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NUCLEAR REGULATORY COMMISSION

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Evidentiary Hearing

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD PANEL

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EVIDENTIARY HEARING

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In the Matter of: : Docket No.
Calvert Cliffs Nuclear : 52-016-COL
Project and UniStar Nuclear : ASLBP No.
Operating Services, LLC. : 09-874-02-COL-BD01
Combined License Application:
for Calvert Cliffs Unit 3 :

-----X

Friday, January 27, 2012

Albright Building
Courthouse Square Conference Room
205 Main Street
Prince Frederick, Maryland

BEFORE:

RONALD M. SPRITZER, Chairman
DR. GARY S. ARNOLD, Administrative Judge
DR. WILLIAM W. SAGER, Administrative Judge

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P R O C E E D I N G S

(9:30 a.m.)

CHAIRMAN SPRITZER: We are back on the record. Mr. Mariotte, I understand Mr. Sklar is present here today.

MR. MARIOTTE: Yes, Your Honor. I'm pleased to say he is.

CHAIRMAN SPRITZER: Let's see if there any housekeeping matters to take care of before we get started. I should make one note that I may have forgotten to mention yesterday for the Staff's benefit.

Some of our questions may have gotten into areas that are covered by your motion in limine. You could rest assured we will consider those objections as applicable to the subject matter that you raised even if it consists of testimony that was offered here, so you don't need to file an additional motion or anything like that. If you feel compelled to, I'll leave it up to you, but we'll consider your objections as generally applicable to any testimony that was presented here today that falls within the parameters of the points -- the arguments you were making.

MR. MARIOTTE: Thank you, Your Honor.

CHAIRMAN SPRITZER: Okay. For people who

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1 are here today and may not have been here yesterday,
2 or don't remember our instructions; these are probably
3 obvious but please turn off any cell phones, no food
4 or drinks in the courtroom.

5 I'm not sure what we're going to do about
6 lunch. If we can go through and get out of here by
7 2:00 as Staff requested, I think we'll try and do
8 that. We will certainly take at least one short --
9 reasonably short break during the morning, but we may
10 not take a lunch break if it appears like we can get
11 done reasonably quickly.

12 All right. Does anybody else have anything
13 they want to raise before we get started?

14 MR. SMITH: No, Your Honor.

15 CHAIRMAN SPRITZER: Hearing no takers, we
16 will proceed with Mr. Sklar. Before you go up there,
17 Mr. Sklar, would you please rise. Go ahead and take
18 a seat on the -- over here, and just remain standing
19 for a second.

20 Do you swear or affirm that the testimony
21 you are going to give in this proceeding is the truth,
22 the whole truth, and nothing but the truth?

23 MR. SKLAR: I so swear.

24 CHAIRMAN SPRITZER: Please be seated. And
25 since you're the sole witness testifying at the moment

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1 would you please give us -- tell us your name.

2 MR. SKLAR: I am Scott Sklar. I am
3 President of the Stella Group, and adjunct professor
4 at both George Washington University and American
5 University.

6 CHAIRMAN SPRITZER: All right. Let's start
7 talking about your qualifications to give expert
8 testimony first. What are you an adjunct professor of
9 at those institutions?

10 MR. SKLAR: At George Washington University
11 I am teaching a unique interdisciplinary course on
12 sustainable energy sponsored by the Arts and School,
13 the Law School, the Business School, and the
14 Engineering School. And in that's in the fall
15 semester. In the spring semester I am co-teaching a
16 course with Professor Johanna Mendelson of the Center
17 for Strategic and International Studies on
18 international energy security, a graduate course. And
19 it is discussing risk analysis of both conventional
20 and new and renewable.

21 In my business --

22 CHAIRMAN SPRITZER: New and renewable what?

23 MR. SKLAR: Renewable energy. I'm sorry. In
24 my business, I blend high-value energy efficiency and
25 renewable energy for the last 12 years for Fortune 500

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1 companies around the world and the U.S. military, both
2 theater of war and facilities.

3 CHAIRMAN SPRITZER: And did you say you
4 were an adjunct professor at another school besides --

5 MR. SKLAR: Just American and George
6 Washington. The first course was GW in downtown D.C.

7 CHAIRMAN SPRITZER: Okay.

8 MR. SKLAR: And then American University
9 also in Washington, D.C.

10 CHAIRMAN SPRITZER: Okay. Can you tell us
11 your educational background?

12 MR. SKLAR: I just have an educational
13 background in international affairs, 40 years ago, and
14 I actually don't use it a lot in this -- in the work
15 I do.

16 CHAIRMAN SPRITZER: So, your expertise is
17 derived from your work experience, not --

18 MR. SKLAR: Thirty-five years, yes, sir. I
19 had hair back then.

20 CHAIRMAN SPRITZER: Am I correct that
21 you're not an engineer?

22 MR. SKLAR: I am not an engineer; though I
23 have to work with engineers and architects often.

24 CHAIRMAN SPRITZER: Okay. Well, that was my
25 next question. Have you had any work experience in the

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1 field of engineering?

2 MR. SKLAR: Absolutely. And I also -- after
3 working nine years in the U.S. Senate for Senator
4 Javits in New York on military energy issues, I was
5 Research Director for a federal funded applied
6 laboratory called the National Center for Appropriate
7 Technology. And for one year ran an 85-person
8 technical staff, mostly engineers and architects, half
9 composed from NASA and the rest from Peace Corps doing
10 international projects on renewable energy and energy
11 efficiency.

12 In my current work, particularly with the
13 military but in the private sector, as well, I am the
14 one that has to interface with the engineering and
15 architectural firms on technology blends with
16 conventional and the newer technologies, make sure
17 they work, make sure they go in correctly. So, I'm
18 working with them intensely; sometimes lovingly, many
19 times not.

20 CHAIRMAN SPRITZER: Okay. Now, in this case
21 we're looking at the question whether the Final
22 Environmental Impact Statement for Calvert Cliffs Unit
23 adequately considered a combined alternative to
24 nuclear energy that includes wind and solar power
25 among other things. You're familiar with that issue?

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1 MR. SKLAR: I am familiar with that issue,
2 sir, yes.

3 CHAIRMAN SPRITZER: Do you have
4 professional experience evaluating the feasibility of
5 wind power for providing a particular required amount
6 of electrical energy?

7 MR. SKLAR: I have experience. I am a peer
8 reviewer in most of the analytical studies looking at
9 all the renewables. And I want to point out all the
10 renewable fundamentally we're not being asked here,
11 which had bothered me. You may have heard my
12 testimony. But all the renewables, including offshore
13 and on-shore wind, solar of all the types, and there
14 are six different types, biomass, geothermal, and the
15 marine technologies, as well. And I add combined heat
16 and power even though it's not actually renewable, but
17 energy efficiency, but it's waste heat from other
18 industrial processes that you can generate electricity
19 from.

20 CHAIRMAN SPRITZER: Okay. Have you ever
21 made recommendations to a federal, state, or local
22 government agency concerning technologies that would
23 be appropriate for supplying a particular amount of
24 electricity?

25 MR. SKLAR: Very often. And, by the way,

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1 I have been hired by different states and entities on
2 that specifically, again on all the renewables and
3 high-value energy efficiency, including the States of
4 Massachusetts, Pennsylvania, and Mississippi after
5 Katrina, among others.

6 CHAIRMAN SPRITZER: Now, we have your
7 Statement of Qualifications. I believe you told us you
8 are the head of a firm called the Stella Group?

9 MR. SKLAR: Named after my daughter who's
10 18-years old, sir.

11 CHAIRMAN SPRITZER: And for the court
12 reporter that's S-T-E-L-L-A, I believe. Is that
13 correct?

14 MR. SKLAR: Yes, sir.

15 CHAIRMAN SPRITZER: Now, what kind of --
16 what business is the Stella Group in?

17 MR. SKLAR: It's a 12-year old business.
18 And the goal of the business was, again, to focus on
19 the Fortune 500 global companies around the world who
20 needed very reliable energy for their -- behind their
21 corporate facility fence, or on their buildings. Many,
22 by the way, giant zero energy buildings around the
23 world that are totally off the grid. By the way, my
24 home in Arlington, Virginia and my little office
25 building in Arlington, Virginia are both those kind of

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1 buildings. And my Washington, D.C. office has a
2 unique solar system overlooking Lafayette Park in
3 front of the White House.

4 But that said, I saw that everybody was
5 looking at a particular technology, and really the art
6 form is how you elegantly blend the technologies to
7 meet the cost, reliability, power quality, surge and
8 sags, and transient protection. And in some cases
9 esthetic, if there's an esthetic issue.

10 By the way, after September 11th my firm
11 morphed into working with the intelligence community
12 and Department of Defense because a lot of that was
13 looking at critical infrastructure, how to protect
14 against terrorism. And I've been brought into several
15 of those issues with the U.S. Department of Defense
16 and their advisory entities.

17 CHAIRMAN SPRITZER: We are actually on --
18 I'm now looking at Joint -- Intervenor Exhibit 2. I
19 want to bring that up. That's his Statement of
20 Qualifications.

21 Now, at the end of the first paragraph --
22 by the way, if you want to look at documents I happen
23 to be referring --

24 MR. SKLAR: Oh, neat. Okay, thank you.

25 CHAIRMAN SPRITZER: The monitor for you

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1 there.

2 MR. SKLAR: Wow, very nice. Very
3 impressive.

4 CHAIRMAN SPRITZER: Just a minute. Now, at
5 the end of the first paragraph here it refers to your
6 "work in facilitating federal and state policies to
7 expand markets." What does that refer to?

8 MR. SKLAR: Well, there are technical
9 issues in energy. Remember these -- you have to look
10 at these technologies where cellular was in 1970. We
11 had a wired system. We knew how that worked. Now
12 you're bringing in wireless technology, and how does
13 that interface with the wires?

14 It's exactly the same issue with a lot of
15 these renewables, so there are things like
16 interconnection standards. How do you connect to the
17 not only transmission lines, the substations, the
18 distribution lines, the buildings, and even the
19 buildings, how does that backflow? There's lot of
20 technical -- you know, it's the dirty details. You
21 guys deal with that, obviously, all the time, so it's
22 one of the issues. And a lot of the policies are not
23 set up to address those kinds of issues, which
24 actually were the exact same issues that impacted the
25 cellular industry and how to get that started. And

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1 these are primarily integration issues.

2 The other issue I do a lot in the policy
3 context is policy makers, as you know, may have what
4 I call flavor of the month. They like some technology.
5 They do some legislation about it, but how they
6 describe the technology sometimes drops a whole sector
7 of related technologies or subsets of technologies.
8 So, I've spent a lot of time educating senior policy
9 makers, and I'm not a lobbyist, by the way; lower
10 policy makers, staffers to understand that when you
11 write this one sentence; and, again, your law judges
12 so you understand this totally. Inadvertently, you may
13 wipe out access to a whole set of commercial or
14 emerging commercial technologies.

15 So, the whole idea is how do you do that
16 in a way that allows the marketplace to determine
17 what's the right -- make the choice, not the policy
18 makers.

19 CHAIRMAN SPRITZER: Now, your Qualification
20 Statement also refers to work you've done for the Army
21 and the Navy. Can you explain what that work involves
22 particularly as it's related to -- or if it's related
23 to wind and solar power, and --

24 MR. SKLAR: Well, it is. I've been on five
25 major Department of Defense studies both as a

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1 contributor and an advisor. All of it relates to
2 reliability and critical infrastructure issues, so
3 part of that is to do due diligence analysis on pretty
4 much what you're trying to do, are the -- what's the
5 potential versus what's the real? What's the
6 technology now? What's coming up? You know, you're
7 trying to figure out the reality and truth it out.

8 The problem, as you know, is with new
9 technologies and new disciplines, a lot of the
10 training of folks who are embedded in the old stuff
11 don't know the new stuff which, again, was true in
12 telephones. I mean, you had people who knew wires and
13 dial phones and thought these ridiculous 60-pound
14 batteries and bags running cell phones the size of
15 this building would never work, and was never -- not
16 cost-effective at the time.

17 So, there a lot of different issues in
18 integrating new or disruptive technologies, and how do
19 you do it? So, that's what the military brings me in
20 beyond the practical stuff. And I'm doing the
21 practical stuff, too.

22 I'm overseeing -- a major facilitator for
23 a zero energy building at the Washington Navy Yard.

24 CHAIRMAN SPRITZER: What is a zero energy
25 building?

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1 MR. SKLAR: Meaning it takes no electricity
2 from the grid, and can operate fully. It's not like --

3
4 CHAIRMAN SPRITZER: What kind of technology
5 does it take?

6 MR. SKLAR: Well, first energy efficiency,
7 high-value energy efficiency, so like geothermal heat
8 pumps for heating and cooling. And LED lights. If you
9 want to shrink the load, why be as wasteful when
10 you're trying to do new technology. And then it's
11 mixtures in this particular building of solar and wind
12 technology with very smart battery banks. And all web-
13 enabled so you can actually see how it's performing,
14 almost like your screen on a Prius, when you can see
15 how filled the battery is, and the wheels going, all
16 that. So, you can look at performance in real time.

17 They have to be very reliable. We're going
18 to use that building as training. All of last year I
19 was hired by NAVFAC to do tough love courses at Naval
20 bases with the architects and engineers, by the way,
21 about 40 to 60 on how to smartly integrate these
22 technologies on a military base cost-effectively and
23 reliably. And most of these engineers and architects
24 have never seen the technology we're talking about.
25 So, how you develop the change if you've never ever

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1 seen it? So, that's the kind of thing. So, it's both
2 analytical.

3 I also do due diligence analysis for the
4 private sector, mostly investor sector, on project
5 because they want to make sure, they want a bunch of
6 tough cookies to take a look at this project I'm
7 investing, will it last? I'm happy to say that none of
8 the projects I've done over the last 12 years in due
9 diligence analysis for the investment community, the
10 ones that actually received investments have failed,
11 so no bankruptcies or anything like that.

12 So, while I support these technologies,
13 you have to look at it very seriously because there's
14 new technology, there is risk, as there is with old
15 technology.

16 CHAIRMAN SPRITZER: Sure. I do have a few
17 questions that have been provided to us by the parties
18 related to your qualifications. I'm going to read
19 those to you now.

20 The first question is, according to your
21 Statement of Qualifications, your professional
22 experience appears to be focused on small-scale
23 renewable development such as mini generation, micro
24 hydro power, and small wind and solar thermal. Do you
25 have experience in developing or assessing the

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1 commercial or technical feasibility of utility-scale
2 wind or solar power?

3 MR. SKLAR: Absolutely. I must say,
4 however, just to be fair and transparent what I am
5 generally hired for by Fortune 500 companies, and in
6 many cases by the U.S. military have been what I call
7 distributed generation. I mean, from I'd say 5
8 kilowatts to 25 megawatts, so 25 megawatts, of course,
9 is some utility scale sizes. But it's more what's
10 available on site.

11 But in the analysis I've done for DOD and
12 for the states, they have been in many cases utility-
13 scale. I have worked with Axion Solar on their 64
14 megawatt concentrated solar plant in Nevada, which is
15 the largest concentrated solar plant in the United
16 States, one megawatt for Arizona Public Service solar
17 and biogas using organic rank and cycle engines that
18 don't require water. I've worked with Apex Wind based
19 in Virginia on large wind farms and wind developments.
20 So, I mean, I have done -- I've been involved in large
21 projects mostly -- not only the due diligence, the
22 analysis, but there are always problems. As you know,
23 all -- conventional energy and renewable energy, there
24 are a lot of issues you have to deal with. You know,
25 avian studies for birds, and of course land use area

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1 and for technologies that require water, which solar
2 and wind don't, there's water availability. So,
3 there's lot of different issue you have to do to make
4 sure these things are not only economic, but
5 sustainable.

6 CHAIRMAN SPRITZER: The next question is,
7 do you have any experience with large-scale energy
8 storage systems?

9 MR. SKLAR: I do. That has become one of my
10 actually fortes. I'm working with seven companies
11 right now on upgraded advanced energy storage systems
12 which include smart battery banks. I was a consultant
13 for GridPoint that had the first what I call modern
14 advanced interactive battery banks. Done some analysis
15 for some of the utilities on use of battery banks,
16 working with Dow Kokam of Dow Chemical to do in-wall
17 battery banks at buildings that are smart and web
18 enabled.

19 Axion Power, which has done a utility-
20 scale battery bank, which is the use of advanced
21 carbon and super capacitor batteries, and carbon
22 batteries can last 20 years, can take more heat and
23 cold. And, of course, super capacitors are solid
24 state so they can take surges. And these -- we just
25 did a utility-scale installation at their

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1 manufacturing plant in Pennsylvania working with PJM
2 and figuring out how we'll monitor it in a way that
3 they can learn from it.

4 I've also been working with Sustainex
5 which is compressed liquid storage. These are for
6 dealing with load shifting from five minutes to 30
7 minutes to stabilize the grid. And those are all --
8 and by the way, Sustainex technology is only utility-
9 scale.

10 And I've had some interesting discussions
11 and reviews for Department of Defense about AES'
12 containerized battery banks, one of which went to
13 Arizona Public Service to take a look at multi-
14 megawatt battery banks, and how they can stabilize the
15 grid. And, of course, be open to store the portion of
16 intermittent renewable solar and wind.

17 CHAIRMAN SPRITZER: By the way, if you --
18 the jug that you've noticed in front of you, that's
19 water, I believe.

20 MR. SKLAR: Okay, thank you.

21 CHAIRMAN SPRITZER: If you need a drink--

22 MR. SKLAR: I probably will. There's a lot
23 of questions here, so thank you.

24 CHAIRMAN SPRITZER: We're just getting
25 starting I'm afraid.

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1 MR. SKLAR: I know, that's what I'm told.

2 CHAIRMAN SPRITZER: Warning.

3 MR. SKLAR: Thank you.

4 CHAIRMAN SPRITZER: Now, do you have
5 experience -- apart from the experience you've just
6 told me about, do you have any experience with
7 compressed air energy storage systems?

8 MR. SKLAR: Yes, I have. Again, I've worked
9 with Sustainex that does primarily liquids, but also
10 does air, and I have been -- I am advising Davis-
11 Montha Air Force Base, which is also known as the Bone
12 Yard, one of the largest military bases in the United
13 States, and they have -- doing analysis on using
14 compressed air to stabilize the grid sections of
15 Arizona for the base, so have been reviewing virtually
16 every technology.

17 And when I look at the technology, I'm not
18 relying just on the company. I'm looking at -- I'm
19 talking to people at the installation side because in
20 reality, you can read all the studies you want. If you
21 don't actually look at the technology and ask
22 different levels of users at the end you don't know
23 how they actually operate in the real world.

24 ADMIN. JUDGE ARNOLD: So, some of your
25 experience with CAES has been in plants that are

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1 actually operating?

2 MR. SKLAR: Both in plants at the demo
3 stage, and at the operation stage. Yes, sir.

4 CHAIRMAN SPRITZER: Have you had any --
5 other than your work on this case where you obviously
6 were looking at an Environmental Impact Statement,
7 have you had any prior -- in your work experience have
8 you had to deal with Environmental Impact Statements
9 previously?

10 MR. SKLAR: Yes. By the way, I served for
11 two years, I was appointed for two years at the end of
12 the Bush administration to the National Advisory
13 Committee for Energy Policy and Technology, NACEPT for
14 EPA. And a lot -- most of that work over two years was
15 looking at impact analysis on renewables, not on
16 conventional, and seeing --

17 CHAIRMAN SPRITZER: What kind -- impact
18 analysis of what?

19 MR. SKLAR: For how it would -- well,
20 actually it was how to -- do we need in the
21 traditional Environmental Impact Statement reviews
22 that you're required to file, do the technology -- you
23 know, we have a whole checklist, as you know, of
24 things you've got to look at. And some things apply,
25 and some things don't apply, because these are new

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1 technology. So, we spend a lot of time taking a look
2 at, for instance, use of solar in deserts. You know,
3 some of those solar technology requires water, most of
4 it does not. So, why are you doing water analysis for
5 technology that doesn't require water? You just check
6 it and say no water. For the ones that require water,
7 obviously, you have to do the water analysis. So,
8 there's all sorts of nuances in use of technology on
9 that.

10 I have been brought in, and some of the
11 work that I've done for the states on some of these
12 larger projects, they also had their own state NEPA
13 reviews, and so they -- the same thing. Who do we
14 need to bring in, or what issues do we look at so
15 we're not surprised later on?

16 CHAIRMAN SPRITZER: So, have you had any
17 experience -- well, let's limit it to the federal
18 version of NEPA, which is N-E-P-A for the court
19 reporter.

20 MR. SKLAR: Yes, for NEPA only on military
21 base installations. I did do a little tiny work on
22 this Arizona -- I'm sorry, on this Nevada concentrated
23 solar part as being sort of an expert also, as part of
24 that review. But, you know, normally on that you're
25 bringing in environmental scientists of all kinds. And

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1 I am knowledge enough to be dangerous, but I am not an
2 environmental scientist.

3 CHAIRMAN SPRITZER: Have you prepared --
4 have you worked in the preparation of Environmental
5 Impact Statements involving energy generation
6 technologies?

7 MR. SKLAR: Yes.

8 CHAIRMAN SPRITZER: You have. Okay. For
9 federal or state?

10 MR. SKLAR: Federal, and again it was for
11 the -- the military base ones you have to, of course.
12 And also for some of the larger scale ones. You don't
13 really have to do it for the teenier ones usually.

14 CHAIRMAN SPRITZER: Very good. Let me ask
15 my fellow judges if they have any questions related to
16 Mr. Sklar's qualifications.

17 ADMIN. JUDGE ARNOLD: No.

18 CHAIRMAN SPRITZER: Very well. Are there
19 any objections from any of the parties to this
20 witness' qualifications to provide the opinion
21 testimony that he's provided in his pre-filed
22 testimony?

23 MR. MARIOTTE: No, Your Honor.

24 CHAIRMAN SPRITZER: NRC Staff?

25 MR. WILSON: No, Your Honor.

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1 CHAIRMAN SPRITZER: Very well, we will move
2 on and start talking about the substance of the
3 qualifications. Excuse us.

4 (Off the record comments.)

5 CHAIRMAN SPRITZER: Mr. Sklar, you've been
6 asked by the Intervenors in this case to look over the
7 Final Environmental Impact Statement that was prepared
8 for the combined license application for Calvert
9 Cliffs Unit 3. Is that correct?

10 MR. SKLAR: I have been -- I was asked to
11 familiar myself with that, but I was really asked by
12 the Intervenors to really only address whether
13 renewables, the capacity of renewables and certain
14 kinds of high-value energy efficiency would be viable
15 as part of that. So, I really wasn't asked to take a
16 look at any aspect other than --

17 CHAIRMAN SPRITZER: Okay.

18 MR. SKLAR: -- the role of renewables,
19 which is my expertise.

20 CHAIRMAN SPRITZER: Now, I take it you did
21 look at the section of the Final Environmental Impact
22 Statement that discussed what we've referred to here
23 as the combined alternative or combination
24 alternative?

25 MR. SKLAR: Yes, I did, sir. Yes.

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1 CHAIRMAN SPRITZER: And have you as a
2 result of your review of the Final Impact Statement
3 and other work you've done in this case come to a
4 conclusion as to what you think the appropriate
5 contribution of wind and solar power could be to that
6 alternative?

7 MR. SKLAR: Yes, I have. I do want to,
8 again, point out, and I do this very respectfully to
9 you all, that when you're looking at what renewables
10 can offer you should look at the entire portfolio.
11 So, solar and wind are a very important portfolio but,
12 again, in this there are commercial technologies of
13 both biomass and marine technology, and combined heat
14 and power. And if you take it as a quilt -- remember
15 I blend technologies, so that's my expertise to begin
16 with, and my bias, so I want to make that clear.

17 So, part of this was yes, I have come very
18 clear in my own mind what solar and wind can do, but
19 it would be crazy not to bring in the other renewables
20 because they might be more cost-effective, and more
21 baseload.

22 CHAIRMAN SPRITZER: Okay. We'll come to
23 that, but let's --

24 MR. SKLAR: Yes, I -- but I wanted to put
25 that in context. But yes, I respond to you shortly --

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1 - the short answer is yes.

2 CHAIRMAN SPRITZER: Okay. It would be good
3 if you can to give yes or no answers where you can.

4 MR. SKLAR: I know, I'm sorry. I had to do
5 that to begin with just to make sure it was in the
6 proper context. I'm sorry, Your Honor.

7 CHAIRMAN SPRITZER: No problem. Okay.
8 Limiting ourselves to wind and solar for the moment,
9 and just so you understand, we have a contention
10 before us that deals with wind and solar power.
11 That's why we're --

12 MR. SKLAR: I understand. I understand.

13 CHAIRMAN SPRITZER: That's why we're going
14 to focus primarily on that. Now, do you have an
15 opinion based on the work you've done in this case as
16 to what the wind and -- appropriate level -- let me
17 rephrase that.

18 Do you have an opinion as to the
19 reasonable level of contribution that wind and solar
20 power could make to the combination alternative
21 described in the Final Environmental Impact Statement?

22 MR. SKLAR: Yes, sir.

23 CHAIRMAN SPRITZER: And what is that
24 opinion?

25 MR. SKLAR: Well, on solar I reviewed a

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1 couple of studies. And the most recent study which we
2 did include as part of my testimony was a March study
3 in 2010 that look at 450 million square feet of roof
4 space in Maryland, and came to the conclusion that
5 solar could -- getting rid of everything that -- all
6 the roofs that didn't have the right solar access, and
7 all the roofs that were old, and all the roofs that
8 had other things on it, so it was getting rid of a lot
9 of roofs that just the roof space alone could meet the
10 5,000 megawatts. And, of course, the study did not
11 take a look at parking lots.

12 And, again, parking lots are becoming a
13 great open space because not only do -- parking lot
14 canopies are installed anyway to protect cars from
15 getting hot and for security, so -- and in the west
16 we're seeing parking lots in New Jersey now a big --
17 megawatt installations of solar in parking lots. In
18 the military bases that I'm working on we're looking
19 at multi-megawatt installations in parking lots. And
20 I believe you could probably get another -- an equal
21 amount -- I mean the most conservative number ever of
22 5,000 megawatts of parking lots.

23 CHAIRMAN SPRITZER: When you say 5,000
24 megawatts what are you -- you've heard the term
25 baseload power used in this --

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1 MR. SKLAR: This we're talking about energy
2 out from let's just -- I'm simplifying from 10 to 4,
3 10:00 a.m. to 4:00 p.m. So, it's not baseload power,
4 it's daytime power. There is a misconception, by the
5 way, that when it's cloudy like today you're not
6 getting anything out. You are, and so if I had a
7 10,000 megawatt peak at noon on a cloudy day like
8 today when it's sunny it would only be 3,000
9 megawatts. So, it's not baseload power, which was one
10 of the issues why I was stunned the Staff, not to hurt
11 their feelings, would just look at the non-baseload
12 renewables. I thought it was not academically correct,
13 and technically correct. But that said, the solar
14 systems are meeting the midday loads which are very
15 critical to baseload.

16 ADMIN. JUDGE ARNOLD: In that study that
17 you based this upon, was there any assumption made as
18 to the percentage of building owners that would not
19 permit solar on their roofs?

20 MR. SKLAR: No, they took a look at it
21 technically. And we all know, that's a very good and
22 substantive question, that there's no doubt that
23 probably a third of them would never allow that. On
24 the west coast, believe it or not even though solar is
25 used more on the west coast, homeowners -- half the

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1 housing in the United States, for instance, is on
2 homeowner associations, and a large majority of the
3 homeowner associations would not allow solar, as just
4 an example. That's a restrictive covenant. It's not
5 even an esthetic thing.

6 And there's a lot of action by federal and
7 state agencies to educate them on provide guidelines
8 but don't ban it. And, of course, Congress actually
9 prohibited it in satellite dishes, for instance, on
10 roofs because of restraint of trade. But that aside,
11 yes, I -- in my mind while 5,000 megawatts for roofs,
12 and another 5,000 for parking lots is practical,
13 there's no question that probably a third of that
14 would be shed because people wouldn't just find it
15 esthetically pleasing.

16 ADMIN. JUDGE SAGER: So, I'm sorry. That's
17 5,000, plus 5,000, so now 10,000.

18 MR. SKLAR: Yes, but minus a third of that
19 because I don't like what it looks like.

20 ADMIN. JUDGE SAGER: I'm trying to home in
21 on numbers.

22 MR. SKLAR: Very good. I think that's a
23 great idea. So, yes, so that's -- I respond to your
24 question and say I would discount it by 30 percent.
25 That seems to be the -- and what I've seen of some of

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1 the local studies around the country of people just
2 not liking the stuff for various reasons, it's about
3 a third. So, there's no solid substantive reports on
4 that that look at it nationally, or that I've seen in
5 Maryland.

6 ADMIN. JUDGE SAGER: Sorry. And the basis
7 was this report that you referred to about solar
8 potential in Maryland?

9 MR. SKLAR: Yes, sir.

10 ADMIN. JUDGE SAGER: Okay. And previously,
11 witnesses describe -- said that the big constraint on
12 solar is that it's not cost-effective now. So, that
13 needs government support, basically, to allow people
14 to install it, or to make some people want to install
15 it. Is that true?

16 MR. SKLAR: You know, if you took my class
17 in George Washington University, you would know that,
18 first of all, we subsidize all our conventional energy
19 at \$70 billion a year, and renewables at \$6 billion a
20 year, of which probably less than \$1 billion goes to
21 solar. The Union of Concerned Scientists' Economic
22 Study on Nuclear says if you compare all 17 subsidies
23 of nuclear, it pays for the cost of a nuclear power
24 plant.

25 There is no such subsidies of that

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1 magnitude for solar photovoltaics. There is a 30
2 percent investment tax credit with five-year
3 accelerated depreciation. That is what's driving
4 large-scale installation. Cost has gone down
5 dramatically as it scaled up just like computers and
6 cell phones.

7 And I must say why I have my computer
8 here, and if you -- I just pulled the study done at
9 Duke University North Carolina by Professor of
10 Economics Blackburn, and it was published in the *New*
11 *York Times*, and said that solar costs have declined
12 and surpassed that of new nuclear power plants.

13 I reviewed his study. It's a solid study.
14 I don't find -- it's very hard to see the data is all
15 substantiated. I reviewed a lot of the footnotes on
16 the data. And for new nuclear power plants for midday
17 power now, that's without storage, without baseload,
18 it's quite competitive. And we have megawatts, you
19 know -- we have a gigawatt of new nuclear -- of solar
20 going in, and it's being driven in the marketplace.

21 MR. MARIOTTE: Just for reference, that's
22 Joint Intervenors's Exhibit 12.

23 MR. SKLAR: That's the study --

24 CHAIRMAN SPRITZER: Well, let's bring that
25 up for MR. SKLAR and make sure we're talking about the

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1 same document. I'm sure it's correct, but let's just
2 be clear on this.

3 MR. SKLAR: Yes, that is Blackburn who I
4 suggested. Again, he is Economics Professor at Duke,
5 and he did a study that was published on the historic
6 crossover.

7 CHAIRMAN SPRITZER: And what was he -- can
8 you summarize the conclusions of his report in terms
9 of the cost of solar and nuclear?

10 MR. SKLAR: Well, again, what he had said
11 is basically we have two trends going on. Trend one is
12 that solar has been declining.

13 CHAIRMAN SPRITZER: Declining in what?

14 MR. SKLAR: In cost. And has been obviously
15 increasing in availability, so we have the largest
16 companies like First Solar, U.S. company based in
17 Arizona invested by the Walmart -- the Waltons, the
18 Walmart family, for instance, that are producing
19 panels under a dollar a watt, a dollar a peak watt,
20 which everybody said would start making this
21 technology viable in the industrialized countries on
22 the electric grid.

23 So, we're finally getting the scale, and
24 some technology breakthroughs. It's mostly scale, this
25 is solid state technology that you're starting to get

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1 that. And, of course, if you look at the two nuclear
2 power plants down in the Carolinas, they've been going
3 up in costs, and they're trying to do construction
4 work in progress to pay for them. And they need the
5 loan guarantees.

6 I don't need a loan guarantee to do a
7 solar project. So, they looked at real historical data
8 in the marketplace of what's going on and just the
9 inflationary costs on nuclear because materials,
10 cement and metal costs more. And, of course, I'm on
11 the safety side and see that, as well. And then the
12 costs come down to the solid state technology, and
13 they said that it's -- you can put an installed cost
14 of electric power for solar. But, again, between the
15 times of 10 and 4, that's longer, of course, in the
16 summer, and whatever. So, that's the issue, so that's
17 the issue.

18 CHAIRMAN SPRITZER: Mr. Mariotte, he'd been
19 referring earlier to a report, a different report I
20 believe that he reviewed. You may not know the exhibit
21 number, Mr. Sklar. I don't know if you -- it's the one
22 that you were saying there was a report that referred
23 to a figure of 5,000 megawatts.

24 MR. SKLAR: Yes, this was the March 31st --
25 this was the Maryland study that I reviewed.

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1 MR. MARIOTTE: Joint Exhibit --

2 MR. SKLAR: I believe it was.

3 MR. MARIOTTE: -- 13. Joint Intervenors
4 Exhibit 13.

5 MR. SKLAR: Yes, that's what -- that is
6 exactly the study I'm referring to.

7 CHAIRMAN SPRITZER: All right.

8 MR. SKLAR: So, I read that, and I did ---
9 I looked at the roof numbers. National Renewable
10 Energy Laboratory had an older study that also looked
11 at rooftops and what made sense. And I looked at the
12 data that the National -- the Federal Laboratory
13 Scientists looked at rooftops compared to this study.
14 This study was actually a little more conservative
15 than the NREL study, so I like the methodology. I was
16 just sort of stunned they didn't include parking lots,
17 you know. Because, again, you've got competing space
18 issues, but parking lots are generically much more
19 accessible and, frankly, less esthetic because you
20 want a big parking lot. You're not going to do a
21 three-car parking lot.

22 ADMIN. JUDGE ARNOLD: This study, the 5,000
23 megawatts of rooftop electricity, would that be
24 available to be put on the grid and sold elsewhere, or
25 is these -- is this really distributed source and

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1 distributed use?

2 MR. SKLAR: Well, first the short answer,
3 because I've been requested for a short answer, is
4 yes. The more detailed answer is, most of the solar
5 going in the United States is what's called net
6 metered, meaning that a certain amount goes into the
7 building, and then -- but, frankly, most of it goes
8 out into the utility network onto the grid.

9 Actually, I'm not a big fan of net metered
10 systems for a lot of other reasons, but that said,
11 that's the way what's going on. So, they are -- it is
12 -- the majority of it by a far share, I mean 97
13 percent would be net metered, meaning dropping power
14 on the grid.

15 ADMIN. JUDGE ARNOLD: And did the report at
16 all address the time frame in which this could be
17 developed?

18 MR. SKLAR: Well, they did make some
19 postulations, but I would like to point out that we're
20 beginning to see gigawatts of solar going into the
21 U.S. market, and that's a good sign. And what's also
22 interesting in the State of Maryland that I also, I
23 believe, included -- yes, we did include in this
24 Intervenor's testimony is, you have some very big
25 projects, solar companies sitting there right in the

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1 State of Maryland, so that a fielded megawatt system -
2 - SunEdison right outside of Baltimore is the largest
3 in the country, in fact. They're doing a 14.6
4 megawatt. Nellis Air Force Base one that's been
5 completed, they're doing another one -- they've just
6 proposed a 14.2 megawatt system in Arizona. They've
7 done both multi-megawatts and multi-hundred kilowatt
8 systems here in Maryland. Standard Solar, as well.
9 Johnson Controls, while it's not headquartered here
10 has offices here, and in fact their renewable group
11 does, and they've also done multi-megawatt systems in
12 the east and west coast. So, you have the company
13 capability to do large-scale systems.

14 The State of Maryland actually, because of
15 the portfolio standard and state tax credits, and
16 trying to entice this market, has been very proactive,
17 so can you bring on hundreds of megawatts a year?
18 Without a question. Can I tell you exactly how much?
19 No, of course not.

20 CHAIRMAN SPRITZER: Now --

21 ADMIN. JUDGE SAGER: I just had -- I wanted
22 to -- again getting back to the numbers. So, previous
23 testimony has claimed that the cap to solar is going
24 to be the 2 percent carve out in the Maryland RPS.
25 Basically, that government subsidies will support

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1 solar up to there, and that development will stop
2 there. Do you have an opinion about how that affects
3 these numbers?

4 MR. SKLAR: Well, I'm not sure that's the
5 right analysis. Okay? One, there's no question that
6 subsidies drive markets. I'm not going to argue that
7 -- against that. But what we're seeing is once you
8 meet a -- you scale up and meet certain market
9 penetrations the subsidies start becoming less
10 important because you're then able to lower your cost.
11 It's not just the cost of the equipment, it's the
12 installed cost of installation and servicing.
13 Obviously, no one wants a big system if you can't have
14 teams of smart service people make sure it's working
15 all the time, because that's how you're going to get
16 the financing. Right?

17 So, the -- so will price come down at the
18 moment you hit that 2 percent? I believe quite
19 substantially. So, therefore, I think it will coast
20 continually in an upward swing. Can I tell you
21 exactly what that is? No, I'm not a fortune teller.
22 But am I nervous or think it's just going to drop to
23 zero, or 10 percent? I don't think there's a chance in
24 hell of that, actually.

25 CHAIRMAN SPRITZER: All right. So, you've

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1 given us an estimate or your opinion as to what solar
2 you believe -- what contribution you believe solar
3 could make to the combined alternative. Now, can you
4 put a time frame on that? Can you tell us by what
5 date --

6 MR. SKLAR: Well, I believe again you can
7 have -- you will have what I'll call multi-hundred
8 megawatt installations every year in the State of
9 Maryland. And they won't all be -- you know, they're
10 not going to be in 100 megawatt blocks. It's going to
11 be in little pieces throughout the state.

12 There's good news and bad news in that.
13 The good news is you don't have a lot of transmission
14 problems like the west has where you're putting in big
15 concentration, you have to move the -- get somehow a
16 transmission line to do it, because when you have
17 smaller power you're allowed to hook up, for instance,
18 distribution lines, not just transmission lines.

19 Also, a lot of places where you're going
20 to put the larger solar plants are already near
21 connection points, whether they're substations or
22 places on the transmission line you can do it.

23 The FERC rules under 20 megawatts fell
24 under Regulatory Commission rules, under 20 -- you
25 know, under -- a couple of megawatts you have a short

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1 form like your IRS easy form. Under 20 megawatts you
2 have a much shorter engineering study form. So, after
3 20 megawatts you really have to do an analysis of how
4 it's going to impact the grid, because you can screw
5 up the grid if you are not thoughtful about it.

6 So, I can't tell you the exact, but can I
7 tell you that there's nothing standing in the way of
8 multi-hundred megawatts a year? Not that I can see.

9 CHAIRMAN SPRITZER: So, using your
10 estimate, let me give you a couple of years, specific
11 years and ask you if you can help us understand what
12 you think -- we're just trying to clarify your opinion
13 so we can get --

14 MR. SKLAR: Yes. No, I totally respect
15 that. Sure.

16 CHAIRMAN SPRITZER: Okay. Let's start with
17 the year 2015. Can you give us an estimate for 2015 as
18 to what you think the potential is in Maryland,
19 understanding that this is subject to considerable
20 uncertainty, and it's best a judgment call.

21 MR. SKLAR: I would say that 2015, you mean
22 how much could go in in that year, or aggregate up to
23 that year?

24 CHAIRMAN SPRITZER: Aggregate up to that
25 year.

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1 MR. SKLAR: Aggregate up to that year in
2 2015, I would say somewhere around 350 to 500
3 megawatts.

4 CHAIRMAN SPRITZER: And that's starting--

5 MR. SKLAR: Of midday power, I'm talking
6 about. Right?

7 CHAIRMAN SPRITZER: I understand.

8 MR. SKLAR: Not baseload. Right?

9 CHAIRMAN SPRITZER: I understand. And is
10 that in addition to what has already been installed in
11 Maryland?

12 MR. SKLAR: Yes.

13 CHAIRMAN SPRITZER: Let me ask you the same
14 question for the year 20 -- well, let's do 2017, end
15 of 2017.

16 MR. SKLAR: I would also -- you request a
17 short answer. I just want to preface everything I say
18 that every estimate on energy, both conventional and
19 renewable has been wrong, so I just want to start
20 saying that. So, looking into the future, as you know,
21 is a mysterious game.

22 That said, by a couple of more years I
23 believe you could probably get another 750 megawatts.

24 CHAIRMAN SPRITZER: And if we went up to
25 2020? Let me back up again. Again, we are talking

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1 about an additional amount on top of what you told us
2 would be available in 2015. We're adding on an
3 additional --

4 ADMIN. JUDGE SAGER: Right. So, you said
5 350 for 2015, if I'm correct, 350, 500, plus another
6 750 by 2017. I don't know, maybe just go for the --

7 CHAIRMAN SPRITZER: Is the 750 in addition
8 to what --

9 MR. SKLAR: No, it was less than 3 and 5.
10 That's including that 300.

11 ADMIN. JUDGE SAGER: So, that's a total
12 750.

13 MR. SKLAR: Total 750. I'm sorry.

14 ADMIN. JUDGE SAGER: That's probably the
15 simpler way to do it.

16 MR. SKLAR: Yes, thank you. It makes it
17 easier for me, too.

18 ADMIN. JUDGE SAGER: Otherwise you have to
19 do a lot of adding.

20 MR. SKLAR: I know, it's really hard. I'm
21 bald you might notice, so it's a little harder for me.
22 Yes.

23 CHAIRMAN SPRITZER: And what would be the
24 total figure then, the total aggregate addition by
25 2020 in your opinion?

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1 MR. SKLAR: A minimum of 1,500 megawatts.

2 CHAIRMAN SPRITZER: And what

3 MR. SKLAR: Midday power.

4 CHAIRMAN SPRITZER: And one last year I'll
5 as you about, 2025?

6 MR. SKLAR: I believe an additional -- on
7 top of that would be another 750 megawatts.

8 ADMIN. JUDGE SAGER: Totaling 2,250?

9 MR. SKLAR: Yes. That's most conservative.
10 It can go higher than that, but I'm just giving most
11 conservative estimates.

12 CHAIRMAN SPRITZER: Now, are your estimates
13 in any way dependent upon existence of federal
14 subsidies or other types of market intervention by
15 federal or state government?

16 MR. SKLAR: No market intervention other
17 than the -- either the federal government or state
18 public utility commission don't withdraw the right to
19 interconnect to the grid and some of the
20 interconnection rules that are still required to
21 connect to the grid. They can add impediments.
22 Politicians can give and taketh away some things that
23 are not considered subsidies, but are barriers. So,
24 assuming that everybody holds that the marketplace has
25 the right to have virtually technology if they can

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1 meet certain safety and environmental rules, and that
2 yes, I think that would be --

3 ADMIN. JUDGE SAGER: And just to make sure
4 we're talking the same thing. So, this is solar power
5 that's derived locally by distributed solar panels,
6 not utility-scale solar panels, and that is --
7 basically doesn't have transmission losses, and
8 doesn't have the factors of trying to move energy
9 across large distances.

10 MR. SKLAR: Well --

11 ADMIN. JUDGE SAGER: Is that a correct --
12 is my assumption correct?

13 MR. SKLAR: In part correct. I'm going to
14 clarify that. It will include some utility-scale in
15 that. I mean, I've seen -- PEPCO already has I think,
16 what, a 285 megawatt thing here in the state, so
17 you're going to have all the utilities in the state
18 have multi-hundred megawatt systems. There's just no
19 doubt about it.

20 They're going to put them obviously in
21 places where there are land and the interconnect
22 distance is very short from the line, so you're not
23 going to have any more line losses than anybody else
24 has line losses. All right?

25 And the last thing to point out, both the

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1 elegance and the pain in the butt with solar is it's
2 going to be for lots of small systems to several
3 handfuls of very large systems. And it's going to be
4 distributed throughout the state for various reasons.

5 ADMIN. JUDGE SAGER: And I gather we're
6 talking within the boundaries of Maryland?

7 MR. SKLAR: Within the boundaries of
8 Maryland is all I'm talking about.

9 CHAIRMAN SPRITZER: Now, you've told us
10 about two of the exhibits that you rely on in forming
11 your opinion.

12 MR. SKLAR: Well, that I reviewed. That I
13 reviewed.

14 CHAIRMAN SPRITZER: All right. Are there
15 any others that you can recall that support your
16 opinion that you've just been telling us about?

17 MR. SKLAR: Well, I --

18 CHAIRMAN SPRITZER: Let me finish the
19 question.

20 MR. SKLAR: Oh, sorry.

21 CHAIRMAN SPRITZER: We have to make sure we
22 get the question on the record.

23 MR. SKLAR: Yes, sir. I'm sorry.

24 CHAIRMAN SPRITZER: Are there any other
25 studies you can recall sitting here right now that you

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1 relied on as the basis of the opinions you've been
2 telling us about for potential solar power
3 contribution?

4 MR. SKLAR: Yes, sir. One of the studies
5 that I also included in this presentation was an
6 analytical study issued by the Institute for Local
7 Self-Reliance that looked at most of the renewables,
8 not all of them, how self sufficient states can be.
9 And it was compiled by John Farrell. I reviewed not
10 only the study but the basis of information that he
11 used in that study, and he -- and Maryland, of course,
12 was one of the 50 states in the United States, so he
13 did that study. And, again, they did not look at the
14 marine technology, and he did not look at recycled
15 wood from municipal solid waste or combining power,
16 were not part of that study at all. Nor did he look at
17 offshore wind in Maryland.

18 So, when you looked at that study of
19 solar, wind, and biomass, he concluded that those
20 technologies could meet 40 percent of the state's
21 electrical load economically. So, that is the basis of
22 that study.

23 He did also issue, and it's on the
24 Institute of Local Self-Reliance website that once a
25 study that was done by the Abell Foundation here in

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1 Maryland on potential offshore wind, and looked at the
2 most conservative estimates of that, that Maryland
3 could probably meet all its energy need if you could
4 add that technology into the play. And that is on
5 their website.

6 MR. MARIOTTE: Your Honor, the study he's
7 referring to is Joint Intervenor's Exhibit 7.

8 CHAIRMAN SPRITZER: Okay.

9 MR. MARIOTTE: And the Abell Foundation
10 study was Applicant's Exhibit 10.

11 CHAIRMAN SPRITZER: Okay. Any others?

12 MR. SKLAR: Those are the ones that come to
13 mind.

14 CHAIRMAN SPRITZER: Very well. Let's move
15 on, unless my fellow judges have any more questions
16 directed to solar. Talking about wind, but if you
17 want to cover solar now, you can.

18 ADMIN. JUDGE ARNOLD: I looked at your
19 Exhibit 13, and I was hoping to see a study there.
20 And instead, the whole exhibits consists of a page and
21 a half summary. Is there any --

22 MR. SKLAR: Exhibit 13 is historic
23 crossover. Yes, I did not include -- I'm happy to get
24 submitted to the Court the Economics Professor's
25 study. I'm sorry, I just didn't have that handy when

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1 I -- we were preparing that.

2 CHAIRMAN SPRITZER: We have that. That is,
3 which one again, Mr. Mariotte? The Blackburn study.

4 MR. SKLAR: Was that the Blackburn study?
5 Am I --

6 MR. MARIOTTE: Actually, Dr. Arnold is
7 correct. It looks like we only submitted a press
8 release about the study rather than the study itself.

9 CHAIRMAN SPRITZER: Oh.

10 MR. SKLAR: But I have that, and you --

11 MR. MARIOTTE: It was probably my screw up.

12 MR. SMITH: I think there's a little bit of
13 confusion here. This 13 is the study about the 5,000
14 megawatts. That's the Maryland League of Conservation
15 Voters, not Joint Intervenors Exhibit 12, which is the
16 Blackburn --

17 MR. SKLAR: Oh, I'm sorry. Okay. Yes, I can
18 get you the SolarTown study. I have that. I'm sorry.
19 That's true, I did not have that handy when we were --
20 they were rushing to compile that in a PDF format so
21 they could give it to you, but I have that study and
22 would be happy to do that, if you allow me to.

23 CHAIRMAN SPRITZER: Sure.

24 MR. SKLAR: That's a good point. Thank you.

25 ADMIN. JUDGE SAGER: Let me -- I'm looking

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1 through many questions I wrote down. So, you just
2 mentioned the Self-Reliance state study.

3 MR. SKLAR: Yes.

4 ADMIN. JUDGE SAGER: Saying that Maryland
5 could generate I think 40 to 107 percent of its energy
6 from renewables. But we've been presented by other
7 witnesses saying that DOE projects only a very small
8 amount of solar energy use basically in this same time
9 frame. What do you think is the source of that
10 difference?

11 MR. SKLAR: That's a good question. The
12 Department of Energy doesn't actually -- they're not
13 a market-oriented analysis. All they do is they
14 extrapolate growth rates and cost reductions, and put
15 it in a model, and the model sort of projects out. So,
16 that's going to be a much more conservative model
17 because if cost reductions are a little more than what
18 their model had, or there's one change in law, or a
19 county government decides to do some education
20 program, it doesn't reflect what's really going on.
21 It's almost like a miles per gallon sticker on a car.
22 It's really what the Department of Energy does. It's
23 a great comparative tool, but it's not a precise tool.

24 Saying that, I do want to remind you what
25 I said before. Every projection on any energy,

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1 conventional or renewables has been wrong, so not
2 surprising, God bless.

3 ADMIN. JUDGE SAGER: Would it be fair to
4 say that this Self-Reliance state study is about the
5 potential, what could be achieved as opposed to what
6 perhaps is more realistic?

7 MR. SKLAR: Yes, but you to give them
8 credit. What they did was, first of all, they only
9 looked at what's conventionally commercial technology
10 now, so there's no assumptions that there's going to
11 be some gizmo coming out that would be a big game
12 changer.

13 Secondly, they did not assume there were
14 going to be a bunch of new laws, just sort of what we
15 -- pretty much stagnant what we have now. And they
16 also looked at the resource and took the most
17 conservative number so as not to stress the resources
18 or be too crazy.

19 That's actually what I liked about the
20 study, of course, that's why you get the range there.
21 But as you know, there are lots of other things that
22 drive uses of energy, so that is, obviously, cost.

23 My business is totally based on
24 reliability and predictability during the economic
25 meltdown. Again, these are Fortune 500 customers, very

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1 large. My business went up 17 percent. It wasn't that
2 my solutions were less expensive, but my solutions
3 were absolutely steady and reliable. Predictability
4 during a very unpredictable time has value in the
5 marketplace. So, you have to look at that. And those
6 things are hard to come up with, those projections, I
7 guess is what I'm trying to say.

8 ADMIN. JUDGE SAGER: Okay.

9 MR. SKLAR: And it's an understandable
10 difference.

11 ADMIN. JUDGE SAGER: Okay, thank you. Let
12 me ask another question. So, you mentioned in your
13 testimony and just a few minutes ago about that solar
14 is a peak load reduction power. In other words, it's
15 on basically during the day when you also have --

16 MR. SKLAR: Solar is a big thing during the
17 day. Again, the type of solar that would be used in
18 Maryland, there is concentrated solar with storage out
19 in the west, but that is not going to happen here.

20 ADMIN. JUDGE SAGER: So, we -- so, I guess
21 my question is how does that apply to Contention 10-C?
22 Remembering that Contention 10-C at the basis of it is
23 that the purpose of the project is to make baseload
24 power. So, does -- I understand it subtracts from
25 peaks, but it's not really baseload power according to

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1 other witnesses.

2 MR. SKLAR: Your Honor, that is why I went
3 nuts and, of course, later I was warned not to do
4 that, and I'm going to try to be very polite and
5 loving here; is why you would ever take off the
6 baseload renewables in this dialogue. It was like, you
7 know, if you want to meet baseload power, spending a
8 lot of time talking about the baseload renewables, and
9 then bring in the natural ones that can cost-
10 effectively meet your peak. Why leave that out? And I
11 was fundamentally stunned that at the Staff for doing
12 that. I have no idea why that would happen.

13 CHAIRMAN SPRITZER: What are the baseload
14 renewables?

15 MR. SKLAR: Well, the baseload renewables
16 are geothermal, biomass, and marine power. They got
17 24 hours a day. They're in the marketplace. I do
18 projects with them every day, and I -- and that's what
19 you would do. And I have studies that have been done
20 by Maryland government, in fact, on biomass, and by
21 Department of Energy on marine power. There is
22 potentially -- MIT did a study on West Virginia and
23 parts of western Maryland. You have some geothermal
24 potential. I don't think it's going to happen by 2020,
25 so I'm not promoting it, but at least the biomass and

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1 marine technology should have been brought in there,
2 and honestly discussed. And there are limitations on
3 that, too.

4 I did bring in some of that data, but the
5 point being is wind and solar by definition are when
6 the sun is blowing and the wind is blowing. You can
7 have storage, and I do tons of storage. I'm glad
8 somebody asked about CAES and there's also compressed
9 liquids now, and battery technology. And you can use
10 some of that, and it is cost-effective. But in the
11 end, it was -- I'm trying to be polite here again. It
12 was slightly intellectually dishonest to do it that
13 way.

14 MR. SMITH: Your Honor, in the interest of
15 keeping the record clear I'd like to point out that
16 the combination alternative does include 100 megawatts
17 of biomass power. It also includes 25 megawatts of
18 hydro power.

19 CHAIRMAN SPRITZER: Again, Mr. Sklar, we're
20 simply dealing with the contention that's before us
21 which --

22 MR. SKLAR: Yes, I understand. I'm not, of
23 course, blaming the justices here, of course. So, I
24 want --

25 CHAIRMAN SPRITZER: We're only judges,

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1 not --

2 MR. SKLAR: Judges.

3 CHAIRMAN SPRITZER: I'm not expecting a
4 promotion any time soon.

5 ADMIN. JUDGE SAGER: Did we get a
6 promotion?

7 MR. SKLAR: I would be happy to sign a
8 recommendation if that were allowed.

9 CHAIRMAN SPRITZER: Justices are usually
10 the people on the Supreme Court.

11 MR. SKLAR: Okay. Well, you look like
12 justices to me. That's all I have to say.

13 CHAIRMAN SPRITZER: We're talking about
14 storage mechanisms that could be used for solar. I
15 take it that would be to --

16 MR. SKLAR: Use power --

17 CHAIRMAN SPRITZER: Let me finish.

18 MR. SKLAR: Sorry.

19 CHAIRMAN SPRITZER: To provide a mechanism
20 of creating baseload power from a source that isn't
21 baseload power standing alone.

22 MR. SKLAR: Yes, sir.

23 CHAIRMAN SPRITZER: Okay.

24 MR. SKLAR: And, by the way, there are a
25 couple of ways to do that. One is this, you know, wind

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1 generally blows in the evening times, so a lot of
2 utilities are looking how to use the daytime power and
3 then the evening power of wind to give you
4 fundamentally two-thirds of the day, and then use the
5 final part of that either with peaker plants or with
6 storage to close out that circle so it has a behavior
7 sort of an organism that's like -- that behaves like
8 baseload power. So, it can be that way.

9 In facilities and buildings, I
10 predominantly use all different kinds of battery banks
11 from about 120 companies around the world. And, of
12 course, most of the military and cellular
13 installations that I've been involved with all use
14 batteries. Batteries are not cheap or less expensive
15 I guess is the more appropriate term, but they are
16 getting less expensive. They are ramping down
17 similarly to photovoltaics, and in another decade I
18 think will be very viable and used by many of the
19 major utilities as load storage and load shifters.

20 CHAIRMAN SPRITZER: Now, the technologies
21 you referred to for storage, are they currently
22 available or are they ones that are projected --
23 you're projecting will be available --

24 MR. SKLAR: No, batteries are -- first of
25 all, batteries are available. They're used now.

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1 They're being used much more at larger scale by
2 utilities than ever before in history now. And there's
3 most of the folks in the analysis side, National
4 Science Foundation, Department of Energy, Defense
5 Advanced Research Program, and the storage industry
6 itself see a giant market opening up for batteries.

7 What the change really is and, frankly,
8 the computer, cell phone, of course hybrid vehicle
9 industries have used private sector money to drive
10 scaling up battery manufacturing and developing
11 materials that can last longer, be 100 percent
12 recycled, very important, and take the ebb and flow of
13 load, electric -- the draw down of electricity so
14 they'll last 10 to 20 years.

15 You had to get that life for the utility
16 industry, particularly, or large-scale installations
17 that I'm -- or large facility installations that I'm
18 involved with. You need some duration of time because,
19 again, these are capital expenditures that are not
20 light either, so you want to make sure you'll have
21 something that not only will work, but will work for
22 minimum of a decade. And I think we're going to be
23 able to get to 20 years within the decade, within this
24 decade.

25 ADMIN. JUDGE ARNOLD: I have a couple of

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1 questions just trying to clarify some statements in
2 your direct testimony. On page 5 of your direct
3 testimony you state, "Applicants and NRC Staff have
4 consistently understated the potential contributions
5 of solar and wind power to Maryland the larger PJM
6 grid."

7 Now, I looked through the FEIS and I
8 couldn't see any statements concerning what the
9 potential for solar was. They focused instead on what
10 was reasonable to expect. So, when you say potential
11 contributions --

12 MR. SKLAR: Well, you -- I respectfully
13 agree with you. That's probably -- I was imprecise.
14 There is that fine line between what is reasonable and
15 what is potential. I would like to tell you, Your
16 Honor, and how you draw that line is not always bright
17 and clear. And I accept that.

18 ADMIN. JUDGE ARNOLD: So, what you meant
19 was they understate what is reasonable to include as
20 your --

21 MR. SKLAR: You are absolutely correct.

22 ADMIN. JUDGE ARNOLD: Okay.

23 MR. SKLAR: It was my inexact wording.

24 ADMIN. JUDGE ARNOLD: In response to
25 Question 8 in your direct testimony on page 9 you

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1 state, "The FEIS assumes a contribution of only 75
2 megawatts from solar power and discounts solar
3 photovoltaics entirely." And I'm wondering where you
4 think the 75 megawatts of solar power was coming from.

5 MR. SKLAR: That was actually an error. I
6 was talking about the efficiency side. I meant to say
7 solar thermal, not photovoltaics. Again, I look at
8 this game of trying to meet megawatts by reducing
9 loads as well as then generating loads.

10 There has been many peer reviewed studies
11 that show it is significantly less cost to reduce a
12 megawatt than generate a megawatt. We have not -- we
13 don't do that very well in this country. We're
14 starting to -- we have some interesting things
15 happening around it, but there is solar, both solar
16 day lighting, and solar water heating, and solar
17 industrial processing which, by the way, is a third to
18 half the cost of solar photovoltaics. And in my mind,
19 if you -- instead of producing electricity to meet
20 lighting and water heating loads, you would just
21 reduce it with something half the cost it would be
22 cheaper than generating. So, that's what I meant. And
23 that was a mistake on my part, sir. Sorry.

24 MR. SMITH: Again, in the interest of
25 clarifying the record, the combination alternative

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1 does include 100 megawatts from conservation and
2 demand side management beyond what is currently
3 planned.

4 CHAIRMAN SPRITZER: All right. Let's --

5 MR. MARIOTTE: If I may also point out the
6 EIS does state on page 924 in addition to DOE, EIA do
7 not project the addition of any utility-scale solar
8 thermal or solar photovoltaics power in the Mid-
9 Atlantic Council which includes Maryland through the
10 year 2035.

11 CHAIRMAN SPRITZER: Counsel could assume
12 we've read the EIS. We're familiar with what's in
13 there.

14 MR. MARIOTTE: Okay.

15 CHAIRMAN SPRITZER: Particularly on the
16 combination alternative.

17 Let's move on, if we can, to wind power.
18 Let me just say, Mr. Mariotte, by the way, on this
19 question of -- I believe it's JNT-13 still up on the
20 screen. This is the exhibit, I believe, that
21 apparently was not -- the complete copy is not in the
22 record.

23 MR. MARIOTTE: And I suspect that was my
24 fault rather than Mr. Sklar's fault.

25 CHAIRMAN SPRITZER: We had the same issue

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1 with the Staff. We were able to pick up one of their
2 documents that had the same problem. That was, I
3 think, Exhibit 33, which has since been corrected.

4 MR. WILSON: Your Honor, with the Staff the
5 exhibit was connected. It's that the link was not
6 complete. Here the -- what was submitted was simply a
7 press release and not the full document. So, if a new
8 exhibit is to be submitted, Staff would like the
9 opportunity to be able to review it and comment on it.

10 CHAIRMAN SPRITZER: No, that's what I was
11 coming to. And you'll need to file a motion, and it
12 can be a short motion. Hopefully there can be some
13 agreement, if there isn't, you'll need to explain the
14 reasons for filing it late.

15 What we would anticipate doing, at least
16 at this point, we may discuss this further once the
17 evidence has been concluded here today, we would close
18 the record normally when the transcript has been
19 issued and any corrections to the transcript have been
20 filed, and if necessary ruled on by the Board. But as
21 soon as possible after the hearing is concluded I
22 would get that motion filed.

23 MR. MARIOTTE: Yes, Your Honor.

24 CHAIRMAN SPRITZER: We'll move on to wind
25 power. Do you have an opinion? And, again, we're

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1 going to go -- I'm going to take you through some
2 specific years similar to the ones we just talked
3 about, but do you have an opinion as to the potential
4 contribution of wind power and I'll include in that
5 both offshore and onshore wind to the --

6 MR. SKLAR: Yes, I --

7 CHAIRMAN SPRITZER: Let me finish the
8 question. To the combined alternative that's in the
9 Final Environmental Impact Statement?

10 MR. SKLAR: There are actually three types
11 of wind that need to be considered. There's small
12 wind, and I'll say those are under 100 kilowatt
13 turbines. And in my view, there can be a couple of
14 megawatts, two to five max, of what I'll call TD wind.
15 All right? And we're starting to actually see that
16 come into the state, and into this region because they
17 can work off of much lower wind speeds. And, of
18 course, being less high you don't have the zoning
19 issues. I mean, it doesn't give you the hundreds of
20 megawatts you're looking for relating to the plant,
21 but it does have some, so I just want to point that
22 out. It would not be correct.

23 I looked at the National Renewable Energy
24 Laboratory study on the State of Maryland utilizing
25 true wind data, and reviewed that study. And I think

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1 it's very accurate, and they concluded that for 35
2 percent capacity factor wind turbines they were
3 looking at 80 and 100 meter heights only. That you
4 could conservatively get just shy of 1,000 megawatts
5 at the 35 percent capacity factor, at the 30 percent
6 capacity factor get to 2,750 megawatts. So, I do
7 believe that is a correct assumption for onsite wind.

8 As you know, larger wind turbines are --
9 take a longer period of time to get approved, and
10 installed, and financed than solar, but that is the
11 capacity.

12 I looked at the Abell Foundation study on
13 offshore wind. They looked at different meters off the
14 shore. They only looked at three megawatt and five
15 megawatt wind turbines, which is fine. I have nothing
16 against that. And I had a lower estimate in my mind,
17 and it's -- I'm being a little more conservative, but
18 I see that there's 3,470 megawatts of wind potential
19 in offshore wind that is likely to be financed because
20 it's closer to the shore, and it's closer to potential
21 interconnection hubs. They went much higher, and it's
22 all possible, of course. A lot of that depends on cost
23 reductions on wind and whether, for instance, Googles
24 network off the shore can create ways to lower costs
25 of hook up, so I would go about 3,470 megawatts of

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1 likely offshore wind. That would be financed within
2 the next 15 to 20 years.

3 CHAIRMAN SPRITZER: All right. Now, on the
4 Abell Foundation document, I believe that's
5 Applicant's Exhibit 10, you refer to another study,
6 the first study --

7 MR. SKLAR: The National Renewable Energy
8 Laboratory study on wind -- land wind capacity
9 factors.

10 MR. MARIOTTE: That is assessment of
11 offshore wind energy resources.

12 MR. SKLAR: Yes.

13 MR. MARIOTTE: I think that might have been
14 -- maybe Joint Intervenors's 3.

15 MR. SKLAR: Let me see.

16 MR. MARIOTTE: Yes.

17 MR. SKLAR: Yes.

18 CHAIRMAN SPRITZER: So, that's Joint
19 Intervenors's Exhibit 3. All right. Now, the numbers
20 --- I'm sorry.

21 Okay, let's put a time frame -- well, let
22 me back up a minute. The megawatt numbers you've been
23 given, are those --

24 ADMIN. JUDGE SAGER: Installed.

25 CHAIRMAN SPRITZER: -- installed capacity,

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1 baseload power, something else.

2 MR. SKLAR: Wind is not a baseload power
3 option, which is why I did my little whiny thing
4 before. So, wind is an intermittent technology, just
5 like solar, would need battery storage or some other
6 kind of storage, or needs to be combined with some
7 other technologies so you get that full circle of 24
8 hour a day power, of course.

9 CHAIRMAN SPRITZER: So, the numbers you
10 were giving to us then, were they installed capacity
11 that is --

12 MR. SKLAR: Is installed capacity but
13 they're not 24 hour a day megawatts because the wind
14 doesn't blow -- 35 percent capacity factor is pretty
15 much 35 percent -- a third of a day, you know, so
16 that's what we're talking about. Solar basically is
17 a third of a day, so that's -- give or take depending,
18 of course, on the season and some other conditions.

19 CHAIRMAN SPRITZER: All right. Now, I'm
20 going to take you through the same years we talked
21 about earlier.

22 MR. SKLAR: Right.

23 CHAIRMAN SPRITZER: And see if you can tell
24 me approximately how much of this installed capacity
25 you believe would be in place at the end of that year.

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1 And we'll start with 2015.

2 MR. SKLAR: 2015 I believe there will be
3 475 megawatts of wind in the State of Maryland. This
4 is based mostly though not on the studies, but on
5 analysis I did just on developers on what projects
6 that have in play. And what I -- they have bites on
7 the financing side. They're already received the
8 initial regulatory okay that they can play. And that's
9 what I think is likely.

10 CHAIRMAN SPRITZER: Can you briefly tell us
11 what those projects are that you were just referring
12 to?

13 MR. SKLAR: I do not have them all in my
14 head, but I'm happy to submit it as --

15 CHAIRMAN SPRITZER: That's all right.

16 MR. SKLAR: -- adjunct to my testimony, if
17 you would allow me to.

18 CHAIRMAN SPRITZER: For 2017, can you give
19 us -- again, the end of 2017.

20 MR. SKLAR: I believe there will be an
21 additional 500 megawatts on top of that.

22 CHAIRMAN SPRITZER: And by 2000?

23 ADMIN. JUDGE SAGER: 2020.

24 CHAIRMAN SPRITZER: I'm sorry. I guess we
25 have to get the time --

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1 MR. SKLAR: I can't regress, I'm sorry.

2 CHAIRMAN SPRITZER: No.

3 MR. SKLAR: Although I've done that in
4 other ways.

5 CHAIRMAN SPRITZER: 2020.

6 MR. SKLAR: I believe 2020 you'll have
7 probably another 280 on top of that. That's sort of
8 what I think. From what I see of the deal flow more
9 than what -- they fall definitely within the
10 parameters of these studies. But deal flow and wind
11 is very -- much more complicated in solar, you
12 generally have larger projects. There's -- the
13 regulatory review you have more impact on the
14 transmission lines because they're larger projects, so
15 there's an engineering review. You have some of the
16 esthetic issues, you have the birds, so you have
17 several more things that you have to face, hoops that
18 you have to face with solar projects. And everything
19 goes slower than one intends, of course.

20 ADMIN. JUDGE ARNOLD: Would these be land-
21 based or offshore?

22 MR. SKLAR: These would mostly be land-
23 based. I expect within the 2020 time frame we will
24 have a offshore -- one offshore wind project that is
25 somewhere along the line, hope it doesn't take as long

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1 as the Cape Wind one up near Massachusetts, but -- and
2 Department of Interior, of course, is trying to
3 accelerate this and make this less painful, but it's
4 a painful process. So, do I think we'll have one? 100
5 percent absolutely. Do I know it will be done by the
6 year 2020? I have no way to tell you that.

7 CHAIRMAN SPRITZER: And the final year that
8 I'll ask you about will be 2025.

9 MR. SKLAR: Well, by 2025 I believe you
10 will have at least 250 megawatts of offshore wind. I
11 do believe that will happen by 2025.

12 ADMIN. JUDGE SAGER: Is that in addition
13 to what you predicted for 2020?

14 MR. SKLAR: Yes, sir.

15 ADMIN. JUDGE SAGER: So, we would just add
16 that on to --

17 MR. SKLAR: Yes, sir.

18 ADMIN. JUDGE SAGER: -- the figure for
19 2020.

20 MR. SKLAR: Yes.

21 CHAIRMAN SPRITZER: All right.

22 ADMIN. JUDGE ARNOLD: You touched upon the
23 Cape Wind permitting process, which we have in
24 evidence from UniStar that took 10 years. Is that
25 correct, it took 10 years?

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1 MR. SKLAR: I can't exactly say it took 10
2 years, but it took a gosh darned long time, sir. Yes,
3 it was a painful ordeal, but it was our first ever.

4 ADMIN. JUDGE ARNOLD: And is there any good
5 reason to believe they're going to be able to shorten
6 that? Other than the fact that we know they're
7 attempting to shorten it --

8 MR. SKLAR: Well, I think so. Remember the
9 -- most of the Intervenors that stopped that project
10 were some of the wealthy and most politically
11 connected people in our country that lived on that
12 great Nantucket Island, and put lots of money into
13 that issue. I don't think there's quite a similar
14 circumstance here in Maryland, frankly.

15 I also believe that what the Department of
16 Interior is doing to get public input to start with,
17 not just looking at shipping lanes and all of this
18 other stuff which is also very important to do and get
19 all that out of the way, but look at the shoreline
20 communities, and build them into the process is the
21 right way to do these kind of projects. So, you have
22 the pain up front, not the pain at the end. So, I do
23 not believe it's going to take 10 years to get an
24 agreement off the shore of Maryland, or Virginia for
25 that matter.

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1 But I do believe it's not going to take
2 two and a half years that we can get down to in some
3 on land places in the United States here. This is a
4 five-year process, you know. I believe it will be a
5 five-year process.

6 ADMIN. JUDGE ARNOLD: On page 6 of your
7 direct testimony, you state, "The U.S. Department of
8 Energy states that the gross wind resource prior to
9 siting and other restrictions is estimated to be more
10 than 4,000 gigawatts out to 50 nautical miles." Do you
11 recall that?

12 MR. SKLAR: Yes, sir.

13 ADMIN. JUDGE ARNOLD: Okay. On the same
14 page you also state, "According to National Renewable
15 Energy Laboratory large-scale offshore wind power in
16 the United States, Maryland itself has 53.8 gigawatts
17 of offshore wind potential for areas up to 50 nautical
18 miles from shore." Do you recall that?

19 MR. SKLAR: I do recall that.

20 ADMIN. JUDGE ARNOLD: Do either of these
21 reports attempt to project the rate at which this will
22 be developed, or is it just --

23 MR. SKLAR: No, and those are very sterile
24 numbers. And actually why I suggested we look at the
25 Abell study, Abell Foundation study was that was a

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1 much more precise study.

2 What the Department of Energy and the labs
3 do, and it's a good thing. I mean, you know, you need
4 different levels of resolution when you're looking at
5 analysis. They're sort of looking at the big picture
6 from 100,000 feet up and seeing technically what can
7 happen with the wind regimes and they throw a little
8 modeling analysis in there to get rid of the crazier
9 stuff. And then try to put a little box around it.

10 And then these kind of -- the Abell
11 studies really took a look at -- started from there
12 and then went very methodically through the detail of
13 kinds of soils, and unique wind patterns, and all this
14 other stuff that you've really got to look at, you
15 know. So, they tend to be a little more precise. And
16 that's how these numbers start getting shaved down to
17 getting closer to reality.

18 So, at the same time I just want to say,
19 you know, we're still -- there's a movement in the
20 capability of this offshore wind technology downward,
21 as well. And we're seeing evolutions in new material
22 science and new control mechanisms, and use of
23 biomimicry, and wind turbine blades that will be able
24 to do some things that we actually have not
25 anticipated in any of these studies. So, we're seeing

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1 things all going on at the same time.

2 Saying that, I am here to tell you it's a
3 great resource, a practical one, but anybody making
4 predictions that there's going to be thousands and
5 thousands of megawatts in the next 10 to 15 years,
6 it's just not going to happen. You know, that's why I
7 suggest thinking you'll have a few hundred megawatts
8 of wind, you know in a decade and a half from now is
9 probably a more realistic --

10 ADMIN. JUDGE SAGER: When you say a few
11 hundred megawatts, you're talking about actual --
12 using a capacity factor because just a few minutes
13 ago we said by 2025 around 1,500 megawatts. So, you're
14 talking about actual power output --

15 MR. SKLAR: Yes, sir.

16 ADMIN. JUDGE ARNOLD: Ocean is not a very
17 forgiving environment.

18 MR. SKLAR: It is the worst -- marine
19 environments are the worst environments ever,
20 absolutely correct.

21 ADMIN. JUDGE ARNOLD: Do we have any
22 reliable projections of a longevity of an offshore
23 wind turbine?

24 MR. SKLAR: You know, that is a great
25 question. The good -- there is some good and bad news

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1 in this. Obviously, the northern Europeans are the
2 leaders in doing offshore wind. Their stuff has been
3 in the water longer than anybody else's in the world.
4 I have to say, I've toured one of them out there, and
5 it looks pretty promising that we can have a 20-year
6 life on these things without question.

7 But do we have any real data to prove that
8 yet? It's a very young industry, so can Scott Sklar
9 say with 100 percent certainty that those things off
10 the coast of northern Europe will last to year 20, I
11 cannot put my hand on the bible. Do I think it's very
12 likely? I do.

13 But remember we have things in water all
14 the time, you know, and a lot of the technology that
15 we've been using for the military and for bridges, and
16 Cathodic Protection Technology, to rust and all kinds
17 of new materials are all being employed. The best
18 science, material science in the world, these
19 companies that are doing offshore wind are not tiny
20 little companies. You know, the Vestas and the GEs of
21 the world are very sophisticated companies with some
22 of the best research guys around. So, do I think it's
23 likely? Sure. But do we have data to prove that it's
24 likely? I haven't seen it yet.

25 ADMIN. JUDGE ARNOLD: Also having to do

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1 with the environment it's in, the coast of Maryland is
2 subject occasionally to hurricanes. Do we -- do
3 existing offshore wind turbines get subjected to
4 similar type weather conditions?

5 MR. SKLAR: Yes, and actually there I can
6 answer that the environmental experience of the wind
7 turbines off the northern European coast actually have
8 taken higher winds than most of the recorded wind data
9 off of Maryland shore, so from that point of view I'm
10 actually a lot more confident that we have some pretty
11 strong data which shows that they could be robust in
12 that.

13 CHAIRMAN SPRITZER: Now, for the wind
14 you've reminded us, of course, that wind power is not
15 baseload power. I take it then that the estimates
16 you've given us for the years we've talked about, they
17 would all require that wind be coupled with I guess a
18 plant storage mechanism, something to --

19 MR. SKLAR: I would hope biomass, because
20 that's something -- I believe the Staff has totally
21 under-calculated that by orders of magnitude. But,
22 anyway, yes, sir, that's correct.

23 CHAIRMAN SPRITZER: And what technologies
24 would be -- well, let me start. What technologies are
25 available now to do that in your opinion?

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1 MR. SKLAR: In just biomass or all the --

2 CHAIRMAN SPRITZER: No, wind power. Let's
3 talk just about wind power.

4 MR. SKLAR: Okay. I'm not sure I understand
5 your question, sir.

6 CHAIRMAN SPRITZER: Okay, that's fine. At
7 any time you don't understand any of your questions,
8 please ask us to clarify.

9 MR. SKLAR: All right.

10 CHAIRMAN SPRITZER: I think you've
11 explained that in order to -- and we've also heard
12 from other witnesses that in order to take a baseload
13 -- a non-baseload power source --

14 MR. SKLAR: Right.

15 CHAIRMAN SPRITZER: -- such as wind, and
16 generate baseload power, you're going to need to
17 couple the wind source with some other technology, a
18 storage mechanism, for example.

19 MR. SKLAR: Correct. Or other generation
20 technology.

21 CHAIRMAN SPRITZER: Or other generation
22 technology.

23 MR. SKLAR: Correct.

24 CHAIRMAN SPRITZER: Now, do you have an
25 opinion as to whether such technology is presently

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1 available?

2 MR. SKLAR: Yes, I mean, you know, in the
3 market today what's being used mostly with wind are
4 natural gas generation plants. And it's easier for
5 them to come on line quick, come off line quick. I
6 don't know if you all know this, but half the wind
7 today, over half the utility-scale wind generation
8 today is forecast days, in some cases months ahead so
9 the utility will know when the wind will drop. So,
10 that's becoming a fine science, so that they are
11 prepared. And, fundamentally, that's what you do, you
12 take these forecasts, make sure your gas plants are
13 ready and pop them up.

14 In some places they're using peakers,
15 peaker plants. The problem with peakers is some of
16 them -- I mean, they work but a lot of them are
17 dirtier because they're older plants, so you have to
18 deal with your Clean Air Act containment on how you do
19 that, and some of that has seasonal issues with
20 missions coming out, so there's play.

21 Generically, natural gas is the play to
22 harden or to close that cycle. States that are
23 building renewable energy portfolio standards are
24 obviously trying to create the portfolio that
25 naturally gets that circle with renewables a little

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1 more to firm up both solar and wind. And that's a
2 great policy, because once you start getting these to
3 scale is when you get the reliability and cost
4 reductions for the future at some point we're going to
5 need to have. And that's one of the tactics to do it.

6 CHAIRMAN SPRITZER: Now, are there storage
7 technologies presently available that would -- could
8 be coupled with a wind power source to generate
9 baseload power?

10 MR. SKLAR: Yes. The -- well, the -- I
11 don't want to misspeak here. The battery technologies
12 are probably the ones that are generically the best in
13 the marketplace at the moment, and they're still in
14 their infancy, but they're being used at the megawatt
15 scale, megawatt and up scale. The compressed air or
16 liquid storage that I've seen are for smaller amounts
17 of time, but for wind particularly, that's a wonderful
18 -- particularly for drops, not necessarily for making
19 up the two-thirds of time it's not running, but if the
20 wind just dips, these things come on so you can have -
21 - the profile you see at the utility side is a level
22 functionality, a level output. So, you have two
23 different issues with wind. You have those quick drops
24 and then, of course, you have the time the wind is not
25 blowing.

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1 But we do have storage. In the west we're
2 using pumped hydro because they have lots of hydro.
3 And there are some big companies that take -- that do
4 it that way. And we're starting to see some movement
5 for -- but, again, these are much smaller scale in
6 terms of flywheels and other technology. But this is -
7 - that stuff is more at its infancy, much more for
8 distributed generation uses.

9 CHAIRMAN SPRITZER: Do you have an opinion
10 whether pumped hydro is a feasible option in Maryland
11 to generate baseload power?

12 MR. SKLAR: Well, first of all, in terms of
13 cost-wise, it's very good. But I have not done an
14 analysis of hydro in Maryland.

15 CHAIRMAN SPRITZER: Okay.

16 ADMIN. JUDGE ARNOLD: I have a concern
17 about storage in the capacity. What -- say, for
18 instance, we needed a combination alternative that
19 required 100 megawatts that could supply that 100
20 megawatts for say 10 hours. What resources are
21 available in Maryland for doing that? Could batteries
22 do it?

23 MR. SKLAR: Yes.

24 ADMIN. JUDGE ARNOLD: Are there any other
25 technologies that could do that to your knowledge?

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1 MR. SKLAR: Well, I mean pumped hydro
2 theoretically could do it. Again, I don't know. I
3 haven't done the study in Maryland to see if that's
4 applicable, but could it do it? Have I seen it
5 elsewhere? Yes. But right now, batteries and pumped
6 hydro are probably the most commercial storage
7 approaches we have, as far as I know.

8 CHAIRMAN SPRITZER: What about CAES,
9 compressed air or --

10 MR. SKLAR: Well, again CAES is mostly ---
11 first of all, I'm a big fan of the technology. I've
12 seen several installations. They work. I think it's
13 very viable. Generally, they've been doing shorter
14 duration reductions, so that's when -- so when the
15 wind drops unexpectedly for 20 minutes, it comes on
16 and can do it instantaneously and levelize the load.
17 That's generally where those technologies have been
18 dealing with. And, theoretically, the same thing if
19 you have a cloud going by and you really want to make
20 sure your out -- you want to make sure whatever is
21 coming out of your intermittent generation -- again,
22 the load profile on the electric lines is steady.
23 That's the best technology.

24 I have not seen, it doesn't mean it
25 doesn't exist, what I call long duration compression

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1 to deal with that. I don't know enough about the
2 longer compression side of that game, so I cannot be
3 as solid an expert for you on that. But short-term, I
4 think it's the way to go.

5 CHAIRMAN SPRITZER: All right. Well, we've
6 been going at you here for about an hour and a half.
7 We'll give you a break; however, the bad news is
8 you're not done yet. You'll be coming back after we
9 come back, which will be in about 15 minutes.

10 MR. SKLAR: Okay.

11 MR. GENDELMAN: I'm sorry, Your Honor?

12 CHAIRMAN SPRITZER: Yes.

13 MR. GENDELMAN: We wanted to inform you
14 that the Staff witness was able to change their travel
15 plans, so if the Board would like to have lunch at
16 this time.

17 CHAIRMAN SPRITZER: We'll try and keep it
18 to less than two hours. Thank you.

19 MR. SKLAR: Thank you.

20 CHAIRMAN SPRITZER: We'll be right back.
21 Give you 15 minutes, so we'll come back at 11:20.

22 (Whereupon, the proceedings went off the
23 record at 11:04:51 a.m., and went back on the record
24 at 11:23:54 a.m.)

25 CHAIRMAN SPRITZER: I think -- we've

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1 conferred over the break as to how we can -- how best
2 to proceed. We tried to shorten some of our
3 questioning in light of answers that have already been
4 provided. So, I think what we're going to do is see
5 how -- try to move forward until about 1:00. If we're
6 close to finishing, including giving you all time for
7 rebuttal questions, closing arguments, and
8 housekeeping matters we need to take care of, we'll
9 try and get done without taking a lunch break. But if
10 we're getting close to 1:00, or if people are
11 suffering we'll take a break at that time. Is that
12 acceptable to everyone?

13 MR. SMITH: Yes, Your Honor, that's
14 acceptable. I would like to add one thing. We'd like
15 to request an opportunity to briefly put back on our
16 witnesses to respond in a very focused fashion to some
17 of the statements that were made this morning. Since
18 we've gone out of order and we weren't able to address
19 them directly yesterday, we discussed it. We think we
20 can do it in 10 minutes max, 20 minutes, if there's
21 some questions from you all. It would be very
22 targeted, and that would be our hope.

23 CHAIRMAN SPRITZER: Any objection to
24 proceeding in that manner?

25 MR. WILSON: No, Your Honor.

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1 CHAIRMAN SPRITZER: Mr. Mariotte?

2 MR. MARIOTTE: No, Your Honor.

3 CHAIRMAN SPRITZER: We'll take that into
4 consideration.

5 MR. SMITH: Thank you.

6 MR. GENDELMAN: Your Honor, we'd add if you
7 had additional questions following Mr. Sklar's
8 testimony of Staff witnesses, they're available.

9 CHAIRMAN SPRITZER: Okay, thank you. All
10 right, Mr. Sklar, I remind you you're still under
11 oath.

12 MR. SKLAR: Yes, sir.

13 CHAIRMAN SPRITZER: Now, if I could --

14 ADMIN. JUDGE SAGER: Okay. So, a question
15 I had follows up on a question that the other judge
16 over here asked a few moments ago, and it goes to
17 reliabilities. I don't have -- somewhere in my
18 question I could point to the exact page. But,
19 basically, made a statement somewhere in your
20 testimony that a combination of alternatives is
21 actually more reliable than say a baseload nuclear
22 plant. Is that a fair -- okay, did I state that
23 properly? And can you elaborate on that?

24 MR. SKLAR: Well, what I mean by
25 reliability, you know, as you know the actual on time

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1 nuclear power plants have been pretty high. The real
2 issue -- you know, and I teach these in both my
3 courses, you know, the whole -- and I have to deal
4 with the military is risk. And risk is a big issue.

5 And, you know, when you have a thousand --
6 - what, 1,600 megawatts go down for any reason,
7 whatever it is, that's a giant hole to fill. And
8 generically when you have lots of distributed
9 generation, the -- you're not going to have those big
10 chunks ever go down. You'll have little pieces go
11 down, of course. So, there is -- you know, risk --
12 nothing works 100 percent of the time. We're human
13 beings, it doesn't work that way.

14 So, when I'm referring to that kind of
15 risk, I'm referring to what happens during a failure
16 and what is the up times for the baseload renewables,
17 marine, biomass, geothermal, as high output as any
18 nuclear plant. So, you're really just dealing with the
19 intermittency of the two other renewables in that
20 play. And we have several tactics to both forecast and
21 prepare.

22 And I want to use the same analogy, the
23 same analogy in telecom was switchboards were very --
24 are and are very reliable, and wired systems. But,
25 frankly, cellular -- a distributed system is far more

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1 reliable because the moment of point of failure you
2 can reroute and draw upon your other systems.

3 And if you look at some of the military
4 data on targets for terrorism, for instance, one of
5 the reasons the communication systems has gone down
6 precipitously is there are no giant targets. You can
7 take a bunch of cell towers down and it's a 30-second
8 blip. That's about it.

9 So, distributed nature really does give
10 you a little more security once you have smart SCADAs
11 and the kinds of controls, and the analytical tools
12 that we're just beginning to develop renewables but
13 are pretty sophisticated tools. And there are -- the
14 smart grid projects in the United States, and there
15 are 28 of them according to my count, a third of them
16 tied to the U.S. military, some of which I'm involved
17 with, you know, I mean, you will see lots of
18 distributed energy come in and out. And it will be as
19 stable and controllable, and frankly more reliable
20 than the -- some of the larger bulk power, what we
21 call central switchboard systems that we're used to
22 now. It's a learning curve issue, so that's what I was
23 referring to.

24 ADMIN. JUDGE SAGER: Okay, thank you. That
25 actually -- I had the wrong idea in mind, so that was

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1 a helpful explanation. But it brings up a couple of
2 other questions.

3 MR. SKLAR: Sure. Sure, please.

4 ADMIN. JUDGE SAGER: So, I was thinking
5 reliability in terms of we know that periodically
6 major hurricanes come up the east coast.

7 MR. SKLAR: Right.

8 ADMIN. JUDGE SAGER: And I could imagine
9 that you could have a scenario where you could lose a
10 significant amount of wind and solar from just
11 destruction caused by in line winds. Is that -- has
12 anyone done any studies of what sort of impact that
13 would have? Does that have a big --

14 MR. SKLAR: Actually --

15 ADMIN. JUDGE SAGER: I'm sorry, go ahead.

16 MR. SKLAR: I apologize. I'm sorry. I
17 always like to answer these -- yes. And, in fact,
18 we've done some studies on Guam that get the typhoons
19 at a little higher rate of wind time than here. And,
20 again, I was hired by the State of Mississippi by the
21 Governor after Katrina because the entire grid was
22 ripped out. And that's really what I want to point
23 out. The most fragile part of this game is not the
24 plants. And I have lots of pictures I use in my
25 presentations when hurricanes come from Florida, you

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1 know, that the solar panels are on -- actually, the
2 buildings that have the solar on the roof are -- the
3 roofs are intertwined stronger. They're still on.
4 Everybody else's roofs are blown off. But the wires
5 are gone, so you can have the best nuclear power plant
6 in the world, or natural gas plant and your wires are
7 gone, which is what happened in Mississippi, you ain't
8 got much.

9 Actually, with your building base systems,
10 if they're done correctly, if the buildings are
11 operating, you may not be putting anything -- and
12 there's no place to put in the grid, but if you have
13 storage systems or at least during the day or at night
14 with the wind, you have power, you can operate.

15 So, it's -- I'm a big believer in
16 redundancy and portfolio technology. That's what my
17 business is based on. I still think that's a more
18 resilient way for the grid, frankly, than relying on
19 any one technology, which includes any one renewable
20 technology, tell you the truth.

21 ADMIN. JUDGE SAGER: Okay. Let me follow-up
22 on another different angle. You just mentioned the
23 wires and the grid. It's obviously important, and you
24 just mentioned previous to that about having a grid
25 that's smart enough to take in all these different

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1 sorts of inputs. So, how -- so, what is the state of
2 our grid today, and how smart is it, and how smart
3 does it really need to be to well integrate all these
4 different sources? And what is our -- that's obviously
5 a limitation on -- you could put up all the renewables
6 you want, but if you can't distribute them, maybe that
7 limits their usefulness.

8 MR. SKLAR: Well, first of all, that is a
9 superbly great question. And let me try to put it in
10 different answers.

11 I do want to start by saying that our
12 grids today are actually very dynamic animals. We act
13 like they're not, but we have transformer failures,
14 and generation failures, and wires coming down, and
15 hundreds of thousands of diesel engines doing line
16 voltage augmentation on transmission lines. And we are
17 managing very much like an air traffic controller,
18 energy coming on and off the grid right today without
19 looking at one renewable electron. So, we are under
20 this fantasy that's not going on. It is.

21 And we have a, what I'll call a middle
22 school kind of grid. We have these SCADA systems, we
23 have some information. The information tells us some
24 things, and in some cases we've been very adept at
25 handling it. I use one of the -- a great picture. I'm

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1 sorry we don't have PowerPoint here, of -- I have a
2 great satellite picture when that tree limb fell in
3 Ohio in August 2003, and 11 states went black from
4 three hours to three days, and parts of Canada. And,
5 of course, we blamed it on the Canadians for the first
6 day and a half until we realized it was a tree limb.
7 And then we realized it was really human failure in
8 Ohio.

9 So, the face of the matter is we have some
10 smartness in our grid, and we have a lot of dumbness
11 in our grid. But what we're talking about -- what we
12 mean by smart grid, and smart grids, by the way, mean
13 different things to different people. So, when Scott
14 Sklar talks about smart grid, or the military is
15 talking about smart grid, we're talking about a
16 seamless self-repairing network somewhat similar to
17 what we have in the internet, so that if there's a
18 human error, or a power failure, or a resource area,
19 the grid can accommodate to it in nanoseconds, and
20 human frailty and Mother Nature, and maybe terrorism
21 can be compensated for. So, that's what we're --
22 that's the aspiration.

23 We have a long way to go. And remember
24 all these aspirations are tied by each State Public
25 Utility Commission in many cases, some of the regional

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1 ISOs in some cases, so it is a very complex patchwork.

2 The kind of renewables we have coming into
3 the grid at this time, which is a very small
4 percentage, our grid is dumb enough or smart enough to
5 accommodate it fine. And, actually, one of the reasons
6 renewable portfolio standards have been limited in
7 percentages has been really at the behest of the
8 utility industry, nobody else saying we're comfortable
9 with no more than that screwing up, unintended
10 consequences. So, that's it.

11 We're starting to get penetration rates
12 now higher than most -- many of the renewable
13 portfolio standards in Europe. And there it's
14 requiring a whole new level of sophistication, because
15 now you're starting to get into the not fringes of
16 under 10 percent, or even maybe up to 20 percent, but
17 now you're starting to get over 20 percent. And there
18 are new tools, and new kinds of sensors, and new kinds
19 of information, and frankly new kinds of skills to
20 make sure that all balances out, because now you're
21 talking about serious percentages on the grid.

22 Is the United States' grid ready for 40
23 percent penetration rate of, particularly solar and
24 wind, not baseload now? No. Are we going to get there
25 any time soon? No. So, I think we have some time to

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1 build up and watch in some cases what the Europeans
2 are doing. But that's a wonderful question, and
3 there's a lot of studies going on just about what
4 skills, and what information, what tools we need to
5 know to do exactly what you asked.

6 CHAIRMAN SPRITZER: If we could turn to
7 Joint Intervenors's Exhibit 1, page 8 toward the
8 bottom. A little bit further up. There we go, that's
9 great. Now, you're talking here about the Bluewater
10 Wind project, and specifically with reference to --
11 well, somewhere in this page you refer to a 600
12 megawatt wind farm off the coast of Maryland proposed
13 by Bluewater Wind. I guess it's a little further up.
14 Yes, right there.

15 MR. SKLAR: Right. Right.

16 CHAIRMAN SPRITZER: There we go. Okay. And
17 my question is, what is the 600 megawatt figure, if
18 you haven't -- well, even if you have covered that
19 previously, is that installed capacity?

20 MR. SKLAR: No. Well, that is the output
21 of the farm at the -- I believe it's at a 35 percent
22 capacity factor. So, again, what we're -- what I tried
23 to show in this part of my testimony was really that
24 right in our environment here, I mean, we do have some
25 private sector moves to put up some real tranches of

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1 wind capacity. Department of Interior is working on
2 it, PJM is involved in this, so it's not -- this is
3 not all just pie in the sky, or pie in the sea,
4 anyway, that was a good one.

5 CHAIRMAN SPRITZER: We have -- sorry.

6 MR. SKLAR: There's some real activity
7 going on. Again, it goes back to your question,
8 there's going to be regulatory hurdles to this.
9 There's -- it's not going to be a slam dunk, but that
10 there's a move by the wind industry to play this
11 seriously in nice chunks of hundreds of megawatts.
12 That was the point of that -- those lines.

13 CHAIRMAN SPRITZER: Now, you are aware, I
14 believe, that this project has recently run into some
15 financial problems.

16 MR. SKLAR: Well, it will go up and down.
17 And, yes, no question, I'm aware of that. And I didn't
18 say this was a slam dunk deal in that testimony.

19 CHAIRMAN SPRITZER: Right.

20 MR. SKLAR: There is no question that there
21 are lots of regulatory hurdles, and the money has to
22 be patient enough, and different kinds of money have
23 different kinds of patient levels for this kind of
24 thing.

25 This is not a -- you know, offshore wind

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1 is not a slam dunk play. We know that, you know, and
2 we're going to have a lot -- several hiccups as the
3 couple of the initial sites get up and operating
4 before the private sector says hey, you know, it's
5 still risky but now I feel a little more comfort. So,
6 we're still at the initial stages of this, you know.
7 We know we have a great resource, we know the
8 technology exists, but now we're got a whole
9 regulatory regime to play out. And it's just not
10 utility regulatory regime, it's the whole offshore
11 permitting, and some of the other issues. So, my point
12 in that was just to show there's play out there, not
13 that it won't have hiccups.

14 CHAIRMAN SPRITZER: Taking into account the
15 recent experience of the Bluewater Wind project, does
16 that affect your opinion whether this is a
17 commercially viable alternative?

18 MR. SKLAR: Absolutely. And we need to get
19 away --

20 CHAIRMAN SPRITZER: How does it -- what is
21 your opinion on that issue taking into account --

22 MR. SKLAR: Okay, thank you, sir. And,
23 again, we have to make sure we're very careful here in
24 some ways dispassionate about a particular company or
25 project, because they're all going to have hiccups. I

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1 mean, tons of nuclear projects have hiccups, too, so
2 this is not related to wind. But offshore wind, which
3 is particularly the new -- one of the newer big block
4 players on the block is -- we're going to have some
5 hiccups in the -- in getting these projects on line,
6 and there's going to be a little pain associated with
7 it.

8 The issue is, and my opinion is that once
9 the first few come up offshore, there's going to be
10 actually a capital movement from onshore wind which
11 now is fundamentally a template business in financing
12 and technology. I mean, we have a lot of very
13 sophisticated wind farm developers around the country.
14 Wind farms are going up every single day. They're
15 multi-hundred megawatt wind farms. It's -- the
16 financial community knows how to deal with it. The
17 regulatory community knows how to deal with it. We've
18 sort of got that.

19 But as we're seeing, the easy wind farms
20 have been done on land, and it's going to be higher
21 and higher regulatory cost because the communities are
22 competing uses of that land. And I believe there's a
23 lot less competing uses for the offshore land if you
24 work out some of the shipping issues and security
25 issues, and some community issues beforehand that in

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1 the end will actually become a faster way to get
2 bigger blocks of wind at better wind regimes.

3 So, this is just an early stage that every
4 industry had. We have the same issue in early days
5 with cell towers. You know, people thought they were -
6 - you know, I mean, I particularly don't love them
7 either even though I do some projects with them, but
8 now they're all over the place. So, the issue is it's
9 just going to take time to get through the hiccups.
10 But if this particular one goes down, I can assure you
11 there'll be another one right behind it with a
12 different set of financial players looking at it, and
13 one of those folks will succeed.

14 CHAIRMAN SPRITZER: Okay. Now, turning to
15 a little further down on this page, I guess going down
16 to the last paragraph, it states, "The tremendous
17 potential for offshore wind in Maryland and the Mid-
18 Atlantic can also be seen in the October 10
19 announcement by Google and Good Energies that they
20 have established a consortium and a \$5 billion
21 transmission backbone to bring offshore wind in the
22 region to shore. Such large investments in
23 transmission are not made to transmit small amounts of
24 energy." Can you tell us where this transmission
25 backbone would be constructed, if you know?

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1 MR. SKLAR: They are -- well, actually,
2 I've had many serious -- first of all, I've done work
3 with Good Energies, and frankly have lots of
4 consultations with the Google family of interest. And
5 they have been fundamentally looking from -- the area
6 Long Island through Delaware has been really what
7 they've been focusing on. Now they are -- there has
8 been some dialogue to ooze that down beyond Delaware.
9 And they're trying to deal with one of the barriers
10 that was mentioned by one of the judges earlier, that
11 where solar transmission is not a big issue, for big
12 wind, of course it's an issue. And for offshore it
13 actually could be the most expensive part of the
14 project.

15 So, by big players like Google and Good
16 Energies putting up billions to figure out ways to
17 reduce that initial play, and frankly tie
18 communication systems, their own smart SCADA
19 capability to it, I think will jumpstart the industry.
20 So, it's -- they're in a very deliberative process on
21 how to play this out. It's very sophisticated. It's
22 also not short-term. It's not going to be all resolved
23 a year and a half from now, as you know. But this is
24 a big commitment, this is a big deal. This is sort of
25 how you figure out how you interface and play bigger

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1 time with this kind of technology.

2 CHAIRMAN SPRITZER: Do you know what stage
3 this project is at at present?

4 MR. SKLAR: The stage right now is they're
5 looking at -- going back to the other judge's comment
6 at the end, that water technology is a very
7 unforgiving medium, which it is. They have to look at
8 sensors and connection points that can withstand long-
9 term and, of course, the weather threats of
10 interconnection. They're working with some of the
11 biggest marine technology companies, and tied to the
12 Navy and to the boating industry in the world, so that
13 they can begin standardization of the technology.

14 Again, the whole issue with renewables is
15 to get it out of the custom stage into standardized
16 modular web-enabled and some cases interoperable
17 templates, whether they're teeny or whether they're
18 large. And then once you do that, the financing can
19 also be done in templates. And that's the play. This
20 is a growing phase.

21 And this interconnection thing, they have
22 to do the same thing, so that's what they're working
23 on. They're trying to make this easier, faster,
24 smarter and, of course, very sophisticated.

25 CHAIRMAN SPRITZER: Okay. What comes first,

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1 the wind turbines or the backbone?

2 MR. SKLAR: Well, I think for the initial
3 projects, the few that I think will salt the market,
4 the wind projects will come first, and as part of
5 those projects the short-term connections to grid
6 connection points will be ad hoc. So, definitely for
7 the first few, I'm not sure it's going to play in.

8 I must say, though, some of the Google
9 folks have said publicly that they are watching these
10 kinds of projects, and may try to figure out how to
11 create some startup or integrative approaches on what
12 they're doing with them. But I am not of knowledge to
13 know how that's going to play out, so my instinct and
14 my best guesstimate for you is they will be more tied
15 to the individual projects for the first few.

16 CHAIRMAN SPRITZER: Is there any -- that
17 you know of, is there any type of construction time
18 frame for when this backbone might -- would be --

19 MR. SKLAR: Well, they are definitely
20 talking about within this decade, no question about
21 it. So, this is not, you know -- I believe you will
22 see some rudimentary construction in the next few
23 years, which will be ramped up towards the end of the
24 decade, bigger time, but I think they need to go
25 through a couple of things, a couple of activities

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1 first before any of us get a real sense of what that
2 play is.

3 CHAIRMAN SPRITZER: Now, let's assume
4 hypothetically that the transmission backbone is
5 constructed, wind farms are constructed to use the
6 transmission backbone. Would this in any way impact
7 the variability problem with wind power that we've
8 been talking about earlier?

9 MR. SKLAR: Yes. Well, clearly, one of --
10 I mean, there are two reasons to even consider
11 offshore wind. Reason one is -- what I addressed
12 earlier is you have a longer-term regulatory problem,
13 I believe, on land wind. It's just getting more
14 intense because of these multi-needed purpose uses of
15 land. All right? So, that's issue one.

16 The second is you have better wind regimes
17 out in the water. You know, that's why they -- you
18 know, historically these coastal winds, you know, just
19 are longer during the day and much less erratic. So,
20 they believe they'll be able to harvest more power for
21 longer periods of time. It should make it a much more
22 reliable, predictable technology at bulk scale. And,
23 of course, that is the name of the game in this.

24 Also, land-based wind turbines -- remember
25 the reason wind actually is tied to solar more so on

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1 land than water because of the warming and cooling
2 rates that create the movement of wind. And, again, a
3 lot of the coastal side you're just getting these
4 constant coastal winds in one direction. They're much
5 more predictable, so there's actually less variability
6 than what we have here on land in many cases, except
7 in certain mountain passes.

8 So, yes, you're going to get a higher
9 reliability. It's going to be a better resource and
10 bigger blocks. And if you can get over the higher per
11 mile cost of how you connect it to the grid, and
12 Google, of course, and Good Energies is trying to
13 address that, to me that was the weakest link of the
14 whole play. So, in some ways that's good. Again,
15 though, that's not a short-term play. This is big
16 stuff we're talking about, lots of power.

17 CHAIRMAN SPRITZER: So, I take it the
18 longer time frame we're talking about in terms of when
19 a given amount of power might be available, the more
20 likely it is we'll see that given amount of power
21 provided that it's from wind and solar.

22 MR. SKLAR: Yes, sir.

23 CHAIRMAN SPRITZER: Are you familiar with
24 Maryland's renewable portfolio standard?

25 MR. SKLAR: I am very familiar with the

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1 standard.

2 CHAIRMAN SPRITZER: Based on? You may have
3 told us this before, but perhaps you could restate
4 what your involvement has been with the Maryland
5 renewable portfolio standard.

6 MR. SKLAR: I have been on an Energy
7 Advisory Board for the State of Maryland where they
8 just reached out. It was a formalized process, as this
9 was being discussed regionally of experts, so I was on
10 some conference calls of lots of experts on different
11 aspects and issues. Mostly, could it be -- you know,
12 could -- was this pie in the sky, was it realistic?
13 Was it too conservative? So, that's -- I just threw my
14 two cents in.

15 I have been involved with some of the
16 other states in their renewable energy portfolio
17 process dialogues, too. And I must say compared to the
18 sister states and what New Jersey and Pennsylvania --

19 I mean, this sort of falls within that same
20 framework, and they're trying to do -- have a real
21 portfolio of technology. And my belief is the higher
22 the portfolio, the better it is for electric
23 customers. It will be in the end more stable.

24 There have been some recent studies which
25 show the higher penetration of renewables, the less

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1 volatility in electric prices are. You know, there
2 have only been two studies of that recently. They're
3 very good studies, one by Lawrence Berkeley Lab, for
4 instance. So, because they are more stable, you know,
5 the resource -- the wind and solar, in particular,
6 doesn't go up, or the water technology, or the
7 geothermal. Just it's a renewable resource.

8 So, that's a good thing. So, this
9 portfolio standard is just like a bank is required to
10 have a reserve portfolio margin for the exact same
11 reason of variability of the economic markets, and a
12 prescribed portfolio. We're doing the same thing for
13 electricity.

14 CHAIRMAN SPRITZER: Now, let me bring up --
15 - let's go to Applicant's Exhibit 10, page 22, Table
16 5. There we go. Have you had a chance to look at this
17 document before. This is the -- well, I think you --

18 MR. SKLAR: Yes, this is the Abell
19 Foundation study, yes.

20 CHAIRMAN SPRITZER: Okay. And I take it
21 Table 5 shows -- if we look at the different columns
22 it shows, well, on the left the year, and the next
23 column over the percentage of retail electricity sales
24 that's required to come from Tier 1 sources. Is that
25 correct?

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1 MR. SKLAR: Yes, sir.

2 CHAIRMAN SPRITZER: And, of course, the
3 next table over shows the retail electricity sales.
4 And the final column shows the, what do they call it,
5 renewable energy credits needed for compliance which
6 would involve simply multiplying the percentage in the
7 Tier 1 column by the retail electricity sales.

8 MR. SKLAR: Correct.

9 CHAIRMAN SPRITZER: So, by year 2022 Tier
10 1 resources will make up -- will be required to make
11 up 18 percent of retail electricity sales for a total
12 number of ranks needed for compliance of 13,664,975.

13 MR. SKLAR: Yes.

14 CHAIRMAN SPRITZER: Am I reading that
15 correctly?

16 MR. SKLAR: Perfect.

17 CHAIRMAN SPRITZER: Well, I doubt that but
18 we'll go to the next --

19 MR. SKLAR: That's my expert testimony
20 right there. Perfect. Thank you, sir.

21 CHAIRMAN SPRITZER: Table 6, which is on
22 the next page -- top of the next page. There we go.
23 Now, this contains a number of -- well, three
24 different -- actually, four different scenarios in
25 terms of the percentage of the 2022 REC obligation

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1 that will be met with wind power. Do you see that
2 column?

3 MR. SKLAR: Yes, sir.

4 CHAIRMAN SPRITZER: Do you have any opinion
5 as to which of these scenarios or any of them are
6 realistic in terms of what is likely to happen in
7 2022?

8 MR. SKLAR: Well, let's just say the 100
9 percent scenario is probably not going to happen. I
10 can't say it's not going to happen. And I think the 50
11 percent scenario will absolutely happen, so I would --
12 - if I were being an expert to you it would be
13 probably between 50 and 100 percent, somewhere in
14 there will be where it lands.

15 CHAIRMAN SPRITZER: What is your basis for
16 that conclusion?

17 MR. SKLAR: Well, because I see what's
18 happening in the marketplace already moving to that 50
19 percent scenario. I mean, in talking to the major
20 players in the industry, the wind developers,
21 everything else, I mean it's just moving naturally in
22 the scenario. I don't see -- I mean, there could be
23 some, again, unintended regulatory issues or some
24 crash of capital that would screw that up. But in the
25 end, I see that 50 percent scenario as happening.

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1 Markets are striving it. There are some natural things
2 that just happen in the market.

3 You know, if energy prices go up a tad
4 more and whatever, or Clean Air Act is not -- has some
5 compliance issues, money will pull it in a higher
6 scenario. I mean, 100 percent -- you know, things
7 happen -- sometimes great things happen but that's the
8 edge. So, if I were assessing it I would absolutely
9 bet on the 50 percent, but know it's somewhere between
10 the 50 and 100 percent where it will land.

11 CHAIRMAN SPRITZER: Well, if we could move
12 back a little to the bottom of page 21, Footnote 11.
13 Now, this footnote which is going to continue on the
14 next page so I'll show that -- let's stay on 21. There
15 we go.

16 Tier 1 resources include wind, which we've
17 just been talking about, qualifying biomass excluding
18 sawdust.

19 MR. SKLAR: Right.

20 MR. MARIOTTE: Methane from anaerobic
21 decomposition of organic materials in a landfill or
22 waste water treatment plant, geothermal, ocean energy,
23 moving down to the next page which includes energy
24 from waves, tides, currents, and thermal differences,
25 fuel cells provided by methane or biomass, hydro

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1 electric plants less than 30 megawatts, and poultry
2 litter incineration facilities connected to the
3 Maryland Distribution System.

4 I take it from your testimony then that
5 you would expect a combination of all of those sources
6 listed in the footnote to be 50 percent of less of the
7 Tier 1 requirement in 2022 for renewable energy
8 credits.

9 MR. SKLAR: Well, these will -- yes, I
10 expect them to be 50 percent.

11 CHAIRMAN SPRITZER: About 50 percent.

12 MR. SKLAR: Yes.

13 CHAIRMAN SPRITZER: Fifty percent -- your
14 best estimate would be 50 percent wind, 50 percent of
15 the rest of the Tier 1 resources.

16 MR. SKLAR: Right. Again, someone mentioned
17 about 100 megawatts of biomass, and my view, that's
18 not -- it's going to be way more than that. I don't
19 understand where that comes from when you're talking
20 about landfill gas, and poultry, and the studies I've
21 seen just in Maryland on just waste wood, sustainable
22 waste wood and sustainable, retrievable out of the MSW
23 stream. I mean, it's ten-fold of that. I mean, it's
24 just -- I don't understand where that's coming from.
25 Biomass is baseload technology. It's going up all over

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1 this country.

2 CHAIRMAN SPRITZER: Well, if that's the
3 case, I mean, that leads me back to our Table 6 at the
4 top of page 23. That would seem to suggest to me that
5 because we're talking in this table about the
6 percentage of renewable energy credits that would come
7 from wind power.

8 MR. SKLAR: Right.

9 CHAIRMAN SPRITZER: The more that comes
10 from biomass the lower percentage that comes from wind
11 power.

12 MR. SKLAR: Well, to meet the portfolio
13 standard, that's correct.

14 CHAIRMAN SPRITZER: Well, I guess what I'm
15 asking is taking into account what you've just told me
16 about biomass, does that in any way affect your
17 opinion as to the percentage of the renewable energy
18 credits that would be expected -- you would expect to
19 come from wind?

20 MR. SKLAR: No. I mean, again, I'm saying
21 that I would put my dollars on the 50 percent. I think
22 that's the best. I think I can do -- big wind is low-
23 cost energy from when it blows. Right? That gets back
24 to when it blows, so when it blows for a third of the
25 time it's a low cost, and the market -- financial

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1 community likes big block power. It's easier for them.
2 The transaction costs are cheaper than buying little
3 bits of things, so I'm pretty comfortable with the 50
4 percent goal, I guess is good.

5 CHAIRMAN SPRITZER: All right. Let's move
6 further down on page 23, the end of the next to last
7 paragraph. That's good. And the last sentence of the
8 next to last paragraph begins, "The Delaware Bluewater
9 Wind project bid which won out over a coal bid and a
10 natural gas bid suggests that large-scale offshore
11 wind projects can be cost competitive with new fossil
12 fuel generation after accounting for future fossil
13 fuel prices, and likely cause to emit carbon into the
14 atmosphere." And my question is, do you agree that as
15 a general proposition large-scale offshore wind
16 projects can be cost competitive with new fossil fuel
17 generation after accounting for the two conditions?

18 MR. SKLAR: Oh, yes, I do think so. Now, I
19 must say not all offshore wind projects will be able
20 to do that. And we are seeing a trend now, a dive in
21 natural gas prices due to fracturing that may change
22 that for a very short period of time.

23 My belief on fracturing though is really -
24 - it's water-related more than anything else. If it's
25 water intensive, we don't have a lot of water, so it

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1 will naturally hit a glass ceiling and then we'll see
2 things come up. So, there may be some burps in that,
3 but as a general philosophy or general guideline, I
4 think that's true.

5 CHAIRMAN SPRITZER: All right. Now,
6 returning your testimony which is Joint Intervenors's
7 Exhibit R-1. And if I referred to it as Exhibit 1
8 earlier I meant R-1.

9 Here we're talking about solar power. The
10 paragraph begins -- this is page 9, I'm sorry. A
11 little further down. There we go, great. "The FEIS
12 assumption of 75 megawatts of solar power ignores
13 Maryland State Law which mandates that a minimum of 2
14 percent of the state's generating capacity be provided
15 by solar power by 2022. This 2 percent minimum itself
16 means that approximately 250 megawatts of power must
17 be generated from solar power by that date." How did
18 you derive this 250 megawatt figure?

19 MR. SKLAR: I was back of the envelope
20 calculating what might be the generation percentage
21 we're getting and what that 2 percent might be.

22 CHAIRMAN SPRITZER: And, again, we want to
23 be as precise as we can with these figures. The 250
24 megawatts, is that -- that's usually called I think
25 installed capacity or nameplate capacity?

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1 MR. SKLAR: Not nameplate but installed
2 capacity with the insulation numbers, meaning the
3 solar resource numbers that pertain to the state for
4 the hours that sun shines out of that.

5 CHAIRMAN SPRITZER: All right. Are you sure
6 -- I just want to be sure we're clear on this. Do you
7 mean capacity or actual output in the 250 megawatts?

8 MR. SKLAR: My -- what I meant was output.

9 CHAIRMAN SPRITZER: Okay, good. Let's go
10 back if we can. I just want to make sure we're clear
11 on how to calculate this number. Can we go back to --
12 in Applicant's Exhibit 10 which we were looking at
13 just a few minutes ago, page 22, Table 5.

14 If we wanted to do our own back of the
15 envelope calculation, I would think what we would do
16 -- for solar we're talking by 2022, 2 percent.

17 MR. SKLAR: Right.

18 CHAIRMAN SPRITZER: We'd multiply that by
19 retail electricity sales to generate or to calculate
20 the number of renewable energy credits needed for
21 compliance for solar in 2022.

22 MR. SKLAR: Yes.

23 CHAIRMAN SPRITZER: Is that a yes?

24 MR. SKLAR: That's a yes.

25 CHAIRMAN SPRITZER: We need it for the

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1 court reporter to have a yes.

2 MR. SKLAR: Oh, yes, sorry about that. The
3 professor was the uh-huh type. Sorry.

4 CHAIRMAN SPRITZER: Now, personally I don't
5 know how to go from retail electricity sales
6 calculated in megawatt hours to a given amount of
7 installed capacity. Do you know how one would go about
8 doing that?

9 MR. SKLAR: Well, if we're looking at sales
10 and, again, megawatt hours remember we're generating
11 off of these plants. Again, I'm being simplistic but
12 eight hours of power, so that's really what you're
13 getting out of the nameplate capacity of these plants,
14 is eight hours of it. So, we would bring -- if we're
15 doing 18 percent, we divide that by 9, then we divide
16 that by 3 and we would get something close to where we
17 are.

18 MR. GENDELMAN: Sorry, Your Honor. I think
19 I might be of aid. In Staff Exhibit 4, our direct
20 testimony on page 14, the formula for converting watt
21 hours to -- equating watt hours, watts, and capacity
22 factor is provided.

23 CHAIRMAN SPRITZER: Great, thank you.

24 MR. GENDELMAN: On page 14 of our direct
25 testimony.

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1 MR. SKLAR: Now, I would be happy to do
2 that calculation formally. I would be nervous to do it
3 right now.

4 CHAIRMAN SPRITZER: All right. Let's look--

5 MR. SKLAR: Particularly I'm sworn in, you
6 know, you have to be careful.

7 CHAIRMAN SPRITZER: All right. Let's move
8 along. All right. I'm going to move along now to
9 asking you questions that have been propounded for us
10 to ask you by the parties. And I'll read them.
11 Needless to say, as with the earlier questions, if
12 you're not clear what the question is asking you,
13 please ask me to attempt to restate it. Although, to
14 do that I'll have to interpret what someone else
15 meant.

16 Could we bring up Joint Intervenors's
17 Exhibit R-1, page 5? And I believe this is the
18 response to Question 5. And in your direct testimony
19 you state that, "The NRC Staff has consistently
20 understated the potential contributions of solar and
21 wind power to Maryland." Is that correct?

22 MR. SKLAR: I'd like to read what I --

23 CHAIRMAN SPRITZER: Yes, I think that would
24 be a good idea. It should be the answer to Question
25 5.

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1 MR. MARIOTTE: It's at the top of this next
2 page.

3 CHAIRMAN SPRITZER: Okay. There --

4 MR. SKLAR: Well, that got back to the
5 potential or probable. And I believe that was raised
6 by the judge on the end there. And I would like to say
7 that the word "probable" would be a better word than
8 potential.

9 CHAIRMAN SPRITZER: Okay.

10 MR. SKLAR: So, I misstated. Not evilly,
11 though. That was just a --

12 CHAIRMAN SPRITZER: That's fine.

13 MR. SKLAR: -- lack of precision.

14 CHAIRMAN SPRITZER: Now, on your testimony
15 -- this is, again, Joint Exhibit R-1, 6-16 you point
16 to estimates by various sources including the National
17 Renewable Energy Laboratory, and the State of
18 Maryland. Those are exhibits Joint Intervenors's 3 and
19 8-A of the potential associated with solar energy and
20 with offshore and on shore wind energy. Is that
21 correct? I think we're on page 6. I'm having a little
22 trouble following some of these numbers. You all can
23 chime in and correct where we need to be, that might
24 help move things along.

25 MR. SKLAR: Well, I did as you see here

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1 according to the National Renewable Energy Laboratory
2 and the State of Maryland, I had some sources talking
3 about potential. I also included with my testimony a
4 list of the 24 studies that were done the last three
5 and a half years that show solar renewable energy and
6 high-value energy efficiency could meet almost all, or
7 all of the U.S. or the world's energy needs.

8 But, again, these are guesstimates, so
9 that's why I brought in some of the more analytical
10 studies that really went to take a look at the market
11 or the resource application in a little more practical
12 use, such as the Abell Foundation and the solar report
13 that we were talking about earlier, because they're
14 starting to get down to the nitty gritty.

15 So, potential is great. It's good to know
16 what you have, but that doesn't mean you're going to
17 go there. And then the detail gives you a little -- it
18 starts bringing that limit down to what's a little
19 more likely. And with solar, obviously, you're going
20 to use rooftops, parking lots first, and probably
21 waste or unused land that's not used for any other
22 purpose. My big corporate clients do that on their
23 facilities, the military bases same thing. So, that's
24 really the game in play. So, yes, did I do it? I did.

25 CHAIRMAN SPRITZER: All right. Let's go to

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1 page 11. Now the question reads on page 11 of your
2 direct testimony, you reference a report by John
3 Farrell.

4 MR. SKLAR: Yes, this is the chart from the
5 report and the words on top of that, yes.

6 CHAIRMAN SPRITZER: That estimates that
7 Maryland could provide 40 percent -- I take it that's
8 the figure on the --

9 MR. SKLAR: Right.

10 CHAIRMAN SPRITZER: -- of its power from
11 renewable resources not including offshore wind, and
12 100 percent of its power needs when it includes both
13 onshore and offshore renewable resources in Maryland.
14 Is that correct? I think this question is just asking
15 you to tell us whether --

16 MR. SKLAR: Well, let me say the report did
17 not -- when that 40 percent number did not include
18 contributions from offshore wind or marine energy
19 technology. I must say that after I submitted this on
20 the Institute of Local Self-Reliance website, they
21 said that when they include the new -- some new data
22 they had received it would allow Maryland to meet 114
23 percent of its electric needs with the entire
24 portfolio of renewable resources. So, while in the
25 study they said 40 percent, of course, they do not

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1 include a few things, they subsequently put something
2 on their website.

3 And, again, the -- all these studies show
4 is that with existing technology today that is the
5 maximum they can deliver. That doesn't mean that's
6 what's going to be practically delivered, but it's
7 important to show the data just to say hey, that's
8 possible, and that's what the study does.

9 CHAIRMAN SPRITZER: All right. Next
10 question is going to direct you to more of your
11 testimony. This is on page 6, last paragraph on the
12 page. There we go. Now it says, "Mr. Sklar, is it --
13 from these sources is it correct that the stated
14 potential for offshore wind in Maryland -- for
15 Maryland is 53.8 gigawatts equivalent of 53,800
16 megawatts, and even without offshore wind, offshore
17 renewable can provide 40 percent of Maryland's power
18 needs."

19 MR. SKLAR: Offshore can be 40 percent.
20 Well, yes, I believe -- you know, again, the NREL
21 projections which are -- by the way the Abell
22 Foundation's projections, I believe, study is much
23 more detailed; therefore, higher resolution. But the
24 National Energy Laboratory study, I put that
25 information in quotes. That was what was in there. So,

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1 there's a potential.

2 Do I think in the time frame you're
3 talking about we're going to be putting large-scale
4 wind between 30 and 50 nautical miles off the shore?
5 I don't think so, but it definitely has the potential.
6 And will we have capability in the future to extend
7 lines out there and do that stuff? Absolutely. I will
8 not be alive probably at that time, but that's what --
9 - again, the NREL study is a modeling study that looks
10 at wind data and says -- draws a line about what's
11 possible technologically. The Abell study really took
12 a look by -- they did it my meters from the shore and
13 different tranches starting from near shore and went
14 in blocks further away.

15 And, again, I saw a gigawatt to two in the
16 first tranche, the closest to shore. That's very
17 conservative being able to be accessed from offshore
18 wind. Do I think capital is going to go in that
19 direction? Yes. Do I think we're going to start
20 seeing some of this before the end of the decade? Yes.
21 So, that's, to me, a better value than looking at the
22 NREL study which is just a lower resolution
23 possibility.

24 CHAIRMAN SPRITZER: Next question is as
25 follows. "Mr. Sklar, based on Maryland's 2010 annual

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1 power sales reported in Maryland's Public Service
2 Commission Ten-Year Plan, the State of Maryland's
3 power needs average about 7,200 megawatts. Considering
4 that Maryland's average power needs are approximately
5 7,200 megawatts, is it correct that 40 percent of its
6 power from renewable resources translates into 2,900
7 megawatts?" I guess they're asking you to make a
8 calculation.

9 MR. SKLAR: Off the top of my bald head
10 that sounds about correct, yes.

11 CHAIRMAN SPRITZER: Okay. Is it correct
12 that in its annual energy outlook for 2011, and this
13 is NRC Exhibit 22, the Department of Energy, Energy
14 Information Administration I believe that is, projects
15 2.37 billion kilowatt hours of generation from wind,
16 and .23 billion kilowatt hours of generation from
17 solar in 2010 in the Reliability First Corporation
18 East Region. I don't know if you had a chance to look
19 at this document?

20 MR. SKLAR: I know of the document. I don't
21 remember those exact numbers in detail, but that
22 sounds like in the ballpark of what EIA had said, yes.

23 CHAIRMAN SPRITZER: Now, is it also correct
24 that these numbers would translate to an average
25 generation rate of 271 megawatts for wind and 26

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1 megawatts for solar, if you know?

2 MR. SKLAR: I can't do that here, but it
3 sounds -- again, it sounds in the ballpark, but I
4 would need to do the calculation to do that at some
5 time.

6 CHAIRMAN SPRITZER: Is it correct that in
7 its annual energy outlook for 2011 DOE, EIA projects
8 3.83 billion kilowatt hours of generation for wind and
9 1.05 billion kilowatt hours of generation from solar
10 in 2017 in the Reliability First Corporation East
11 Region?

12 MR. SKLAR: Again, I have looked at the
13 document. That sounds correct but, you know, I have --
14 - I probably need it right in front of me to verify,
15 but yes, that sounds in the ballpark.

16 CHAIRMAN SPRITZER: Let me ask you this,
17 these kind of numbers from Department of Energy and
18 the Energy Administration, would you use these by
19 themselves as a basis for predicting without looking
20 at anything else that is, as a basis for predicting
21 the level of onshore or offshore wind or solar?

22 MR. SKLAR: No, I would absolutely not. I
23 have found --

24 CHAIRMAN SPRITZER: Why?

25 MR. SKLAR: Well, the problem with the EIA

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1 numbers, and I have gone in and many other experts
2 like me have gone in to try to better validate their
3 calculations. You know, what happens is -- with these
4 models is they're really very imprecise instruments.
5 And, at the same time, they're getting more complex on
6 how they do them. And most predictions, not just EIA's
7 as I already told you are wrong. So, I believe EIA is
8 one of a portfolio of measurements you should look at
9 but it is not gospel.

10 CHAIRMAN SPRITZER: Okay. What else would
11 you look at?

12 MR. SKLAR: Well, actually, I would also
13 look at what the Public Utility Commissions are
14 saying. I would look at -- there are a couple of
15 services that look at investments in projects in the
16 renewable and distributed energy sector, because a lot
17 of it will actually follow where the money is, not
18 what the models predict. And money is, of course,
19 what gets these projects on line. And analysis is a
20 multifaceted field, so I like to follow -- I mean, the
21 Department of Energy analyses are good, analysts are
22 good, the State and the State Energy Office has some
23 good data, the State Public Utility Commissions have
24 good data, some of the financial tracking firms have
25 good data, and the trade associations, either national

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1 or state of the particular technology have good data.

2 Generally, I take that and put it together
3 with the money data being probably the highest of the
4 hierarchy because that shows where the money is
5 flowing. And that's going to tell you what's going to
6 come and what's not.

7 And I walk in, by the way, EIA and many
8 other think tanks were putting out stuff where -- and
9 I keep on saying how does this jive because the money
10 is different from where you're saying it, and that's
11 make it happen. And they do look at me with damp
12 little eyes sometimes on that issue. So, is it a tool?
13 Yes. It is something you should rely on fully? No.

14 CHAIRMAN SPRITZER: Now, we're talked about
15 baseload power frequently here today. Can baseload
16 power in Maryland be provided by facilities located
17 outside of Maryland, outside of the geographic
18 boundaries of Maryland?

19 MR. SKLAR: Well, we wheel power all the
20 time, the utility industry does that. And some of the
21 credits in different states can be used to bring in
22 green power, solar, wind, and biomass, and other
23 renewables from other states. Some of the states now
24 are beginning to limit that so that their -- you know,
25 because a portfolio standard while in most cases they

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1 want it within the state, though in some cases are
2 open in the region. And there is some give and take on
3 this resource side because if you have -- 100 percent
4 of the green electrons have to come from within the
5 state. And right across the border you have a slightly
6 better project that has wind, let's say, and is on the
7 same line really, it's coming right across the border,
8 why wouldn't you want to promote that somehow?

9 So, you want some flexibility, but in the
10 end you don't want Virginia, my home state, you know,
11 they've been buying green stuff that they're required
12 from Ohio. That's a tad far away, so you want
13 something either within the state or approximate to
14 drive it. And, actually, it gets to, I think, your
15 initial question at the end, sir, of what are the
16 transmission and distributions costs and losses? The
17 further away it is, you're going to have some of that.

18 And, actually, one of the asset values of
19 most renewables is they're closer to the end-user
20 source, so that's part of the play here.

21 CHAIRMAN SPRITZER: Okay. Are you aware
22 that the Maryland Public Service Commission has issued
23 a Certificate of Public Convenience and Necessity for
24 Calvert Cliffs III based on a need for power in
25 Maryland?

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1 MR. SKLAR: I am aware of that, yes.

2 CHAIRMAN SPRITZER: Now, the next question
3 asks you, "Are you arguing" -- this is referring to
4 your testimony at Paragraph 10 on page 17. Again,
5 that's Intervenors's R-1. "Are you arguing that
6 nuclear power is not a baseload generation source
7 because Calvert Cliffs will be a merchant plant,
8 Calvert Cliffs III will be a merchant plant?"

9 MR. SKLAR: Well, again, I -- my goal has
10 been arguing that the renewable and high-value energy
11 efficiency contribution has not been taken into
12 appropriate account. The other issues about who's
13 operating these plants, and what's going on I haven't
14 looked at. But one of the issues, again, I have
15 looked at and I raised to you earlier today is the
16 larger the bulk power generation plant has you do have
17 to look on the risk side of when those go down, and
18 they will go down, how do you fill that hole? And it
19 has to happen. It has to happen. Nothing humans make
20 will go 100 percent all the time. They're not
21 perpetual motion.

22 So, generally in smaller chunks it's a
23 little better. And when you start looking at the
24 chunks, renewable energy in certain chunks make a lot
25 of sense. So, that's really what I've been -- my

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1 insight comes into this rather than if it's a merchant
2 plant or not.

3 CHAIRMAN SPRITZER: Under your definition
4 could there ever be a baseload power source in
5 Maryland in an unregulated energy market?

6 MR. SKLAR: Well, yes, I guess there could
7 be. I haven't done analysis, but there are baseload
8 power plants in unregulated energy markets elsewhere.

9 CHAIRMAN SPRITZER: Isn't baseload a
10 function of the generation technology and not the
11 market for the power produced?

12 MR. SKLAR: Well, the market for the power
13 produced has a lot to deal with it. And, by the way,
14 I must say the markets don't always need baseload
15 power. That's part of the other issue that we --
16 California has learned that its air conditioning
17 bubble midday eats a third of its grid, so why would
18 you want to build a baseload plant when you need
19 midday power between 10 and 4? So, the market does
20 have some impact on it. And, of course, traditionally
21 in the United States of America we'll build baseload
22 plants on these bubbles. And that's very inefficient.
23 And how we try to get around that efficiency is wheel
24 that extra power when we don't need it somewhere, and
25 hope we can get paid a good piece of money for it.

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1 So, I mean, that's our system. So, I'm not
2 100 percent sure how to answer that question. I'm just
3 saying that baseload is an important thing, but also
4 partial generation plants that coincide with certain
5 loads are as important.

6 CHAIRMAN SPRITZER: Now, I think you've
7 told us that solar power can reduce midday loads?

8 MR. SKLAR: Yes, sir, because that's when
9 the sun generates --

10 CHAIRMAN SPRITZER: I understand that.
11 Does reducing midday loads meet the project purpose?
12 This is referring to the purpose of Calvert Cliffs
13 Unit 3, which is to generate baseload power no matter
14 the loads?

15 MR. SKLAR: Well, that gets back to my
16 earlier statement. The issue is, and I think actually
17 one of the problems of large baseload plants whether
18 they're nuclear power plants or not is, it's great
19 when the load is there. You know, during the economic
20 meltdown for the first time in history our loads
21 actually went negative, went down. And if you have a
22 lot of -- and particularly nuclear power plants that
23 actually need to generate a capacity, what do you do
24 with that? Well, as long as you have a place for it
25 to go, it's great. If you don't, you could be in a

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1 jam. So, again, there are benefits of having chunks of
2 power in different sizes and capabilities. Bigger is
3 not always better.

4 CHAIRMAN SPRITZER: Now, in light of the
5 project goal for Calvert Cliffs Unit 3 of producing
6 baseload power, do you agree that a fossil energy
7 source, most likely natural gas, will be a significant
8 contributor to any reasonable alternative energy
9 combination? I take it this is referring to the so-
10 called combination of alternative --

11 MR. SKLAR: Well, yes. I mean, natural gas
12 is the cleanest of the fossil fuels, has -- is going
13 down in price as we speak, has some elegances because
14 you can get a natural gas plant up faster than either
15 nuclear or offshore wind, let's say. So, in these
16 chunks that I'm talking about, and can be brought on
17 and brought off very quickly online and offline. And
18 natural gas has been used with solar thermal plants as
19 well as biomass plants all the time. It could be the
20 elegant solution really to talk about what you do with
21 intermittency with wind and solar. And I see that as
22 a player, has to be a player. And I see the money
23 going in that direction right now.

24 CHAIRMAN SPRITZER: UniStar's witnesses
25 made the point that because renewable development is

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1 driven by incentives and RPS requirements, more wind
2 or solar would likely displace other renewable
3 generation sources such as biomass, or hydro. Do you
4 agree with that?

5 MR. SKLAR: I totally disagree with that.
6 Why I disagree with that is three-fold. First of all,
7 again, wind and solar are load-following technologies
8 because they're by definition not baseload. Biomass
9 and water energy technologies, and geothermal which
10 has probably less applicability here are baseload
11 technologies. And they don't compete against each
12 other at all that I've seen in the market. I've never
13 seen one of those renewable plants get cancelled
14 because a wind farm or solar farm came up.

15 And the other issue is -- and, again, it
16 goes back to the cellular and switchboard paradigm
17 that we talked about earlier. Is, you know, we're
18 talking about lot smaller chunks of plants, so they're
19 brought on in service territories focused on certain
20 loads, so parts of the state. And you're focusing in
21 many cases more on distribution or very short
22 transmission to deal with that. I'm using a lot of
23 these baseload renewables to get over actually
24 transmission and distribution constrictions. They
25 can't put as much power as they need because

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1 development has changed, and they don't have time to
2 build new lines, so you augment it at your choke
3 points. You add power on.

4 So, I just don't see it in reality that
5 you're going to get rid of -- that the renewables
6 compete against each other. I've never seen it yet.

7 CHAIRMAN SPRITZER: Do you believe that
8 there will be an expansion of renewable incentives or
9 RPS requirements? And let's talk just -- let's limit
10 that to Maryland, which is the --

11 MR. SKLAR: Well, I think the RPS
12 requirements in Maryland are pretty good. I'm sure
13 they will be expanded, but I don't believe in the
14 short term. I could think everybody wants to see can
15 we actually meet them, and I think that's probably a
16 good idea.

17 I do believe incentives will be increased
18 because remember the asset is not just cents per
19 kilowatt hour, you know. Frankly, I'm seeing a lot of
20 incentives to meet Clean Air Act requirements of
21 particulates, sulfur, nitrous oxides, and now mercury.
22 So, you're going to see other drivers of incentives
23 coming in to increase the portfolio to meet other
24 kinds of legislative needs and other requirements.

25 CHAIRMAN SPRITZER: Are there any offshore

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1 wind generation projects currently in operation in the
2 United States?

3 MR. SKLAR: No.

4 CHAIRMAN SPRITZER: Are there any under
5 construction?

6 MR. SKLAR: Under construction, I don't
7 believe under construction, but in the midst of being
8 financed, yes.

9 CHAIRMAN SPRITZER: Which ones are those?

10 MR. SKLAR: I don't have them in my head,
11 but I am happy to submit that at a later time, if you
12 would allow me.

13 CHAIRMAN SPRITZER: No, it's not necessary.
14 Has the Bluewater Wind project in Delaware received
15 final approval to begin construction, if you know?

16 MR. SKLAR: I don't know.

17 CHAIRMAN SPRITZER: Okay.

18 MR. SKLAR: I believe it had received final
19 approval, but it has not received the money, is my
20 understanding.

21 CHAIRMAN SPRITZER: Okay. Has the Bluewater
22 Wind project in Maryland applied for any federal or
23 state permits or approvals, again if you know one way
24 or the other?

25 MR. SKLAR: I know they applied for the

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1 permits. I do not know what approvals they received.

2 CHAIRMAN SPRITZER: Are you aware of any
3 time line for development of the Bluewater Wind
4 project in Maryland?

5 MR. SKLAR: Well, I believe the developers
6 want it ASAP, but as we've just found out, their money
7 just fell through, who knows what that's going to be.
8 I cannot look in the future.

9 CHAIRMAN SPRITZER: Has the Atlantic Wind
10 Consortium actually filed for any permits or
11 approvals, if you know?

12 MR. SKLAR: I know they have hired firms to
13 do so. I don't know what the status of the
14 applications are.

15 CHAIRMAN SPRITZER: Is there a time line
16 for beginning construction of the offshore
17 transmission systems to support wind power?

18 MR. SKLAR: There is a very strong internal
19 time line for that. I believe they are still testing
20 out some components of that before they move into
21 action, but they are very serious moving forward with
22 that.

23 CHAIRMAN SPRITZER: Do you agree that wind
24 power development is driven primarily by incentives
25 and RPS requirements?

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1 MR. SKLAR: I believe all energy is driven
2 by incentives and requirements, so that's my response.
3 I already cited the Union of Concerned Science study,
4 economic study of nuclear that said there are several
5 handfuls of incentives that actually account for the
6 entire subsidy of nuclear power. So, you know, they're
7 driven by incentives, too. Everybody is driven by
8 incentives.

9 CHAIRMAN SPRITZER: The Maryland Long-Term
10 Electricity Report projects that 190 megawatts of
11 onshore wind would be added over the next 10 years
12 equivalent to 57 megawatts electric on average using
13 a 30 percent capacity factor, and no offshore wind
14 would be added over the next 10 years. Do you disagree
15 with the LTER projections on wind power in Maryland?

16 MR. SKLAR: Yes, I do. I do believe we'll
17 see, again, some trial offshore wind projects, and I
18 do believe you'll probably see a little higher actual
19 on land wind in that.

20 CHAIRMAN SPRITZER: Do you believe that
21 offshore wind is economically viable in the absence of
22 any special incentives or credits?

23 MR. SKLAR: I would respond that virtually
24 all energy is uneconomic without incentives. That's
25 why they all have them.

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1 CHAIRMAN SPRITZER: All right. I think
2 we've been over that. If you believe that a 100
3 megawatt electric contribution from wind in
4 conjunction with energy storage -- I take it that 100
5 megawatt electric figure is in baseload power terms.
6 If you believe that figure underestimates the likely
7 wind contribution to a reasonable combination
8 alternative, what amount of wind energy do you believe
9 is reasonably foreseeable?

10 Well, let me strike that because I think
11 we've been over that in some detail already.

12 MR. SKLAR: Yes.

13 CHAIRMAN SPRITZER: Does your conclusion
14 that more wind power should be included in the FEIS
15 combination alternative rely on incentive -- on
16 expansion of incentive programs or tax credits for
17 wind power projects?

18 MR. SKLAR: No, it does not rely on any
19 expansion of what currently exists.

20 CHAIRMAN SPRITZER: Are you assuming that
21 the Maryland RPS will be expanded or an offshore wind
22 carve out created?

23 MR. SKLAR: Interesting. No, I don't think
24 -- well --

25 CHAIRMAN SPRITZER: Well, it's just asking

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1 as you assuming that. You can tell us --

2 MR. SKLAR: I'm not assuming it, but I do
3 think that probably the state if they see actual money
4 flowing offshore wind would probably create a sub line
5 for it as a way to stabilize investment. But I was not
6 assuming that that was going to happen.

7 CHAIRMAN SPRITZER: What capacity factor
8 are you using for solar in Maryland?

9 MR. SKLAR: Capacity factors right now that
10 I've been using has been around 27 to 30 percent. And
11 I'm being very conservative.

12 CHAIRMAN SPRITZER: Do you agree that solar
13 thermal plants are not technically viable in Maryland?

14 MR. SKLAR: Well, solar -- concentrated
15 solar thermal electric plants would not be viable in
16 Maryland. Solar thermal, again for industrial process
17 heat and water heating are very economic and can
18 reduce load substantially. I'd say could reduce the
19 entire state load by about 10 percent.

20 CHAIRMAN SPRITZER: Are they technically
21 viable?

22 MR. SKLAR: Yes, absolutely. Cost-
23 effective, too, right now, right this second. I don't
24 understand why we're not doing it.

25 CHAIRMAN SPRITZER: Do you agree that solar

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1 power development, we've been talking about wind
2 recently, do you agree that solar power development in
3 Maryland is driven primarily by incentives and RPS
4 requirements? Well, you told us about incentives. I
5 think I know what your answer is to that. Do you agree
6 that solar power development in Maryland is driven
7 primarily by RPS requirements, including the carve out
8 in the RPS?

9 MR. SKLAR: Well, does it have a positive
10 impact on growth? Yes. Is it the sole factor? No.

11 CHAIRMAN SPRITZER: Does your position that
12 more solar power should be included in the FEIS
13 combination alternative rely on expansion of incentive
14 programs or tax credits for solar power?

15 MR. SKLAR: An expansion? No, it does not
16 rely.

17 CHAIRMAN SPRITZER: Okay. Are you assuming
18 that the Maryland RPS solar carve out will be
19 expanded?

20 MR. SKLAR: No, I'm not assuming it.

21 CHAIRMAN SPRITZER: All right. Just update
22 on scheduling. We've got a few more of the questions
23 proposed by the parties to go through. We will take a
24 break. Hopefully that will be done in about 15
25 minutes, by 1:00. I think we'll take a break for lunch

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1 of about one hour. At that point come back, I think
2 we have the Applicant's -- you said you had a witness
3 for about 10 minutes. I take it you're going to give
4 us questions you want us to ask them?

5 MR. SMITH: Certainly, I can do that.

6 CHAIRMAN SPRITZER: You'll have the lunch
7 break to do that. Now, I guess we could also -- that
8 would be an appropriate period -- we'll keep Mr. --
9 Mr. Sklar, if you come back if there are rebuttal
10 questions that you want to give us in addition to ones
11 we've already covered. And that would be applied to
12 the Staff, and Intervenors, as well.

13 So, we'll do that when we get back. Then
14 we'll move to the Applicant's rebuttal witness. We'll
15 do closing arguments, and then we'll go home.

16 MR. SKLAR: Sir, so that means I have to
17 stay for all that, too?

18 CHAIRMAN SPRITZER: You need to come back
19 after lunch.

20 MR. SKLAR: Okay.

21 CHAIRMAN SPRITZER: Is that going to work
22 for your plans? I hope so.

23 MR. SKLAR: Well, I was going to pick up my
24 daughter but I will try to deal with it.

25 CHAIRMAN SPRITZER: Okay. Well, all right.

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1 Are you disputing the NRC Staff and UniStar
2 conclusions on the need for large-scale energy storage
3 to support baseload generation of wind and solar
4 power?

5 MR. SKLAR: I believe it can be done in
6 several different ways. If you're addressing the
7 baseload you can again, as we do all over the country,
8 marry natural gas, small natural gas generation with
9 wind or solar, or biomass, or landfill gas. There's
10 many projects with landfill gas that we're using. You
11 can use different kinds of storage, as well, to meet
12 the time. In many cases we're blending wind and solar
13 together, as well. So, yes, there -- I am assuming
14 there can be blends, and I expect there will be blends
15 if you're looking at renewables to meet a baseload.

16 But, again, why I'm a little nervous about
17 the whole direction on the wind and solar thing absent
18 the other renewables is the financing isn't based for
19 wind and solar on baseload. The financing is to meet
20 the loads of which exist when they're generating, in
21 many cases not met by baseload, or nervousness that
22 because of performance or failure that we -- they have
23 some capability for in-state generation of that power.
24 But if you need to craft the baseload, yes, you can do
25 it, and it's done all over the world by blending

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1 different technologies together to do that, some
2 conventional and some renewable, and some storage.

3 CHAIRMAN SPRITZER: Now, are you aware of
4 any favorable geology, for example salt caverns,
5 hardrock caverns, or aquifer storage for CAES in
6 Maryland?

7 MR. SKLAR: I have not seen any studies
8 that detail them. I do believe there are some in
9 western Maryland, but I have not seen any studies so
10 I am not in a position to advise you on what we can
11 do. But I also must tell you that while caverns are
12 one way, they are using what I'll describe as metal
13 canisters similar to what, by the way, we hold nuclear
14 waste in that can handle the intensity of the pressure
15 of the storage medium to do what it needs. So, while
16 caverns are one way that has been looked at, there is
17 some other technology that's also possible.

18 CHAIRMAN SPRITZER: Do you agree with the
19 UniStar -- well, let me rephrase this.

20 Do you agree that battery technology and
21 economics cannot support baseload wind or solar power?

22 MR. SKLAR: I do not agree with that. I
23 believe battery technology can in certain
24 circumstances, and if the price curves are coming down
25 the way I see them, will actually be a major player in

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1 the utility load shedding and storage for intermittent
2 renewables within this decade. And it has just begun.

3 CHAIRMAN SPRITZER: Do any of the
4 incentives for wind power or solar power provide
5 support for development of any energy storage
6 technologies that you're aware of?

7 MR. SKLAR: Could you rephrase that to me
8 again, please?

9 CHAIRMAN SPRITZER: Sure. Do any of the
10 incentives for -- I take it this is referring to
11 government incentive programs, not the normal
12 incentives that exist in any marketplace. So, we'll
13 limit it to that. Do any of the governmental
14 incentives for wind power or solar power provide
15 support for development of energy storage
16 technologies?

17 MR. SKLAR: There are many pure and applied
18 research programs and demonstrations now on both
19 electric storage technologies, which include the
20 entire array of batteries, and compressed air and
21 liquid storage, flywheels, and in some cases hydrogen
22 that are going on in the U.S. Government at the
23 National Laboratories and Energy Defense like crazy.
24 I mean, this is one of the hottest areas of research
25 going on, and there are I think a few hundred research

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1 projects going on right now, demonstration with real
2 analysis, pulling data.

3 And, again, I told you about the
4 companies, many of the companies I have worked with
5 developing these technologies now. I believe there are
6 billions of dollars coming in from the private sector
7 to look at what started again in extending life and
8 reducing weight for cell phones and laptops, and now
9 moving into hybrid vehicles. And now virtually all
10 those hybrid vehicle battery manufacturers saying we
11 want to look at the grid, and backup power. So, I
12 believe that transition is underway at full steam.

13 CHAIRMAN SPRITZER: Can we bring up the
14 Final Environmental Impact Statement, that's NRC
15 Exhibit 3-A, page 9-28. The table should be on --
16 maybe it's not on -- there we go, that's it. Table 9-
17 3, which is actually I believe on 9-29. Have you ever
18 seen -- have you had a chance to look at this table
19 before?

20 MR. SKLAR: No, but I'm looking at it now.

21 CHAIRMAN SPRITZER: Maybe we can scroll
22 down to the second half of the table. Is it possible
23 to fit the whole thing on one screen? That doesn't
24 help. Let's go back to the --

25 MR. SKLAR: May the judges note I'm on

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1 trifocals, okay. Okay, and who is stating this? Where
2 does this come from?

3 CHAIRMAN SPRITZER: This is the Final
4 Environmental Impact Statement for Calvert Cliffs Unit
5 3. It's Table 9-3. And what it's listing are the
6 Staff's -- the NRC Staff's evaluation of the
7 environmental impacts of the combination of
8 alternatives that they used in the Final Environmental
9 Impact Statement.

10 MR. SKLAR: Okay, so moderate. All right,
11 of the combined thing.

12 ADMIN. JUDGE ARNOLD: I have a printed copy
13 if that would help you.

14 CHAIRMAN SPRITZER: It might be easier to
15 look at that.

16 MR. SKLAR: Yes, that would help very much,
17 I think. Thank you, I appreciate that. Okay.

18 I think the land use issue, you know,
19 solar --

20 CHAIRMAN SPRITZER: Hold on a minute, Mr.
21 Sklar. There's no pending question.

22 MR. SKLAR: Oh, there's no question. All
23 right..

24 CHAIRMAN SPRITZER: But you've kind of
25 guessed what the question is.

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1 MR. SKLAR: Right.

2 CHAIRMAN SPRITZER: Do you have any
3 disagreement with the discussion of the environmental
4 impacts that are listed in this table?

5 MR. SKLAR: Well, I mean most of them
6 they're saying it's small to moderate, you know. I
7 guess it depends what kind. Again, if you're including
8 all the marine technologies and free flow hydro rather
9 than dammed hydro you'd have probably some minor
10 changes and issues like land use. For free flow hydro,
11 you don't need -- you don't have it on land, for
12 instance. You don't have -- other than running a line.

13 But, you know, I mean I would find this
14 hard to fundamentally argue with. I think it's
15 generically correct, which is the nicest thing I've
16 said about the NRC Staff today, so I want you to note
17 that, so it looks reasonable to me.

18 CHAIRMAN SPRITZER: Do you agree that
19 utility-scalesolar projects typically require five to
20 ten acres for every megawatt of generating capacity?

21 MR. SKLAR: Generically, yes.

22 CHAIRMAN SPRITZER: Does the amount of
23 solar generation considered in the Final Environmental
24 Impact Statement therefore translate into significant
25 land use impacts?

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1 MR. SKLAR: Well, again, you know, I see
2 land use studies all the time, and my view is -- as
3 with the solar study I talked to you about a little
4 earlier, if you're looking at rooftops and parking
5 lots so you have dual use. And, actually, one of the
6 things that makes solar such a great option is if you
7 put a nuclear power plant, or for that matter a
8 biomass plant stuck in the ground, there's nothing
9 else you can do with that ground. And, of course, for
10 safety you have to cordon off a lot more for the
11 nuclear. But for solar, I mean you park your cars
12 under the carport. Most people don't live on roofs,
13 though I've met a few, so you have a lot of dual
14 purpose.

15 The land constraints you're not -- solar
16 makes no sense on prime land. It's beyond
17 ridiculousness. I see all these land studies
18 sometimes, it goes -- you're going to use dual purpose
19 property where fundamentally the land is free. And
20 rooftops and parking lots the land is free.

21 I'm getting a lot of calls on
22 municipalities around the country to use the landfill
23 caps, and use a kind of solar where you're not
24 penetrating into the cap of the landfill. Again, it's
25 sort of a wasteland. It's acres and acres of landfill

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1 caps. Superfund sites that have been stabilized also.
2 You don't want to build a public school on a Superfund
3 site, and you don't want to do things that penetrate
4 soil, but everything is fine according to federal
5 regulations, so putting solar on top of it is a nice
6 dual use thing than rather it just sitting there.

7 So, this whole land use thing on solar is
8 sort of beyond ridiculousness because again you have
9 dual use property. You're not going to use it on
10 pristine land, or any land where you can get a higher
11 wealth value out of it. It makes no sense,
12 particularly on the east coast.

13 ADMIN. JUDGE SAGER: Sorry. I understand
14 your answer on solar, part of the question was also
15 about the wind, wind power.

16 MR. SKLAR: Well, again, you know, there's
17 -- again, there are three different kinds of wind with
18 small wind turbines more like solar, you know. They're
19 just like a light pole in a parking lot. The offshore
20 wind, and again Department of Interior and the states
21 on the coast are working to get pre-arrangements on
22 shipping lanes and security, and recreation, so the
23 parcels they'll allow you to build on, assuming
24 presumably they'll do it in good faith. You won't have
25 those issues.

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1 So, the real only land issues are related
2 to wind are on land, obviously. And, you know, again
3 in the Midwest we have found a lot of wind
4 developments going in agricultural areas where you can
5 still have the cows and get the crops. It's sort of
6 dual use land. It makes it very different than the
7 traditional bulk power model where you have a power
8 plant and you've got to cordon it off to safety rules
9 and security rules, and that's it. You don't have that
10 with these. I mean, I can't tell you how many wind
11 farms I've walked with cows and unfortunately cow pies
12 between the wind turbines or the farmers are pulling
13 their crops out. I mean, it's a different kind of
14 development. It's not an all or nothing approach to
15 land development, which is another good reason for it.

16 CHAIRMAN SPRITZER: Do you believe that a
17 combination alternative consisting of the amounts of
18 wind and solar energy that we talked about here today
19 combined with a gas plant or other means of providing
20 baseload power, do you believe that would be
21 environmentally preferable to Calvert Cliffs Unit 3?

22 MR. SKLAR: Well, it depends what kind of
23 environment -- I think they would use less water. I
24 think it would be less land-intensive. And I think,
25 again, the risk analysis of what happens when

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1 something does not work will probably be a little more
2 gentle with a renewable, a blend of renewable and
3 conventional technologies. So, that's, I guess --

4 CHAIRMAN SPRITZER: Is it fair to say that
5 what's environmentally preferable depends to some
6 extent on who's doing the preferring, and what their
7 values and concerns are?

8 MR. SKLAR: No question. No question about
9 it. If you just look at carbon, that's one thing. If
10 you're looking at water, carbon, and a whole range of
11 others including waste, there may be another thing.
12 So, it depends what the criteria are to determine that
13 outcome.

14 CHAIRMAN SPRITZER: All right. I think
15 we're at an appropriate break point for lunch. The one
16 question I have for counsel and Mr. Mariotte is, the
17 Party's Representative that is, is if we're going to
18 have a significant number of draft rebuttals questions
19 for Mr. Sklar, I think we can give you lunch to
20 prepare them. If you don't, in consideration of his
21 interest in picking up his daughter, maybe we could
22 run through that quickly. I don't know how much you're
23 likely to have.

24 MR. SMITH: The Applicants, we don't have
25 any rebuttal questions for MR. SKLAR. We also in the

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1 interest of accelerating the overall efficiency we
2 have our questions prepared for our witnesses if we
3 wanted to go ahead and proceed with those in short
4 order. We have those ready to go.

5 CHAIRMAN SPRITZER: All right. Well, let's
6 first get through the question about Mr. Sklar.

7 MR. GENDELMAN: I'm sorry, Your Honor, we
8 don't have many questions, but there are some
9 questions we'd like to submit.

10 CHAIRMAN SPRITZER: Can you draft -- how
11 long do you think you would need to draft?

12 MR. GENDELMAN: Not very long, we have most
13 of them already.

14 CHAIRMAN SPRITZER: Okay, 10 minutes, 15
15 minutes?

16 MR. GENDELMAN: Ten is fine.

17 CHAIRMAN SPRITZER: And, Mr. Mariotte, do
18 you have any rebuttal questions?

19 MR. MARIOTTE: No rebuttal questions, Your
20 Honor.

21 CHAIRMAN SPRITZER: All right. Why don't we
22 take a 10-minute break. We'll bring Mr. Sklar back
23 after that, and then I believe we'll be done with you
24 and you can go get your daughter.

25 MR. SKLAR: Thank you very much. That's

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1 very kind. Thank you.

2 (Whereupon, the proceedings went off the
3 record at 12:58:46 p.m., and went back on the record
4 at 1:12:50 p.m.)

5 CHAIRMAN SPRITZER: All right, back on the
6 record. What we're going to do is we'll finish with
7 Mr. Sklar. I've gotten a couple of brief questions for
8 UniStar's witness from UniStar's counsel. We'll call
9 them back on the stand, then we'll break for lunch.
10 So, hopefully, we'll be done here in about 15, 20
11 minutes, and then we'll have lunch and we'll come back
12 and do closing arguments, and any remaining issues.

13 Mr. Sklar, with respect to Exhibit --
14 Intervenors's Exhibit 12, let me bring that. That's
15 the historic crossover study. If you reviewed this
16 study, does it consider only installation costs and
17 not the levelized cost of energy which would include
18 operating costs?

19 MR. SKLAR: It does include the operating
20 costs, and it also does not include the safety,
21 security, of course has no waste, but waste costs, but
22 a real comparative analysis of the total fuel cycle
23 and plant cycle of solar and renewable, but it does
24 include the installed costs with included O&M.

25 CHAIRMAN SPRITZER: With respect to the

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1 same study, doesn't this study include the reduction
2 in solar price from subsidies?

3 MR. SKLAR: From existing investment
4 credits, yes.

5 CHAIRMAN SPRITZER: Did the study reduce
6 the cost of nuclear based audit subsidies which you
7 claimed add up to essentially the full cost of a
8 nuclear plant?

9 MR. SKLAR: It did not include any nuclear
10 subsidies in its analysis.

11 CHAIRMAN SPRITZER: Is there any
12 requirement that any of the rooftop or parking lot
13 solar capacity be built in Maryland? I take it that
14 means requirement --

15 MR. SKLAR: No, no one has mandated to
16 place solar, but we do have to understand the market.
17 And if you look at the market, land has value, so if
18 you're going to put it on land, then you've got to get
19 a lease or buy the land. And then you have to do all
20 the permitting cost. If you're going to put it on a
21 parking lot, well you don't lease the parking lot. So,
22 if I own a strip mall and I want solar, I can just put
23 it on top of my parking lot. I don't have to buy land
24 next to my strip mall.

25 So, there is a real mistaken issue here.

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1 The market drives the least cost place the solar goes.
2 Roofs are usually not used, or at least all of them,
3 all parts of them. And, again, only the solar goes on
4 the south-facing side. And then -- and parking lots
5 if you put it above the cars, obviously not driving on
6 the solar panels, you can do it, too. Those are the
7 places it goes. And then what I call waste or facility
8 land, unused land, so either it's dual use 80 percent,
9 and the 20 percent it's not is unused, it's just
10 sitting there.

11 CHAIRMAN SPRITZER: I think what this
12 question was getting at, though, was the question of
13 whether this installation of solar capacity would have
14 to take place within the geographic borders of
15 Maryland in order to satisfy the Maryland RPS
16 requirement, or could it be constructed in some other
17 state?

18 MR. SKLAR: Oh, I am actually not 100
19 percent sure what can be bought -- what the
20 requirement has relating to out-state purchasing and
21 not, to tell you the truth. I mean, I have the RPS
22 sitting right here, but I do not remember that off the
23 top of my head.

24 CHAIRMAN SPRITZER: Okay. Intervenors's
25 Exhibit 13, as you've stated, concerns the

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1 theoretically possible rooftop solar deployment. You
2 suggested the actual number of available roofs is much
3 lower. Was the likelihood of this scale of rooftop
4 solar deployment considered in this study? And we now
5 have the study. At least what we have of the study is
6 up on the --

7 MR. SKLAR: Well, no. All I said was --
8 actually, I said a couple of things about the study.
9 I said that their initial calculation of rooftops were
10 fine. They took out old roofs, roofs that did not have
11 solar access, and parts of roofs that had other things
12 on them because roofs had other things on them. So,
13 the number was okay. I said I didn't believe it would
14 go, even with that subset of roofs that it was logical
15 it wouldn't go up to that max most likely, and it
16 related to more of the esthetic and personal side that
17 people -- some people don't like solar on their roofs.

18 So, would it maximize up to that top? No.
19 Would it be two-thirds? Most likely. But then I said
20 there's an equal amount of space that could be parking
21 lots, and that's where the market is also evolving.
22 And that has much less of those esthetic issues,
23 frankly. Most parking lots are not gorgeous either, so
24 you actually have double the space even though you'd
25 probably lose a third off of the -- from the rooftop

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1 part of that space, because of the esthetic.

2 CHAIRMAN SPRITZER: Next question is you've
3 stated that solar facilities would not be built on
4 land but on rooftops and parking lots. Is that
5 correct?

6 MR. SKLAR: I didn't say would not be built
7 on land. I said that, again, the priority for
8 installations are rooftops, large rooftops in many
9 cases which can be acres, you know, like the Walmarts
10 and Big Box, and warehouses. And then parking lots,
11 and then land. But that land is not probably suitable
12 for anything else, because if it is its value would
13 not be in the market, even with the subsidies to take
14 it out for a sitting solar plant. It would add too
15 much to the cost of the project, and could not be
16 financed.

17 That's why when you see land being used
18 it's on a facility or municipal land where it has no
19 other potential use, so it serves as a dual use. And
20 I use the example landfills or just unused hilly land
21 at a facility, or even some formally contaminated land
22 that has now met the stabilization requirements of EPA
23 and the local state environmental authorities.

24 CHAIRMAN SPRITZER: Isn't it true that
25 large solar facilities, those in the range of multiple

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1 megawatts are being placed on land that in some cases
2 needs to be cleared?

3 MR. SKLAR: Again, a third of the
4 installations that are put on land -- actually, the
5 only -- I rarely have seen that it's -- it's never put
6 on wooded land that I've seen. It's been put on
7 facility or municipal land that doesn't necessarily
8 have to be cleared, but does have to be, if it's hilly
9 or very rocky, the rocks have to be moved out, and
10 some of the hills have to be -- I mean, these are
11 small little things -- leveled off because you're
12 going to be installing the metal framing, basically,
13 that you bolt the panels to. And you want that to be
14 as level as possible, and want to make sure there's
15 nothing also at the horizon when the sun comes up,
16 you're not blocking the output of your panels. But
17 it's what I call grading. It's very limited. Again, if
18 there's a lot of labor in land preparation that's
19 usually not the land picked.

20 CHAIRMAN SPRITZER: Now we're going to move
21 to discussion of wind. You predicted that 475
22 megawatts of new -- you predicted 475 megawatts of new
23 wind generation by 2015. Is that correct?

24 MR. SKLAR: Yes, sir.

25 CHAIRMAN SPRITZER: Are you aware of any

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1 applications for certificates of public convenience
2 and necessity pending before the Maryland Public
3 Service Commission for wind facilities?

4 MR. SKLAR: I have not reviewed those kinds
5 of filings, but I have been -- actually, I was at a
6 couple of conferences recently where wind farm
7 developers briefed me on what they're doing in
8 Virginia and Maryland, and briefing me on their
9 financing. So, they obviously have money, and projects
10 underway. So, I don't have -- I did not ask on that
11 other kind of information. I did not go any of the PSC
12 websites to check that.

13 CHAIRMAN SPRITZER: Okay, I think you've
14 answered the next question, as well. You stated that
15 the suspended Bluewater Wind project in Maryland would
16 have an average output of 600 megawatts which would
17 equate to approximately 1,800 megawatts capacity. Is
18 that correct?

19 MR. SKLAR: Output of 600 megawatts, yes,
20 that's probably correct. Yes.

21 CHAIRMAN SPRITZER: According to
22 Intervenors's Exhibit 5, wasn't this a proposed 600
23 megawatt capacity facility? I want to bring up
24 Intervenors --

25 MR. SKLAR: Yes, let's see that. See if it

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1 was a capacity -- we go a little down there. Hold on.
2 Okay. A 600 megawatt wind power plant, blah, blah,
3 blah, blah, blah. My understanding, which always could
4 be wrong, was that this would be the actual output
5 when the wind is blowing of that plant.

6 Now, I could be wrong on that, and if that
7 is the nameplate capacity, which means that in reality
8 you're only getting a third out of the plant, it could
9 be less. But my understanding from what I know and
10 have been told is that's what the output would be. I
11 always could be wrong on that, too.

12 CHAIRMAN SPRITZER: With regard to the
13 Google Good Energies project, this is the
14 interconnection project we discussed, are you aware of
15 any offshore projects that would or could connect to
16 this sort of system and their current permitting
17 status?

18 MR. SKLAR: First of all, there's no
19 permitting status related to those because it's not
20 there yet. But has Google and Good Energies been
21 talking to the major players would be putting wind --
22 offshore wind in this region? Absolutely. Are they
23 playing to choreograph how the grid -- the offshore
24 electric grid does in, and the wind turbines?
25 Absolutely. Is it very premature to do filing on any

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1 of this? Absolutely, you know. You can only file when
2 something is in place and rocking ready -- you know,
3 really ready to go.

4 CHAIRMAN SPRITZER: So, you're not aware of
5 any permit application.

6 MR. SKLAR: I am not, and I don't believe
7 there are any. It's too premature.

8 CHAIRMAN SPRITZER: You stated you had
9 experience on large-scale storage. Please state the
10 largest capacity in megawatts of any storage projects
11 on which you have worked.

12 MR. SKLAR: I have worked -- I do have to
13 see if I'm allowed to publicly state my -- I need to
14 think a second on my military ones if I'm allowed to
15 state it.

16 CHAIRMAN SPRITZER: If you're not sure,
17 don't tell us.

18 MR. SKLAR: I'm afraid I -- I would be very
19 uncomfortable. I have been briefed on the AES one-
20 megawatt capacity battery at Arizona Public Service by
21 Arizona Public Service people, and that -- those units
22 using A-123 batteries are probably the largest being
23 used right now in the United States of America, so
24 let's leave it at that. But they are -- you know,
25 they're not in the multi-megawatt scales at this time.

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1 They're up to about a megawatt, I believe.

2 CHAIRMAN SPRITZER: You stated you worked
3 on CAES operating facilities. Where was this facility?
4 Please describe it and what was its power level?

5 MR. SKLAR: I did not work on it. I have
6 actually been working on non-compressed air,
7 compressed liquid storage. The compressed air ones
8 that I have seen are in a small megawatt range in
9 Arizona and California.

10 CHAIRMAN SPRITZER: Besides the facilities
11 in Alabama and Germany, are you aware of any CAES
12 facilities in the 100 plus megawatt range?

13 MR. SKLAR: I am not at this time.

14 CHAIRMAN SPRITZER: You mentioned a 200
15 plus megawatt PEPCO storage facility. Please describe
16 this facility, its storage mechanism and its current
17 location.

18 MR. SKLAR: I don't believe -- I talked
19 about a 200 plus megawatt photovoltaic thing. I don't
20 remember talking about anything that's related to
21 PEPCO.

22 CHAIRMAN SPRITZER: Okay. I believe then we
23 are done with this witness. Anything else? Thank
24 you, Mr. Sklar, for your testimony.

25 MR. SKLAR: Thank you, sirs, and thank you

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1 for working around my schedule. I deeply appreciate
2 it, as does my daughter.

3 CHAIRMAN SPRITZER: I'm sure. All right.
4 And we will now recall the UniStar witness. Welcome
5 back, gentlemen. Let's treat you as still under oath.
6 Is that understood?

7 (Chorus of ayes.)

8 CHAIRMAN SPRITZER: What time lines did you
9 assume in your analysis?

10 MR. RATTI: We looked at approximately 10
11 to 15 years, all the sources that we used go out to
12 2020 and beyond. We looked at the RPS which goes out
13 to 2022. We looked at long-term electricity report,
14 goes out to 2030, DOE, EIA source used by the Staff
15 also goes out to 2030. So, we counted for about 10, 15
16 years and a little bit further.

17 And if you allow me one second, I'd like
18 to correct one statement I made yesterday on the long-
19 term electricity report. Actually, Executive Order
20 11201016 requires an update every five years so it's
21 not a one-time study.

22 CHAIRMAN SPRITZER: Okay. Do you agree with
23 the conclusion of Intervenors's Exhibit 12? We'll
24 bring that up, at least the front page.

25 MR. RATTI: I know we talked about this

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1 yesterday a little bit. If you could put up actually
2 page 3. On page 3 here you have the cost of solar, and
3 then the cost of nuclear. And the green line here and
4 the green dots indicate the cost of solar, which is
5 portrayed to be around 15 percent as of today.

6 If you move for a second to the Appendix
7 A methodology.

8 MR. SMITH: Page 17.

9 ADMIN. JUDGE SAGER: Which page?

10 MR. SMITH: 17.

11 MR. RATTI: Yes, if you look at the way
12 they calculated the capital cost, actually page 18, if
13 you scroll down a little bit. On top of page 18 here,
14 this formula here that looks at the cents per kilowatt
15 hour, I do agree with this formula. This is correct.
16 This is fairly close to what a system like this would
17 cost for Maryland, with the exception maybe the
18 capacity factor would be a little lower from 18
19 percent to 15 percent. So, the cost of solar as they
20 determine here is about 35 cents a kilowatt hour.
21 Actually, Maryland would be a little higher, probably
22 40 cents or so.

23 And then they take into account the
24 incentives that are provided today, and that price
25 drops to -- then the cost is offset by the incentives

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1 and goes down to 15.9 percent, I'm sorry, 15.9 cents
2 kilowatt hour here. So, that's how they calculate
3 that.

4 If you go back to Table 3, we want -- I'm
5 sorry, page 3. On the other side here you've got for
6 nuclear, you've got the yellow dots, and they go up to
7 -- they're about between 20 and 25 cents a kilowatt
8 hour for 2011. I'd like to call up as a reference
9 Applicant 14. If you look here, this is comparable
10 number. If you look at the line that says "Advanced
11 Nuclear," at the end of the line further to the right
12 the number there is 113.9. This is dollars per
13 megawatt hour, so the equivalent here would be 11.39
14 cents per kilowatt hour.

15 So, this is the DOE projection that will
16 be 11 cents approximately, and the projection in the
17 other report is between 20 and 25 cents per kilowatt
18 hour, so they're projecting very high cost for
19 nuclear. So, on the one side they're comparing the
20 solar price after incentives, on the other side you've
21 got a very high cost for nuclear, so I don't believe
22 they're comparing apples and apples.

23 ADMIN. JUDGE SAGER: Do you know the source
24 of the high cost, what assumption they've made to make
25 it high?

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1 MR. RATTI: No, they don't provide a
2 source.

3 CHAIRMAN SPRITZER: Do you concur with Mr.
4 Sklar's estimates for potential solar power
5 development, 5,000 megawatts for rooftops, 5,000
6 megawatts for parking lots?

7 MR. RATTI: Yes, I do not have an issue
8 with that estimate, but I'd like to add that that's,
9 again, potential.

10 CHAIRMAN SPRITZER: I take it how much of
11 that potential is developed would depend, at least in
12 part, on government incentives, programs of that
13 nature?

14 MR. RATTI: Yes.

15 CHAIRMAN SPRITZER: Do you concur with Mr.
16 Sklar's estimates of what is reasonably foreseeable in
17 terms of solar and wind capacity? For solar 1,500
18 megawatts by 2020, 250 megawatts by -- excuse me,
19 2,250 megawatts by 2025, for wind 1,250 megawatts by
20 2020, 1,500 megawatts by 2025.

21 MR. RATTI: I do not necessarily concur
22 with these numbers, and I don't know how they were
23 calculated, so I can't really elaborate more. But I'd
24 just like to point out that if you take these numbers,
25 if you take the 2020 numbers for example for solar,

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1 1,500 megawatts and then you apply the capacity factor
2 of 15 to 20 percent, you would get an average capacity
3 of 225 to 300 megawatts, if I'm correct with the math,
4 which is the same number that is in the NRC Bounding
5 Analysis.

6 For wind, if you take the 2020 number, the
7 1,250 megawatt and you apply the capacity factor there
8 of 30 percent you would get a number which is a little
9 less than 400 megawatt on average, which is again the
10 number that is in the NRC Bounding Analysis.

11 CHAIRMAN SPRITZER: Do you believe biomass
12 can be a substantial contributor to the Maryland power
13 mix?

14 THE WITNESS: No, I do not believe so. I'd
15 like to call up Applicant 5, page 9.3, Figure 9.1. The
16 contribution here from biomass is the green bar. You
17 could -- biomass usually indicates solid fuel, but you
18 could enlarge the definition to include also biogas,
19 plant filled gas. You can see that the future
20 contribution from biomass is not significant. There is
21 already 100 megawatt today, and then going forward
22 there is only a small addition of biomass going
23 forward predicted in this report.

24 ADMIN. JUDGE SAGER: Couldn't biomass --
25 it's biomass burning. Right? Wouldn't it have

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1 essentially the same environmental effect as burning
2 natural gas? I mean, if you're looking at
3 environmental impacts.

4 MR. RATTI: It would be a little different.
5 The nature of the fuel is different, so it would have
6 to stay within certain limits. It is matter of
7 biological origin so because the CO2 is already
8 encircled, that would be -- impact of biomass on CO2
9 would be less, so it would be -- it's a carbon neutral
10 technology.

11 ADMIN. JUDGE SAGER: That's because you're
12 taking carbon out of the atmosphere, and then putting
13 it back in again.

14 THE WITNESS: Putting it back. That's
15 correct, yes. So, it could be conceived to be on that
16 side different, but there would be emissions
17 associated with that in terms of nitrogen oxides and
18 sulfur oxide.

19 I would add also on biomass, I was an
20 officer of a Bio Power Company up until about a year
21 ago, and I've done development of biomass all over the
22 country. We went to Washington State, Idaho, Northern
23 California, Texas, Louisiana, Maryland has never come
24 up as a region of interest where there would be
25 substantial biomass that could be developed here.. I

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1 live in Maryland so I would have liked to develop some
2 projects in Maryland. That was not available.

3 CHAIRMAN SPRITZER: Do you agree with the
4 statement in Intervenors's Exhibit 5, I believe this
5 is, page 23. Is that -- that offshore wind is
6 competitive with fossil fuel? I think this is probably
7 -- probably talking about -- is this the Abell
8 Foundation study or report?

9 MR. RATTI: I believe that may be Applicant
10 5 that you're referring to.

11 CHAIRMAN SPRITZER: It's actually Applicant
12 10, but it is page 23. That's why I was -- I'm a
13 little on page 23.

14 MR. SMITH: Yes, it's Applicant 10, page
15 23.

16 CHAIRMAN SPRITZER: Okay. Applicant 10,
17 page 23, a little bit further down at the bottom.
18 There we go. I take it it's the statement that large-
19 scale offshore wind products can be cost competitive
20 with new fossil fuel generation after accounting for
21 future fossil fuel prices and likely costs to emit
22 carbon into the atmosphere. Do you agree with that
23 statement?

24 MR. RATTI: I do not agree with that
25 statement. First of all, it says after accounting for

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1 future carbon cost. And I can't read but I believe you
2 said fuel adjustments. I can't recall exact wording.

3 CHAIRMAN SPRITZER: After accounting for
4 fossil fuel prices and the likely cost to emit carbon
5 into the atmosphere.

6 MR. RATTI: Yes. So, it does say that. In
7 addition to that, in this power purchase agreement the
8 way to structure it, for every unit of electricity
9 generated by the offshore wind farm the owner of the
10 farm would receive 3.5 times the renewable energy
11 certificate that it would receive for any other
12 technology. So, effectively, this is a special
13 situation that was carved out in Delaware for offshore
14 wind. So, that has to be accounted for.

15 Even with that, Bluewater, the current
16 owner of Bluewater decided not to go forward with the
17 project because he still cannot close the gap between
18 what it costs and the price that he can receive. And
19 they cited loan guarantees not being available any
20 more, under Section 1703 and 1705. And also the
21 potential expiration of the production tax credit at
22 the end of 2012.

23 CHAIRMAN SPRITZER: I read what was
24 submitted on that. My impression was they had not
25 abandoned the project completely, but they weren't

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1 going forward with it due to the current financing
2 problems you mentioned at the present time.

3 MR. RATTI: Correct. I would --

4 CHAIRMAN SPRITZER: Is that a fair
5 statement?

6 MR. RATTI: Yes, it's a fair statement.
7 Like Mr. Sklar said, in the future it is possible that
8 under different conditions things would change. Yes.

9 CHAIRMAN SPRITZER: Very well. Are there
10 going to be any rebuttal questions for these witnesses
11 just based on their testimony they've given the last
12 few minutes?

13 MR. MARIOTTE: No, Your Honor, I won't.

14 CHAIRMAN SPRITZER: All right. And the
15 Staff?

16 MR. GENDELMAN: No, Your Honor.

17 CHAIRMAN SPRITZER: Very well, we'll take
18 a break.

19 MR. VAN DER LINDEN: Do you want me to
20 comment?

21 CHAIRMAN SPRITZER: Sure.

22 MR. VAN DER LINDEN: Very briefly, Mr.
23 Sklar mentioned batteries and canisters. In my
24 testimony I refer to both of those. They are short-
25 term storage, they're not baseload storage or bulk

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1 storage. Batteries respond very quickly, have to be
2 recharged, so you have to put in a large capacity to
3 be able to get a continuous baseload from it. I just
4 want to make that comment.

5 CHAIRMAN SPRITZER: All right, thank you.
6 All right. We'll come back at quarter to 3. Thank you
7 for your testimony.

8 (Whereupon, the proceedings went off the
9 record at 1:40:51 p.m., and went back on the record at
10 2:43:16 p.m.)

11 CHAIRMAN SPRITZER: All right. We're back
12 on the record and we're ready to hear closing
13 arguments. And I believe we were going to start with
14 the Intervenors.

15 MR. MARIOTTE: Thank you, Your Honor.

16 CHAIRMAN SPRITZER: Oh, we're missing --

17 (Laughter.)

18 MR. MARIOTTE: I didn't want him to hear
19 what I have to say, anyway.

20 CHAIRMAN SPRITZER: I would be able to see
21 them the whole hearing since we have a lot --

22 (Off the record comment.)

23 MR. SMITH: I apologize. We had --

24 CHAIRMAN SPRITZER: No, we just got --

25 MR. SMITH: What, problems?

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(Laughter.)

CHAIRMAN SPRITZER: That seems to become a curse. Is Mr. Repka coming back to join you?

MR. SMITH: He is, he just dropped me off, so he will be coming back.

CHAIRMAN SPRITZER: We'll wait for him. We'll wait a couple of minutes.

MR. GENDELMAN: Did you happen to go to Saffron?

MR. SMITH: We did not. We knew better than to do that. We were talking about where to go and we were trying to remember what the name of the place was from yesterday, and we --

CHAIRMAN SPRITZER: Very well. I believe we're ready to hear closing arguments and our time allocation was Joint Intervenors 20 minutes, 15 minute each for the Staff and the Applicants, and we'll certainly allow the State of Maryland to speak if they want. Of course, you're not required to use your maximum allocation of time, so Joint Intervenors can start it.

MR. MARIOTTE: Thank you, Your Honor, and I will certainly try not to use my maximum allocation of time.

First of all, I want to thank the Board

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1 for (a) for admitting this contention; and (b) for
2 holding this hearing, and for the manner in which the
3 hearing was conducted, and especially the -- I
4 actually want to thank the Applicants and NRC, too,
5 for not objecting because of the problems we had
6 yesterday with our witness, and I appreciate that. And
7 I think we're quite happy with the way this has gone
8 on.

9 I personally found the hearing very
10 interesting. I actually personally learned a lot, and
11 I hope the Judges feel they did, as well.

12 I want to refer you to our rebuttal
13 statement of testimony, not that you need to look at
14 it or anything, but just in there on pages 4 and 5 we
15 talked a little bit about how in some ways we see this
16 case as sort of two contrasting visions of what our
17 energy future is going to look like. And I think we
18 saw that on display here this past two days, and we've
19 had experts on sort of different sides looking at the
20 same future, and coming up with different visions of
21 what that future is going to be.

22 We don't think it's this panel or the EIS
23 who has to choose between these two futures. What we
24 contend is that the EIS needs to at least fully
25 examine a feasible energy future. I mean, I think

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1 that's the purpose of the combination of alternative
2 section of the EIS is, in our view, to determine is
3 there an environmentally preferable alternative to the
4 project that's been proposed. And how you get that is
5 by picking the right data, of course, to look at.

6 And we believe that we have provided some
7 compelling data and some compelling information about
8 the potential energy resources, the feasible energy
9 resources. And I'll get back to that in a minute, but
10 I want to say a couple of other things first.

11 We heard a lot over the last couple of
12 days about the Maryland Public Service Commission
13 Certificate of Need for this plant. I want to first
14 say we've actually never challenged the EIS or the
15 application on need for the plant. Although, I do want
16 to say we were Intervenors in the PSE proceeding, and
17 I personally attended every minute of that proceeding.
18 And that was the first proceeding in Maryland that was
19 held under the new deregulation law that had passed.

20 Prior to that proceeding, the Maryland PSC
21 had to consider rate payer interest as one of the
22 factors in issuing a Certificate of Need, and we
23 brought up -- our side brought up the cost of the
24 plant. In fact, that was the first proceeding in which
25 the public learned of the possible cost of the plant

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1 from testimony from UniStar, from UniStar's CEO at the
2 time. And the judge allowed all this testimony, but
3 ultimately decided that they couldn't consider under
4 Maryland's deregulation law couldn't consider cost in
5 determining whether to issue a Certificate of Need or
6 not. And there was some question as to whether, if
7 they had had to consider cost, whether they could have
8 issued that Certificate of Need.

9 It's a hypothetical. I'd just thought I'd
10 bring that up, but we didn't challenge that need. And
11 really we haven't challenged the purpose of the plant
12 either in the sense that the Applicants have stated
13 that the purpose is to provide baseload power.

14 What we've tried to do instead is raise
15 questions about whether this project and this
16 Applicant can meet its stated purpose itself any
17 better than the combination of alternatives along the
18 lines of what we have suggested needs to be looked at.
19 And we are argue that it basically can't do it any
20 better than what we have proposed any better than
21 properly managed renewables.

22 And our expert today, and in our evidence
23 and I quoted yesterday from one of our exhibits about
24 how a properly managed and constructed grid can
25 provide reliable electrical power 24/7 using all

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1 renewable power. I think the NRC witness basically
2 acknowledged this yesterday. He argued it would be a
3 major challenge, but you know, every energy project in
4 this country is a challenge.

5 We've got people protesting offshore wind
6 in Massachusetts. We've got people protesting solar
7 power in the California deserts. We've got people
8 protesting every coal plant that's been proposed.
9 We've got people protesting fracking, and we've got
10 those of us who are protesting nuclear. You know,
11 every energy project is a challenge in that sense, and
12 every energy project is a challenge technologically,
13 every new energy project.

14 In this case, this particular case we're
15 talking about an EPR design that has actually never
16 operated anywhere in the world. I mean, there's a
17 technological challenge to this project, just as it
18 would be a technological challenge to building the
19 kind of grid we're talking about in Maryland. The
20 challenges to any of these are not insurmountable.

21 So, I believe we have shown that there's
22 much more solar and wind potential available to
23 Maryland than the EIS considers. These are not all
24 necessarily approved projects, or even planned
25 projects. Truth is, if we're looking out over the next

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1 10 years, none of us know what's actually going to be
2 built or not. We can only do projections and figure
3 out what's feasible

4 UniStar's expert acknowledged that large
5 quantities of solar power could be built over this
6 period even if they were not in the planning stage
7 right now. We know that there's substantial interest
8 in wind through Bluewater Wind, that it's on hold now.
9 It doesn't change the fact that Bluewater Wind, and
10 Google, and Good Energies, and all these fairly major
11 players in the game have been considering this, and
12 are waiting to see particularly on the production tax
13 credits. As our witness pointed out today, all energy
14 is driven by incentives. Like it or not, that's the
15 way it is.

16 The project we're talking about today for
17 the EIS, they're waiting for an incentive called a
18 federal loan guarantee of many, many billions of
19 dollars.

20 CHAIRMAN SPRITZER: What do you think would
21 be the appropriate time frame -- I think it's pretty
22 clear that December 2015 is not going to happen. I
23 know that's the time frame that was used in the FEIS.
24 If you were looking today at an appropriate time frame
25 for evaluating when a renewable combination

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1 alternative would need to be ready in order to come on
2 line at the same time as Calvert Cliffs Unit 3, what
3 kind of time period should we be looking at?

4 MR. MARIOTTE: Well, I think -- let me
5 answer that two ways, and they're actually both pretty
6 close. I think -- yesterday I think I actually made
7 the argument it should be in the 2022 time frame. If
8 you take the earliest possible date construction on
9 Calvert Cliffs III could begin, which would be
10 sometime in 2014, give an eight-year construction
11 period which is shorter than they're experiencing in
12 Finland, pretty generous to the Applicants. That
13 would put it around 2022, which sort of coincides
14 nicely with the renewable portfolio standard, as well.

15 I think you could -- I could and probably
16 will make the argument that you could also extend it
17 out a few more years after that because historically
18 speaking, and I think I included this possibly in our
19 rebuttal statement, but historically speaking new
20 design nuclear reactors regardless of the design
21 typically operate at much lower capacity factors for
22 the first two to three years of their existence
23 because they're got to work out the bugs. So, instead
24 of looking at 90 percent capacity factors, when a new
25 reactor comes on line, particularly a new design

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1 reactor, we're usually looking closer historically
2 speaking 50 to 60 percent capacity factors. And that
3 might push out two three more years as to when you
4 would need to have a comparable amount of power in
5 place.

6 CHAIRMAN SPRITZER: Suppose we were to take
7 a range of years, say something like 2020 to 2025,
8 does that sound reasonable to you?

9 MR. MARIOTTE: That's fairly reasonable to
10 me.

11 CHAIRMAN SPRITZER: Okay.

12 MR. MARIOTTE: But yes, I certainly think
13 2015, 2017 is not in practical terms what we're
14 looking at.

15 Anyway, so I think we've shown, and the
16 way we tried to do it, we show (a) that the resources
17 are there, sort of the big level resources, and as our
18 witness talked this morning, and bringing it down to
19 what the potential is, and then down to what the
20 feasibility is, sort of each one a different level
21 standard.

22 We don't think our arguments are in the
23 range of remote or speculative. Certainly no more so
24 than the current project is remote or speculative.

25 We have not -- and I realize the Judges

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1 did try to get our witness today to put in some more
2 precise numbers than certainly we have put in in our
3 written testimonies and written statements. But we
4 have generally throughout this proceeding, throughout
5 this contention tried not to -- tried very hard not to
6 offer a prescriptive alternative. We don't believe
7 that it is our position, our prerogative to tell the
8 NRC this is the combination of alternatives you should
9 look at. That's not for us to decide. Rather, we've
10 just been trying to say we think you've really
11 underestimated this, and here are some ideas of how
12 you have underestimated it.

13 You know, we could throw out numbers out
14 there, but it just didn't seem like it's our job to do
15 that. We'd be happy to do that in a final statement if
16 the panel thinks that's helpful. But, again, we tried
17 to avoid telling the NRC how to do their job.

18 The UniStar witness yesterday essentially
19 argued, if I understood it correctly, that even if the
20 combination of alternatives were 100 percent
21 renewable, Calvert Cliffs would still be the
22 environmentally preferred alternative. I understand
23 why they say that. They have a product to support.
24 And the NRC witness kind of said something similar, if
25 I understood correctly, although I'm not going to hold

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1 him to it because I don't -- I assume that the EIS
2 analyses are done with somewhat more rigorous analysis
3 than a quick comparison while sitting on a witness
4 stand. So, I'm not going to assume that, but I just
5 would point out that we find the UniStar witness'
6 statement rather -- to use a word that has some
7 resonance in NRC language, incredible.

8 And I think our witness today talked about
9 how land use may not really be the barrier, or the
10 problem that many have seen it for renewables. A
11 couple of things where perhaps we should have brought
12 up contentions and did not. For example, I noticed in
13 the Table 9.3 in the Environmental Impact Statement it
14 has the waste, that was listed as waste and it had the
15 impacts from Calvert Cliffs III that's small, and the
16 impacts for renewables is small. And perhaps they're
17 not considering radioactive waste under that analysis,
18 I'm not sure. But I think there's a marked difference
19 between radioactive waste, high-level radioactive
20 waste and the dregs from biomass.

21 Certainly, the dregs from biomass are
22 nasty stuff, but it's not going to kill you if you
23 walk too close to it. Probably we should have brought
24 that up as a contention, but it's certainly in the
25 context of environmental consequences. I don't think

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1 those two can be equated.

2 So, I guess my point in saying that is
3 that I think if the NRC were to consider the kinds of
4 contribution from renewables that we've been talking
5 about in this proceeding, that a more rigorous
6 analysis of the environmental effects comparing the
7 two will probably -- well, in our view would not lead
8 to the conclusion that the EIS now has. So, we
9 obviously differ with UniStar on that.

10 And, of course, there's one other
11 environmental consequence of nuclear power that we've
12 steered clear of in this proceeding but I'll just have
13 to bring up at this point, which is what we all saw
14 happen, literally explode across our TV screens last
15 March.

16 Nuclear power is an inherently dangerous
17 technology. That's why the NRC exists. The NRC knows
18 that, and that is a potential environmental
19 consequence that, of course, has to we believe be
20 weighed whenever we're making decisions about this
21 technology.

22 Now, I realize that what happened at
23 Fukushima, used very different reactor designs than
24 the one we're talking about here, a 40-year newer
25 reactor design, should be better than what was built

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1 back then. But if you recall back in the '60s and
2 '70s when those GE Mark I reactors were being built,
3 the NRC, actually I guess it was the Atomic Energy
4 Commission back then, their official position was that
5 a nuclear accident such as Fukushima was "incredible,"
6 couldn't happen. So, they thought those plants were
7 really safe back then.

8 We think -- or UniStar and the NRC believe
9 -- well, UniStar believes that the EPR is certainly
10 much, much safer. The NRC hasn't completed its design
11 review yet, so I guess I won't speak for them yet, but
12 presumably they think so. But I just bring this up
13 because, as I said, the NRC realizes that there is an
14 inherent risk to nuclear power, and that there are
15 some potential consequences to the environment because
16 of that.

17 And the moment that they fail to
18 acknowledge that risk would be the moment that we'd
19 all be put at much greater risk, so I appreciate that
20 they do recognize that. But that is a potential
21 environmental consequence that probably should be
22 included within the context of the EIS. I'll leave it
23 there.

24 CHAIRMAN SPRITZER: Do you have anything
25 further in the way of closing, or are you --

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1 MR. MARIOTTE: No, I mean, I think -- I
2 guess I'll just say one more time that I really
3 appreciated the opportunity to hear these different
4 witnesses and their different perspectives. I think
5 our witness did a very good job at explaining where we
6 are coming from with this contention, and with this
7 vision that we think deserves a full examination in
8 the context of the EIS.

9 CHAIRMAN SPRITZER: Let me just ask one
10 other question. You talked earlier about a range of
11 years between 2020 and 2025. You said it's been your
12 policy from the start not to give us a specific
13 prediction; nevertheless I'll ask, do you have any
14 numbers you could provide to us, let's stick to
15 installed capacity to make it simple in terms of wind
16 and solar, roughly?

17 MR. MARIOTTE: If you would like that, I
18 would like to put that into our final --

19 CHAIRMAN SPRITZER: Okay, that's fine.

20 MR. MARIOTTE: -- brief.

21 CHAIRMAN SPRITZER: Nobody needs to say--

22 MR. MARIOTTE: Which I actually forget what
23 it's called, but I know we do have a final brief
24 coming up.

25 CHAIRMAN SPRITZER: Yes, we'll be talking

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1 about that shortly, and that's the Proposed Findings
2 of Fact and Conclusions of Law.

3 MR. MARIOTTE: Right. I will include that
4 in there.

5 CHAIRMAN SPRITZER: I think it would be
6 helpful for me, at least, to have something reasonably
7 concrete. It can be a range of values. It doesn't need
8 to be a specific figure, and it might depend on what
9 year you're talking about.

10 MR. MARIOTTE: It absolutely would.

11 CHAIRMAN SPRITZER: And that's certainly
12 not limited, by the way, to Intervenors. I welcome the
13 same thing from the other parties to the case.

14 All right. If you're finished we'll move
15 on and hear from the NRC Staff.

16 MR. GENDELMAN: Thank you, Your Honor.
17 Niels Bohr mused that making predictions is difficult,
18 especially when they're about the future. But an
19 Environmental Impact Statement does exactly this. An
20 EIS is a fundamentally forward-looking document. It
21 must predict what the impacts of a proposed action
22 would be. It must predict what the impacts of
23 alternatives to that action would be.

24 In those predictions is some uncertainty.
25 This is why in its 2005 Louisiana Energy Services

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1 decision the Commission noted that NEPA does not call
2 for certainty, but for an estimate of anticipated not
3 unduly speculative impacts.

4 In the Calvert Cliffs III FEIS, the
5 Staff's analysis of energy alternatives presents
6 reasonable estimates of likely future wind and solar
7 energy development in Maryland using objective
8 authoritative sources.

9 The contention before the Board claims
10 that the EIS understates the likely contribution of
11 wind and solar to the combination of energy
12 alternatives. The basis for this claim is that the
13 potential contribution is much higher, exemplified by
14 recent investments in those technologies.

15 In the FEIS, the review team concluded
16 that there will be meaningful expansion of wind and
17 solar energy development in Maryland. The combination
18 of energy alternatives in the FEIS projects
19 substantial growth in these generation sources. But
20 the Staff properly based its forecast on what was
21 likely to occur as NEPA requires, not on what was
22 theoretically possible.

23 As the D.C. Circuit noted in Carolina
24 Environmental Study Group versus United States, NEPA
25 does not require an agency to explore every extreme

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1 possibility which might be conjectured; rather, NEPA
2 requires consideration of alternatives as they exist,
3 and are likely to exist.

4 As set out in the Staff's direct and
5 rebuttal testimony and before this Board yesterday,
6 the Staff's approach to energy alternatives relied
7 upon authoritative sources and was consistent with NRC
8 guidance, including the Environmental Standard Review
9 Plan, NUREG 15-55.

10 The Staff's analysis considered not only
11 what alternative sources of energy were currently
12 viable and at what levels, but what technologies and
13 capacities will be viable within the appropriate
14 future time frame to determine what technologies and
15 capacities can be reasonably expected.

16 To make those determinations the review
17 team used authoritative sources, such as the
18 Department of Energy, Energy Information
19 Administration's Annual Energy Outlooks, and the State
20 of Maryland's own projections for generation growth.
21 The Staff did not base its forecast on any one of
22 these sources, but used these authoritative sources to
23 inform its determination.

24 These forecasts consider tax and other
25 incentives, as well as the declining cost of these

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1 technologies. The DOE, EIA, and Maryland reports also
2 explicitly consider the role that the renewable
3 portfolio standard will have on renewable energy
4 development in Maryland.

5 The forecast in these reports align with
6 the figures in the FEIS. The Staff determined that
7 100 megawatts electric of baseload equivalent wind
8 power and 75 megawatts electric of baseload equivalent
9 solar power could be reasonably expected. This
10 equates to 250 to 300 megawatts of wind capacity, and
11 approximately 270 megawatts of solar capacity.

12 The FEIS was prepared to inform decision
13 makers of the environmental impacts of the proposed
14 action before the Commission; namely, disposition of
15 UniStar's application to build and operate Calvert
16 Cliffs Unit 3. Thus, the content of the application is
17 important in informing the purpose and need of the
18 project, as well as the subject time frame.

19 There's been some discussion of the
20 probable completion date of the proposed unit. I'll
21 begin by noting that this issue is outside the scope
22 of the admitted contention, which concerns only the
23 wind and solar contributions of the combination of
24 energy alternatives for the purpose and need developed
25 by the review team, as stated in the FEIS in Section

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1 1.3.

2 In the application, the completion of
3 construction was forecast to be in December 2015. The
4 date was changed to the end of 2017 in the subsequent
5 revision to that application. This is the information
6 that the review team used in its analysis when
7 developing its alternatives. This is the information
8 that was submitted to the Commission under oath or
9 affirmation seeking issuance of a combined license.

10 In the 2006 USEC case, the Commission
11 found that stated purposes of the project and the
12 applicant's needs should be considered in developing
13 alternatives to a proposed action. Informed by the
14 applicant's stated purpose, the review team developed
15 Purpose and Need Statement for the proposed action is
16 to provide for additional large baseload electrical
17 generating capacity within the State of Maryland.

18 This Purpose and Need Statement helps to
19 define what constitutes a reasonable alternative, in
20 that an alternative that does not meet the purpose and
21 need is not reasonable.

22 There is a need for power in Maryland, as
23 of the applicant's then 2015 proposed completion of
24 construction date as determined by the Maryland Public
25 Service Commission in its issuance of a Certificate of

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1 Public Convenience and Necessity. Those are NRC
2 Exhibits 14 and 15.

3 This is confirmed by the NRC Staff's
4 evaluation in Chapter 8 of the FEIS. Thus, while the
5 Staff will not accept unreasonable claims, nor does it
6 accept blindly the applicant's stated purpose and need
7 without performing its own analysis, the NRC must
8 consider the application before it, as the application
9 is ultimately what is or is not granted.

10 There has also been some discussion of the
11 process undertaken by the Staff in its evaluation of
12 energy alternatives. The Staff applied the same
13 criteria in evaluating all energy alternatives,
14 including the combination of energy alternatives. For
15 each energy alternative, the Staff considered whether
16 the alternative energy source was capable of meeting
17 the purpose and need of the proposed action by itself.

18 For coal and natural gas, the Staff found
19 the answer to be yes. For other energy sources, they
20 found that they were not competitive alternatives by
21 themselves; that is, they were not capable of meeting
22 the purpose and need on their own.

23 But the Staff went on to further consider
24 whether any of these energy sources could contribute
25 to a reasonable alternative in combination with other

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1 generation sources. The Staff considered hydro power,
2 solar power, biomass generation, conservation and
3 demand side management, and wind power in combination
4 in addition to a natural gas supplement to create a
5 competitive alternative.

6 While experience within the region of
7 interest made clear that coal and natural gas were
8 capable of meeting the purpose and need on their own,
9 there's limited experience with large-scale solar and
10 wind installations in Maryland.

11 Unlike coal or natural gas, because no
12 solar or wind projects for baseload generation have
13 been undertaken in Maryland, in order to include these
14 resources in a reasonable combination of energy
15 alternatives that can meet the purpose and need of the
16 proposed action, the Staff used authoritative sources
17 to inform what values for these energy sources were
18 appropriate.

19 The Staff sought to maximize each of these
20 contributions in developing an alternative with the
21 least overall environmental impacts. The inclusion of
22 compressed air energy storage, likewise, was designed
23 to reduce the impacts of the combination of energy
24 alternatives while still meeting the purpose and need
25 of the proposed action; that is, while still

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1 presenting a reasonable alternative to the proposed
2 action.

3 While cost was considered in the Maryland
4 and Federal reports used by the Staff, following
5 guidance in the Environmental Standard Review Plan in
6 Section 9.2.3, the Staff's Energy Alternatives
7 Analysis is a two-step process. First, the Staff looks
8 at the environmental impacts of the proposed action
9 compared to each competitive alternative. This
10 analysis does not compare costs but is concerned only
11 with environmental impacts and identifying
12 environmentally preferable alternatives
13 notwithstanding cost.

14 If a competitive alternative is identified
15 as environmentally preferable to the proposed action,
16 then and only then is a detailed cost analysis
17 undertaken. As no reasonable alternative was found to
18 be environmentally preferable to the proposed action
19 no detailed cost comparison was performed.

20 The Calvert Cliffs III FEIS including its
21 discussion of alternative energy sources comes to
22 grips with all important considerations. The Staff
23 has met its NEPA obligations.

24 In their pre-filed testimony and now
25 before the Board, the Joint Intervenors assert that

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1 the Staff's combination of energy alternatives
2 understates the potential of solar and wind power.
3 The Joint Intervenor understand potential to mean the
4 theoretically maximum generation potential without
5 consideration of other factors. This approach would,
6 for example, cover the Maryland coast with turbines to
7 extract every possible watt of power as discussed on
8 pages 7-8 of their direct testimony, or cover every
9 eligible rooftop in Maryland with rooftop solar, as
10 discussed in Joint Intervenor Exhibit 13.

11 Theoretical potential is one factor that
12 informed the review team as it developed its Energy
13 Alternatives Analysis in the FEIS, but by themselves
14 such figures are not the same as what can be
15 reasonably expected to occur without further
16 consideration of project time lines, technological
17 hurdles, licensing requirements, and a host of other
18 factors that each also inform an overall appraisal of
19 reasonably expected future generation growth.

20 CHAIRMAN SPRITZER: So, you agree that
21 project time line is a relevant issue.

22 MR. GENDELMAN: For alternatives.

23 CHAIRMAN SPRITZER: Not as a separate
24 issue, we understand that, but it seems to have, if
25 I've understood all the testimony and exhibits we've

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1 seen, it's intimately connected. And this includes
2 your own direct testimony, it's intimately connected
3 with the estimate of what wind and solar potentials
4 there are. What is the time frame for the construction
5 of Calvert Cliffs III, and then we look to see what
6 amount of wind and solar could be constructed within
7 that time frame. And as I understand the Staff's
8 testimony, that's what they did.

9 MR. GENDELMAN: I think yes. What I would
10 say is that the time frame of the proposed project
11 informs the alternatives analysis in so far as that's
12 the time frame in which the alternatives are
13 considered. So, for example, if a project, a very,
14 very short time frame were considered something that
15 could, for example, be operational six months after a
16 license was granted, that would inform the time frame
17 under which you'd consider alternatives. So, something
18 that couldn't be operational in vaguely that time
19 period would not be an alternative on that basis.

20 With respect to those factors, these are
21 what Maryland considered in its Long-Term Electricity
22 Report and Ten-Year Plan. This is what DOE EIA looked
23 at in its Annual Energy Outlook, and this is what the
24 review team considered in its Alternatives Analysis in
25 Section 9.2 of the FEIS.

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1 While the Joint Intervenors have provided
2 some information as to declining prices of solar and
3 wind generation, a factor explicitly considered in the
4 authoritative sources used by the review team, the
5 Joint Intervenors have not identified what information
6 in, for example, the Maryland or DOE EIA analyses that
7 they dispute or why. These are authoritative sources
8 on the likely future development of wind and solar
9 energy in the United States, the Mid-Atlantic region
10 and Maryland.

11 While the Joint Intervenors disagree with
12 the conclusion the review team reached in the FEIS,
13 they have not demonstrated that Staff has not taken
14 the hard look NEPA requires.

15 Today Mr. Sklar stated that wind power
16 does not provide baseload power, and that solar power
17 likewise does not provide baseload power. The purpose
18 and need of the proposed project is to provide a -- is
19 to construct and operate a large baseload facility in
20 Maryland. This was the need Maryland identified in
21 issuing its Certificate of Public Convenience and
22 Necessity.

23 Despite this, the Staff was able to
24 include wind and solar power in a combination of
25 energy alternatives that could meet the purpose and

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1 need of the proposed action at the levels identified
2 by the Staff; although, that alternative was
3 determined not to be environmentally preferable.

4 While parties may provide competing
5 approaches to the one chosen by the review team, the
6 Commission held in the 2010 Pilgrim case that an
7 agency is free to select its own methodology so long
8 as that methodology is reasonable.

9 Also, to determine compliance with NEPA,
10 the Board does not determine which of the parties'
11 calculations or methodology is the best or most
12 precise. Where in the same case the Commission also
13 noted, "There is no NEPA requirement to use the best
14 scientific methodology, and NEPA should be construed
15 in the light of reason if not to demand virtually
16 infinite study and resources."

17 Now, this is not to say that the Staff
18 does not believe its approach was the correct one, and
19 that its analysis was complete and thorough, but
20 rather to underscore that the Staff was not required,
21 as noted in the Carolina Environmental Study Group
22 case, to explore every extreme possibility which might
23 be conjectured, but rather the Staff was required to
24 consider alternatives as they exist and are likely to
25 exist.

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1 This is precisely what the Staff has done
2 in its combination of energy alternatives, and
3 therefore the Board should find Contention 10-C to be
4 without merit, and find in favor of the Staff. Thank
5 you and I'd be happy to answer any additional
6 questions.

7 CHAIRMAN SPRITZER: Hearing no questions
8 from my colleagues, we'll proceed to hear from the
9 Applicant.

10 MR. SMITH: Thank you. First, thank you for
11 your efforts yesterday and today. We covered a lot of
12 ground with the witnesses and brought out some
13 valuable insights I hope will help you as you make
14 your decision.

15 I think what you heard from the NRC Staff
16 witnesses and from UniStar's witnesses is exactly the
17 sort of clear, focused, and reliable information and
18 on-point expert analysis that you need to resolve
19 Contention 10-C. Before I talk about our testimony, a
20 little bit of discussion of the scope of that
21 contention is useful.

22 First, the purpose and need that is
23 construction of 1,600 megawatts of baseload power in
24 Maryland is not at issue, as Mr. Mariotte noted. The
25 region of interest, Maryland, is also not at issue.

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1 And the cost of Calvert Cliffs and the related
2 economics have nothing to do with a NEPA alternatives
3 analysis, at least in the absence of an
4 environmentally preferable alternative. The proposed
5 action is construction and operation of Calvert Cliffs
6 III.

7 So, the testimony and evidence has to be
8 viewed in light of the specific challenge in
9 Contention 10-C, which is, as we've heard is that the
10 combination alternative understates the reasonable
11 contribution of wind and solar, and overstates the
12 need for the natural gas supplement.

13 Looking at the evidence, that's clearly
14 not the case. You heard about the potential
15 contribution of wind power to the Maryland energy mix
16 including the status of both onshore and offshore
17 projects, and you heard about both current solar
18 deployment and expectations for future projects.

19 Some key testimony focused on the fact
20 that first, there are no offshore wind projects
21 currently under active development in Maryland.
22 Offshore is little more than an idea at this point;
23 that additional onshore wind in Maryland is
24 constrained by the availability of suitable sites, and
25 limited by economics and uncertain incentives; that

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1 solar power deployment in Maryland is strongly
2 dependent on the RPS. Even with further reductions in
3 photovoltaics, solar is not going to be economical to
4 deploy at the scale posited by the Intervenor.

5 In addition, there are no known sites
6 suitable for underground bulk energy storage in
7 Maryland, and there are no viable energy storage
8 technologies that can be combined with wind or solar
9 to create the equivalent of baseload power.

10 Importantly, the testimony that you heard
11 is flexible enough to accommodate some uncertainty in
12 the expected dates of operation for Calvert Cliffs
13 III. The impact of the RPS was evaluated out to least
14 2022, the Maryland Long-Term Electricity Report on
15 which both the UniStar witnesses and the NRC Staff
16 relied, it goes out to 2030. The DOE projections also
17 go out to 2030. The CPCN is not limited to any
18 particular date of operation, and UniStar's testimony
19 explicitly accounted for the next 10 to 15 years. In
20 short, the reasonableness of the combination of
21 alternatives is not dependent on any particular
22 operation date for Calvert Cliffs III.

23 In contrast to UniStar's expert analysis
24 that considers the regulatory and legislative
25 framework, the realistic commercial considerations,

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1 and incremental technological developments, the
2 Intervenor's projections were based primarily on
3 speculation regarding future regulatory or legislative
4 changes and theoretical technological developments.
5 And the logic behind them strays far from what is
6 considered reasonable under NEPA.

7 For instance, as NRC Staff pointed out,
8 their discussion of theoretical potential, for
9 example, the 5,000 megawatts of rooftop that we heard
10 today is of little use in a NEPA analysis. Intervenor's
11 provided no basis for including offshore wind in the
12 combination alternative, particularly in light of the
13 Bluewater Wind project being placed on hold. The
14 Intervenor's made unrealistic assumptions regarding the
15 scope of solar power deployment. They did not address
16 the specific economic considerations or inner workings
17 of the Maryland RPS as they apply to in-state solar.
18 And the Intervenor's experts, apparently at least
19 somewhat off the cuff estimates of potential wind and
20 solar are no substitute for the clearly explained and
21 transparent methodologies and authoritative sources
22 that were relied upon by the UniStar and NRC Staff
23 witnesses.

24 The Intervenor's also failed to effectively
25 grapple with the implications of renewable energy for

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1 baseload generation to meet the purpose and need for
2 the project.

3 While the Intervenor did make an effort
4 to highlight some unknowns in the combination
5 alternative, NEPA analyses must often rely on
6 imprecise and uncertain data, as the Staff pointed
7 out, particularly when forecasting technological
8 developments.

9 The NRC Staff may appropriately rely on
10 the judgment of its experts in determining what is
11 reasonable. The Staff is under no obligation to
12 independently reproduce DOE's Annual Outlook, or
13 duplicate the Maryland State analyses. Rather, their
14 goal is to develop a means of comparing the
15 environmental impacts of the proposed action to
16 alternatives, and thereby aid decision makers and the
17 public in comparing those alternatives.

18 NEPA again requires only reasonable
19 forecasting, which is exactly what the NRC Staff, as
20 supported by UniStar's expert witnesses has done here.

21 As the Commission described it, under NEPA
22 the question is not whether every assumption in the
23 FEIS was the best, or whether it will turn out to be
24 true, but rather whether the economic assumptions were
25 so distorted as to impair a fair comparison of the

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1 environmental effects.

2 As you've heard from the NRC Staff and
3 UniStar experts, all evidence points to a conclusion
4 that the combination alternative is reasonable, and
5 allows for a fair comparison among alternatives.

6 Moreover, by accounting for some
7 uncertainty in those projections through a sensitivity
8 analysis or bounding analyses in the FEIS that was
9 further explained yesterday by the NRC Staff and
10 UniStar experts, the FEIS provides additional
11 information to aid the public and decision makers by
12 looking at a range of alternatives, including those
13 that are not considered likely in the current
14 regulatory environment, or that are not based on
15 realistic expectations of future developments. In this
16 regard, the Staff's analysis actually goes well beyond
17 what is required by NEPA.

18 We understand that the Intervenor are
19 wishing and hoping for more wind or more solar, but
20 there's simply not enough evidence to support a
21 finding that the combination alternative used by the
22 Staff is unreasonable.

23 To the contrary, the preponderance of the
24 evidence supports a finding that the combination
25 alternative reflects a realistic assessment of

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1 technically feasible, economically viable renewable
2 generation over the next 10 to 15-year period.

3 In any event, the entire discussion of the
4 precise mix to be used in the FEIS is to a large
5 degree immaterial to the overall NEPA findings.
6 Nuclear power has a small footprint and low air
7 emissions. Nuclear energy has the lowest direct impact
8 on the environment of any of the alternatives.

9 As you heard from Mr. Kugler and Mr.
10 Lutchenkov, this conclusion is true whether you add a
11 lot more wind, or a lot more solar to the combination
12 alternative.

13 While all the evidence that was presented
14 by UniStar's witnesses and by the NRC Staff is
15 compelling and, in my view, essentially
16 uncontroverted, the Board need not find in favor of
17 the Intervenor even if it finds that the discussion
18 is somehow insufficient. The Board can and it should
19 consider the entirety of the record before it. And
20 that record includes analyses out to the 2022 to 2027
21 time frame.

22 The testimony and evidence presented here
23 in the aggregate is more than sufficient to satisfy
24 the Agency's obligation under NEPA to take a hard look
25 at the consequences of issuing a combined license to

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1 Calvert Cliffs.

2 In the final analysis, the specific
3 combination used is reasonable, and it is realistic.
4 The FEIS confirms that no technically feasible and
5 economically viable combination of alternatives is
6 environmentally preferable to the proposed action.
7 And that's even accounting for some uncertainty in the
8 amount of wind or solar that can be generated.

9 As a result, the Final Environmental
10 Impact Statement satisfies Part 51 and it satisfies
11 NEPA. The Licensing Board should, therefore, resolve
12 the contention in favor of the NRC Staff and UniStar.
13 Thank you.

14 CHAIRMAN SPRITZER: Thank you. Last,
15 Maryland, are we going to hear anything from you?

16 MR. BOLEA: Thank you for the opportunity,
17 Your Honors, and I have no closing statement.

18 CHAIRMAN SPRITZER: All right. We can then
19 move on to cover the last matters on our agenda which
20 are set future dates. We don't control when the
21 transcript will be issued. Of course, following that
22 the parties have an opportunity to propose transcript
23 corrections.

24 Again, Mr. Mariotte, I would -- if you
25 want us to correct or have a full version of I believe

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1 it was your Exhibit 13 --

2 MR. MARIOTTE: Right. The motion I should
3 get in this next week.

4 CHAIRMAN SPRITZER: Okay. On the transcript
5 corrections, any suggestions as to how long you would
6 like to propose transcript corrections once you get
7 the transcript? Three weeks, is that reasonable?

8 MR. SMITH: That's more than adequate.

9 MR. MARIOTTE: More than adequate. I'm sure
10 we could cut it down.

11 CHAIRMAN SPRITZER: Three weeks for
12 proposed transcript corrections, and it would be great
13 if you could submit joint proposed transcript
14 corrections. That is, if you can agree on them, if
15 you can't then you'll have to submit your own. And
16 then we would, I guess, normally run the Proposed
17 Findings of Fact and Conclusions of Law from the
18 Board's order -- well, we either will adopt your
19 proposed transcript corrections if they're agreed to.
20 If there are disagreements, I guess we'll have to rule
21 on them.

22 MR. MARIOTTE: As I understood it, those
23 transcript corrections are basically typos and
24 misspellings.

25 CHAIRMAN SPRITZER: Exactly. We're not

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1 interested in changing a witness' answer from yes to
2 no, or vice versa.

3 MR. MARIOTTE: Just checking.

4 CHAIRMAN SPRITZER: No substantive changes,
5 only typographical errors and errors of that sort.

6 How long would you like to submit Proposed
7 Findings and Conclusions of -- Proposed Findings of
8 Fact and Conclusions of Law from when we rule on the
9 transcript corrections? Thirty days, is that --

10 MR. SMITH: Forty-five days?

11 CHAIRMAN SPRITZER: Forty-five days, okay.

12 MR. SMITH: From the date of your order on
13 the transcript corrections.

14 CHAIRMAN SPRITZER: Right. That would also
15 be the date that we would close the record. All
16 right. We'll go with 45 days then.

17 All right. Well, thank you, everyone. We -
18 - as counsel indicated, I certainly learned a lot. I
19 probably have the -- I'm sure I have the steepest
20 learning curve of all the judges up here who have a
21 good deal more experience with issues, these kind of
22 issues than I do. But all the witnesses were very
23 helpful, as were the submissions of counsel, and Mr.
24 Mariotte as representative of the Intervenors. And we
25 look forward to seeing your Proposed Findings of Fact

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1 and Conclusions of Law. And we will now stand
2 adjourned.

3 MR. MARIOTTE: Thank you.

4 (Whereupon, the proceedings went off the
5 record at 3:29 p.m.)
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This is to certify that the attached proceedings
before the United States Nuclear Regulatory
Commission

Proceeding: Calvert Cliffs III Nuclear Project
Evidentiary Hearing

Docket Number: 52-016-COL

ASLBP Number: 09-874-02-COL-BD01

Location: Solomons, Maryland

were held as herein appears, and that this is the
original transcript thereof for the file of the
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and thereafter reduced to typewriting under my
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