer than that," you know, and you then ask that it be

clarified. So we're just looking for those kinds of transcript corrections that are going to significantly, that have the capacity to affect the record.

That said, what we would like is for the parties to get together and submit, if at all possible, a joint submission on transcript corrections. So that if basically Entergy can submit its proposed corrections to New York, Riverkeeper, Clearwater, the staff and vice-versa, and then hopefully there won't be a disagreement as to what those proposed corrections are.

What we would like to do is to sort of do this and for this particular session, as you should have the transcript within a week, and would think that -- well, let me ask. I was going to say that certainly by December 1st, you should be able to get those transcript corrections to us. Does Entergy believe that's a viable date?

MS. SUTTON: Yes, Your Honor.

JUDGE McDADE: Any disagreement?

MR. SIPOS: No disagreement, Your Honor.

JUDGE McDADE: Apparently not, okay. So that's the issue with regard to transcript corrections. One of the things I would note, when you

do get around, and again not until after December 15th and some time probably more than 60 days after that, and you are doing your post-trial briefing, one of the issues that we would like all of you to take into consideration with regard to the environmental contentions, those under NEPA.

If, and this is a hypothetical, if we were to find there were a defect in the FSEIS, would the Board be able to correct that as part of this hearing, the transcript and our order, so that a hard look would be taken at the issue for the decision-maker, not just through the FSEIS, but through the entire record of proceeding, including our initial decision.

That would be something as a matter of law that we would like you to address in the briefing. Those are the housekeeping matters that I had for right now. Before we break -- well, one other housekeeping matter. We have received two documents, the Synapse Energy Economics, Inc. Indian Point Replacement Analysis, a Clean Energy Roadmap document, and a New York Energy Highway blueprint document.

These have not been received into evidence. As things stand right now, we're not going to read them, because they haven't been put into evidence. I would direct that they be marked as Board

exhibits for identification, as the next two. Mr. Wilkie, is that 5 and 6 or 6 and 7?

MR. TURK: 6 and 7 possibly, Your Honor.

JUDGE McDADE: They will be marked, the Synapse Energy as Board Exhibit 6 for identification, and if we're missing a 5, we're missing a 5, and the New York Energy Highway as Board Exhibit 7.

If New York believes that it's important for the Board to consider the context of this and admit them into evidence, so that the Board would read them, file a motion to that effect, which the other parties would have an opportunity to respond to prior to the time that we would receive the documents in evidence.

Are there any other housekeeping matters that we should take up before we break? From Entergy?

MS. SUTTON: No, Your Honor.

JUDGE McDADE: New York?

MR. SIPOS: No, Your Honor.

JUDGE McDADE: Riverkeeper?

MS. BRANCATO: No, Your Honor.

JUDGE McDADE: Clearwater?

MS. RAIMUNDI: No, Your Honor.

JUDGE McDADE: The staff?

MR. TURK: Not for the staff.

JUDGE McDADE: From any interested government entity?

VOICE: No, Your Honor.

JUDGE McDADE: We are in recess. Thank you very much.

(Whereupon, at 4:25 p.m., the hearing was recessed.)

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
Neal R. Gross & Co., Inc.