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1 (Confidential Transcript filed under seal.) 2 MR. KEMPIC: Your Honor, I'm going to distribute a 3 section from the Member Edition of the 1993 EPRI TAG booklet and 4 have it marked as Company Exhibit 14. This is the confidential 5 portion. 6 EXAMINER FARKAS: And we're marking this CEI Exhibit 7 14, and the first page is entitled "Liquid Gas Shield 8 Technologies", and it is -- okay. 9 10 Thereupon, Company Exhibit No. 14 was marked for 11 purposes of identification. 12 13 Thank you. MR. KEMPIC: 14 BY MR. KEMPIC: 15 Q. Mr. Blecker, isn't it true that there are different types 16 of combustion turbines? 17 Α. Yes, it is. 18 0. On CEI Exhibit 14, on Page -- or, rather, on Page 8-99 it describes the type of combustion turbine that you have 19 20 considered and proposed that CEI install as an alternative to 21 the Rachel 138 kV transmission line; is that correct? 22 MS. MIGDEN: Your Honor, if I may ask a question --23 ask that a question be posed to Mr. Blecker, which is, is he 24 familiar with this document and has he ever seen it, since this is a company document that they -- that they are seeking to 25

elicit responses and information from Mr. Blecker on and which 1 2 he may be seeing for the very first time? 3 MR. KEMPIC: Your Honor, I would -- I would submit 4 that this Exhibit 22 was also marked as an exhibit by Citizens 5 for a Better Way. 6 MS. MIGDEN: Not this entire document. 7 THE WITNESS: I have never seen the Member Edition of 8 this document. 9 EXAMINER FARKAS: Okay. Well, for the record, you 10 are -- you've never seen this page? THE WITNESS: Not the Member Edition. 11 12 EXAMINER FARKAS: Not --13 THE WITNESS: There is a --14 EXAMINER FARKAS: But are you familiar with --15 THE WITNESS: There is a public edition that I have 16 seen. MR. KEMPIC: Okay. 17 18 BY MR. KEMPIC: Okay. If you could pull that out then, if you have that 19 0. 20 with you. 21 Have you found that yet, Mr. Blecker? 22 No, I have not. Α. 23 MR. KEMPIC: Your Honor, if we could go off the record 24 for a second. EXAMINER FARKAS: Yeah, let's go off the record. 25

(Discussion held off the record.) 1 2 EXAMINER FARKAS: Let's go back on the record. 3 BY MR. KEMPIC: 4 Mr. Blecker, would you agree with me that what is in --0. 5 what is labeled CEI Exhibit 14, Page 8-99, is an accurate copy 6 of what is labeled Citizens for a Better Way Exhibit No. 3? 7 Α. Yes. 8 MS. MIGDEN: Your Honor, may I ask that questions with 9 regard to this not be under seal if it's relating now to a 10 public document; that any questions you have with regard to this 11 particular exhibit, whether that has to be under seal for purposes of briefing? 12 13 MR. KEMPIC: Your Honor, this puts us in a difficult 14 position because we can't, pursuant to our master license 15 agreement, release this information without having it being held confidential. 16 17 MS. MIGDEN: But you didn't introduce it. It's my exhibit. 18 19 MR. KEMPIC: I can't speak towards their license 20 agreement or their rights of use, your Honor. 21 MS. MIGDEN: Well --22 I don't want to put the company in a MR. KEMPIC: 23 position --24 MS. MIGDEN: May I make a suggestion that Mr. Kempic 25 and I see if we can work this out off the record at a later date

1	and then come back on this issue?
2	MR. KEMPIC: That's fine, your Honor.
3	MS. MIGDEN: As much as can be on the public record
4	would be better.
5	EXAMINER FARKAS: Let's do that. But we'll still be
6	confidential at this point and then we'll
7	MS. MIGDEN: Okay.
8	BY MR. KEMPIC:
9	Q. Mr. Blecker, is the combustion turbine that's represented
10	on Page 8-99 of CEI Exhibit 14 a simple combustion turbine?
11	A. Yes, it is.
12	Q. What is a simple What is a simple-cycle combustion
13	turbine?
14	A. The waste heat is not reused, as in a cogen process, to
15	increase the overall thermal efficiency or to provide for other
16	requirements where steam would be a valuable input. In other
17	words, you burn your fuel, drive the turbine, produce
18	electricity, waste heat is recovered for efficiency of the unit,
19	but you're not using that waste heat steam the waste heat or
20	steam for other processes.
21	Q. Now, is the CT also an aero-derivative combustion turbine?
22	A. EPRI has a separate category for aero-derivative.
23	Q. Are you familiar with the aero-derivative combustion
24	turbines?
25	A. Familiar in what sense?

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1	Q.	Do you know what one is?
2	A.	It's derived from airplane engines.
3	Q.	They're generally considered a stationary jet engine then?
4	A.	Yes.
5	Q.	Okay. The combustion turbine on Page 8-99 of CEI Exhibit
6	14,	that's labeled at the top of the page as a STIG; is that
7	cori	rect?
8	A.	Yes.
9	Q.	What does that stand for?
10	A.	Steam turbine injection gas, I think.
11	Q.	What is a steam or would you accept a definition of
12	stea	am-injected or steam Strike that.
13		What is a steam-injected gas turbine?
14	A.	As I understand it, the it's a simple combustion turbine
15	wher	re the waste heat is reinjected into the combustion chamber
16	to :	increase overall efficiency.
17	Q.	Then let me compare and contrast that. A simple-cycle
18	com	oustion turbine application is what? One in which the
19	A.	There's no cogen.
20	Q.	Okay. Is it true that each type of combustion turbine has
21	difi	ferent types of operating characteristics?
22	A.	I would accept that to be true.
23	Q.	In addition to physical plant, physical equipment, do you
24	know	w what materials are needed to operate a steam-injected
25	aero	o-derivative combustion turbine?

- 1 A. No.
- 2 Q. Do you know what fuel?

3 A. Natural gas.

4 Q. Do you know whether they require water to operate?

5 A. Inasmuch as there is steam in the process, I would assume 6 that water is required.

7 Q. Do you know how much water?

- 8 A. No, I do not.
- 9 Q. Do you know what type of water?

10 A. Based on my Navy experiences with power plants, it would
11 have to be clean water, perhaps deionized, I don't know, but
12 clean water.

Q. Earlier today in response to Mr. Wright I believe you
indicated that you didn't do any independent analysis of the
location of natural gas lines in the project area.

16 A. That's correct.

Q. Did you do any analysis as to whether there is adequatewater supplies for the operation of a STIG?

19 A. No.

20 Q. Do you know whether a STIG takes a larger area in which to 21 operate than would a simple single -- simple-cycle combustion 22 turbine?

23 A. I do not.

Q. On Page 51 of your testimony you estimated the cost for your proposed CT as \$300 per kilowatt; is that correct?

1 A. Which page?

2 Q. Fifty-one.

3 A. Yes.

4 Q. Does that estimate include everything that's necessary to 5 install that combustion turbine and place it into operation?

6 A. That was my installed cost estimate.

7 Q. Including natural gas line extensions?

8 A. As we spoke of this morning, I'm not sure if that's

9 typically included in the balance of plant cost or a turnkey

10 installation.

11 Q. Okay. What about noise reduction?

12 A. I would assume that would be.

13 Q. Included?

14 A. Yes.

15 Q. Do you know what it would cost per -- what noise reduction 16 would cost per kw --

17 A. No, I don't.

18 Q. -- of generation?

Do you know if that cost included the cost of getting the water line to the area?

21 A. No, I don't.

22 Q. What about the cost of water treatment?

23 A. No, I don't.

24 Q. What about the cost of the property?

25 A. Property is included, or so I would assume.

1	Q. What about a startup transformer? Would that be included?
2	A. That's a typical balance-of-plant item.
3	Q. Auxiliary transformer, is that included?
4	A. I don't know.
5	Q. Switch gear?
6	A. Yes.
7	Q. Control equipment?
8	A. Yes.
9	Q. What about the building? Is there any building required
10	for th is ?
11	A. I don't know if a building would be required or not, but
12	the construction pad would be the installation pad, excuse
13	me.
14	Q. Do you know whether water will freeze in Ohio in the
15	winter?
16	A. If Ohio gets below 32 degrees and it's pure water, it will
17	freeze.
18	Q. Okay. What does EPRI list as its total capital cost for
19	the combustion turbine shown on Page 8-99 of CEI Exhibit 14?
20	A. For the combustion turbine and auxiliary equipment, \$310
21	per kw.
22	Q. What about the total capital cost?
23	A. \$822 per kw including AFUDC.
24	Q. Okay. What does EPRI list as the cost for the steam
25	generator?

Α. Looks like \$71 per kw. 1 Okay. What about the costs for general facilities and 2 Q. 3 engineering fee? Α. \$336 per kw. 4 5 Q. What does EPRI list as a cost for project --6 MS. MIGDEN: Your Honor --7 BY MR. KEMPIC: 8 Ο. -- and process contingency? MS. MIGDEN: Your Honor, this is an exhibit already on 9 the record. I'm not sure what we're getting at by repeating all 10 11 the numbers. EXAMINER FARKAS: Well, the exhibit does speak for 12 itself. All the costs are right there. 13 14 MR. KEMPIC: Okay. I'll move on. BY MR. KEMPIC: 15 Q. Do you believe EPRI accurately estimated the cost for 16 17 general facilities and engineering? Α. I believe at the time that this document was published, all 18 of the costs were presumed to be reasonable and accurate by 19 20 EPRI. This document was published in 1993, which means the date 21 that that went into it is probably 1991, 1992 vintage. 22 At the time on -- Well, A, it's three years old; and, B, at 23 the time, EPRI could not have presumed the level of competitive pressures which exist in the marketplace today which are driving 24 25 down the capital costs of contracts. The country is long in

capacity and nobody's investment -- Let me restate that. 1 2 Few utilities are investing in new generation equipment. The market is -- has resulted in a much quicker decline in the 3 4 prices, the purchased costs and the installed costs for combustion turbines than EPRI could have imagined three years 5 6 aqo. 7 0. Turning to the operating requirements, would you agree with me that each type of combustion turbine has a different type of 8 operating requirement? 9 10 Α. What do you mean by "operating requirement"? Unit availability, duty cycle, net heat rate? 11 Q. Yes, I would. 12 Α. 13 On Page 49 of your testimony you state that "...CEI already Q. 14 has a potential site for the CT at the proposed Rachel Substation." 15 16 From an electrical engineering perspective, does that mean 17 that you believe if a CT is built, it should be built at the 18 site of the proposed Rachel Substation? 19 That merely means I was offering up the Rachel as a Α. No. 20 potential site which could be evaluated for locating a CT. The 21 actual site will be dependent upon a number of variables and 22 factors which I was not capable nor inclined to try to 23 determine. 24 What factors go into the location of a CT? Q. 25 Α. Access to the existing grid, interconnection requirements,

1 access to natural gas, for the case of the STIG access to water, 2 zoning laws, land use. 3 Do you know what plume incurion is? Q. 4 Α. Excuse me? 5 Do you know what plume incurion is? Q. 6 MS. MIGDEN: Is there a reference, please? 7 MR. KEMPIC: Yes. On Page 8-86 of CEI Exhibit No. 14. 8 MS. MIGDEN: Could you site to a paragraph, please? 9 The fourth full paragraph in the left MR. KEMPIC: 10 column. 11 THE WITNESS: Taken in context, I'm assuming it has something to do with the nature or pattern of the dispersion of 12 13 the exhaust gases from the combustion turbine. 14 BY MR. KEMPIC: 15 Prior to reading this document, did you know what plume ο. incurion was? 16 17 Not by that name. Α. 18 Did you consider that concept when you were making your Q. 19 recommendation that a CT would be a viable option to the Rachel 20 line? 21 Α. As I said earlier, I considered the overall emissions from 22 the proposed CT in the context of impact on OTAG and overall 23 levels of NOx and SOx emissions. 24 Q. But you did not consider whether a visible plume would be 25 coming from the CT?

A. That would be highly unusual for a natural gas-fired
 combustion turbine.
 Q. What about a STIG?
 MS. MIGDEN: Objection. I think this has gotten

5 beyond his testimony here. We're getting really out here.

MR. KEMPIC: Your Honor, he --

EXAMINER FARKAS: Well, I'd just like an answer to the
question; did you consider this --

9 THE WITNESS: No.

10 EXAMINER FARKAS: -- before you saw the term?

11 Okay.

6

12 BY MR. KEMPIC:

13 Q. Do you know how water is demineralized?

MS. MIGDEN: Objection. What does the
demineralization of water have to do with his testimony on need?
MR. KEMPIC: In Citizens for a Better Way Exhibit
No. 3 that exhibit states that the company should investigate a
STIG.

MS. MIGDEN: No, it doesn't. The Citizens Exhibit No. 3 uses a STIG for the purposes of giving an idea of what equivalent availability was. That was the purpose of Citizens Exhibit No. 3.

23 MR. KEMPIC: And if you let me proceed, we'll show how 24 the equivalent availability of a STIG differs from the 25 equivalent availability of other types of CTs such that this is

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the only CT that could be installed pursuant to your client's 1 2 recommendation. If you want to pursue that line of 3 MS. MIGDEN: questioning, go ahead; but I think your current question is 4 irrelevant. 5 BY MR. KEMPIC: 6 Do you know how water is demineralized? 7 Q. 8 MS. MIGDEN: I continue to object. EXAMINER FARKAS: Okay. I'll note your objection for 9 the record, but I overrule it; and let me ask, do you know? 10 THE WITNESS: I'm trying to remember back to the -- to 11 my oh-so-distant past in the Navy. 12 13 EXAMINER FARKAS: He's not asking you to explain it yet, he's just asking do you know. 14 15 THE WITNESS: I have a basic idea. BY MR. KEMPIC: 16 That's all I need. 17 Q. Are there any waste materials resulting from that? 18 19 I would imagine that there are. A. Do you know whether a waste stream from demineralizing 20 Q. 21 water would require any type of treatment facility? 22 Α. I don't know. Do you know whether the Ohio EPA requires any permits --23 Q. 24 MS. MIGDEN: Objection, calls for a legal conclusion. 25 MR. KEMPIC: Your Honor, he did testify that he

considered the emissions impacts. This is --1 2 MS. MIGDEN: He considered the level of air emissions 3 coming from a combustion turbine. He did not consider perm- -necessarily permitting the requirements for waste, et cetera, or 4 what you're getting into. That's entirely different. 5 MR. KEMPIC: I don't believe it is entirely different, 6 7 your Honor. 8 EXAMINER FARKAS: Well, do you know? 9 THE WITNESS: No. BY MR. KEMPIC: 10 So you're not familiar with the Ohio permit-to-install 11 Q. requirements under 35 -- 3745-31? 12 13 MS. MIGDEN: Objection. He's not an attorney. EXAMINER FARKAS: Yeah, he wouldn't know that. 14 15 BY MR. KEMPIC: Do you know what a selective catalytic reduction system is? 16 0. It's a means for reducing NOx emissions; oxides and 17 Α. nitrogen, to be clear, instead of definition for NOx. 18 Would the installation of one of those add to the cost of a 19 Q. 20 combustion turbine? Yes, it would. 21 Α. 22 MS. MIGDEN: One of what? 23 BY MR. KEMPIC: Do you know what that additional cost would be? 24 0. No, I don't. 25 Α.

1	Q. Do you know whether spent catalysts from a selective
2	catalytic reduction system would be considered hazardous waste?
3	A. I don't know.
4	Q. Do you believe that selective catalytic reduction equipment
5	would be required to operate a combustion turbine in an
6	intermediate or baseload duty cycle?
7	A. You wouldn't operate a CT as a baseload unit.
8	Q. Never?
9	A. I wouldn't.
10	Q. No type of CTs?
11	A. CTs were designed to provide low capital costs and high
12	operating maintenance costs, thereby making them very expensive
13	means of providing baseload capacity.
14	Q. What about in intermediate levels of capacity; would you
1 5	operate a CT at that level?
16	A. You could.
17	Q. Is it advisable?
18	A. It depends on the application, the need and the economics
19	of the project.
20	MR. KEMPIC: Your Honor, if we could have one second,
21	I have to reorganize some cross so that we could do all the
22	confidential information at one section.
23	(Pause.)
24	BY MR. KEMPIC:
25	Q. Okay. In your Table DAB-1, Column B

Could you reference a page for quick MS. MIGDEN: 1 reference, please? 2 EXAMINER FARKAS: Page 10 of the direct, 1A, Page 10. 3 4 MR. KEMPIC: In the rebuttal testimony. 5 EXAMINER FARKAS: Okay. 6 BY MR. KEMPIC: 7 Ο. Are you at Table DAB-1 on Page 7 of Citizens for a Better 8 Way Exhibit 1C? 9 Α. Yes, I am. 10 In Column B you're showing a forced outage rate of 6.10. Q. 11 Α. That's correct. 12 What's your source for that number? Q. 13 Exhibit 22 of the EPRI TAG, equivalent unplanned outage Α. 14 rate. What -- Of a STIG? 15 Q. 16 Α. Yes. 17 Q. Is that correct? 18 Α. That's correct. Do you know whether equivalent unplanned outage rates and 19 Q. 20 NERC forced outage rates mean the same thing? 21 Α. No, I don't know. 22 Q. Pardon me? 23 Α. I don't know. 24 Q. Then why is that comparison made between these tables on 25 Page 7?

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It's my assumption that they -- if they are not defined 1 Α. 2 exactly the same, they represent similar performance factors; and the NERC number puts perspective on CEI Witness Bertaud's 3 4 number of 18 -- 83 -- 83 percent availability or a 16.5 percent 5 outage rate. 6 EPRI says 6.1 percent, NERC says it's actually 3 -- NERC 7 says it's actually 3.04 percent. 8 ο. But you still don't know whether those actually represent 9 the same concept, do you? **1**0 I believe they represent the same concept. The definitions Α. 11 may be slightly different. Could you define how EPRI defined equivalent unplanned 12 Q. 13 outage? 14 Α. No, I can't. Do you know whether there's a difference between a forced 15 0. 16 outage rate and a forced outage factor as defined by the NERC GADS? 17 Yes, there is. 18 Α. What is that difference? 19 0. 20 Α. The variables that go into the calculation. 21 What are the different variables that go into the different Ο, 22 calculations? 23 MS. MIGDEN: Could I have that -- into the calculation 24 for? 25 MR. KEMPIC: For the forced outage rate and the forced

outage factor. 1 2 THE WITNESS: I don't have those committed to memory; 3 I don't have the definitions with me. BY MR. KEMPIC: 4 Which one, those being the forced outage rate or the forced 5 Ο. outage factors, did you rely upon? 6 Forced outage factor. 7 Α. MR. KEMPIC: One second, your Honor. 8 9 EXAMINER FARKAS: Okay. (Pause.) 10 BY MR. KEMPIC: 11 Would it be appropriate in Table DAB-2, Column B, to have 12 Q. changed the title from "Forced Outage Rate" -- from "Forced 13 14 Outage Rate" to "Forced Outage Factor"? 15 Α. That would be appropriate. Q. Would the percentage change? 16 17 Α. I said I used the forced outage factor. 18 Q. So the percentage would not change? If we called it forced outage factor, it would be 3.04 19 Α. 20 percent. It is 3.04 percent. I used the forced outage factor. 21 Page 8-99 of CEI Exhibit 14 contains a STIG, and you Ο. testified that's where you located the equivalent availability 22 ratio; is that correct? 23 That's where I obtained the equivalent unplanned outage 24 Α. 25 rate from.

And in your definition is this STIG -- or, rather, strike 1 Q. 2 that. 3 Is this a STIG cycle combustion turbine generating unit? Α. I'm sorry? 4 This document -- This Page 8-99 of CEI Exhibit 14 does 5 Q. 6 represent a STIG cycle combustion turbine generating unit; is 7 that correct? 8 MS. MIGDEN: Your Honor, the document speaks for 9 itself. 10 EXAMINER FARKAS: I would agree with that, the 11 document does speak for itself. MR. KEMPIC: Okay. 12 BY MR. KEMPIC: 13 14 0. Could you please turn to Page 8-95 in CEI Exhibit 14? 15 Do you dispute the equivalent availability of a 50-megawatt combustion turbine is 83.5? 16 17 According to EPRI numbers, that is what they claim for the Ά. heavy-duty combustion turbine. 18 Okay. Now, it's your testimony that you believe the Rachel 19 Q. 20 project is needed because of a peak load situation; is that 21 correct? 22 Α. Peak load is one of the contributing factors to the need. 23 Okay. Why then, with regards to equivalent availability, Q. 24 did you select an intermediate duty cycle combustion turbine 25 rather than a peak duty cycle combustion turbine?

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1	A. Because CEI says they need a 60 percent capacity factor,
2	which I don't understand nor do I believe Let me back up.
3	I do understand it, I don't believe it. But in order to
4	strike some resemblance of a compromise, the STIG seemed to be
5	an appropriate unit.
6	If you're going to run a CT as an intermediate duty unit,
7	then pick a intermediate duty unit to evaluate.
8	MR. KEMPIC: One second, your Honor.
9	(Pause.)
10	MR. KEMPIC: Your Honor, I think that's all the
11	questions from this exhibit. We can go back to the public
12	version of the record.
13	(End of Confidential Transcript.)
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