STATE OF MISSOURI

PUBLIC SERVICE COMMISSION

At a hearing of the Public Service Commission, held at Jefferson City, Missouri, on the 27th day of March, ...1979.

CASE NO. EA-79-119

In the matter of the application of UNION ELECTRIC COMPANY for permission and authority to construct, operate and maintain two combustion turbine generating units in the State of Missouri.

BEFORE:

PAUL W. REIMNITZ, Presiding,
CHIEF HEARING EXAMINER.
CHARLES J. FRAAS, JR., CHAIRMAN,
HUGH A. SPRAGUE,
LEAH B. McCARTNEY,
ALBERTA C. SLAVIN,
COMMISSIONERS.

REPORTED BY:

ROBERT L. STRATMAN AND
BARBARA A. SKALLA

APPEARANCES:

MICHAEL F. BARNES, Attorney,
WILLIAM E. JAUDES, Attorney,
1901 Gratiot Street,
P. O. Box 149,
St. Louis, Missouri 63166,

FOR: APPLICANT,
UNION ELECTRIC COMPANY.

KENT M. RAGSDALE, Assistant Public Counsel,
Office of the Public Counsel,
P. O. Box 1216,
Jefferson City, Missouri 65102,

FOR: THE PUBLIC.

MS. TREVA J. LASKA, Assistant General Counsel,
Missouri Public Service Commission,
P. O. Box 360,
Jefferson City, Missouri 65102,

FOR: STAFF OF THE MISSOURI PUBLIC
SERVICE COMMISSION.

BE IT REMEMBERED, at a hearing of the Public Service Commission, held at the time and place mentioned on the title page hereof, the following proceedings were had:

(Written Entries of Appearance filed.)

EXAMINER REIMNITZ: If we are ready, why don't we go on the record.

The Commission has set this time for hearing Case No. EA-79-119; in the matter of the application of Union Electric Company for permission and authority to construct, operate and maintain two combustion turbine generating units in the State of Missouri.

I would like for the parties to make their appearances at this time.

MR. BARNES: Michael Barnes and William Jaudes, Attorneys for Union Electric Company, Post Office Box 149, St. Louis, Missouri 63166.

MS. LASKA: Treva Laska, for the Staff, P. O. Box 360, Jefferson City, Missouri.

MR. RAGSDALE: Kent Ragsdale, Assistant Public Counsel, P. O. Box 1216, Jefferson City, Missouri 65102, appearing on behalf of the Public.

MR. McNICHOLAS: Robert C. McNicholas, Associate City Counselor, representing the City of St. Louis, who is not a party to this case, but is present.

EXAMINER REIMNITZ: Before we proceed, are

there any matters the parties wish to bring to the attention of the Commission?

(No response.)

EXAMINER REIMNITZ: All right. I guess I could state for the record that the Commission has received a telegram this morning, requesting a delay in the proceedings, but I see no reason to go into it any further, since the parties sending the telegram aren't here, and no one else has anything further to say.

Is there any desire to make an opening statement by anybody?

(No response.)

EXAMINER REIMNITZ: Okay.

Would all those persons knowing themselves to be witnesses in this cause, please stand and raise your right hand and be sworn.

(At this time three witnesses were duly sworn.)

EXAMINER REIMNITZ: Call your first witness.

MR. BARNES: Mr. Fred Platt.

APPLICANT'S EVIDENCE:

FRED R. PLATT, JR., called as a witness in behalf of the APPLICANT, UNION ELECTRIC COMPANY, being duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. BARNES:

MR. BARNES: Mr. Examiner, Union Electric has filed direct testimony of our two witnesses in this case. I would like to know how you would have--like to have that testimony handled, as an exhibit, or will it be incorporated into the record as if read?

EXAMINER REIMNITZ: Well, it is really not that long. Why don't we read it into the record.

MR. BARNES: Okay.

EXAMINER REIMNITZ: It won't take that long. It is very brief.

MR. BARNES: Do you want us to read the--

EXAMINER REIMNITZ: Ask the question and let him read back the answer.

MR. BARNES: Okay.

EXAMINER REIMNITZ: Let's go off of the record a minute.

(Discussion off of the record.)

EXAMINER REIMNITZ: Let's go back on the record.

MR. BARNES: If possible, I would like to have the exhibits marked the way they are in the prepared testimony; that is, 1, and 1A, 2, 2A and 3.

EXAMINER REIMNITZ: All right.

MR. BARNES: And, then, the direct examination can be marked 4 and 5.

EXAMINER REIMNITZ: Fine.

(AT THIS TIME APPLICANT'S EXHIBIT NOS. 1, 1A, 2, 3, 3A, 4 AND 5 WERE MARKED BY THE REPORTER FOR THE PURPOSE OF IDENTIFICATION.)

EXAMINER REIMNITZ: All right. Proceed.

BY MR. BARNES:

Q Please state your name for the record.

A My name is Fred R. Platt, Jr.

Q Have you prepared testimony, in written form, for submission in this proceeding, which was submitted on March 9, 1979, and supported by Affidavit?

A Yes, I have.

Q I hand you what has been marked Petitioner's (Applicant's) Exhibit 4, it is an eight-page document, entitled, "TESTIMONY OF FRED R. PLATT, JR., MISSOURI PUBLIC SERVICE COMMISSION, CASE NO. EA-79-119." I ask you if that is the testimony that you prepared?

A Yes, it is.

Q Are there any changes or additions you wish

to make to your prepared testimony?

A. No.

Q. If I were to ask you the questions set forth in your prepared testimony, would your answers be the same as those set forth therein?

A. Yes, they would.

Q. Okay. Are there any exhibits referred to in your prepared testimony?

A. Yes.

Q. I have handed you what has been marked for identification as Petitioner's (Applicant's) Exhibit Nos. 1, 1A, 2, 2A and 3; are those the exhibits referred to in your testimony?

A. Yes.

EXAMINER REIMNITZ: Excuse me. Did I hear you right,--

MR. BARNES: I may have--

EXAMINER REIMNITZ: --or is it 1,--

MR. BARNES: It should be--

EXAMINER REIMNITZ: --1A, 2, and 3 and 3A?

MR. BARNES: Yes; that is correct.

BY MR. BARNES:

Q. Were those exhibits prepared by you or under your direction and supervision?

A. Yes.

Q. Do they accurately set forth the information which they purport to show?

A. Yes.

Q. Do you adopt these eight pages and exhibits as your direct testimony in this case?

A. Yes, I do.

MR. BARNES: Mr. Examiner, Mr. Platt is available for cross-examination.

EXAMINER REIMNITZ: Ms. Laska?

MS. LASKA: Yes.

CROSS-EXAMINATION BY MS. LASKA:

Q. Good morning, Mr. Platt!

A. Good morning.

Q. Are the combustion turbines proposed by Union Electric in this application typical of the type used for peaking purposes?

A. Yes, they are.

Q. What will be the yearly average, in hours, that the combustion turbines would run for peak loads?

A. We anticipate, over the life of these units, that they will be operated on the average of two to 400 hours per year.

Q. In that--

A. In that--

Q. --range, there is no one single figure, then?

A. No; no. It might be higher over--than that in a particular year, but over the life of the machine, we anticipate that it will be two to 400 hours per year.

Q. Over the life of the machine?

A. Yes.

Q. What will be the average duration of each of these runs, when it comes on and shuts off, for how long a period at a time?

A. Depending upon peaking conditions, we might expect these to run for ten hours a day, for as many as five days a week.

Q. But over what period of time of the year will these combustion turbines be run to supplement--

A. Generally during the peaking time of our year, which would be in the summertime, but they also might be used during equipment outages of the other equipment, when we would have need for it.

Q. But to supplement for peak load would be generally during the months of--

A. --June and July and August.

Q. What is the longest continuous run for any of Union Electric's presently used combustion turbines of this type?

A. I don't have a specific number. I would imagine that there may have been incidents where they run

for 24 hours.

Q That is probably the longest?

A Yes. But, generally, we expect them to run during the day, daylight hours for a period of ten hours a day.

Q You spoke in your testimony of the black start capability of these two combustion turbines. How often is this black start capability needed?

A We hope never, but it might occur in some incident in our system, in which we would have a total black-out in our system, or a brownout in a section of our system, where we might lose complete power, in effect.

COMMISSIONER SPRAGUE: Would you define, I had a question about that, what do you mean when you say a "blackout?"

WITNESS PLATT: A blackout means that we have lost all of the power generation. We have complete loss of lights, power to all of our customers within a service area. These are common--these are incidents that happened in the East, what happened in the East.

COMMISSIONER SPRAGUE: No. I mean a black start, what do you mean by that?

WITNESS PLATT: Oh, a black start? I am sorry. Well, a black start would occur under incidents like that, where, if a power plant, say the Meramec plant, which one of

these is located at, if the power in that area was blacked out, say the City of St. Louis was blacked out, we have the capability, within that machine, to be started up without an external source of power; electricity specifically. These units are started with what we call an air pack. It has got a compressed air system, storage tank, and it is actually started up with an air motor, which rotates the rotating elements of the thing, so that you can fire-off the fuel and get it to burn, to get it in service.

COMMISSIONER SLAVIN: If you got it going that way, and we are dealing with about a 50-megawatt plant, what area could you serve, and for how long?

WITNESS PLATT: Well, the way we plan to use these is that we want to use these to start up a power plant, the one located at the Meramec plant and the one located at the Sioux plant, to be specifically there to start up that plant, so that we could then start up our system.

COMMISSIONER SLAVIN: So that you are not planning to use it to serve in the area in a blackout, you would just use it, then, to start up the plant,--

WITNESS PLATT: That is right.

COMMISSIONER SLAVIN: --essentially?

Is this the only way you could get a plant started, if there is a blackout?

WITNESS PLATT: Yes; because all of the power plants that we have, all of the pumps and the fans, and all of the equipment is run by electric motors; and, in fact, we are our biggest user, we usually use five percent of the power we generate, so--

COMMISSIONER SLAVIN: Like my gas furnace?

WITNESS PLATT: Yes; yes.

COMMISSIONER SLAVIN: Is that the reason that you have relocated one of these plants, and maybe I am ahead of you there, you will get into that, perhaps, later, why you have relocated and changed your plans on where you are going to build it?

WITNESS PLATT: Yes.

COMMISSIONER SLAVIN: Go ahead.

BY MS. LASKA:

Q The average for the other combustion turbines that Union Electric now has in use, what is the average duration of each of these units?

A We have six combustion turbines on our system right now. Three of them, which have been in service, one since 1967, one in '73, and one in '74, and over that period, on those three plants, the first one, the Venice plant has had an average of about 306 hours per year.

Q Right. Out of--or are you still talking about with the ten hours a day average on that?

A. I don't have the specific records on, you know, the character of the load that that carries. All that we have is the total number of hours that have been generated, and all I can give you is average numbers in these cases.

Q. Well, then, do you believe that that average is ten hours a day, five days a week, for those also?

A. Yes. In general, that is true for all combustion turbines that we have got, we are installing, and we anticipate using in the future.

COMMISSIONER SLAVIN: Are you going to give us the locations of the other six combustion turbines?

WITNESS PLATT: If you wish them, I can.

BY MS. LASKA:

Q. You can? Go ahead.

A. We have one located at our Venice power plant, which is located across the Illinois--in Illinois, I am sorry, across the Mississippi River in Illinois. We have the Howard Bend plant, which is located at the Howard Bend Water-works, which is used for black start of the City of St. Louis' water plant. We have one more located at our Meramec station, which will be at the same location that we are locating this second one.

And, then, just this last summer, we placed into service three more combustion turbines, which are actually located within the Missouri Power & Light's territory,

and these are located at substations, one at Mexico, Missouri, one at Moberly, Missouri, and one at our Monroe substation, which is just south of Jefferson City.

COMMISSIONER SLAVIN: Does the one at Meramec presently have a black start capability?

WITNESS PLATT: It does not.

BY MS. LASKA:

Q. Will these be the only units at the Sioux plant capable of black start capability?

A. Yes.

Q. And at the Meramec plant?

A. Yes.

Q. How much more will these units cost because of this black start capability feature?

A. Of course, this is a different manufacturer than we have at, say, our Meramec plant. This is a turbo power marine unit, it is manufactured, the one at the Meramec plant is our General Electric unit. And in the purchase of those, there was just a slight incremental cost, higher, for, well, I am sorry, when you look at black start capability--

Q. Yes.

A. --on these, if you put black start on the General Electric unit, compared to this turbo power marine unit, the General Electric would cost more. So it, basically, is an integral part of that machine, that is the way it is

normally started under any circumstances; that is, air start It just has this additional feature of being able to--the black start capability.

Q. In other words, you could not have bought a combustine turbine from this manufacturer without--

A. Right.

Q. --without the black start capability?

A. Right; that is right.

Q. But could have bought it from another manufacturer?

A. Yes.

Q. Without black start?

A. Yes; that is right.

Q. For much less?

A. No. Oh, excuse me. Without the black start?

Q. Yes.

A. Yes, it would be, it would cost less, yes.

Q. Do you know how much less?

A. When we evaluated these back in 1975, when we purchased them, it was in the order of about $2 a kilowatt.

Q. Isn't it true at the present time that Sioux has on-site motor driven generators for black start and shut-down power?

A. No. I am sorry. At each one of our power plants, we do have the capability of what we call let-down

power, but this let-down power only covers a small amount of generation. For instance, the one at Sioux plant is only about a thousand KW, compared to 50,000 KW that is in this black start unit. And that thousand KW only takes care of critical auxiliaries; that is, fuel oil pumps for our turbines, and other critical auxiliaries that are critical to that unit, to keep it running, so that it isn't destroyed because of a lack of power.

Q. But it could not start and back up again?

A. No. A thousand KW just cannot start a 5,000 or a 10,000-horsepower motor, you know, a big motor like that, it just doesn't have the capability of doing it.

Q. So, in the event of a blackout or brownout now, the Sioux plant would be down, is that what you are saying, a--is that how you bring it back up?

A. They bring it back up with this combustion turbine unit. Oh, you mean--

Q. Now?

A. Now?

Q. Yes.

A. We could not start it up until we got some-place else in our system started up.

Q. But your system, as an integrated whole, has transmission lines that are available to this Sioux plant,--

A. Yes.

Q --to start it back up again?

A That is right. And that is available to starting up to hydroelectric power, Bagnell Dam, for instance, we could start it up, but one of the advantages of having it at our plant is that we can start up much faster.

Q Okay. That is what I meant.

Mrs. Slavin?

COMMISSIONER SLAVIN: How much faster?

WITNESS PLATT: I can't tell you that. I don't have that number in my notes. Perhaps Mr. Esswein may be able to answer that question.

BY MS. LASKA:

Q Well, will you continue to use these motor driven generators for the process that you use them now, the ones at the Sioux plant?

A You mean the let-down equipment?

Q Right; the let-down equipment?

A Yes.

Q Its purpose is separate from the combustion turbines?

A Yes.

Q And will continue to be used for that purpose?

A That is right. They will continue to serve power to the oil pumps and whatever critical auxiliaries that we have to have to keep the plant running.

Q. Exhibit 4, Mr. Platt, is your prefiled testimony, and on Pages 4 and 5, you indicate that each unit will burn 5,000 gallons per hour; do you still agree with that figure?

A. Yes; that is a real rough average of what it takes.

Q. What, then, do you estimate will be the operating cost of these turbines in cents per kilowatt-hour, the operating costs?

A. I don't believe I have that, I don't have that in my notes. Mr. Esswein has it, I think.

Q. Okay. Then, should I ask him also what will be, then, the total cost in cents per kilowatt-hour for construction, operation and maintenance, and fuel cost?

A. Yes.

Q. Okay. You--I am sorry. Okay. You have stated that the average annual load in hours that the combustion turbines will be run is from 200 to 400 hours?

A. Yes.

Q. We have, from the other Annual Reports, five companies, Arkansas-Missouri, Kansas City Power & Light, Missouri Public Service Company, the Missouri Power & Light Company, and Missouri Utilities, that the average of 15 similar units used by these five other companies, from 1975 to 1977, was 114 hours per year. Now, first of all, does it

seem to you, then, that the 200 to 400 hours seems rather high,--

A. No.

Q. --on the average?

A. No. I still consider the two to 400 hours per year to be low for peaking service.

Q. Why would Union Electric require more peaking service than the other companies--

A. It is strictly a matter of the characteristics and the load requirements of our system compared to anybody else's system.

Q. Is this, technically and mechanically, more costing to the turbines themselves, to use them for this amount of load over a continuous period of time?

A. Yes. If you use them for a long period of time, certainly you are going to have more maintenance on them.

Q. And what do you expect the life span of these combustion turbines to be because of this?

A. Thirty years; that is the predicted 30-year life on those units.

Q. Even with the use you intend to make?

A. Oh, yes.If we have damage to them because of fuel burning, or we push them too hard, we have to maintain them and make them be like new, you know.

Q. Do you still expect them to have a life span of 30 years?

A. Yes, ma'am.

COMMISSIONER SLAVIN: What is the length of your peak season, in days? Or are you planning to get into that?

MS. LASKA: June, July and August, he said before, when I asked him, in answer to one of my questions.

WITNESS PLATT: Basically, it is July and August. It does go into June, but it is basically July and August.

COMMISSIONER SLAVIN: July and August. Then, how many days would you say in July and August would be considered peak days?

WITNESS PLATT: I am going to have to defer that one to Mr. Esswein. I think he is better qualified to answer that question than I am.

COMMISSIONER SPRAGUE: How many, in your question just a minute ago, did you ask him, did you say that you got an average of 114 hours for how many units?

MS. LASKA: For 15 similar units used by the five other companies.

COMMISSIONER SPRAGUE: Do you recall what the high and the low was on them?

MS. LASKA: I have it. Just a minute. I

think Union Electric was the high.

COMMISSIONER SPRAGUE: Well, I don't care about the low. The high anyhow.

MS. LASKA: 554 was the high, at the Meramec unit, for Union Electric.

Is that all you wanted?

COMMISSIONER SPRAGUE: Yes.

COMMISSIONER SLAVIN: Do you have the dates on those?

MS. LASKA: That is for 1975 to 1977, for those two years.

MR. BILL WASHBURN: That was in 1977.

COMMISSIONER SLAVIN: That was for 1977, it ran--

MR. WASHBURN: That is correct.

COMMISSIONER SLAVIN: The Meramec peaking unit, is it of the same size?

MS. LASKA: Yes, it is.

COMMISSIONER SLAVIN: For 554 hours?

MS. LASKA: Yes.

COMMISSIONER SLAVIN: And do you have the 1978 figures?

WITNESS PLATT: The number is 302.

MS. LASKA: It is in evidence, probably by the Public Counsel, if you can wait until then. I hate to

refer to something that isn't in evidence.

COMMISSIONER SPRAGUE: I am sorry. I didn't know if that was a proper question to you, but I was a little confused about what a 15-company average, 15-unit average would do, and that is the reason I didn't want to ask him an improper question, but I couldn't quite--if you didn't mind me asking you that, I hope.

MR. LASKA: No.

BY MS. LASKA:

Q. On Page 5 of Exhibit 4, which is your prefiled testimony, you refer to the fuel storage of 600,000 gallons, which will provide for 120 to 150 hours. Is that 120 hours to 150 hours to be continuous hours?

A. It could be.

Q. As opposed to running it down to depletion?

A. Well, that, if you didn't replenish the supply and you burn it for that many hours, you would deplete that tank, but we have got to continue to be replenishing our tanks as we operate.

Q. Oh, so, you do continue to replenish?

A. Oh, yes; certainly.

Q. All right. And what is the--where does Union Electric usually obtain its oil supply for peaking units in this area?

A. It usually obtains it from the suppliers

within the St. Louis area.

Q. By what means, transportationwise, usually?

A. It is usually trucked.

Q. Okay. And how long does it take to get the supply to Meramec?

A. I believe it can be delivered within a day's time.

Q. And Sioux?

A. The same. They are all within the close proximity, within 15 or 20 miles of downtown St. Louis.

Q. Are there any oil storage facilities at Sioux at the present time?

A. None which could be used for combustion turbines. There is a small tank, as far as plant use, but none that could be used for combustion turbines.

Q. And what is it used for now?

A. It is used for ignition fuel, for starting up the boilers.

Q. Why is it that you determined that you needed this large a fuel storage?

A. Well, we wanted to take--we took a look at the economics of the tank sizes to determine what we needed in fuel supplies. Basically, the tanks that we have installed at the Mexico, Monroe and Moberly stations are for 60 hours of storage.

Q And how many gallons?

A That is for 300,000 gallons.

Q Then that will be twice as much--

A Yes.

Q --that you would have at the Sioux plant,--

A Yes.

Q --than you have at the other plants that are running at 500 hours a year?

A Yes; yes; two to 400 hours a year.

Q Two to 400 hours a year. Would it not be more economical to be supplied immediately upon depletion and only carry approximately a 90-day supply?

A Well, in the past, we haven't felt that we needed it. The Meramec tank, for instance, is a million and a half-gallon tank, and our criteria, and when we initially installed the Meramec unit, was about in the same order of magnitude of what we are installing now. But with the fuel embargo and that type of problem a few years ago, we installed a million and a half-gallon tank at that plant, which gives these two units 150 hours of storage, so it is a larger tank at Meramec.

Q About twice as large?

A Yes; yes.

Q Do you think that it saves the ratepayers, well, I guess what I would like from the Company is somehow

a late-filed exhibit, if that is possible, I don't know that he can answer this question,--

A. Okay.

Q. --than what it saves the ratepayers to have this excess inventory in the rate base, where, because I am sure, well, I feel as though the question might have been answered, was a, yes, it saves money because we buy it when it is cheaper, and we have it there for a longer period of time. But, is that the motivation for having such large storage?

A. We don't consider this to be a large storage.

Q. Although it is twice as large as any other that you have at this time?

A. Are you talking about the Sioux location?

Q. Yes; the Sioux location.

A. The Sioux location, in our future plans and as we have indicated in our testimony, we had originally planned to install additional combustion turbines at the power plant locations. If there is a need for additional combustion turbines, and we have to install them on our system, they will be installed at power plant locations. At the Sioux plant, we have provisions where we can install two units, the one that we are making application for now, and one additional unit. At this time we installed a 600,000-gallon tank, because we felt like our present investment was

better and because of fuel supply problems, it would be better to go ahead and install that tank right now.

Q. What you are saying, then, is that you may not fill the tank up each time?

A. That is possible.

Q. You will only fill it half full?

A. That is possible. But if supplies get hard to get, we will keep it full.

COMMISSIONER SLAVIN: I am sorry, Treva. I don't understand. You have, what, you have a million and one half-gallon tank at Meramec?

WITNESS PLATT: Right.

COMMISSIONER SLAVIN: And you have one unit there?

WITNESS PLATT: There will be two units there.

COMMISSIONER SLAVIN: You originally were planning to have three units there?

WITNESS PLATT: We were originally planning to have four units there.

COMMISSIONER SLAVIN: Four units there. All right. Could we go back to the drawing board and tell me what your plans are? I am assuming that the tank at Meramec was designed to serve how many units?

WITNESS PLATT: It was designed to serve four units.

COMMISSIONER SLAVIN: Four units. Okay. Now, what are your plans for Meramec now and in the future?

WITNESS PLATT: When we install four units there eventually, that tank will give us 75 hours of generating capacity at that location.

COMMISSIONER SLAVIN: For each unit?

WITNESS PLATT: For each unit.

COMMISSIONER SLAVIN: Okay.

WITNESS PLATT: And our normal criterion is about 60 hours.

COMMISSIONER SLAVIN: Okay. Now at Sioux you have no peaker, you are planning to build one now and another at a later date?

WITNESS PLATT: Sometime in the future; yes.

COMMISSIONER SLAVIN: What is sometime in the future?

WITNESS PLATT: Well, when our needs require it.

COMMISSIONER SLAVIN: Oh!

WITNESS PLATT: Right now, we don't know.

COMMISSIONER SLAVIN: So, essentially, you will nave excess tank capacity at both sites, isn't that right?

WITNESS PLATT: Yes, ma'am.

BY MS. LASKA:

Q Are these internal combustion turbines?

A Yes, they are.

MS. LASKA: I would like to ask for Commission recognition of the Federal Register, Wednesday, November 22, 1978, the Department of Energy.

EXAMINER REIMNITZ: You want us to take notice of that?

MS. LASKA: Yes. So I might refer to it as I ask questions.

COMMISSIONER SPRAGUE: 19 what? What was that date again?

MS. LASKA: November 22, 1978.

COMMISSIONER SLAVIN: Do you have copies for everyone?

MS. LASKA: I have three copies. I did not know if he would ask me to put them in evidence. If you take recognition, I can pass the copies out.

EXAMINER REIMNITZ: Well, for what purpose?

MS. LASKA: I am going to ask some questions of the witness regarding this.

EXAMINER REIMNITZ: I mean, do you have specific pages, or do you want the whole document--

MS. LASKA: No; no.

EXAMINER REIMNITZ: Or what?

MS. LASKA: I am merely going to ask him if he is aware of this.

EXAMINER REIMNITZ: Go ahead and ask your question.

MS. LASKA: Okay.

EXAMINER REIMNITZ: We will see what we get here. I am having a little trouble with how much you want us to take notice of.

BY MS. LASKA:

Q Are you aware of the rule--he speaks of it in his testimony, also, are you aware of the rule proposed by the Department of Energy as printed in the Federal Register of this date, Wednesday, November 22, 1978?

A Which rule?

Q The rule that speaks of the Fuel Use Act, that would restrict the use of fuel oil in combustion turbines?

A Yes. That was enacted in November of 1978.

Q Well, it is a proposed rule, I think, isn't it?

A It was enacted in--

COMMISSIONER McCARTNEY: I am sorry. I have been hearing parts of what you say, sir.

WITNESS PLATT: I am sorry.

BY MS. LASKA:

Q I am speaking of the proposed rule that--not the law itself, not the Fuel Use Act itself, but the proposed

rules that have been drafted pursuant to that Act, that was--

A. Well, I am having difficulty because I don't know what your specific question is.

Q. Okay.

A. I am generally familiar with the Fuel Use Act,--

Q. Right.

A. --that has been enacted last year,--

Q. According to the--

A. --but particularly what is in that rule, I don't--I can't answer.

Q. Only that there are restrictions--

A. Yes.

Q. --that will be on fuel oil?

A. Right.

Q. And what do you expect those to be?

A. Yes.

Q. And do you have some expectation now that there will be restrictions on the use of the fuel oil that you will burn in these combustion turbines?

A. The Fuel Use Act recognizes combustion turbines as a peaking type of unit, for the generation of power, and because it recognizes it, it allows an exemption to the Fuel Use Act, which would allow us or allow anybody who is

granted that permission or that exemption to burn oil for combustion turbines. One restriction for that is that it must be burned less than 1,500 hours per year.

Q. Okay. Do you intend to pursue that exemption--

A. Yes.

Q. --for your combustion turbines?

A. Yes.

Q. That is what I wanted to get at.

COMMISSIONER McCARTNEY: Would this exemption apply to those combustion turbines already in existence; or would it permit you to build one and then apply, or how does that law work?

WITNESS PLATT: It does not apply to the combustion turbines that we have placed into service. It only applies to new units, such as these two that we are installing in the future.

COMMISSIONER McCARTNEY: Oh, I see.

BY MS. LASKA:

Q. In the event that you were unable to receive this exemption, or oil becomes scarce, or too expensive, can these turbines be converted to pressurized, fluidized beds, or any other sort of use for high sulfur coal?

A. Yes, they can be converted to alternate fuels, when those fuels are developed to a point where we can get enough supply to serve our needs.

COMMISSIONER SLAVIN: Would you be more specific.

WITNESS PLATT: Well, our--or one synthetic fuel that we know is methanol, now that can be burned in combustion turbines. But, it is just not produced in such quantities that we could use it today, that we could get it to serve our needs today.

COMMISSIONER SLAVIN: Are these units convertible to natural gas?

WITNESS PLATT: Oh, yes, ma'am.

COMMISSIONER SLAVIN: Then, so that is right now, I mean when you install it, you can use it either with number two oil or natural gas?

WITNESS PLATT: No; no. We would have to install additional equipment and we would have to have a supply line serving these units.

COMMISSIONER SLAVIN: I am not terribly conversant with the Fuel Use Act, but it seems to me that one of the requirements of the units that were going in was that they either or--that they have a capability of either natural gas or oil?

WITNESS PLATT: No. Only if you have purchased the hardware on that piece of equipment to burn that fuel, and we have not purchased that.

COMMISSIONER SLAVIN: I don't understand what you mean.

WITNESS PLATT: We only have hardware on these combustion turbines to burn one fuel, and that is a liquid fuel, of number two fuel oil, or some other very similar type fuel. We cannot burn a gas, a natural gas, or a methanol, or any other fuel without some conversion to those units to accommodate that fuel.

COMMISSIONER SLAVIN: Are you aware of the federal policy now, which is to encourage electric utilities to put gas in their boilers?

WITNESS PLATT: Yes.

COMMISSIONER SLAVIN: Instead of oil?

WITNESS PLATT: Yes.

COMMISSIONER SLAVIN: And how do you relate to that? Is this the type of proposal--

WITNESS PLATT: We have not pursued it for these units. It is still very fluid right now, in the way the laws are being written, and we have not pursued it on these two units.

COMMISSIONER SLAVIN: Have you pursued it on any units?

WITNESS PLATT: No.

COMMISSIONER SLAVIN: All right. And you said methanol for natural gas would be an alternative?

WITNESS PLATT: Yes.

COMMISSIONER SLAVIN: Assuming that you install

the hardware. The same hardware would be available, would work for methanol, roughly?

WITNESS PLATT: No, I don't think so. I think methanol is a liquid fuel very much like number two fuel oil, so--

COMMISSIONER SLAVIN: There is no hardware for methanol?

WITNESS PLATT: No. It requires some hardware, but I don't know how much different, but it is basically a liquid fuel, and it requires some provisions or some changes on the equipment to accommodate that fuel.

COMMISSIONER SLAVIN: All right. What others? You mentioned fluidized beds--

MS. LASKA: Well, that is what I was going to ask--

WITNESS PLATT: Well,--

MS. LASKA: --him even more specifically.

BY MS. LASKA:

Q. Can these turbines be converted to pressurized, fluidized beds that could use high sulfur coal?

A. Yes.

Q. And, if so, what would be the expense--

A. Well,--

Q. --in comparison to this?

A. Well, this technology is very new. It has not

been developed to the point where, again, we would have enough fuel supplies to serve our needs. The manufacturers or the manufacturers of combustion turbines are designing their equipment to accommodate this type of equipment in the future. We do not--we have not pursued it, because it is just not available to us as a viable fuel. So, we just really haven't pursued that area.

Q But they are capable of being converted?

A Yes; to our understanding, they are.

COMMISSIONER SPRAGUE: Well, if the government finally made up its mind and said, we want to do a policy here, we want a unit capable of burning gas, we want a unit capable of burning oil, then you would come back and ask for the necessary equipment to convert that unit, to make those changes at that time, is that right?

WITNESS PLATT: If we were required to.

COMMISSIONER SPRAGUE: If you were required to?

WITNESS PLATT: Yes.

COMMISSIONER SPRAGUE: Your point is that you are not doing it now because you are not required to, is that the way I understand it?

WITNESS PLATT: That is right. And--

COMMISSIONER SPRAGUE: All right. Okay.

CHAIRMAN FRAAS: Sir, you are talking generally of hardware. Let's assume for the moment that

you were going to convert one of these units from burning number two to gas, do you have any idea of the extent of the hardware we are talking about, specifically its cost?

WITNESS PLATT: I am making a guess right now. I would say it might cost us a half a million to a million dollars a unit to convert to another fuel.

CHAIRMAN FRAAS: Per unit?

WITNESS PLATT: To convert it to another fuel.

CHAIRMAN FRAAS: Thank you.

COMMISSIONER SLAVIN: Could these units burn number six oil?

WITNESS PLATT: They could. But, again, it takes quite a bit of conversion to do it.

COMMISSIONER SLAVIN: Would you elaborate on why you are building one that takes the number two oil, in terms of fuel availability and expense?

WITNESS PLATT: Well, number two fuel is available. It--I believe it gets into the environmental aspects of this problem, because one of the present requirements of the Clean Air Act is that we meet two criteria on our emissions, one of them is sulfur dioxide emission, and the other is nitrous oxide emission, but specifically sulfur dioxide emission requires that we burn a low sulfur fuel. And that is one of the reasons why we

purchased our number two oil, is because we can get it in the low sulfur quantities required to meet those environmental conditions.

COMMISSIONER SLAVIN: I have just been reading that utilities in the East are asking for variances from the EPA, to exempt them from the Clean Air requirements, which have forced them to burn number two oil because of, number one, expense; and, two, availability. Now why do you at Union Electric think as a new customer, in a sense, in essence, expect that you will want to burn this fuel, when somewhere a few miles, you know, a few thousand miles away from us there may be a different decision?

WITNESS PLATT: I am not sure of their reasons, but I know that the eastern utilities are heavily dependent upon fuel oil as their primary source for base load generation.

COMMISSIONER SLAVIN: Yes.

WITNESS PLATT: That is quite a different problem than when you are looking at peak load generation of two to 400 hours per year, and the cost associated with that much generation. That is our reason, is because we are only going to use it for a couple of hundred hours a year, which is very, very low generation.

COMMISSIONER SLAVIN: So, you don't expect any availability problem?

WITNESS PLATT: No; no.

COMMISSIONER SLAVIN: And what is the difference in cost?

WITNESS PLATT: I don't believe I have that comparison.

COMMISSIONER SLAVIN: Will anyone have that?

WITNESS PLATT: Do you have a comparison, Mr. Esswein,--

MR. L. A. ESSWEIN: I can check it.

WITNESS PLATT: --of other types of fuel?

CHAIRMAN FRAAS: Sir, just to follow up my question earlier, would there be any difference in the cost of installing the units if you made the decision right now and put in units that would burn gas rather than number two oil, so that there wouldn't be any hardware switching to be done later?

WITNESS PLATT: No. I think that the hardware would be a cost there regardless of whether we--that is, to change now or change over later, I think we would have to pay for additional hardware on that equipment. Initially, I think the big problem is, at these locations that we are talking about, is finding a gas supply and we do not have a natural gas supply in close to the--well, I am sorry, we do have one close to the Meramec plant, at the Meramec plant, and I am not sure about the Sioux plant. I don't

think we have any up there at all. So, we would have to pay the cost of getting those--that fuel to our power plants, plus the fact that we can only get natural gas on a dump basis right now, and we are not certain that we could get it to suit a peaking need at the time we need it.

CHAIRMAN FRAAS: Thank you.

COMMISSIONER SLAVIN: So, you are really saying, then, that natural gas isn't an option for you without considerable expense, particularly at Sioux?

WITNESS PLATT: Well, I don't think it is a good option, because I think the natural gas is a short-term thing, as far as the government is concerned. I think they are only looking at it in terms of two to five years in the future, it is not a 30-year life fuel supply for us.

COMMISSIONER SLAVIN: Well, all right. Well, forgetting the government policy, let's just--which we may all need to do at some point, but you are telling me that you do not have any natural gas supply at Sioux without running a pipeline there?

WITNESS PLATT: Right; right.

COMMISSIONER SLAVIN: At considerable expense, is that right?

WITNESS PLATT: Right.

COMMISSIONER SLAVIN: Because it is not anywhere near the Sioux plant?

WITNESS PLATT: To my knowledge, it is not.

COMMISSIONER SLAVIN: And you are saying that you do have a natural gas pipeline that comes somewhere in the range of Meramec?

WITNESS PLATT: Right.

COMMISSIONER SLAVIN: How many miles?

WITNESS PLATT: It comes to the site.

COMMISSIONER SLAVIN: It comes to the site?

WITNESS PLATT: Because we are capable of burning it in our boilers.

COMMISSIONER SLAVIN: And do you burn it in your boilers?

WITNESS PLATT: It is only available to us on a dump basis; that is, when there is an excess amount of gas, that the gas company has and says we can burn it on such and such a date. It is not available at all times.

COMMISSIONER SLAVIN: Okay. That is all.

BY MS. LASKA:

Q. Mr. Platt, are you familiar with the fluidized or pressurized, fluidized beds that I spoke of, and their conversion suitability for your combustion turbines?

A. Not in great depth. I know in concept what they are.

Q. I was going to say, if you would just in concept, perhaps, point out to the Commissioners, I think

that--I mean--

A. Well, it is taking coal and placing it through a process in which they get what they call a low BTU gas, which can then be used for burning in combustion turbines, or burning in boilers, or however you want to use it.

Q. And that is by converting them from internal combustion to external combustion?

A. No. It would be burnt in--if it were burnt in a combustion turbine, it would still be an internal combustion turbine.

Q. And the conversion is really not as expensive as one might think, from hearing the terminology?

A. No. I think the conversion would probably be in the order of the cost of conversion to natural gas, because the fluidized bed is going to produce a gas that we burn in combustion turbines. And I think it would be in that order of magnitude.

MS. LASKA: Thank you.

EXAMINER REIMNITZ: Mr. Ragsdale?

CROSS-EXAMINATION BY MR. RAGSDALE:

Q. Mr. Platt, the Commission's Counsel has already directed you to some things in the Federal Register. I am wondering if you are familiar with the interim rules put out by the Economic Regulatory Agency in the Wednesday,

March 21, 1979, Federal Register, in particular the interim rule regarding transitional facilities; are you familiar with that?

A. Yes.

Q. Has Union Electric signed--did Union Electric sign a contract for construction or acquisition of these two turbines prior to November 9, 1978?

A. Yes.

Q. And do you know, in a dollar amount, how much was spent, percentagewise, of the total cost as of November 9, 1978?

A. For these particular units?

Q. Yes.

A. It is probably in the order of $100,000, and again that is a guess on my part, but it is basically an engineering cost. We have not paid any equipment cost to date.

Q. Has the Company filed a request, in conformance with those Economic Regulatory Agency rules I just mentioned to you, to get these units labeled "existing?"

A. No. We don't believe that they are qualified as existing units.

Q. I believe in your testimony that you rated the units at 51 megawatts for maximum peak summer capacity, and I believe 48 megawatts as the base load summer rating,

and I wonder if you could give me a little bit more information on what those two terms mean?

A. Those two ratings represent a capability of the machine, to get more generation. Our normal practice is, and it gets back to this problem of maintenance on the equipment, our normal practice will be to operate them at what we call the base load rating for that machine, which is the 48 megawatts rating. If we operate them at the peak load rating, 51 megawatts, we are just pushing them harder, carrying higher temperatures in our combustion zone, and, therefore, having higher maintenance on them. So, it is our practice to use these machines, all of these machines that we have in our plants, to operate them at the base load rating of the machine, in order to avoid high maintenance on them. If we need that additional kilowatt under an emergency situation, we use it.

Q. Earlier you defined what a blackout was for Commissioner Sprague; define what you mean when you use the term "brownout."

A. Well, brownout, I believe, is when just certain portions of our system or power shutdown in certain portions of our system, we may require a certain load reduction on manufacturing and that sort of thing. I believe that is correct.

Q. Do you know when the last time that Union

Electric had a systemwide blackout?

A. I don't believe we have ever had a blackout.

Q. And the problems that you may have had last January, in the ice storm, would be what might be described as a brownout, or is that something else?

A. Well, that was where we lost power in certain areas due to transmission lines being taken out because of ice.

Q. You wouldn't describe that as a brownout, that you previously defined?

A. No.

Q. But has Union Electric ever had a brownout on its system?

A. I can't tell you when we have had one. We may have had one. Mr. Esswein may be able to answer that question for you.

Q. I believe in your testimony you gave us a cost figure for each of the units, that appearing on Page 4 of Company Exhibit No. 4; if both of these units were to be constructed at Meramec, would the cost, then, be the $8,800,000 times two, rather than the two figures that you have listed there?

A. Let me refer to my notes. Essentially, yes, that is correct.

Q. Now you defined these--you described these

two units as having black start capability, and you described the method that is used. How long would it take these combustion turbines to be operating at their capacity, once you have initiated the black start procedure?

A. Within five to ten minutes.

Q. And once these units are operating, how long would it take you to get the Meramec or the Sioux units back on-line in a systemwide blackout situation?

A. That is difficult to predict, but assuming that those units were firing, were on load when we had the blackout and they tripped off, we ought to be able to come back very quickly, within an hour, and get generation out of any one of those units.

Q. And I believe you testified, in questioning from Commissioner Slavin, you wouldn't know how long it would take if you had to rely upon Bagnell Dam for your black start capability?

A. No, I do not know that. It requires some switching of transmission lines, to get the power into St. Louis, and that is where the biggest time factor is.

Q. That has to be manual switching, or could you just--

A. I believe it is, yes.

Q. I noticed in your responses to our Interrogatories that the Labadie and the Rush Island plants, I believe, have a combined capacity in excess of 3,000 megawatts. Is that a

fair estimate of the capacity of those two plants?

A. In excess of 3,000?

Q. If you combined those two units, those two plants together?

A. Yes; roughly about 3,600.

Q. Okay. And I believe the two at Meramec's plant site have a combined capacity of less than 2,000 megawatts?

A. Yes; that is about right.

Q. My question is, why has the Company chosen to site the black start units at the smaller plants rather than the larger plants, like Labadie and Rush Island?

A. Primarily because of the size of the generating units, and specifically the Meramec unit site was chosen because those units are--there is four units at Meramec, and they start out at, one of them--two of them are 140 megawatts, and one is 300, and one is 350 megawatts, compared to the 600 megawatt units at the other site locations, the Labadie and the Rush Island. Those small units can be started up much faster than the large units, and that would give us a much faster recovery to our system there under a blackout situation.

Q. Would it be that the larger Labadie type units would require more megawatts to get it started, or is it because the bigger units just takes a longer process to get it started?

A. Just a longer process to get it started.

MR. RAGSDALE: I believe that is all of the questions I have.

QUESTIONS BY COMMISSIONER SLAVIN:

Q. How much longer?

A. I can't give you a specific answer on that.

Q. Minutes?

A. Oh, I would say it may be, it may be twice as long. It may be two to three hours, compared to an hour to an hour and a half, assuming the unit has been operating and it is hot, and you can bring it right back on.

Q. So, your estimate of a black start is an hour and one-half?

A. I am estimating the recovery of that unit, I am not really addressing what it requires to get all of the switching outside of that power plant in our system, and all of that. So, I don't have a number of what a system blackout would have. It is a very difficult thing to define, and we have never experienced it, so we don't really have good data, to say what it would take to recover, but we want to design so that we can recover as quickly as possible.

Q. Let me ask the question, but I think it is called the "war room," and I was assured that a blackout for Union Electric's system was virtually impossible.

A. I don't believe that is true.

Q. How would it occur?

A. It could occur by upset to our system.

Q. What kind of an upset?

A. Well, I believe we had one incident, I believe it was last year, where we were transmitting power through our system, and the power got cut off on the outlet in and, so, we had a great bulk of power coming into our system and no place to go, and we came very, very near to having a blackout at that time. But, we managed to recover that situation and didn't have a blackout. But, it takes a lot of circumstances to cause a blackout within our system, but it could happen.

Q. So, essentially, the system in that kind of a situation has to shut off power, you have too much power?

A. Well, under that particular case, yes.

Q. You mean you have too much power or not any?

A. Right; right.

Q. Is that what you mean? Well, I was under the impression that since you had so many different transmission lines coming in, quite dissimilar to the situation that occurred in New York, where it was, basically, one transmission line?

A. I think it depends on the system. If we-- the more input we have, the more ties we have to our system,

the better chance we have of not having a blackout. If we just had one tie, well, then, we would probably have a pretty good chance of having a blackout, as compared to a large number of inputs to our system.

Q So, you are saying more input protects you from blackouts?

A Yes.

Q Right?

A It gives us other sources of power coming into our system.

Q That's right.

A So, we can live through that.

Q Well, that is what I said.

A Yes.

Q What I had in mind.

A Yes. Well, perhaps, that is what they were telling you when they said that it was impossible, I mean it is possible, and that is why we are concerned about it. And that is why we are installing black start equipment on our system.

Q Would you say that the reason for installing peakers is more for the black start than one for peaking?

A It is more for peaking. It is an added benefit to get black start capability.

COMMISSIONER SLAVIN: Okay.

EXAMINER REIMNITZ: Any redirect?

COMMISSIONER SPRAGUE: I have only one question. Is another reason you could have a blackout in the future, could be insufficient capacity, couldn't it?

WITNESS PLATT: Yes. If we lost one of our major power plants, like our Labadie plant, which is 2,400 megawatts, if we lost that whole plant, there is a good possibility of causing a blackout in our system, that we would have too little power.

COMMISSIONER SLAVIN: Labadie is not now rated at 2,400, is it?

WITNESS PLATT: It may be--that is a nominal rating, is the number that I used, but it may be a little less than that.

COMMISSIONER SLAVIN: I thought it was significantly less than that. Maybe Mr. Proctor can--

WITNESS PLATT: Well, we have gone through this problem of derating, because of environmental problems, which has caused some change to that. Those units were nominally 600-megawatt units, but they may be 575, something in that order, not a specific number.

MR. BARNES: Mr. Examiner, can we have just a five-minute break?

EXAMINER REIMNITZ: Let's take a short recess.

WHEREUPON, a recess was taken.

PURSUANT to the recess, the hearing of this case resumed, and the following proceedings were had:

WITNESS FRED R. PLATT, JR., RESUMED THE STAND.

EXAMINER REIMNITZ: Let's go back on the record.

MR. BARNES: Mr. Examiner, I have one question on redirect for Mr. Platt.

EXAMINER REIMNITZ: All right.

REDIRECT EXAMINATION BY MR. BARNES:

Q. Mr. Platt, why did the Company decide to install a 600,000-gallon tank at Sioux rather than a 300,000-gallon tank?

A. There were three reasons why we did that, is that, first, we anticipated that we--sometime in the future we would have one additional unit at that location.

And, secondly, because of the incremental cost and the escalation of cost in the future, we felt like it would be best to install the 600,000-gallon tank at this time.

The third reason is that this represents an incremental cost of additional storage. We had estimated that the 600,000-gallon tank would cost us in the order of $350,000 for the Sioux site. The cost reduction for a 300,000-gallon tank at Sioux would be in the order of $100,000. So, we felt like that this incremental cost of it would be

enough that we should go ahead and provide that additional storage. And, then, in the interim, with only one unit there, it gives us additional storage capacity for that unit in case we get into an oil supply problem and that sort of thing.

EXAMINER REIMNITZ: Anything further of this witness?

(No response.)

EXAMINER REIMNITZ: Do you have anything further of this witness?

MS. LASKA: Yes. I am sorry. I have one more question.

EXAMINER REIMNITZ: All right.

RECROSS-EXAMINATION BY MS. LASKA:

Q. Mr. Platt, do you think you would have made the same decision about the larger storage facility if the Commission would determine at some time that they would only allow into rate base the amount that you would be using for the combustion turbine actually in use at that time, would you have made the same decision to go ahead with the larger storage capacity?

A. I am not sure, because I am not familiar with working with you people, and I can't really answer that question.

MS. LASKA: Thank you.

EXAMINER REIMNITZ: Thank you, Mr. Platt. You

may step down.

WITNESS PLATT: Thank you.

MR. BARNES: Mr. Examiner, if we may have just one more question.

EXAMINER REIMNITZ: Oh! I was a little premature here. I thought everybody was through.

FURTHER REDIRECT EXAMINATION BY MR. BARNES:

Q. Mr. Platt, did you give any consideration to the rate base in designing these combustion turbines?

A. I don't understand your question.

Q. In planning for these combustion turbines, did you, yourself, give any consideration to the rate base in those decisions?

A. No. That is not my responsibility.

MR. BARNES: Thank you.

EXAMINER REIMNITZ: Thank you, Mr. Platt.

MR. BARNES: Mr. Examiner, if there are no more questions for Mr. Platt, may he be excused?

EXAMINER REIMNITZ: Any objection to this witness being excused?

MR. RAGSDALE: I have none.

EXAMINER REIMNITZ: Mr. Platt, you may be excused.

WITNESS PLATT: Thank you.

(Witness excused.)

MR. BARNES: I would like to call Larry Esswein to the stand.

L. A. ESSWEIN, called as a witness in behalf of the APPLICANT, UNION ELECTRIC COMPANY, being duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. BARNES:

Q Please state your name for the record.

A My name is L. A. Esswein.

Q Did you prepare direct testimony in written form for submission in this proceeding, which was submitted on March 9, 1979, and supported by Affidavit?

A I have.

Q I have handed you what has been marked Petitioner's (Applicant's) Exhibit 5, an 18-page document, entitled, "TESTIMONY OF L. A. ESSWEIN, MISSOURI PUBLIC SERVICE COMMISSION, CASE NO. EA-79-119," I ask you if that is the testimony that you prepared?

A It is.

Q Are there any changes or additions you wish to make to your prepared testimony?

A Yes. There is one change I would like to make, and that is on Page 14 of the testimony, the fifth line down, the number that appears in that line is "17.7%," that number should be "18.3%."

That is the only change that I have.

Q. Other than the change you have just noted, if I were to ask you the questions set forth in your prepared testimony, would your answers be the same as those set forth therein?

A. They would.

Q. Do you adopt these 18 pages as your testimony in this case?

A. I do.

MR. BARNES: Mr. Examiner, I have a few more questions on direct examination for Mr. Esswein.

EXAMINER REIMNITZ: All right. Go ahead.

MR. BARNES: Mrs. McCartney, I will hand you a copy of these additional questions on direct examination.

COMMISSIONER McCARTNEY: Thank you.

COMMISSIONER SPRAGUE: Do you have any more of those?

EXAMINER REIMNITZ: Let's go off of the record.

(Discussion off of the record.)

EXAMINER REIMNITZ: Let's go back on the record.

BY MR. BARNES:

Q. Mr. Esswein, Dr. Michael Proctor, a member of the Staff of the Missouri Public Service Commission, has submitted prefiled testimony, including an exhibit, in this

case. And have you reviewed Dr. Proctor's testimony, including the exhibit?

A Yes, I have.

Q At the bottom of Page 2 of his testimony, it is stated that "It is our recommendation that Union Electric Company's amended application be granted subject to two provisions." Do you have any comments?

A Yes, I do. Certainly I agree with the recommendation that the amended application be granted. Additionally, I basically agree with the intent of the two provisions because they state that which Union Electric plans to do and would do without the provisions. However, I am concerned that the possible inclusion of the second provision in the Commission's Order, assuming that the Commission approves the amended application, could be detrimental to the public should conditions change. Also, use of the statement in the first provision that "Union Electric Company should carry out an aggressive interchange sales policy in 1979 and 1980" is subjective. Please let me explain.

First of all, having a level of reserve higher than 15 percent, and even as high as 25 percent in 1979, does not mean that that is an uneconomical level to have. We have studied our system, assuming the existence of conditions as presently projected and as I have previously

testified, as shown on Page 16 of my prefiled testimony, the purchase of the Joppa capacity, which is what caused the potential high reserve level, results in an estimated net benefit from this purchase of $1.9 million over and above its cost in 1980. In 1981, the estimated benefit is $4.5 million. In 1979, the estimated benefit is $11,000. If some of the potential uncertainties occur to the detriment of Union Electric, the benefit of the Joppa purchase will increase. Therefore, having what some might consider to be a high reserve level does not mean that that level is uneconomical. I would like to quickly emphasize that I am sure Dr. Proctor recognizes this, and I am not suggesting that his provision suggests otherwise.

Following up on Dr. Proctor's first provision, we always stay in touch with the neighboring utilities to learn of their capacity situation. If the possibility of a sale develops for 1979 or 1980, we, in normal course, will consider if it might be beneficial. This is done by first seeing what terms and conditions would be acceptable to the potential purchaser. After that is determined, we then use our various computer models to study the cost to Union Electric to supply its load without the sale and with the sale. If it is determined that the sale is sufficiently beneficial, we will make the transaction. The reason I use "sufficiently beneficial" is that if one

does not make a sale constituting reservation of capacity with a demand charge, the energy associated with the sale, if not made, can often be sold on a daily or hourly basis as economy, excess or emergency energy, while still having the capacity available to our system if needed. This provides a return to the Company. In summary, for 1979 and 1980, we will continue to be as aggressive as we have in the past in selling power and energy on the interconnected system. That is one of the reasons Union Electric has made the effort to become one of the most interconnected utilities in the country. With respect to "an aggressive interchange sales policy," one must keep in mind that the amount of sales, or the lack thereof, is not an indication of aggressiveness, or the lack thereof. Two other key factors are the opportunity to sell to others, and the terms and conditions necessary to make the sale.

Addressing the second provision, that approval of the amended application for installation of combustion turbines at two different sites should preclude the addition of the installation of a combustion turbine in 1981, I would like to state the following: Union Electric, given the present conditions, does not intend to install a combustion turbine in 1981. However, including such a provision in the Order would not be in the best interest of the customer, and I feel that Dr. Proctor does not intend

this provision to be included in the Order. The problem of including it in the Order is that if conditions subsequently worsen, such that installation of a combustion turbine is the only alternative available so as to have adequate capacity for our customers in 1981, Union Electric would be estopped from taking timely action until the Order could be changed. I believe a prudent approach would be not to include any such statement in the Order but, by virtue of the record of this hearing, Union Electric recognizes the Staff's position given the presently projected conditions. If conditions subsequently change, such that Union Electric finds it necessary to install a combustion turbine for 1981, Union Electric could act in a timely manner, knowing that the entire matter is subject to review by the Staff and approval by the Commission before obtaining a Certificate of Convenience and Necessity for the installation of such a unit. I believe the public is fully protected in this way, while at the same time Union Electric is able to use all the tools available to it in a timely fashion to meet its customers' electrical needs.

Q Mr. Esswein, directing your attention to Pages 19 and 21 of the exhibit attached to Dr. Proctor's testimony, you will note that it states, starting on the bottom of Page 19, that ". . . it is the Staff's opinion that a hearing concerning methods for meeting the 1982

capacity deficit be scheduled for early 1980. The issues in this hearing should cover: (1) The availability of purchased power to meet the 1982 capacity deficit. (2) Conversely, the potential market for sales over the period 1983-1985. (3) The aggressiveness on the part of Union Electric to pursue purchases and sales. (4) The comparative economics of the two alternatives." Do you have any comments?

A Yes, I do. With respect to holding a hearing to discuss the subject of the first point, which is "The availability of purchased power to meet the 1982 capacity deficit," I note that while I am sure it is not intended to be, it is possibly counter to testimony by Dr. Proctor in the second answer on Page 3, wherein he states that "Our concern is that there are issues concerning the potential market for purchased power that should be heard by the Commission before the summer of 1980. At that time, if - and I want to emphasize the "if" - if Union Electric has not been able to secure capacity (committed) purchases for 1982, and it goes on, end of quote. The point made on Page 3 is that if the Company has not been able to secure purchases for 1982, then the Commission would hold hearings.

I would be extremely concerned, and Union Electric would probably be severely impaired to the detriment of its customers, if Union Electric were, by Order, somehow precluded from committing for 1982 capacity

because a hearing had not taken place. The ability of the utility to make the best deal possible in transacting for power on the interconnected system is one of timing. If Union Electric were restricted from contracting to purchase capacity for 1982 until after a hearing were held, we, in addition to probably losing our ability to maintain our "first refusal" rights in the Ill-Mo Pool, would also be inhibited in making the best possible purchase. Although I see no need to hold a hearing to discuss the availability of purchased power, if a hearing is judged to be desirable by the Commission, I would hope that any Order would not preclude Union Electric from taking that action deemed appropriate at a given time irrespective of whether a hearing had already taken place, was scheduled, or had not yet been scheduled. We certainly recognize that our actions in this regard are always subject to Commission review if they are deemed as possibly not being in the best interest of our customers.

The second recommendation on Page 21 of the exhibit, is that the hearing would cover "The potential market for sales over the period 1982-1985." I recognize that the Commission can at any time investigate whether Union Electric has or is acting in a prudent manner. However, to include in an order for the two combustion turbines, which are the subject of this hearing, a condition as

contained in the second recommendation would potentially inhibit or preclude the Company from making a timely transaction. Union Electric intends to continue its past practice of continually searching the interconnected system to make the best possible power transactions possible.

With respect to the third recommendation, wherein the hearing would cover ". . . aggressiveness. . . " in pursuing purchases and sales, one must recognize that this is subjective in nature. As I stated in an earlier answer, the presence, or lack thereof, of a power transaction in a utility's plans to meet its load is not an indication in and of itself of aggressiveness or the lack thereof. Purchases and sales are made on the basis of what is in the overall best interest of our customers and often it ends up that having what some might judge to be high reserves is, in fact, the most economical approach for the utility and its customers. Union Electric does intend to and will aggressively pursue appropriate purchases and sales.

Commenting on the fourth recommendation, which is that a hearing should cover "The comparative economics of the two alternatives," I presume that the two alternatives to be reviewed are those of the installation of combustion turbines in 1982 as opposed to the purchase of capacity. As indicated by our stated plan to purchase capacity in 1982, Union Electric recognizes that if it can

purchase capacity under reasonable terms and conditions for one year, it is a much better and more economical approach than is the installation of combustion turbines which, from a capacity and reserve standpoint, will not be needed in several subsequent years.

I believe the thoughts I have just expressed are not in conflict with Dr. Proctor's thoughts, but rather are a more encompassing discussion of various issues that Union Electric and the Staff recognize.

MR. BARNES: Mr. Examiner, we have no further direct testimony at this time, and we offer Mr. Esswein for cross-examination.

EXAMINER REIMNITZ: Ms. Laska?

CROSS-EXAMINATION BY MS. LASKA:

Q How are you?

A Pretty good. And you?

Q I am fine. I have a few questions for you. I had asked Mr. Platt what his estimate would be of the operating costs of these turbines in cents per kilowatt-hour and he told me to defer that question to you.

A Yes, I can answer that. That question was asked in one of the questions submitted to us, to be answered, by Public Counsel, and the answer is contained in Answer No. 17, and you can see there is a projected fuel cost for 1980 of 5.34 cents per kilowatt-hour; Page 4,

of the answer to the data request by Public Counsel, it is answer 17. a), the projected fuel cost in 1980 is 5.34 cents per kilowatt-hour; in 1981, it is 6.00 cents per kilowatt-hour. The projected maintenance cost in 1980 is .61 cents per kilowatt-hour; and in 1981, it is .65 cents per kilowatt-hour; together, those would constitute the production cost plus maintenance.

Q. And that is taking into consideration the fact that you may be running these combustion turbines, according to Mr. Platt's testimony, more than or at 10 hours a day, five days a week, during a three months' period?

A. The projected maintenance cost would include that amount, that amount of maintenance. These are production costs, not the cost of ownership, if that is your question.

Q. Well, then, I was going to ask, what, then, would be the total cost in cents per kilowatt-hour for construction, operation, and maintenance, and fuel cost?

A. Well, I think--I don't have that answer here, but one could take the answer in item b), and figure out the annual carrying charges for the 30-day period and divide by the number of kilowatt-hours projected to be used, to come up with an answer. Basically, the information is available there, that anyone can perceive.

COMMISSIONER McCARTNEY: Will you make that calculation?

WITNESS ESSWEIN: Yes, I can, certainly; or we can provide that later, or could have it made during the noon hour.

COMMISSIONER McCARTNEY: Would you please?

WITNESS ESSWEIN: We will certainly try to.

COMMISSIONER McCARTNEY: Thank you.

BY MS. LASKA:

Q Mr. Esswein, on Page 6 of Exhibit 5, which is your prefiled testimony,--

MS. LASKA: That is Exhibit 5?

MR. BARNES: Yes.

WITNESS ESSWEIN: Yes.

BY MS. LASKA:

Q The second answer to the first question on that page makes the statement, "Adjusting this figure for receipt of firm power and interruptible load,. . ." could you explain to the Commission what you mean by that phrase?

A I am sorry, but I haven't found it yet. On Page 5, the second answer?

Q Page 6.

A Oh, excuse me. No wonder I didn't find it.

Q Your Exhibit 5, Page 6.

A Yes. Can you redirect me again?

Q Yes. On the second answer, the second statement in that answer, "Adjusting this figure for receipt of firm

power and interruptible load, . . ."--

A. Yes.

Q. "--the adjusted peak demand was estimated at 5917 megawatts."

A. Yeah. I think I have an answer in the testimony in another location. Let me see first.

Q. What firm power, I just want firm power and interruptible load.

A. Oh, excuse me.

Q. Yes. Would you please explain that?

A. Sure. You take the demand, the projected demand and, then, you adjust it for power, any firm power received, and Union Electric is a participant with TVA in a diversity energy transaction, wherein we receive during the summer 130 megawatts of firm power from TVA, and we deliver to them 130 megawatts in the winter, that saves both of us from installing 130 megawatts of capacity. So, you subtract, since that is firm power, you subtract that off of the demand. And, additionally, there is--we have an interruptible load of--I think it is about 45 megawatts, I know it is 45, anticipated to be 45 megawatts, and you subtract that off because that is not an obligation that you have at time of peak. And a third adjustment is something that we call entitlement energy, and what that is, is that Union Electric and Associated Electric Cooperative are parties

to an agreement to supply what we call delivery point service for each other. And the purpose of that arrangement is to try to minimize the construction of transmission, duplication of transmission. And, so, if one party has transmission close to the other party's load, by virtue of the arrangement, the party with the load can tap the other party's line, subject to the conditions in the contract. And, then, the following summer, you are entitled to some power and energy as compensation for that service. And that is anticipated to be a receipt of about 45 megawatts, I believe is the number, for that year.

Q Thank you.

COMMISSIONER SLAVIN: I am not quite sure I understand that agreement.

WITNESS ESSWEIN: Sure.

COMMISSIONER SLAVIN: Would you run that by me again?

WITNESS ESSWEIN: Sure.

COMMISSIONER SLAVIN: This is to eliminate duplication of transmission lines?

WITNESS ESSWEIN: Sure; that's right. I was trying to think of an example. We have a line that goes from Overton to Osage, a 161 KV line, and we have some substations off of that line. By the same token, Associated Electric Cooperative has some load in the area

also. And they have tapped our line to supply a substation of theirs, that they call the Barnett substation. Now, if we did not permit them to--did not have this mutual agreement between us, the only way that Associated could provide that load would be to build transmission facilities there. Well, I think, in an attempt to act in a responsible manner, and I put extra transmission facilities in, we try to cooperate to minimize the construction of transmission; therefore, Associated is tapping our line at Barnett. Now, some flow of their power goes over our line, or is displaced over our line, to supply their load. Now since that has saved them the need to build a transmission facility, it is recognized that we should be compensated somehow, and it works both ways, it is a two-way arrangement, of course.

COMMISSIONER SLAVIN: Do you know how much they tap; do you meter it, is that what you do?

WITNESS ESSWEIN: Yes; yes, we do. It is test metered on a monthly basis, and then both the demand and the kilowatt-hours are metered. And it is actually not at the end of the year, it is about June of each year, you take all of the delivery points that Associated has on our system, and we add those up, all of the peak demands, and we get 25 percent of that amount of capacity as a free delivery to us, no demand charge or energy charge. And we get three percent of the energy that flows through all of

those delivery points, at no cost to us. And we get that back, so what it amounts to, it is a low cost combustion turbine. We had--like this year, we are going to get 45 megawatts of power from them for something like 300 hours of use.

COMMISSIONER SLAVIN: Now how can you take it, is that exchanged on an all year long basis, or--

WITNESS ESSWEIN: Oh, no.

COMMISSIONER SLAVIN: --or do you do it--

WITNESS ESSWEIN: Oh, no. We get delivery during the summer.

COMMISSIONER SLAVIN: Is their load heavier in the winter, their load peak?

WITNESS ESSWEIN: Now their load peak, yeah, that is it, it is there, the diversity transaction like we have with TVA. And we deliver, we have a tap on their system, and we pay them back in the winter. And, so, that is how we do it. It is sort of a diversity transaction.

BY MS. LASKA:

Q. Mr. Esswein, I would like to ask you now some questions about how you determine the need for a combustion turbine, when you look at the peak that Union Electric is forecasting for its system. Okay?

A. Sure.

Q. Last year you put into service three 55-megawatt

combustion turbines, for a total of 165 megawatts of peaking capacity, one at Monroe,--

A That's right.

Q --Moberly and Mexico, is that correct?

A That's correct.

Q Okay. And since then you did not--you have not experienced a new peak. If you will look at your testimony in Case No. EA-77-146, well, I am sorry, I will have to refer to it,--

A Sure.

Q --since I don't have a copy. You said that it is estimated that the peak load for Union Electric will be 5,760 megawatts in 1978, and then you adjusted this figure for purchases and sales of firm power and peak loads, just as you have in this instance, the peak load is estimated to be 5,600 megawatts in 1978. The information we now have is that, that you have supplied a figure of, your peak load was 5,474 megawatts.

A It is still considered--yes.

THE REPORTER: I am sorry, sir, I didn't catch it.

WITNESS ESSWEIN: Yes.

MS. LASKA: Okay.

COMMISSIONER SLAVIN: What was the actual number?

MS. LASKA: 5,474.

WITNESS ESSWEIN: That is correct.

BY MS. LASKA:

Q Even with this figure before us, do you still feel that there will be a need for these new combustion turbines?

A Yes; most certainly.

Q And why?

A Yes; most certainly. First of all, the information that you are referring to, particularly the second number of 5,474, you have to remember that, in a sense, you are "a Monday morning quarterback." And when we had the order--and put that in quotes. And when we had the order to proceed, this was in May of 1978, that peak demand had not yet been experienced. That peak demand was first experienced in the summer of 1978. Now we have projected a load growth of four percent on a ten-year compounded growth rate, previously, in May of 1978. I believe the records will show, or we can certainly provide the information to you, that actually before we--the amount of growth we experience, summer to summer, prior to ordering the CT's was a little bit over four percent. However, we did, indeed, even lower our load forecast, because other indications showed us that we should lower our load forecast down to a 3.7 percent compounded growth rate over ten years. So, we did not have the benefit of that summer that you have

talked about available at the time we ordered the CT's, and we were using our projected numbers at the time, of four percent. So, that you have used a number on me that I didn't have available, that wasn't available, but your basic question was, was it a prudent decision? I believe most certainly, I have no questions about it. And the reason being, is that we projected the need for additional combustion turbines in 1980, 1981 and 1982. And when you are going to have the need to install combustion turbines for several years, and there are some other years past, that if you look at our construction schedule, you can make these calculations and determine whether it is more economical to install or to purchase.

Q Uh-huh.

A. And when you go for the purchase option, as recognized in Dr. Proctor's testimony, there is some question out there, is it going to be available? Since this was the first year of a series of three years, where we planned to install combustion turbines, and since we did want to have this ability to black start in the metropolitan area, we felt that the prudent thing to do was to order those two combustion turbines. At the same time, we knew that there were many environmental considerations that were just unknown, uncertainties there, and we felt that by adding the two combustion turbines, which would give us a

reserve of 16.8 percent, that it was a prudent management and a correct management decision to not only provide black start in the area, but also to protect against any deratings that might subsequently come out.

Q. With the information that was available to you when this decision was made, do you feel that it would have been prudent to then come to the Commission and tell them before you purchased the combustion turbines that you are now making application for?

A. I guess my reaction to that, is that we followed the procedure that we have followed for the installation of capacity, we followed the same procedure that has been followed for many years with the Commission, and that is the procedure we followed. If there is some other procedure that would be more desirable, certainly we could--we would live by it.

Q. On Page--no, that is all right. I started to say Page 2, but that is something that you read into evidence. You made the statement, in the further direct testimony, that "If some of the potential uncertainties occur to the detriment of Union Electric, the benefit of the Joppa purchase will increase." Could you explain to the Commission what these potential uncertainties are?

A. Yes, I sure could.

COMMISSIONER SLAVIN: What page?

MS. LASKA: It is Page 2 of his later filed direct testimony. I don't know what--

COMMISSIONER SLAVIN: Is that what I have (indicating)?

MR. JAUDES: It is a five-page document.

COMMISSIONER SLAVIN: Okay.

WITNESS ESSWEIN: Quite frankly, I am not too sure where to start with the uncertainties that do exist, because of the environmental situation, and because of the Fuel Use Act. Number one, as I stated in my testimony, in my direct testimony, prefiled testimony, that if Venice 7 and 8 are not available for us, our reserves will drop in 1981 down to 18.3 percent. I say "if," but frankly right now, in reading the regulations that you quoted to Mr. Platt, it seems extremely unlikely that we will be able to use Venice 7 and 8, because it is fired on oil. Those regulations and the draft regulations that have been--rules and regulations that have been prepared, or submitted, are extremely comprehensive, extremely confusing, and, additionally, there is one part of the law itself which seems to preclude the use of Venice 7 and 8, automatically by law. We are pursuing that in Washington, with the appropriate regulatory people there and we don't know the outcome of that. But come May 8, of this year, that will be the end of burning oil in Venice 7 and 8, that is 210 megawatts gone. The next question--

COMMISSIONER SLAVIN: Excuse me. Is that because they are considered base load?

WITNESS ESSWEIN: No.

COMMISSIONER SLAVIN: Is it age?

WITNESS ESSWEIN: It is almost a horror story, the reason is, is that the law was passed November 8, 1978, the National Energy Act. Normally, when you plan, one would think that a utility, or anyone, would have the right to plan on the basis of existing regulations. The Fuel Use Act did not do that. They made the Fuel Use Act retroactive to the date President Carter made his speech--

COMMISSIONER SLAVIN: April 20th?

WITNESS ESSWEIN: April 20th, 1977. Now one did not know, when we were doing this, that a law like this would be retroactive to April 20. Number two, the retroactivity of the law, until April 20, 1977, was that if the unit was not operating at that time, you could not operate it, except if it went into this classification that Mr. Ragsdale referred to before, as the "transitional" type area. The law is further complicated by the fact that if the unit burned any coal at all in 1977, now it took it from April 20, 1977, back to January 1, 1977, it said, "nope, you can't use it." The problem, the situation is, is that Union Electric made the decision to convert the units to oil, and worked with the Illinois EPA, in the

discussions area before that date. However, we had a coal pile there on the ground. Now you either burn the coal, or you truck it out. And the lowest cost thing is to burn the coal. And we burned the coal in January, and a little bit in February, 1977, and because of that, we may be estopped from using that unit. And we intend to pursue that to the end, because that is 200 megawatts of capacity from our customers, that is going to cost a tremendous amount of money to replace and it is just not right.

COMMISSIONER SLAVIN: So, essentially, you have converted those units to oil, number two oil?

WITNESS ESSWEIN: Number two oil; yes.

COMMISSIONER SLAVIN: Is it a hundred megawatts?

WITNESS ESSWEIN: It is 210 megawatts.

COMMISSIONER SLAVIN: In February of 1977, in January and February?

WITNESS ESSWEIN: Yes. The decision was made back in the 1976 and 1977 era, and the engineering started, and the application to the Illinois EPA, and so forth. And, then, in--actually today, I believe, they are firing oil, the work has been completed and they are firing oil today. We signed those contracts, ordered the equipment, work had started and here we have just lost it.

COMMISSIONER SLAVIN: The units were down for a number of months while you were making the conversion, is that correct?

WITNESS ESSWEIN: That is correct.

COMMISSIONER SLAVIN: So, you just started burning oil?

WITNESS ESSWEIN: We are just starting burning oil, I guess today, really, is when we are supposed to be starting oil.

COMMISSIONER SLAVIN: Do you consider them peaking units?

WITNESS ESSWEIN: Those would be peaking units, you see, and that is one of the problems. We consider, we will use that as peaking load, as peaking units, but the law itself talks about your ability to use oil for peaking purposes and Union Electric don't use but--about one percent of its energy comes from oil, we use very little oil. And here is peaking capacity that we could utilize and, yet, we are estopped from using it, apparently.

COMMISSIONER SLAVIN: Are you of the opinion that if you could use it, that you need the other units?

WITNESS ESSWEIN: Oh, most certainly.

COMMISSIONER SLAVIN: You would?

WITNESS ESSWEIN: Oh, yes; certainly, yes. Another interesting point on there, is that actually Union Electric made the decision to convert Venice, the Venice plant to oil-fired back in the early 1970's, prior to the Arab oil embargo, and we converted Units 1 through 6

to oil at that time. And, then, the Arab oil embargo came along. And at that time we thought with the Arab oil embargo--it stopped, so we did not convert Units 7 and 8 at that time, because of the oil embargo. And then subsequently, when the oil situation sort of--kind of stabilized, or whatever, studies showed that the prudent thing to do and that the most economical thing to do was to convert those units to oil. So, that is what we went ahead and did. And we were on our way doing that, when, lo and behold, they passed a law, they made it almost two years retroactive. And, so, the law itself makes it extremely--it is extremely doubtful that we--we believe it is going to be worked out, but when and how long it is going to take is doubtful, but we intend to pursue it. We have that obligation.

But, I only answered part of her question. If I may continue. Sure, another situation is, is that initially we don't know what is going to happen relative to the rules, the emission rules passed by the Missouri Air Conservation Commission, and right now they allow for a 4.8 pounds per million BTU of SO2. We have done quite a lot of testing on the units, burning western coal with Illinois coal, and we have been very encouraged by the results that we have seen. We have some modification work that is going on right now at both Meramec and Labadie, and if this work is not completed on the precipitators and on the

gas treatment, we are going to have some additional capacity that is going to be unavailable for a period of time.

Additionally, the part that really bothers us, is that while the State of Missouri and the State of Illinois have accepted 4.8 pounds per million BTU of SO2 for emission, the EPA, the Federal EPA allows you 2.3 pounds per million BTU. If the Federal EPA should not accept the Missouri Air Conservation Commission's proposed rule, or the rule that they pass, it has to be approved by the Federal Government, we will then automatically be at 2.3 pounds per million BTU, and we will have drastic deratings. Now what those are, I don't know, but they will be drastically derated.

Additionally, another problem, again on the Fuel Use Act, there comes--well, excuse me, let me stay on that for a minute. At the Meramec power plant, we have worked with St. Louis County, and we have put together a compliance plan for particulates. And we burn what is called a compliance coal at that plant, which meets the SO2 restriction, but the particulate, there is more particulate than meets the law. Well, I wouldn't want to say it that way, because it is not true, there is--you have got more particulate because you are burning a higher ash and a lower sulfur coal, so what happens, is we were--happened is, we worked with St. Louis County and entered into a compliance

plan to modify that equipment, so that it would be in compliance. And they approved the plan, and the Missouri Air Conservation Commission has also approved the plan. Now that plan is before the Federal EPA; whether they will approve it or not, we won't know, and our understanding is we will not hear until sometime in June, and after July 1, that is sort of all she wrote. That is about it.

Now there is one other point. You can see the uncertainty that bothers us here. And there is one other point and, that is, the Fuel Use Act also has provisions, or actually those provisions, I don't believe, have been drafted, the draft provisions I don't believe have been issued yet, but there is the intention to come out with their draft regulations that finally--final regulations on units that already burn oil that are not peaking units. That is our--well, that do not burn oil, let's say that units that burn oil now and at one time burned coal, and in that category, we have Units 1 through 6 at Venice, which is some 200 to 300 megawatts of capacity, and I can get the right number for you, it is about 230 megawatts of capacity right now. And, then, we have the Ashley plant which also is another plant, which is about 70 megawatts of capacity, and it is another one in question. So,--

COMMISSIONER SLAVIN: I thought you were always closing down Ashley?

WITNESS ESSWEIN: Well, Commissioner, I think we would have a hard time closing down at Ashley.

COMMISSIONER SLAVIN: In case you needed--

WITNESS ESSWEIN: No. It is Cahokia.

COMMISSIONER SLAVIN: Oh, I see.

WITNESS ESSWEIN: And, by the way, we did sign a contract, we got approval from the Illinois EPA about a week ago and that is taken care of.

COMMISSIONER SLAVIN: So you did close down--

WITNESS ESSWEIN: Yes.

COMMISSIONER SLAVIN: --Cahokia?

WITNESS ESSWEIN: Yes, we did.

COMMISSIONER SLAVIN: About how many megawatts--

COMMISSIONER SPRAGUE: Now wait a minute. Can he finish his answer?

COMMISSIONER SLAVIN: Okay. Well, I was just trying to get his answer--

WITNESS ESSWEIN: If I may, I would be happy to go over it with you--

COMMISSIONER SPRAGUE: Let's get back to these 300 megawatts, and then ask another question. I was depending on your answer, and now I am totally lost.

COMMISSIONER SLAVIN: Ashley is 70, and it has not been closed down?

WITNESS ESSWEIN: It has not been closed down,

but it is subject to some proposed regulations of the Fuel Use Act. And the same with Venice.

BY MS. LASKA:

Q Well, what we have got there, is we have lost Venice 1 through 6, perhaps, two to 300 megawatts, Ashley at 70 megawatts, perhaps, now go on.

A Well, Venice 7 and 8, which is a hiatus, and we don't know what is going to happen with the rules, the rules passed by the Missouri Air Conservation Commission, that have been submitted to the FEA, to the EPA, for Sioux, Labadie, and Meramec.

And also, further, Attorney General Scott, of the State of Illinois, says that he is going to sue, and so, you know, if they do pass, we may end up with a suit, that I don't know what is ever going to happen, you know.

I am sorry about the complex answer.

EXAMINER REIMNITZ: Excuse me. Would this be a good breaking point?

MS. LASKA: Let me make one more inquiry. I just have one further question at this point.

EXAMINER REIMNITZ: All right.

BY MS. LASKA:

Q And, that is, what is the kind of megawatt power that you have lost in your peaking power, base load

power, intermediate base load power?

A. Well, Venice 7 and 8.

Q. What are you losing?

A. Well, Venice 7 and 8 will be peaking power.

Q. Uh-huh.

A. If we don't get to use that, it looks like that is out.

Q. Uh-huh.

A. Some at Meramec, then, has to use some intermediate type of power, we would lose some there. Sioux and Labadie is base load power.

MS. LASKA: Okay.

EXAMINER REIMNITZ: I think we will take a recess until one-thirty, and we will all regroup.

WHEREUPON, the noon recess was taken.

PURSUANT to the noon recess, the hearing of this case was resumed, and the following proceedings were had:

WITNESS L. A. ESSWEIN RESUMED THE STAND.

EXAMINER REIMNITZ: Let's go back on the record. Ms. Laska.

CROSS-EXAMINATION (CONTINUED) BY MS. LASKA:

Q. Good afternoon.

A. Good afternoon.

Q. I'd like to-- Well, do you remember the series of questions that I was asking Mr. Platt about the typical yearly load of these combustion turbines?

A. Yes, I do.

Q. What, in your opinion, is the average peak load that these two combustion turbines will run each year?

A. From system studies beforehand, when you model the system, it ends up that the average expected use, given somewhat normal conditions, will be between 200 and 400 hours a year, as Mr. Platt did testify. Now, this can change. It will be different each year, depending upon temperature conditions, whether you go through--get some extremely hot days.

If you have other equipment out of service and all of a sudden the load comes up-- It may not get very high. But, since you have other units out, there may be

maintenance. During even the winter, you might have to bring combustion turbines on line. And, also, just for more of an emergency situation, when a large base load unit trips off, you try to get the other capacity on to cover your load needs.

So, on the average, 200 to 400 hours is what's projected.

Q. You spoke to us before the lunch recess about the amount of deratings and loss of megawatt power that your Company's system will experience in the near future, you believe. At least, you believe it will be.

Now, do you intend to use these turbines as supplement because of that loss of power?

A. Well, first of all, what I was speaking about were the uncertainties that we face; and there are a tremendous number of uncertainties that confront the Company because of environmental situations and because certain rulings have not yet been made and because of the Fuel Use Act.

We did purchase the Joppa capacity, which was an extremely fortunate situation to find ourselves in. And we hope we will make maximum use of that power. Also, at the same time, we will try to purchase whatever is the lowest cost power available on the interconnected system.

Hopefully, the lowest cost power available at any given time will be lower in cost than will the energy

from the combustion turbines. And, hopefully, we will not have to use the combustion turbines because, frankly, we do not want to use combustion turbines. It is a more expensive form of energy.

Now, if you can tell me what conditions we're going to experience, I can answer. But I can't answer more specifically than that.

Q. Also, we talked to Mr. Platt about the storage capability that you intend to have at the Sioux Plant and the fact that--

Do you also agree that it's twice what you have at the other combustion turbines now and twice what you would expect to use?

A. Yes, the tankage going in is twice what we anticipate.

Normally, for a combustion turbine, we would anticipate putting storage in or plan to put storage in at about 300,000 gallons a year. We foresee that sometime down the road we could put in another combustion turbine there. And the reason one would put it in there is to take advantage of a number of situations that exist; for instance, transmission, incremental transmission, so you don't have to build extra transmission, on-site maintenance. So there are advantages to try to put another unit there in the future if needed. When that will be, one doesn't know.

Now, with respect to Mr. Platt's testimony that we are putting a 600,000-gallon tank there, it's for really a very economical reason. When you look at the cost of putting in a 300,000-gallon tank, the cost is something in the neighborhood of $250,000 to $300,000. That's for one 300,000-gallon tank.

To make that same tank--to double it in size and have twice as much storage, the incremental cost is small compared to putting in a second tank of that type or that size at a later date. Also, you're putting it in-- In the meantime, if you put it in at a later date, say, eight years later, you have the escalation that's going to take place on that new or future 300,000-gallon tank.

So it's a question of trying to make a prudent business decision on what is best overall and what is the proper way and the most prudent way to spend the dollars. And that's the reason for it.

We feel that it's definitely the right decision to have the extra storage there. We don't have to fill the tank up to 600,000 gallons. And I, frankly, doubt if we would.

By the same token, if we do feel that there would be advantages to have extra storage in the tank at that location for possible inventory to maybe ship by truck to another station, it gives us that flexibility.

So there are many advantages that we gain by spending those incremental dollars.

Q. Would the Company still make the same decision if they found out that later the Commission would not allow the extra stored oil into the rate base? Would they make the same decision to put the extra capacity storage at Sioux?

A. I think the Company is charged with responsibility of making prudent and the best decisions that can be made based on sound business management. And I think sound business management tells us that we should put in the 600,000 gallons of storage.

My judgment would be that, since it was based on that, that I think this Commission would find that that is a prudent decision. And I have no reason to believe that they would not allow that tankage, and we would do it.

COMMISSIONER SLAVIN: Along this track, it still is not clear to me why you changed your plans to build one of the units now at Sioux, because if you were not building one of the units now at Sioux, you'd only need to build a tank.

WITNESS ESSWEIN: Well, our initial plans when we ordered the units and planned them for installation in 1980 was to put both units in at Meramec Power Plant.

COMMISSIONER SLAVIN: That's the way the original application showed?

WITNESS ESSWEIN: That's correct.

COMMISSIONER SLAVIN: And it was only changed very recently, to my knowledge.

WITNESS ESSWEIN: Yes. But that's what I'd like to explain.

The opportunity developed that because of the conditions as they changed, as stated in my prefiled testimony, and we were able to get this low-cost capacity and that would be available to us from the Joppa Power Plant, that we're now in a position of being able to postpone the installation of--of not having to install combustion turbines in 1981.

Now, when you sit back and look at your capacity installation program, you can see the possibility of saving additional dollars, expenditures, capital expenditures, that ultimately end up in the rate base. And we're not looking to add dollars to the rate base. We can look at the possibility of saving 350 megawatts of CT installations in 1982 if we get by for one year, and we're going to do our darndest to get by for one year. If all that transpires, if we stayed with our original application, the only place we would have black start in the metropolitan area would be at Meramec. So then one has to ask themselves the question: Is that the best thing to do?

Initially, we were going to put two at Meramec

in '80 and two at Sioux in '81. Now we've wiped out '81 and hopefully '82. So now you want to say, "What is the best way to operate the system?"

And, at that point, you can see that it's evident that let's get black start not only at Meramec, but let's get it at Sioux. We were going to get it at Sioux in '81.

Now, since we've wiped out those CT's in '81 and potentially in '82 and then we have no CT installations planned for many years, for ten years, say, eight years, let's take one of those units and put it at Sioux and give the metropolitan St. Louis area the flexibility of being able to start up from the south end by the use of Sioux Plant, of Meramec Plant, and from the north end by the use of Sioux Plant.

And, also, we get an added benefit at Sioux because the Sioux boilers are of a different type; and we can have adequate let-down power at Sioux. So, in case we do lose external power to Sioux, we don't run the risk of potentially ruining the bottom of the boiler, which is a tremendous maintenance expense.

So we want to get a unit there, and that's the rationale for doing that.

COMMISSIONER SLAVIN: It has nothing to do with the location of the peaking units essentially? It's really

that you're only asking for a black start capability at two locations?

WITNESS ESSWEIN: I'm not sure I follow you.

COMMISSIONER SLAVIN: I mean, it doesn't matter where you're getting your extra peaking capability?

WITNESS ESSWEIN: No. Peaking capability on our system is peaking capability on our system so long as, for instance, in either case, Meramec or Sioux, we do not have to add additional transmission. So that's one thing we don't want to do.

Now, we can achieve this by staying both at Meramec or by moving one to Sioux. We don't have to put in additional transmission, but we also gain these other benefits and we still have the additional 102 megawatts of capacity on our system.

BY MS. LASKA:

Q In the exhibit marked No. 5, your prefiled testimony, on Page 10--

A Yes.

Q --approximately the fifth and sixth lines from the bottom, I think, it says that the derated capacity would be reinstated in 1981 after the installation of additional equipment.

What is this additional equipment that you refer to, and-- Well, I'll ask the questions one at a time.

A. Oh, I see. Excuse me.

It was projected that this derated capacity ,30 megawatts would be reinstated beginning in 1981 after the installation of additional equipment. What additional equipment is your question would we plan to install.

We don't know. The problem at the time was that we knew how we potentially could come out on the regulations; and we could see that in order to meet the regulations this summer, that the best engineering judgment indicated that there would be 730 megawatts of derating.

In order to be able to utilize that capacity, we would have to put on some facilities, whether it would be bag houses, additional precipitators, whatever, overpower on the precipitators, which we are doing, gas and flue gas conditioning. We didn't know, because the regulations had not settled that.

But we knew that-- We hoped, let's say, and we're pretty sure, that we could get much of that back; and it took a period of time.

And that's why we tried to say, "Okay, if we had to do something,--you're kind of guessing here--what am I going to have to do?" And you're not quite sure, but you know it's sort of in this area. And "How long is that going to take me?"

And so we had to try to make some judgments,

and that's what we did.

Q. On Page 8 of Exhibit 5, which is your prefiled testimony, you discuss the power pool that Union Electric is a member of. And I'd like to ask you this: What would occur if Union Electric did not maintain the power pool reserve margin that it agreed to with this power pool?

A. You mean, as far as punitive damages or something such as that?

Q. I don't know. What would happen?

A. You enter into a contract in good faith. And you do agree to abide by certain guidelines and rules and regulations that the parties agree to or are realistic and purposeful for the good management of the systems and the good operations of the systems. You put those guidelines into an agreement so that people know the basis on which they're going to plan and can rely on another person.

If one of the parties fails to live up to its contractual commitments, you know, do you sit here ahead of time and say you're going to sue the person or something such as that?

We intend to live up to the 15 percent reserve obligation, and so do the other participants to the pool. And we would not be fulfilling our obligation if we did other than that.

Now, if you're saying if we had a situation

that occurred that we went down to 14 or 13 or 12 percent reserve, we would be obligated because of our contractual commitment to go out on the interconnected system and attempt to buy interchange capacity to get us up to that level. That's our obligation. And we receive benefits by being in the Ill-Mo Pool, and that's one of our obligations.

So, if we ended up below 15 percent reserve, our contractual obligation says we have to go out and search for capacity and purchase it; and so do the other parties, if they themselves are below.

Q. Would Union Electric no longer be considered a member of the power pool if they drop below their reserve margin?

A. Well, I think a person could certainly claim that you're in violation of a contract and the contract is null and void because you have not abided by or fulfilled your part, your obligations, under the contract.

I think that's a question that would have to be addressed to Illinois Power Company and Central Illinois Public Service Commission. Normally, utilities try to work together; so I would--

Q. Do you agree that the units will cost $1.5 million for 102 megawatts or $181.40 per kilowatt?

I'm sorry. $18.5 million for 102 megawatts or 181--

A. That's what Mr. Platt testified to, right.

Q. Do you agree to that?

A. Yes.

Q. Has Union Electric in its assessment of future growth in peak demand properly considered the changes in use that would occur if Union Electric invested in load control devices to lessen the peaks that make the installation of such combustion turbine units necessary?

A. We've considered it. First of all, one Vice President of the Company, Clyde Allen, is or was a member and served on the Joint--I believe Commissioner Slavin is probably more familiar with it than I--Rate Research/Rate Design Load Management Committee, where they are trying to look at various ways to control load.

One of the major problems in load management is the-- One thing we did look at is this: Union Electric, first of all, we do encourage people to use electricity prudently. We have gone to programs and are experimenting in programs which are load management oriented, such as solar screens, encouraging the use of higher EER equipment, ice cooling, and things like that.

But one thing we did look at was the use of our Taum Sauk Power Plant. And Union Electric has, which most other utilities around here do not have, we have this storage Taum Sauk Power Plant, which is a storage facility,

where you use your equipment at night, your generating facilities at night, that are not providing load. You use that facility to pump water to the top of the hill. And then, during the day, you permit that water to come out to cover load.

We have looked at and studied what would happen if, by the use of load management, we would be able to shave 100 megawatts of our load off the time of peak on our system profiles. And then we said, "What would happen to Taum Sauk?"

And one of the limitations on the use of Taum Sauk is the pumping time, the time to replenish--the time you can pump water to get it back up to the top of the hill so you can use that plant at full capability or rated capability the next day.

Our studies show that, if we would experience 100 megawatts of load management that was effective over our summer peak period, we would have to derate Taum Sauk 125 megawatts because of our inability to have sufficient time to pump it back.

In effect, what it does is it flattens our load curve out much more and the shoulder problems, the shoulder areas-- And Dr. Proctor understands what I'm talking about. The shoulder areas limit our pumping ability. So that's a problem with load management. We'd actually lose on it at Taum Sauk.

What we are doing in that regard is we're ...ve in another type of storage project, and that's ...nis compressed air energy storage. We, along with four other utilities, are participating in a research and development project to store compressed air below ground in geological formations called aquifers, where you can, in essence, blow big bubbles of air under the ground. And the advantage of that is you're not limited by the size of the pool of the storage at the top of Taum Sauk, which you can just keep blowing a bigger bubble under the ground and you can store compressed air. And then you can leave that out during the day. And that also is fuel. It has the benefit of being responsive to the government's desire not to use oil.

By use of this type of facility, if and when it works, and we're hopeful that it will, is that, in a combustion turbine, if one uses one unit of oil for another unit of electricity in a combustion turbine normally, by virtue of the compressed air facility, you can stick compressed air in the ground. Well, a combustion turbine uses two-thirds of its units of oil to compress the air and the other one-third to heat the air; and that's how it generates. If we compress the air with coal and at night stick it in the ground, when we leave it up during the day, we only have to use one-third the amount of oil that we would normally have to use.

So we are very enthusiastic about that. And

we believe, while that's-- That is not load management. That's supply management. And what that does is that gives the customers the ability to live the type of life they normally would lead and not have to get up at 2:00 a.m. in the morning to do their wash. You can do it when you want with supply management.

COMMISSIONER SLAVIN: I think that probably what Ms. Laska was looking for was-- I think you got to it at the end of your question.

You're talking about supply management. What we are really talking about is what is the Company doing in terms of load management? And, for example, some companies have instituted ripple controls.

Have you examined what customers you're serving, perhaps industrial or commercial customers, who may only come on to your system at peak? I think Busch Breweries fit into that capacity, where they come on as a summer customer and they're a generating company as well.

Have you examined areas where the Company can prudently shed load and techniques for shedding load, because it seems to me that you're really only addressing supply.

WITNESS ESSWEIN: Well, I attempted-- If I did--

COMMISSIONER SLAVIN: You did make a distinction.

WITNESS ESSWEIN: I attempted to address more

than supply. Certainly we think, for instance, higher EER's. We believe that solar screens have the ability to shave the summer peak load. We believe that use of better insulated homes has the ability to help shave summer peak load.

Now, with respect to other industries or commercial establishments, as far as getting them to shave their load at time of peak, yes, we've explored that by virtue of our interruptible rate. And, although we've had an interruptible rate for years and years and years, you cannot get industrial customers willing to go on the interruptible rate. And that would be the ideal use of-- That would be the ideal way to load management. You'd have load management with the interruptible rate.

COMMISSIONER SLAVIN: Are you aware of the ARMCO-KCPL contract?

WITNESS ESSWEIN: No, I am not.

COMMISSIONER SLAVIN: That might be something that you could look at.

WITNESS ESSWEIN: Sure. I'd be glad to.

COMMISSIONER SLAVIN: That certainly is an agreement in which the two companies have worked out an agreement which involves a number.

I think it's 100 megawatts, isn't it, Mike?

MR. PROCTOR: I'm not sure how much it is.

WITNESS ESSWEIN: Well, we'd be glad to look

at it, certainly.

COMMISSIONER SLAVIN: In which the company entered into an agreement, a load-shedding agreement, with ARMCO. Now, it may be a situation where you don't have anything that duplicates that type of customer, which you may not.

WITNESS ESSWEIN: Well, we have tried to get this load shedding, if one would call it that, by virtue of our interruptible loads. And we find people less willing to take interruptible service rather than being more willing.

For years we've had, in our industrial rate, the ability where a customer could have twice the peak demand at nighttime without incurring--and still only incur the daytime peak demand. And that was just plain and simple. That's a very ideal way to keep the people off at the time of summer peak, and we have about five customers that use that. I cannot identify those customers. But it's been static through the years of customers. The people's living habits and so forth, they just don't want to do that. And how do you get a person to do that?

Well, you try to develop those rates. We have done it. I think we've had that rate for--I don't know how many years. And I don't know, Commissioner.

BY MS. LASKA:

Q I think the thrust of my questioning here is

at it, certainly.

COMMISSIONER SLAVIN: In which the company entered into an agreement, a load-shedding agreement, with ARMCO. Now, it may be a situation where you don't have anything that duplicates that type of customer, which you may not.

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Well, you try to develop those rates. We have done it. I think we've had that rate for--I don't know how many years. And I don't know, Commissioner.

BY MS. LASKA:

Q I think the thrust of my questioning here is

just for it to be in the record the knowledge for the Commission that Union Electric has explored other alternatives, such as alternative energy sources, conservation.

A. We have. We're deeply involved in, you know, the use of oil, as far as the national policy, trying to decrease the use of oil.

The question was asked before of Mr. Platt what the Company was doing in that regard. We are involved in a research and development project with about 18 other companies with Wentworth Corporation to try to develop a method to methanate--make liquid methanol out of coal. And what we're looking for there is a storable, burnable liquid. And methanol is a storable, burnable liquid that is environmentally acceptable.

The Wentworth Brothers have completed their study; and part of the agreement with them was that, before the final report--after they issued their final report--

We're very active in EPRI, Electric Power & Research Institute. And we made it a condition as far as Union Electric being a party to that agreement that EPRI had the right to review that study completely before that was issued. And EPRI is in the throes of having a consultant of theirs review that study, and that answer is not here yet.

Another project that we're involved in, again aimed toward trying to have a low-cost, environmentally

acceptable fuel available, is Union Electric, along with-- It depends if you count subsidiary companies of some of the other utilities. But, along with either 11 or 8 other utilities, we're involved with Allis Chalmers in this kiln gas project; and we're very enthusiastic about that.

Kiln gas is a method to gasify coal. And the benefit of kiln gas as far as a gasifier as opposed to any other type of gasifier is that kiln gas-- It's expected that kiln gas will be able to cycle or to follow load, go up and down.

Most gasifiers are what they call batch processes. You put it in and you go up and you're there and you come down. And that doesn't fit a system like Union Electric's. So we have spent a fair amount of our R&D dollars in that project.

If things keep looking the way they are, we'll probably desire to spend more dollars in that project. And I would anticipate that if we do, we'll be back talking to this Commission about approval to do that, because we think it is highly desirable to do it at this point. Now, I'm prejudging an answer here.

COMMISSIONER SLAVIN: Before you leave derating-- And maybe this is in the record here. But if it's not, could you provide me, just so I can get a handle on what the capacity of your system is, the derating that has occurred over, let's

say, the last five years, on each unit and the reason for the derating?

Now, you've indicated some derating for plant in '78; but I know that some plants have been derated over the years. So that I can understand what your true capacity is and how it has changed as a result of derating so I can relate it to the capacity and reserve figures.

WITNESS ESSWEIN: I'll take a stab at it.

COMMISSIONER SLAVIN: Is it here already? Is it in an exhibit?

WITNESS ESSWEIN: Well, the best place-- No, it's not really in any prefiled testimony; but I have a convenient document here to look at. Let me say this: I'll take a stab at it. I don't have anything-- I have not thought about it ahead of time, and I think that's what you're asking me to do.

Labadie Power Plant is down right now rated at--

COMMISSIONER SLAVIN: Every unit? The four units started out at 600.

WITNESS ESSWEIN: 600 is the gross rating of Labadie. 575 is in that rating.

COMMISSIONER SPRAGUE: Wait a minute. Can we go off the record a minute?

EXAMINER REIMNITZ: Let's go off the record.

(Off-the-record discussion.)

EXAMINER REIMNITZ: Let's go back on the record. It's my understanding you're going to obtain the information requested by Mrs. Slavin and provide that. And I would assume we're going to do it as a late-filed exhibit.

We'll reserve Exhibit 6 for that information.

MS. LASKA: May I continue now?

EXAMINER REIMNITZ: Certainly.

BY MS. LASKA:

Q We discussed here earlier the fact that Union Electric's projected peak was not as high as you had once thought it would be in 1978, last year?

A That's correct.

Q Do you think that the peak was less than you had expected because of the peak alert program, because of conservation, because of the high prices of electricity?

A Well, I would say that one thing we know it wasn't due to-- And, obviously, to make this answer, I don't want to assume that I'm prejudging the peak awareness program.

The peak awareness program has been in operation one year. And we have looked at those days when peak awareness was announced, and the information was inconclusive at this point. Certainly it did not do anything to shave our peak, but that was only one year of operation. And we had some

peculiar weather conditions, which we know happen, and really didn't give the awareness program the proper chance it deserves.

When we examined the information that was at hand before making the last peak load forecast, we did note that the major place where the growth did not come up to projections was the base load sector, the base load portion of our growth. And it appears that that was coincident or started, let's say, at the time of the coal strike, and continued on through the summer, that there was a loss of some peak load, amount of peak load, that was not there. Whether that will continue, one doesn't know.

We know in many office buildings, including our own, during the summer, we had half the lights turned out or a number of lights turned out. It started during the coal strike and continued. How many other people had that situation, and will they keep their lights out?

Lights in an industrial facility is base load, and it's on year around. It's base load during the time of the day. So, in our buildings, for instance, the lighting system is part of the heating system, so we had to turn the lights back on in the winter.

Now, there are a lot of other companies that probably have the same situation. Will these companies go back and turn out lights again next summer? I don't know.

COMMISSIONER McCARTNEY: Are you going to have

the peak awareness program next summer?

WITNESS ESSWEIN: Most certainly.

BY MS. LASKA:

Q Finally, we've talked about the deratings that may or may not occur in your system, the potential to buy bargain energy from Joppa, and the uncertainties of the oil situation, right?

A That's correct.

Q Union Electric still proposes to build two combustion turbines that will, in fact, burn oil for 200 to 400 hours a year.

You have said that there probably will be a need for these combustion turbines. But are you really asking this Commission to build these combustion turbines for an insurance policy of sorts in case you need them, but you don't know that you really will need them?

A We believe we will need the units.

MS. LASKA: Thank you.

QUESTIONS BY COMMISSIONER SLAVIN:

Q That just brings me back to one that occurred to me in which you said, "Well, the reason we're putting this one at Sioux and the reason we're putting it at Meramec is that we could have serious damage to a boiler if they were out for any period of time."

Aren't you going to have the same serious

damage problems to your boilers at Labadie or Rush Island?

A. No. The Sioux boiler is a different type of boiler than the other boilers on the system. And right now we do have a diesel unit at the Sioux Plant which, as Mr. Platt explained, is used to circulate lubricating oil and such things as that, to keep your equipment lubricated while the stuff is rolling and coasting down. If you don't, you'll wipe a bearing. And you wipe a bearing on a big machine, and you've got problems. So we do have those facilities.

By the same token, the diesel unit at Sioux, by going through a certain sequence of operations, there is the possibility to keep the bottom of the boiler cool. But what you have to do is keep the circulating water in that boiler that's circulating through some tubes there in the bottom, which are not the case in the other boilers-- You have to keep those cool to carry away the heat. And, therefore, you have to keep a pump going. If you don't have any power to that pump, you're not going to move the water through those tubes to take away the heat; and then you're going to burn the bottom of the boiler. So, if certain things operate fine, we can manage to get by.

Now, in the past, we knew this situation existed. But the question at the time is: "Do you spend the dollars that it would cost to install a combustion turbine there having adequate capacity to be sure you don't experience this?

Do you just go out and put that there just for that reason?"

Our answer is: "No," that was not the prudent thing to do. But the answer also was that we still had the problem and, when we're going to put in capacity for capacity needs, let's put one in at Sioux and also obtain this additional benefit. It's an additional benefit over and above the capacity aspect of it.

Q But you have known of this problem for a long time, and then you just suddenly changed your plans. Is that the result of your agreement that was worked out at Joppa then?

A. The boilers at Sioux have been there since 1967. They're a different type of boiler than those that exist at Labadie and at Rush Island. I don't know when it became apparent, but it's sometime in there. And, again, I don't know.

Q What kind of an outage are you talking about in terms of minutes, hours, or days, and so on, before you have to worry about that boiler damage really happening?

A. It would be an outage of external power or plant power to run the auxiliaries. I would say in the neighborhood of probably, say,-- I'm not a-- I'm an electrical engineer. This is a mechanical engineer's or thermal dynamics principle.

In the neighborhood of 15 minutes you'd better

get power in there to get that--

Q. Have you ever experienced an outage at Sioux longer than 10 minutes? Two minutes?

A. Well, we came dog-gone close one time. And the question was asked of Mr. Platt earlier have we ever experienced a brownout? One Saturday, and I don't know which year it was. But I think it was somewhere around 1972, '73.

Spontaneous combustion from the coal pile caused the belts at Sioux to catch on fire, and we came dog-gone close to losing that whole plant. And we were just that far away (indicating) from losing that plant, and we would have been in trouble.

Q. It would have solved your problems with EPA there.

A. I don't think EPA demands we solve them that way.

EXAMINER REIMNITZ: Ms. Laska, do you have any other questions of this witness?

MS. LASKA: No. I'm finished. Thank you.

EXAMINER REIMNITZ: Mr. Ragsdale.

CROSS-EXAMINATION BY MR. RAGSDALE:

Q. Mr. Esswein, I believe you stated earlier that the Company does have some interruptible customers in the neighborhood of 45 megawatts?

A. That's correct.

Q. When the Company has in the past and currently prepares peak load forecasts, is that 45 megawatts of load included in your peak load forecast?

A. The 45 megawatts of load is adjusted out of there. They have to look. And, when you load forecast, you have to say, "Was the load on or wasn't it on?" And they have to do it on a consistent basis, and then you adjust it in or out.

Q. You do have before you a copy of the Company's answers to our interrogatories?

A. Yes, I do, sir.

Q. If I may direct your attention to the answers you have for No. 6. And I guess my question was the peak demand forecasts.

And, in the answer to that question, 6(c) and 6(d), was the 45 megawatts of interruptible load included in those figures or excluded?

A. In 6(c) and (d)?

Q. Yes.

A. The load is there. But, now, when we go and calculate our reserve requirements, we make this adjustment to get to the adjusted demand, wherein we subtract the TVA diversity; the Associated entitlement, which we discussed before; and the interruptible load.

Q. That brings me to another question. In making

that calculation, you took these diversity arrangements and Associated Electric entitlements and interruptible customers; and you subtracted that from the load, peak demand load.

My question is: Why was the calculation made in that manner rather than adding that load to capacity, particularly the diversity arrangement?

A. Oh, sure. That's an understandable question.

The reason on 130 is it's a firm delivery. We entered into an obligation to deliver 130 megawatts to TVA in the winter with reserves; and we have to stay behind it, just like our load. They do the same thing in the summer. So, therefore, you don't have to have reserves with it, because the delivery has reserves with it.

And the same thing happens with the entitlement with Associated Electric. That's a firm delivery, and the reserve component comes with it.

With respect to the interruptible, if you're subtracting it off, the load isn't there. So you don't have to have reserve for a load that isn't there.

Q. So, I guess, as I understand it, your answer is that you subtracted from load instead of adding to capacity because you're not responsible for any reserve for that amount?

A. That's correct.

Q. Union Electric is one of the owners of Electric Energy, Incorporated; is that correct?

A. That's correct.

Q. And that's the corporate entity that operates the Joppa Plant?

A. That's correct.

Q. In regards to the answers to the Interrogatories Nos. 13 and also 15 and 16, I note, as part of Union Electric's capacity, there's a notation for Joppa. And, then, for the years 1978 through 1981, you show 110 megawatts.

Am I to assume that that is something different than the contract which you discussed in your prefiled testimony?

A. Your assumption is correct.

Q. Is that a firm commitment that Union Electric has out of the Joppa Plant in that amount?

A. Yes, in the sense-- Let me explain the Joppa contract, and this can get pretty involved.

Joppa is a power plant. EE, Inc., owns the Joppa Power Plant, which is normally a 1,000-megawatt plant. There are two contracts with EE, Inc. One of the contracts is the EE, Inc.,-DOE contract, wherein during the year DOE has the right to 735 megawatts out of that plant. The sponsoring companies have the right to the 265 megawatts that remain. The 110-megawatt portion is our portion of that remaining 265.

COMMISSIONER SLAVIN: Do that again. DOE gets 735?

WITNESS ESSWEIN: DOE gets 735 as long as our contract, yes.

COMMISSIONER SLAVIN: All year long?

WITNESS ESSWEIN: Yes. And the 265 is proportioned 40 percent to Union Electric and 20 percent each to Illinois Power, Central Illinois Public Service, and Kentucky Utilities. And 40 percent times 265 should give you somewhere pretty close to 110. 1,000 megawatts is a normal rating.

COMMISSIONER SLAVIN: Is your contract with DOE or with EE, Inc.?

WITNESS ESSWEIN: Our contract for any power out of Joppa is with EE, Inc.

COMMISSIONER SLAVIN: I thought you said you had the contract with DOE, but maybe I'm mistaken.

WITNESS ESSWEIN: You start to get caught in semantics is what happens.

BY MR. RAGSDALE:

Q I note, Mr. Esswein, that for 1976 and '77, the Company had 310 megawatts out of the Joppa Plant. Can you explain to me why you've lost 200 megawatts?

A. Sure. That's why I said this can get to be complex if you want to talk about it.

That plant was built in 1952 and '54. By virtue of the initial contract, the AEC, Atomic Energy Commission at the time, which subsequently became ERDA, which

is now DOE, had the right to 735 megawatts of power out of that plant.

In the 1960's, if I can just talk DOE now and forget about the transition, DOE wanted to reduce their amount of power. And arrangements were worked out wherein they were permitted to reduce their amount of take, which gave the sponsoring companies more power. In fact, it reduced it by 500 megawatts. And our 40 percent of the 500 megawatts was 200 megawatts.

But when they did this, they did it with the proviso that, with 5 years notice, they would have the right to get that 200 megawatts back. And that was only during the summer period that they had it. So what happened was that they gave 5 years notice. And where you see the transition, that's where the 5-year notice period ran out.

Q. I note that the Joppa Plant is described as an intermediate load. Is that because of the way the plant was built to operate that it's that type of a plant?

A. It's because of the size of the units primarily. They're normally 140-megawatt units. And they are able to be moved around, cycled, without difficulty, due to temperature mismatch. And that's where you run into your problems, with temperature mismatches and things like that.

And, for that reason, they're able to be called intermediate units and are used that way.

Q. Looking back at the state of the art in the electric industry in the 1950's, would they have been described as intermediate plants at that time?

A. No. They were base load units at that time. In fact, Mr. Ragsdale, the Department of Energy, their use is 100-percent load factor. So the 735 is base load for them. And, at 100-percent load factor, our portion is intermediate use.

Q. And it's intermediate because of the way you can use the facilities?

A. The way we dispatch it, yes.

Q. How often does Union Electric revise its load forecast?

A. At least annually.

Q. And is that done at any particular time of the calendar year?

A. Normally it's done after you have the information in from the summer peak, so it would be in the fall. And we are trying to go to an update in the April-May period, because we have found that there are some other basic information.

Let me start over, if I can. Basic information that comes in which is very important is the summer peak, what happened in the last summer peak. And you try to gather all that information and analyze what the situation is and what's going on, so that's why we do it in the fall.

By the same token, there's local information and so forth that are gathered by various agencies and bodies; Regional Commerce Growth Association, and things like that. And they do it on a calendar basis. So, therefore, that information is not readily available before January. But, if we wait until about April or May, that information starts coming out. And so we are trying to take a second look at it.

Q. Is it then that you will then have sort of a biannual review of your load forecasts as a practice?

A. This is something that we instigated last year, and hopefully we will, because we think that gives us a better look at doing what's best.

Q. In looking at the answers to interrogatories, particularly 5(a), in preparing the answer to that question, how does the Company define "base load"?

A. When you forecast load, what you have is your-- Let me start over and just answer your question and not go into everything else.

Base load is determined by measuring our load during the daytime in April and October when the temperature is between 48 degrees and 64 degrees, maybe 65, 64 or 65 degrees. And we plot the peak load on the weekdays of the year of that month, April and also October, when the temperatures are in that range. The reason for that is because you have

very little heat sensitive load. There's not much of your load that is temperature sensitive.

So, by plotting those points during April and October, you can determine what the average was in April and what the average was in October. And you can come out with a measure of what is the base load on your system or the non-heat temperature load.

And then approximately halfway in between is July and August. So we interpolate to get halfway between, and that is our base load. And the base load is that load which is not sensitive to variations because of heat.

Q. Let me see if I can run this back to you and see if I've got it.

So you look at the month of April and look at those days and if the temperature did not go outside the range of 48 or 65?

A. That's correct.

Q. And plot what your load was on that particular day?

A. The peak load.

Q. And then you come up with an average for April of all those plots?

A. Basically, yes.

Q. And then we go forward and look at October, and we run the same type of calculation?

A. That's correct.

Q. And then we find the mid-point between those two numbers, and that would be the base load you have for a particular year?

A. That's correct.

Q. So the Company doesn't necessarily look at a load duration curve and look how that curve lies and say, "Well, the load was this amount for 75 percent of the time; and that's the base load"? You don't use some type of a formula like that to determine--

A. No. We go out and see what is the system response. That's what we look at.

Q. My next question is: How does the Company then define "heat sensitive," as that term is used in 5(b) to the answers to interrogatories?

A. Heat sensitive load is really the remainder once you know the base. Your peak load during a year is made up of two components; that which is not responsive to temperature, and that's the base portion. And, once you know that, you can subtract that from the peak you actually experienced. And, by subtracting that, the remainder is that portion which is sensitive to temperature.

Q. Looking back at 1976, '77, and '78, in order to do that calculation, you first would have calculated the temperature corrected load; is that correct?

A. That's correct. Yes, we would subtract the base load from the temperature corrected peak.

Q. In regards to making load forecasts, we're not looking back from the past to determine what the base load or heat sensitive is; but we're looking forward. Does the Company then make two different forecasts, one for base load and then another forecast for temperature sensitive, and add the two together?

A. Yes, they do.

Q. Now, I guess your answer would be no to the question that weather affects growth or lack of growth in base load demand. It should not have an effect; is that correct?

A. That's correct.

Q. Looking at your answer on 5(a) of the interrogatories, I note that the 1978 base load is only 8 megawatts over 1977.

I guess I would be correct in assuming that the Company forecasted a larger growth than 8 megawatts for 1978 base load over '77 base load?

A. I'm not sure I understand the question.

Q. Okay. I'll rephrase it.

I note that, in '78, the Company had 8 megawatts of base load growth over '77?

A. Yes.

Q Now, is that in line with what the Company forecasted for base load 1978 over 1977?

A No. I think what you're looking at there, Mr. Ragsdale, is the fact that, as I indicated earlier to Staff's Counsel, that because of the coal strike, we noted that we had lost--there was a lack of base load growth there. That shows that lack of base load growth.

COMMISSIONER SLAVIN: Are those actual numbers then?

WITNESS ESSWEIN: Those are actuals.

COMMISSIONER SLAVIN: Well, aren't you saying, "What did you project"?

MR. RAGSDALE: My question was: "Was that in line with what they projected?" And I determined, I guess, his answer is, "No."

WITNESS ESSWEIN: Excuse me. No, that is not what we projected.

COMMISSIONER SLAVIN: Is there some place where it shows what you did project?

WITNESS ESSWEIN: Sure. I believe I could find that.

COMMISSIONER SLAVIN: Or is that 8(a)?

MR. RAGSDALE: No. I did not ask what the Company forecasted for '76, '77, or '78.

MS. LASKA: Some of that is in this testimony from--

EXAMINER REIMNITZ: Let's go off the record.

WHEREUPON, a recess was taken.

PURSUANT to the recess, the hearing of this case was resumed, and the following proceedings were had:

WITNESS L. A. ESSWEIN RESUMED THE STAND

EXAMINER REIMNITZ: Let's go back on the record.

CROSS-EXAMINATION CONTINUED BY MR. RAGSDALE:

Q. Mr. Esswein, before we broke for the recess, we were discussing the load growth in '78 base load demand of the Company. And I believe you attributed that to the effects of the coal strike?

A. That's our thoughts.

Q. Does the Company have any external process to measure whether the coal strike was the cause of this phenomenon, or is this just an internal guess of the Company's to explain the situation?

A. I wouldn't call it a guess certainly. What one does is examine your sales data, kilowatt-hour sales, in various months; and you try to determine where the decrease came from. It's our feeling that it's attributed to the coal strike and potentially additional conservation that has been, in essence, wrung out of the system, the customers' use of electricity. At this point, that's our best estimate of the situation.

COMMISSIONER SLAVIN: I assume that number can be broken into your commercial, residential, and

industrial, right, load?

WITNESS ESSWEIN: It would be quite difficult. The reason being is that, while our industrial-- Most of our industrials have demand meters along with kilowatt-hour meters. Of course, you recognize that residential customers only have kilowatt-hour meters; and many commercial customers only have kilowatt-hour meters. So what one would have to do is have demand meters; because this is a demand that we're talking about, demand, not kilowatt-hours.

COMMISSIONER SLAVIN: This is not kilowatt-hours, okay. It's not sales?

WITNESS ESSWEIN: That's correct.

BY MR. RAGSDALE:

Q So the Company looked at its sales in the base load months of April and October and made a determination that the coal strike had an effect on each one of those two months?

A We made a determination that our base load growth was down--and you asked me the question before--from what was forecasted. The forecasted base load or projected base load growth was 3,040; and we experienced 2,925, which is 115 megawatts less than projected.

Now, at this point, you have to try to determine what are the reasons for that loss in base growth. When you do that, you do many things. You go back and you

look and see if any customers were on strike, were industrial customers shut down because of vacations, and things like that; and you try to look for those things.

The obvious thing that occurred in early 1978 and the end of 1977 was the coal strike, and one could see that there was some decrease in use. And it's our belief right now that the most obvious thing is the coal strike.

Q. And you think the coal strike had an equal effect then each month of April and October of '78?

A. I couldn't answer that question.

Q. When the Company prepares its load forecast, do they prepare a high growth forecast and a low growth forecast to give some type of a range of what they expect might be happening off in the future?

A. We prepare our basic load growth, which is the most likely, based on normal weather and various indicators. And then we prepare a scenario from that, taking into account what might happen if certain things change. And we develop a scenario approach so that we can determine if there is a lower growth or a higher growth.

Q. So I guess you take your model and plug in different parameters, different rates of economic growth, and perhaps different changes in weather patterns to look at what might happen in the future, assuming something changes from what you expect it to be at the current time?

A. Various factors.

Q. Directing your attention to the answers to 5(c) and 5(d), in which we compare the temperature corrected peak and the actual peak for '76 through '78, I note that the temperature corrected peak for each of those years exceeded the actual peak. Can we infer from this that the past three summers have been cooler than average?

A. Yes, I think you can. Most certainly you can. And, I think, if you asked Laclede Gas, "Were the last three winters colder than average," I think they'd say so, too.

Excuse me for digressing. The answer is, yes, they were cooler summers.

Q. And has the Company examined the Weather Service data to determine this, or was the sole determination just looking at your load growth?

A. No. We use weather data.

Q. I mean, you used weather data to determine that the summer of '78 was cooler than normal or cooler than what you forecasted it to be?

A. Cooler than normal. I think the question you're asking me is how do we take our actual peak and how do we temperature correct it; is that correct?

Q. I haven't gotten there yet. I'm going to get there in a minute.

I asked whether this information indicated

that the summers were cooler in '76 through '78 than average; and you said, "Yes." And I'm wondering if the Company made steps to use external data to determine whether that was, indeed, the case.

I mean, did you get data from the National Weather Service in St. Louis to show that the summer of '78 was cooler than average; or did you just rely upon this phenomenon that the actual peak was less than the temperature corrected peak to arrive at your conclusion that the summers of '76 through '78 were cooler than average?

A. What you have available to you is the peak that we experienced on the various days, and you have temperatures available from the Weather Bureau from Lambert Field. We use the temperature information, the weather information, available from Lambert Field. And we use that in conjunction with the peaks that we experience to weather correct our actual peak.

Q. Did you take into determination that there were more cooling degree days or less cooling degree days in '78 than you expect on an average to make the determination that the '78 summer may have been cooler than average?

A. I'm not sure what cooling degree days would have to do with Kw peak demand. If you tell me there, I could maybe answer.

Now, it has something to do with kilowatt-hour

sales; and certainly it would have an effect there. But, as far as peak demand, we're looking at the hottest temperature of the day, not cooling degree days.

Q. Now, in calculating your temperature corrected peak load, is this calculation performed for every weekday in the summer?

A. It's performed for the summer itself.

Q. My question was asked of your response to Interrogatory No. 10.

So the Company does not perform this calculation for every weekday of the summer? You don't see what your load was and look at the temperature and then correct it up to 88 degrees for each day of the summer?

A. Every weekday of the summer is included in determining what weather correction to make.

Q. What time period is the summer, as you've used that term in your answer?

A. Generally June, July, and August. If you have hot days in early September and late May, you'd include those.

Q. And can you tell me what the term "88 degree two-day weighted temperature," how that figure is calculated and what that represents?

A. Sure. I'd be glad to.

Eighty-eight degree two-day weighted

temperature is a means to try to capture the effect that if you have one hot day, a cool day, and then a hot day, and then another cool day, the peak load you're going to experience on that hot day is going to be different than if you have a cool day, a warmer day, and then the same hot day, as I previously assumed, because you have a temperature buildup.

And so what utilities attempt to do is to get a weather measure which takes into account the fact that there is this heat buildup, so we use this 88 degree two-day weighted temperature. And what we do is we take the high and the low temperature for that day, and we look at the mean. And then we take the high and the low from the day before and look at that mean temperature. And you multiply today's temperature by two and add it to yesterday's temperature and divide by three, and then that is the two-day weighted mean temperature.

Q In calculating the temperature correction, is the process that you start with what your actual peak load was in the summertime? Is that the first bit of information you need to calculate that figure?

A No. The actual peak load on any specific day is not inherently that significant. It's the summer, all the days during the summer. We temperature correct our summer, not any particular day.

Q Well, do you look at the summer to determine

whether this 88 degree two-day weighted temperature was achieved in any particular time period?

A. That will come out on the plot, yes. I'll be glad to, again, offer to explain how we weather temperature, if that would be helpful.

Q. Yeah. That's what I'm trying--

A. I asked you before; and you said, "No."

Q. I think you were ahead of me when you asked that. That's what I'm trying to get at. I'm sorry.

A. I would have offered sooner, but you told me no before.

What we do is you take the months generally of June, July, and August. And you take yesterday's temperature, the mean temperature from yesterday, and multiply it by one. You take today's mean temperature and multiply it by two. You add them together and divide by three, and now you have the two-day weighted mean temperature.

And you have a graph that shows temperature on the left-hand scale; and you have, I think, peak demand along the bottom or demand megawatts. And you'll pick that point for the two-day weighted mean temperature for that day and the load for that day, the weekdays; and you'll go through the summer putting these points there. And history shows that these plots, points, fall in kind of a certain pattern. And you can take that curve, and if you exceeded--

Okay. You can plot those points.

Now, by taking weather data starting in 1906 from the St. Louis Weather Bureau, we've calculated what the two-day weighted mean temperature is for this area. And we've learned that 88 degrees is the two-day weighted mean temperature, where you have a 50/50 chance of being higher or lower, the probability of being higher than it or lower than it. So that's what we forecast on.

So we take this curve that you can fit through all these points; and where that intercepts 88 degrees, that is our weather temperature corrected load for that summer.

Q So a calculation is done for each weekday of the summer? You calculate what the two-day weighted temperature is for each day; is that correct?

A That's correct.

Q And then, on this plot, you--

A That determines one point on the plot.

Q And, then, where it intersects with what your demand was, that's the point you put on the graph?

A That's correct.

Q And you do that for each weekday of the summer?

A That's correct.

Q And you get a slope of a curve?

A. You get a series of points, yes.

Q. And the fact that for the period '76 through '78 the actual peak was less than what your temperature corrected peak at 88 degrees would have been, would it be correct to assume that we had no weekdays in those three summers where we had an 88 degree two-day weighted temperature?

A. As far as your basic question, no, it's not correct to assume that; because we don't correct any single day. But I think the fact is that I believe we-- We came very close to hitting a two-day weighted mean temperature of 88 degrees, but we did not hit it. But that's not axiomatic with your question.

Q. Turning your attention to the answer you gave to Question 19, you discuss or the Company's response there talks about discounted present worth of capital and operating expenditures when examining various alternatives for capacity additions. Is this discounting done over the projected operating life of a capacity addition?

A. Yes.

Q. Further on in that answer, the term "generation simulation models" is used. Could you explain a little bit about what that type of model is and what it's supposed to do?

A. There are various types of models that we use. One model is something we term the SSP Program. It stands

for System Simulation Program. In that model, we can put in all the characteristics of our existing facilities, existing power plants; how high they can be loaded, what maximum load they can carry, their fuel costs, operating costs, outages, all those types of things. And then we can also put in there the projected facilities that one might plan on putting in on the system in the future and put the same information in and then put your projected loads. And you can run the model, and it will tell you what the cost is to operate that system. And then you can present worth that back. That's one way to do it.

Another method that's available is something called ORSIN. It's a system induration model, and it's essentially a similar type of tool. It's done more on a monthly basis as opposed to a daily basis, which the SSP utilizes.

A stronger tool that's presently available is something called the WASP Program. I think it stands for Wise Automated System Program. And that model, in essence, runs along the same basis, but only in there you put load shapes and you run it on, I think, a quarter-year basis and put your cost of capital and cost of fuel and escalation rates. And you can optimize what type of system one should put in for the long term.

Q Are there other types of utility planning

methods used besides generation simulation models and system duration curves?

A. Would you please restate that?

Q. I'll make reference to the second sentence in answer to 19 where it states, "Various utility planning methods are utilized in the analysis, including generation simulation models and evaluation of system duration curves."

I guess my question is: Are generation simulation models and system duration curves all inclusive of those utility planning methods?

A. Yes, those are in there.

Q. I'm not sure whether that sentence means that those are just examples of utility planning methods or those are all the utility planning methods, a description of all of them.

A. I would hate to be all inclusive up here on the witness stand. God might strike me dead.

Q. In reference to Union Electric--

A. With reference to Union Electric, the three I mentioned are the three we use.

Q. The reason I asked that is that sentence seemed to indicate to me that perhaps there were some other methods that were not specifically mentioned.

A. No. And, Mr. Ragsdale, that's why I tried to be more specific then by mentioning all three.

Q The next sentence in that answer refers to operability constraints. And I'm wondering if you could give me some information on what type of operability constraints the Company might have when it looks at the various generation alternatives.

A Operability constraints are the constraints that one has in moving units around. By moving them around, I mean, for instance, you drive your automobile and you're going along at 30 miles an hour and, say, you all of a sudden decide you want to go 70. And you just push down on the accelerator, and you're at 70 in a short period of time.

You don't do that with power plants. You can't just dump more coal in there and get them to go from 300 megawatts to 600 megawatts like that. You have temperature mismatches that you have to be cognizant of so you don't create strains and stresses on the equipment itself and cause cracks and so forth, cracked blades, and things like that. So each piece of equipment, regardless of what it is, your automobile, each piece of equipment has certain operating constraints that one has to take into account when you're operating a piece of equipment in a prudent manner. And generating facilities are like that.

For instance, like the Labadie units, Labadie power plants, while they can get up to in the neighborhood of 550 megawatts of output, you can bring them down to, say,

half load, over a period of time in the late afternoon or early evening. But you can't take them off, or else you're not going to get them back on the next morning. So one has to take those things into account when you're planning a system, and we do.

Does that answer your question?

Q Yes. I was needing a little bit more information about what you meant by operability constraints. Thank you.

Previously there was some discussion about your Taum Sauk plant. I was wondering if you could give me some idea what the energy ratio is at that plant. If you put in so many kilowatt-hours, how many are you going to get back out of that plant?

A I think it's two in and one out is the general rule of thumb. But if you want it more exact than that--

Q I think, for my purposes, that's fine.

I believe, before the noon recess, you were asked about what the total cost per Kwh would be for the combustion turbines, including cost of ownership and depreciation. I wonder if you had calculated that over the noon hour?

A Yes. The information that I did provide already was the fuel cost and the production cost. And,

during the noon hour, the cost of ownership is 6.38 cents per kilowatt-hour, based on 400 hours of operation a year.

Q And that would be equivalent to 20,400,000 kilowatt-hours?

A Yes.

Q In a question from the Bench, I believe you discussed the problem you have at your Sioux plant if you had an outage and that the boiler floor may have some problems. And you stated that the Company had been aware of this for some time.

I'm wondering why the Company did not put in a combustion turbine unit at the Sioux plant last summer when it was building three such units around the state.

A Well, I think the answer is as follows: When you're going to put in capacity, you look at what benefits are you going to-- First of all, you're going to obtain the benefit of having additional generation to cover needed or additional load growth and reserves. Then you say, "Are there additional benefits that can be obtained?" And you list those benefits and determine where can you achieve the most benefits.

We looked in outstate Missouri. We looked at Jeff City. We could see Jeff City sitting here with about 100 megawatts of load and a 50-megawatt combustion turbine here. And you start saying, "Well, what happens if the line

from Moreau to Jeff City is out of service and another line is cut?" Jeff City, there's a problem.

And so you try to weigh what are the benefits that one can achieve by installing the combustion turbines at various locations. It was our judgment at the time that the best locations to install those three units were where we installed them, and that's the answer.

MR. RAGSDALE: Thank you. That's all the questions I have.

EXAMINER REIMNITZ: Any redirect?

QUESTIONS BY COMMISSIONER SLAVIN:

Q. I just have one that goes back to an earlier one that I directed to Mr. Platt, and he said that you can answer it.

I was trying to find out why there seems to be a discrepancy between the average articulated by Ms. Laska on her cross from other companies in the operation of the combustion turbine, and they said that you would be the witness that could tell me how many peak hours you were running the plants for and why your numbers are significantly higher than the other companies that we're surveying.

A. I can give you a little bit of history. In 1976, the Venice combustion turbine ran 85 hours, the Howard Bend combustion turbine ran 169 hours, and the Meramec combustion turbine ran 30 hours.

In 1977, the Venice combustion turbine ran 315 hours, the Howard Bend combustion turbine ran 396 hours, and the Meramec combustion turbine ran 554 hours.

Q. Now, there was quite a difference between those two years?

A. That's correct.

Q. Can you explain that?

A. It would be system conditions. What were the conditions at time of peak load? Did you have a couple large units out? Could you not buy interchange at a lower cost? Just system dispatch, dispatching the system on the most economical basis, which is the way you do it. And each year is different.

Q. Could you provide for me the information on what really specifically did happen between those two years, why the load was specifically higher?

A. Well, if you think-- If you desire it, I think what we'd have to do is we would have to go back to 1976 and pull out the records of those combustion turbines, 365 days for each combustion turbine. We'd have to look at what hours they operated. We'd have to log that. Then we'd have to go and we'd have to look at all of our other generating facilities on each of those days to say, "What conditions existed?" And we'd have to then examine the load dispatch logbook to see what conditions existed on the

interconnected network to determine why was the unit operating. And it's a horrendous job, I would say. You know, we could--

Q. You indicated there might be some gross conditions, like, a plant being out of service or interchange sales being more expensive. I mean, I'd like them in--not in daily specificity, but in--

A. That's the only way to do it. When there's 8,760 hours in a year and you're talking about 300 hours and, in one case, 30 hours and 85 hours, there's no way to go back and determine that without getting into specificity.

I would hope you would realize the magnitude of the request you are making. We would have someone tied up doing this for many hours. And I would say that the best explanation is that the system is dispatched on an economical basis. And the unit that is most economical to operate at a given time is what we operate, whether it's combustion turbines or some other facility.

We also look at the interconnected system and can we get power at a lower cost there. And, if we can, we don't want to use the combustion turbines.

Now, at any given time, when you look at a particular year and you see that one unit operated 85 hours and another unit 169 hours, what one has to do then is go and look at those specific days that the unit is running 169

hours, what specific dates it operated. And then you have to go back and say, "Maybe Venice was down for maintenance. Maybe it couldn't operate. Maybe we had the unit down on maybe four days when it racked up 40 hours of use."

So we can do it, but it would be a tremendous job. And I--

Q. I'm not interested in putting you through hours and hours of work, you know. And I do accept the notion that you are doing your best to load most economically.

But it is a little bit peculiar that there is such a difference between the two years to me. But, now, maybe it shouldn't be to you.

A. No. Really, Commissioner, that's not unusual.

You put in peaking capacity with the thought that, when it burns oil, that you don't have to use it. You have it there to utilize to be available to come on and serve your customers and keep the lights on, but you're not looking to operate the type of unit that is the most expensive operating unit on your system a lot of hours.

Q. That's what I'm wondering.

A. So you try to hold that down. Now, what happens in one year is that you may have a number of large units-- Maybe two units are out for maintenance. And then all of a sudden--

Q. It wouldn't be normal for you to put it out

for maintenance at that time of year?

A. No, no. Excuse me.

Let's say two base load units, two Labadie units let's say-- Or let's say a Labadie unit and a Sioux unit were out for maintenance in the winter and then all of a sudden another Labadie unit tripped off because of an equipment failure. Well, you have to get under that load. The customers' load is still there.

So what you'd have to do is bring on the combustion turbines, and you bring them on then. You might not be able to get that unit that came down back for a couple of days. And, therefore, you might run into just a short period of time that it required you to operate the units more hours. In another year, you may not hit that condition.

COMMISSIONER SPRAGUE: Is that called emergency use?

WITNESS ESSWEIN: That's emergency use.

COMMISSIONER SPRAGUE: You had that in the last case, and one of the parties couldn't understand what that meant.

WITNESS ESSWEIN: You know, when is there an emergency? It's kind of hard. You really say you hope that anyone ever has emergencies.

BY COMMISSIONER SLAVIN:

Q. Well, maybe you can handle this by just

providing me a monthly number of hours that you run each combustion turbine, and then we could certainly tell whether it was peak or emergency.

A. Maybe I could answer the question in some other way that would be helpful if I knew exactly what you were after.

Q. Do you have the monthly operational use of each of your combustion turbines?

COMMISSIONER SPRAGUE: I wasn't referring to you, Commissioner, as one of the parties. You gave me a look.

COMMISSIONER SLAVIN: No. I know.

BY COMMISSIONER SLAVIN:

Q. Do you have that?

A. Certainly the records are there. The question is how much time does it take to extract that information and, you know, is that something that's desirable? And, if it is, we shall do it.

COMMISSIONER SLAVIN: That sounds simple. And maybe if the attorneys can tell me--

COMMISSIONER McCARTNEY: For what period of time is this?

COMMISSIONER SLAVIN: '76 and '77.

WITNESS ESSWEIN: For each day of '76 and '77?

COMMISSIONER SLAVIN: No. Monthly hours of operation.

MS. LASKA: Or, if you could point out there were emergency situations, that might-- See, if you could show her there were emergency situations for that time period, then that might--

WITNESS ESSWEIN: I would rather take the Commissioner's suggestion, because that is going back to logbooks and that's just reading and reading and reading.

Is that a late-filed exhibit or what?

MR. BARNES: I guess so.

EXAMINER REIMNITZ: Let's go off the record.

(Off-the-record discussion.)

EXAMINER REIMNITZ: Let's go back on the record.

Any redirect?

MR. BARNES: No.

EXAMINER REIMNITZ: Anything further of this witness?

(No response.)

EXAMINER REIMNITZ: Thank you, Mr. Esswein.

(Witness excused.)

MR. BARNES: Mr. Examiner, at this point, which is the conclusion of Petitioner's case, and before the Staff's case, this might be an opportunity for me to move that Petitioner's exhibits that have previously been

identified; Exhibits 1, 1A, 2, 3, 3A, 4, and 5, be admitted into evidence and, also, that we move that late-filed Exhibits 6 and 7 be admitted into evidence.

EXAMINER REIMNITZ: Is there any objection as to 1, 1A, 2, 3, 3A, 4, and 5 that was just made?

(No response.)

EXAMINER REIMNITZ: Hearing none, they will be received.

(AT THIS TIME APPLICANT'S EXHIBITS NOS. 1, 1A, 2, 3, 3A, 4, AND 5 WERE RECEIVED IN EVIDENCE AND MADE A PART OF THIS RECORD.)

EXAMINER REIMNITZ: Is there any objection to the two late-filed exhibits, as we understand they're being offered?

(No response.)

EXAMINER REIMNITZ: We'll wait until we see what the late-filed exhibits are.

Ms. Laska?

MS. LASKA: The Staff would call Dr. Michael Proctor to the stand.

(AT THIS TIME STAFF'S EXHIBIT NO. 1 WAS MARKED BY THE REPORTER FOR THE PURPOSES OF IDENTIFICATION.)

STAFF'S EVIDENCE

MICHAEL S. PROCTOR,

called as a witness in behalf of the STAFF, having been previously duly sworn, testified as follows:

DIRECT EXAMINATION BY MS. LASKA:

Q. Dr. Proctor, I have shown you a copy of the exhibit marked Staff Exhibit No. 1, which was submitted as your prefiled testimony with affidavit on March 14, 1979. Was this prepared by you or under your direction?

A. Yes, it was.

Q. Do you have any changes to make to your testimony at this time?

A. No, I don't.

Q. If I were to ask you these same questions today, would your answers be the same?

A. Yes, they would.

Q. Is there an exhibit referred to in the text of your testimony?

A. Yes, there is.

Q. Do you have any changes to make in this exhibit?

A. No, I don't.

Q. And do you adopt it as your testimony?

A. Yes, I do.

Q. Dr. Proctor, how long have you worked for the Commission?

A. I started work for the Commission in June of 1977.

Q. What is your present position with the Commission?

A. Presently I'm Assistant Director in charge of the Research and Planning Division.

COMMISSIONER SPRAGUE: I think that should be clarified. Assistant Director of Utilities. Or what's your full title? It sounded like you were the Assistant.

Do you see what I mean?

WITNESS PROCTOR: Yeah. I'm the Assistant Director of the Utilities Division.

COMMISSIONER SPRAGUE: In charge of--

WITNESS PROCTOR: In charge of the Utilities Research and Planning Division.

MS. LASKA: I have some further questions to ask Dr. Proctor on direct at this time in addition to the prefiled testimony.

EXAMINER REIMNITZ: Go ahead.

BY MS. LASKA:

Q. Dr. Proctor, in your prefiled testimony, you placed two conditions on your recommendation that Union

Electric's amended application be approved. What was your intent when you made these recommendations?

A. It was not my intent to make these a condition of approval; rather, to make the Commission aware of two concerns of the Staff.

And one of those was the high reserves that they're showing in 1979 and 1980. And the condition that I put down was that Union Electric would be actively involved, or aggressive, I think, was the term that I used, in pursuing sales in those two years, particularly in 1980, because that's when the two combustion turbines were coming on.

And the second concern was the additional combustion turbine capacity that could come on before the Callaway 1 unit. And, relating that to the question of splitting the two CT's that are in this case between Meramec and Sioux, that if, in fact, these units come on in 1981 and one goes to Meramec and one goes to Sioux and then in 1982 another unit would come on, that some additional cost would be borne that would not be necessary. So I put a second condition in that I didn't see, under the present circumstances, that bringing an additional combustion turbine on in 1982 was the right thing to do or in the best interest at this point in time.

So I simply wanted to make the Commission aware of those two things; the high reserves, and that maybe

some additional combustion turbine capacity might be needed in 1982. And it was just a point of awareness. I didn't want those specified as conditions for approval of these two CT's.

Q Dr. Proctor, further on that recommendation, did you have anything to add about the timing of the application then with the Commission to that end?

A On that particular one, I have a concern; and I'm not sure how to express it.

The two combustion turbines in question were ordered in the summer of last year, in 1978. And my concern is that this hearing process maybe should have taken place at that point in time. I don't see that we're trying to make the management decisions for the Company, and they have to do things in a timely manner. But these combustion turbines have been ordered, and now we're put in a position of do we approve it or don't we approve it? And there's some problems there because there's some alternatives that might be excluded at this point in time.

And so, when I talked about the additional combustion turbine capacity for 1982, what I'm saying is, in order to have that, Union Electric Company would have to order it by this summer in order to have it there. It's a two-year lead time is my understanding on getting these combustion turbines on line. So that, instead of that

decision being made and we coming up again at this point next year and having a hearing process on it, I would like to see that done up front so that the Company is aware of what the Commission's feelings are on it and so that we've had a chance to look at that. And so I was just looking ahead in terms of that recommendation.

Q Dr. Proctor, also, in your prefiled testimony, you recommend that hearings be set for early in 1980 on methods for meeting the 1982 capacity deficit and for the general question of capacity planning as they relate to the second unit at Callaway. Why did you raise these issues in this case?

A Again, primarily because of the timing problem that I saw. The 1982 capacity deficit question would have to be answered by early 1980 in order for it to be a timely thing for Union Electric and for the Commission. Also, the second unit at Callaway, when you start looking, if you're going to really look at viable alternatives to Callaway, coal plants have eight-year lead times on them. And so I think the requestion of those things has to be done in a timely manner. And my concern is that, if it goes beyond that point in time, that those decisions may be, in a sense, either almost irreversible or very, very expensive to reverse those decisions at that point in time or past that point in time. So that's why I raised them in my

prefiled testimony.

MS. LASKA: Thank you. That concludes my direct testimony, and I offer this witness for cross.

EXAMINER REIMNITZ: Mr. Barnes?

MR. BARNES: We have no questions.

MR. RAGSDALE: The only question I have is: Has this whole thing been marked as Staff Exhibit No. 1?

MS. LASKA: The entire thing.

MR. RAGSDALE: I have no questions.

EXAMINER REIMNITZ: Anything further of the witness?

QUESTIONS BY COMMISSIONER SPRAGUE:

Q. On Page 18--to make sure I understand this--about the sixth line down, "The Staff would strongly oppose the split in location on the two combustion turbines for 1980 if an additional combustion turbine were being planned for 1981."

What is your feeling about the split of these turbines?

A. In terms of the black start capability, I think the Company has made a strong argument for splitting those.

My concern is, when I looked at the capacity expansion plans of the Company, I saw the need for 50 megawatts sitting there the year after these two were coming

on. And the Company, in essence, said, "We're going to try to get that additional capacity in terms of purchased power."

When I went through and analyzed it, my initial reaction is I'm not sure, to meet the 15 percent short-term reserve requirements, that that 50 megawatts is even needed, given their present expectations about things. In other words, if all the things that we've been talking about; the environmental considerations, the deratings, and all that, if those hold the way they're looking at them now, I'm not sure that those 50 megawatts are needed. Those changes could affect my statement right here.

But my concern was that the Company might be thinking about putting a 50-megawatt combustion turbine in about next year. And, if that was the case, I would see no rationale to incurring the additional two and a half million dollars to split them in the year before. And I just wanted to make that clear.

QUESTIONS BY COMMISSIONER SLAVIN:

Q. Well, that's a question that I've been trying to get at today.

How did you arrive at the two and a half million dollars, because essentially I looked at-- There's a number for Meramec and there's a number for Sioux; and it's about $900,000 difference, right?

A. Well, I may have miscalculated then; because

I took that off of the original filing. Now, if you want me to, I can check that. But I was looking at the cost of the two combustion turbines at Meramec versus the total cost of the Meramec and Sioux, if you put them at Meramec and Sioux.

Q I would like you to look at those numbers, because I think that the Company witness just doubled the figure that was in the record for Meramec.

MS. LASKA: Are you able to do that now?

WITNESS PROCTOR: Yes, I think.

COMMISSIONER McCARTNEY: And does that include the tanks?

WITNESS PROCTOR: I was looking at total figures. I'm not sure exactly all that's included.

Okay. At the bottom of Page 4 of the amended application--

BY COMMISSIONER SLAVIN:

Q This is the Company's?

A. The Company's amended application.

It says, "The construction of the Meramec Turbine Unit will cost approximately $8,800,000" and "The construction of the Sioux Turbine Unit will cost approximately $9,700,000."

In the original application, it says that the construction of each-- And this is, again, at the bottom of Page 4 in Item 10. "The construction of each Meramec Turbine

Unit will cost approximately $7,988,000."

Now, we could do some arithmetic to see if the difference is two and a half million dollars; but that was the source of my two and a half.

Q And this does include tanks for Sioux?

Does that include the tank at Sioux?

MR. JAUDES: Yes.

I think, on Page 4 of Exhibit 4 of Mr. Platt's testimony, he gets into some of that explanation at the top of Page 4 of his exhibit.

There is a combination of factors involved: The escalation rate of the equipment costs was higher than originally estimated; and then the switch to the Sioux site requires additional site fill and fuel storage facilities that are not required at Meramec; and, thirdly, that there are some additional costs incurred as a result of having two sites instead of one, such as installation and engineering costs.

So there really are three separate sets of reasons for that cost differential. And certainly one of those three is the split between--or two of the three are related to the split between them, Sioux and Meramec.

COMMISSIONER SLAVIN: Do we have a number, a current number, on what it would cost to erect the two units at Meramec?

MR. RAGSDALE: I believe Mr. Platt responded to a question that I asked him that it would be doubled $8,800,000, if I recall.

COMMISSIONER SLAVIN: That's what he said. That is the number that we're going with. So it's two times 8.8.

EXAMINER REIMNITZ: Is there anything further of this witness?

BY COMMISSIONER SLAVIN:

Q. Are you still with your two and a half million dollars?

A. Yeah. If I took the differences as I calculated them, it was two and a half million dollars. If you go with the $8,800,000 and double that, that would give you the $900,000 difference.

So, when I calculated the two and a half million dollars, I took that from the two applications to be the difference and did not go into the details of splitting those costs up. So I misinterpreted the two and a half million dollar difference.

Q. Now, you've indicated that both units were ordered in May of '78, right?

A. (The witness nodded his head.)

Q. And there was no application to build the units at that time?

A. That's correct.

Q. And what has already been expensed by the Company so far on each unit? $100,000?

A. I don't know the exact number. My understanding is that simply engineering expense has gone into it. They haven't paid anything.

Now, if your question is what would it cost them if they canceled the order at this time, I do not know.

Q. Did your work consider building one at Meramec at this point and delaying a decision on the second one?

A. No.

Q. Would you explain what you mean by this wide swing in excess reserve capacity in '79-80? Would that not correct that problem if you only put one on, or would it slightly correct it?

A. Well, it would have nothing to do with the high capacity occurring in 1979, because the combustion turbine units would not come on line until 1980. Obviously, the capacity surplus or the higher reserves would be reduced in 1980.

Q. Is that in a table?

A. Right. Page 12 of my prefiled testimony, Table IV.3, shows percentage reserve of 22 percent in 1980; and those are in the-- If you're looking at 16 to 18 percent as a standard, those are high. And the reason that those are higher is the purchases that are showing up under "Megawatt

Purchases" of 360, which are coming from this Joppa plant or the Department of Energy contract.

At this point, I would not be willing to recommend that only one combustion turbine be purchased. The reason I wouldn't be willing to recommend that is that it's clear to me that there's a lot of other uncertainties that come into this; uncertainties with regard to the environmental considerations, uncertainties in regard to what revisions in peak forecasts are going to be balanced on the other side.

But I have not and do not have the expertise to look into the details of those particular issues and make judgments on them at this point and say, "Hey, I think that it's in the best interest of the customers not to bring on one of those two CT's." I wouldn't personally make that judgment at this point. It would take me a lot more-- I'd have to look into those things a lot further.

Q. Assuming permission to proceed, does it take from now until 1980 before they become operational? Do they start immediately?

A. They would not be operational before the summer of 1980, that's correct. I think, at this point, the company from which they ordered those combustion turbines is beginning to process or in the process of building the unit.

Again, my understanding of it is that it's, in a sense, like buying a prefabricated house. The construction that needs to be done on site is basically the assemblage of what's sent there. It's a very compact pre-put-together type of thing, and I don't know the exact time. I think when we were-- We did visit Howard Bend, and I believe they told us that the construction time was less than six months of actually putting the thing together.

Q. Pursuant to your concern that we have an input into a decision in a timely manner for another CT by 1982, should this-- Or, is there a possibility of keeping this docket open to address that issue?

That may be a legal question.

A. I think it is.

Q. But is there not the problem of, if we at this point issue something-- You say you do not want the Commission to look at your recommendations as, in fact, a provisional acceptance?

A. For these CT's.

Q. But if, in fact, the Commission is going to be involved in a meaningful way in this question, we're almost now? This is when we should almost be holding that hearing? It is now, isn't it?

A. That's correct.

Q. So that there would be a way the Commission

could address that in this Order?

A. By implication, yes. My concern is that they would preempt the Company if some changes occurred in the next few months or even, say, towards the end of the summer--that, if some changes occurred, that that Order would not preempt the Company from going ahead and making a decision to order that additional combustion turbine.

But, if they did, I would surely want the Company to come back and say, "Hey, we did that; and we're going to put these two combustion turbines at Meramec at a lower cost. And, then, when that next one comes on in 1980--whatever it is--1981, that that one would be put at Sioux." And that's the type of thing that I was trying to get to, you know. The Company certainly would have to make that decision, I would think, before maybe June or maybe as late as August.

But, if they made a decision to bring an additional combustion turbine on because some changes had occurred, I think that then they would want to and we would expect them to come back and say, "Hey, we'll put these two on at Meramec and wait to put the one on at Sioux because of the additional cost involved." That type of thing is what I was trying to get to.

Q. So you're really, in fact, saying that it is much more prudent economically for the ratepayer to put two

on at Meramec at this point if their plan or whatever the uncertainties are that develop require another unit and delay that one for Sioux?

A. Right.

Q. Are we really getting the answers on that in this proceeding? I keep trying to get to it, and I'm not sure I'm getting it.

A. Well, part of the problem is the uncertainties involved.

Q. Yeah. Well, look at your Venice. You're showing Venice as a 210 increase. The Company says there's an uncertainty with Venice as a result of the Fuel Use Act problem, right? It could end up to be a zero?

A. It could end up to be a zero.

Q. But we look like we will have an answer on that in the next few months, based on the testimony received here, right?

A. Right.

One of the things I might just point out is that, if you turn back in the prefiled testimony to Page 5 and Table III.1, those were the conditions that the Company faced when they ordered the combustion turbines or that they were viewing when they ordered the combustion turbines. And the reserve levels there are very reasonable, 16.9 and 19.4.

And what I tried to do in this section of the

testimony was show how in one year-- You see the date on it. It's 2/23/78. It was February-- I'm sorry. Something is wrong with that date. These were the forecasts that were-- No. That's correct. 2/23/78, February 23, 1978.

And, at the beginning of that summer, they ordered those combustion turbines based upon that. Well, if we had had a hearing back at that point on these combustion turbines, I don't think the question of excess reserves or a lot of other things would have been raised because, given what they were looking at at that point, it was a very reasonable type of decision.

Well, then, if you turn to Page 7, you have a second capacity addition schedule; and there were some real changes that occurred. The deratings changed. And, instead of looking at 720 megawatts of deratings on their units, they were looking at a lot fewer at this point in time because they had some experience with low-sulfur coal and the effects that it was having on their particular problems. You also see some purchases occurring that weren't there before. At this point in time, they were getting some concept that this Department of Energy plant or the Joppa plant would have power available.

Q. Where does that show up?

A. Under the "Megawatt Purchases" column. And this would be on-- I guess that would be November 13.

Excuse me. October 13, '78. This was their best estimate of what that purchased power would be.

One of the biggest changes was their adjustments in their peak forecasts. We've discussed that or it's been discussed on the stand in terms of the coal strike, and the biggest factor being the change in what they call their base load or non-temperature sensitive demand. So the picture changes. And you're looking, again, not at particularly enormous reserve positions.

But, then, you get back to Table IV.3. And, by February 13 of 1979, those contracts were firmed up with Joppa; and they were firmed up on an economical basis. They went in and bid and made a contract for that power.

Q. What's the length of that contract?

A. It would be three years; 1979, 1980, and 1981. So those purchases; 500, 360, and then, out of that last 290, 250 of that is off of Joppa. Fifty is either going to be off an additional combustion turbine or another purchase, if they can get it.

Q. Didn't we just hear 110 was their share?

A. No. That's the same plant, but a different contract. The 110 is their share of what's left over if the Department of Energy takes what it said it was going to take.

Now, the Department of Energy came back last summer and said, "We don't really need all that we said we

were going to take." And then negotiation processes took place, and so this is addition to that 110.

Q. So it's 110 plus 250? Is that what we're talking about in 1981?

A. Right. The 110 would already be included in the existing capacity there.

Q. And what fills the gap of that purchase by 1982, if that drops off?

A. The 350?

Q. Yeah. Where is that coming from?

A. That was the--

Q. Uncommitted purchases?

A. --uncommitted purchases. That was the concern I raised in the second part and was saying that I felt there were hearings that were needed for the first part of 1980. You've got 350 megawatts of capacity that's required in 1982.

Now, if you would turn to Page 20, I address that issue in terms of a comparison about what would happen to surplus reserves over 15 percent. That's my definition of surplus capacity.

Q. Surplus. And this means over 15 percent?

A. I simply defined it to be over 15 percent, correct.

And the two tables, the two larger boxes there, show what would happen if you met that 350. Well, at

15 percent, that gets cut down to about 250; but what would happen if you met it by purchases or if you met it with combustion turbines.

So, in 1982, you have a capacity deficit of 227, looking at 15 percent reserve. If you meet that with a purchase of 250 or with a combustion turbine of 250, in that year, you have a surplus over 15 percent of 23 megawatts.

But you go to the next year, the first year that Callaway 1 is on line, and what happens is that, if you've got purchases, then that's a one-year thing. So you drop 250. Whereas, on the other side, you've got that 250 of combustion turbines; and it's still there. And so you're talking about a difference of 250.

And you come down to 1986, and it's the same thing. You can purchase 350 megawatts or add an additional 100 CT's, and it has quite an impact on reserve after that point.

So I think it's an important issue. And I'm certainly not meaning to preempt Union Electric from going out and making the best purchase contracts. In fact, one would want to encourage them to do that.

But there's two sides to that market. If there's not a lot of purchased power available for them, perhaps there's a market for on the other side, that when they bring Callaway 1 on line, there will be people that are

needing purchases; in other words, if they can't get it in 1982, but it could be likely that they'll be able to sell it in 1983.

Q You mean, their excess even from the CT?

EXAMINER REIMNITZ: We've just run off the tape.

(Off-the-record discussion.)

EXAMINER REIMNITZ: Let's go back on the record.

BY COMMISSIONER SLAVIN:

Q Have you taken a look-- And maybe it's in here, because I haven't had a chance to study it. Have you taken a look at whether or not you believe Union Electric is doing everything possible to shed load or shed loaded peak?

A I'm not familiar at this point with the programs that Union Electric has set up for what's called load management. The Staff is proposing in a rate design case that time-of-day prices be implemented as a load management--

Q Have you looked at ripple control at all?

A No.

Q Do you plan to?

A I know the Commission plans to. The question of which division is going to look at it is another one, because when you get into that area, I think you need a lot

more engineering expertise than perhaps just economics. But I'm sure we're going to be involved in it, yes.

Q. So that essentially your conclusions have not really been based on a very thorough study of load management techniques for the Company?

A. That's correct.

Q. I have a question here in terms of your testimony starting on Page 1, which goes back to the Rush Island matter.

Is it your impression that the Rush Island units were canceled with the thought that the capacity would be met by oil-fired generation? That's what I seem to read here.

A. I guess my answer is no. There's not a one-to-one substitute between those two.

When you're looking at reserve levels for capacity requirements, that's quite a different thing from looking at the total economics of those. In this particular case, Union Electric provided us with their calculations of the comparison of those two. It's very clear from those calculations that the combustion turbines are not being substituted for the proposed Rush Island units. The proposed Rush Island units would be intermediate load; whereas, the combustion turbines would be used as peak load.

Q. Wasn't the original plan for Rush Island that

the two 600-megawatt units that were canceled were base load, not intermediate load?

A. No. There are two units at Rush Island that are base load units.

Q. Well, two were being projected, which were canceled, which I remember as base load capacity.

A. Well, my understanding was that those units were to be cycling units, which would allow the Company to bring them down to, say, 25 percent minimum running rate, rather than something like a 50 percent minimum running rate that you'd have on a normal base load unit.

So you'd have several-- As I understand cycling, there'd be several boilers; and you could bring the unit down to a much lower running rate. And that's a good characteristic for an intermediate load plan.

Q. And where did you find the basis for your conclusions on that?

A. On what?

Q. On the intent for the use of the two 600-megawatt units.

A. In the general discussion about the characteristics of those particular units.

Q. And where was the general discussion?

A. With Union Electric Company. We went up and talked to them in some detail about those.

Q At what time? At what date approximately?

A In February of this year.

Q So are you saying that there is now to be built units at Rush Island that--

A No. We're talking about the two that were canceled. To kind of put this together, once the two units at Rush Island were canceled--and you've got an eight-year lead time on coal units--you have preempted coal-fired alternatives to capacity expansion to Callaway 1. In other words, when that decision was made, then the only way that you can get additional capacity between that point and Callaway 1 coming on as a nuclear plant is through either purchases or combustion turbines. So, once that decision was made, then you've preempted these alternatives.

So, now, as you come through history and you're saying, "Do I approve whether that combustion turbine comes on or not," the economics of that decision was made way back when; because there really are no other alternatives if that combustion turbine capacity is needed. Coal is not an alternative to it. If purchases aren't available, they're not an alternative to it. And so you've got the combustion turbine. That's why I brought that up as an issue in this case, because the real economics of it was made way back then.

Q And the economics which were addressed in 19--

A '75.

Q --'75 were based on the fact that the two units that were being built were not being built as base load, according to your understanding, but were being built as some sort of a cycling unit?

A That's correct.

Q But they were each 600-megawatt units?

A That's correct.

Q And the Company in 1975 decided that it didn't need that capacity or that that capacity would be filled instead by combustion turbines?

A That's correct. Or, are you asking me of those two alternatives?

At that point in time, they decided to go with the combustion turbines rather than with the coal-fired units at Rush Island, yes.

Q And were the economics of that decision a Commission decision?

A In other words, did the Commission have a say-so in that?

No. The only way that it got raised, I think, was in a rate case as to whether the losses that the Company incurred with the planning on the Rush Island units, whether they were going to be able to recover those losses or not. That's the only way the issue came before this Commission.

But it never came before the Commission as an issue, per se, "Should we do this or this?" It was: "We did this. Now, are you going to allow us to recover that cost?"

Q. Not only "recover the cost," but "will you also approve the combustion turbine capacity subsequent to that decision," right?

A. That's correct.

Q. The Commission did approve the recovery of the investment of the Company over a five-year program, according to Mr. Sullivant's exhibit?

A. I believe that's correct.

Q. But there was nothing at that point in which the Commission was asked to address whether there would be a need for additional power?

A. That's correct. I suppose this is one of the points that I'm getting to, is that, if you don't hear these things on a timely basis, you've preempted certain alternatives and, therefore, have to accept other alternatives as they come along.

Q. Has your shop analyzed the economics of that decision?

A. Of the decision as it was made back in 1975?

We looked over the numbers that were submitted that were in Chester Sullivant's testimony, and we asked

Union Electric Company for some additional figures to back those up. And we checked over those numbers; and they did show the economics were in favor of the combustion turbines, given the information that was available at that point in time.

We did not, for example, go back and pretend like we were back at that point forecasting load and run it through some kind of simulation model to determine whether this was the optimum. We just simply looked at the two alternatives in terms of the numbers that the Company had given us.

COMMISSIONER McCARTNEY: At the time you were looking over this information, had there been a proposition made to the Commission for Callaway 1?

Callaway 1 and 2, I think, were done at the same time. I mean, did we have Callaway 1 in mind at the time you were making that decision?

WITNESS PROCTOR: I'd have to go back and check. I believe the Commission had at that time approved Callaway 1, the building of Callaway, Callaway 1 and 2.

MS. LASKA: That would be 1976.

WITNESS PROCTOR: '76. Well, then they hadn't.

COMMISSIONER McCARTNEY: They had not?

WITNESS PROCTOR: They had not.

COMMISSIONER McCARTNEY: The reason I'm asking

is--

MS. LASKA: 1975 was the hearing--

COMMISSIONER McCARTNEY: I'm not hearing you.

COMMISSIONER SLAVIN: We're trying to recall dates.

My understanding is the hearing was in--

MR. JAUDES: The hearings were in '75, I believe. But I believe the decision may have been in '76. I'm not sure.

COMMISSIONER McCARTNEY: The point that's bothering me is, with Callaway 1 coming on line, proposed to come on line, in 1983, whether there would be an actual need for the combustion turbines at all.

WITNESS PROCTOR: I believe, at that point, in looking at the forecast at that point in time, 1975, the Company was forecasting a 1,200-megawatt deficit total between where they were and bringing Callaway 1 on line. In other words, if you look at the year just prior to Callaway 1, there was a 1,200-megawatt deficit, so that you would have to fill in that deficit in some way.

Now, due to the oil embargo that took place at that time-- Their original plan was to fill it with combustion turbines. Then the oil embargo came on line, and the Company decided to go to the coal units at Rush Island. Then the oil situation seemed to clear up; and they reversed,

they changed back to the combustion turbines.

And it turns out that, if you look back on it now, that was the best decision because, instead of bringing on 1,200 megawatts of intermediate base load coal, they will only be bringing on, within 50 megawatts, the three combustion turbines that they brought on last year and these two that they're proposing now. So that's basically nothing like 1,200 megawatts.

COMMISSIONER McCARTNEY: In your opinion, if we didn't approve the combustion turbines, could we get along in '80, '81, and '82 without any additional capacity?

WITNESS PROCTOR: No. Now, if you look on Page 12 of my testimony, by 1981, with those two combustion turbines on, showing them coming on in 1980, you would have a reserve of 16.2 percent.

COMMISSIONER McCARTNEY: I see the 1980 combustion turbines, but I don't see the 16 percent.

WITNESS PROCTOR: Go down to 1981 and over to the last column.

COMMISSIONER McCARTNEY: I've got it.

WITNESS PROCTOR: And those 102 megawatts are included in that total capacity figure. So, in 1980, if nothing changes, perhaps you could delay putting those combustion turbines on by one year.

COMMISSIONER McCARTNEY: That was what I was

concerned about. Thank you.

BY COMMISSIONER SLAVIN:

Q. The original date for Callaway 1 was 1981, right?

A. Right.

Q. The original date for Rush Island 3 and 4 was 1978 and 1979?

A. Right.

Q. And, I think, if you look back on the record, the hearings for Callaway 1 were in 1974 and the decision was in 1975, so we're a year off. And the cancellation occurred simultaneously. The Rush Island cancellation came shortly after the hearings, but I think it was in 1974.

Maybe we should take a review of this entire period in order to get the record corrected.

A. Okay. And, specifically, you want to know the timing of the hearing, the date on which the decision to cancel the Rush Island units occurred, and then the date on which the Commission approved the Callaway plants?

Q. And probably you should also take a look at the record to determine whether or not, in fact, Rush Island was a base load or an intermediary load plant in its original projection.

I may be wrong, but I do-- I would be interested to know what the Company plans to do with the

Rush Island area.

Is there any plan for coal-fired units there or anything there at any point in time?

A. Not to my knowledge.

Q. Nothing has been projected to you?

A. The capacity that I've seen projected between now and Callaway 1 and Callaway 2 is combustion turbines. The placement of those combustion turbines, besides the ones that have been specified in this case, has not been specified.

Q. Do you have any problem with that strategy being in conflict with the basic philosophy of the Fuel Use Act that was approved by Congress in November?

A. In order to answer that question, I would have to do a thorough study of how those combustion turbines are really expected to be used. In other words, if they're using combustion turbines for intermediate capacity, then my answer to your question would be "It's in conflict."

If, on the other hand, after studying that, I see that they've got already enough intermediate capacity with Meramec; with perhaps some of the Venice units during the summer when they can use gas in them; with purchases that they can get on the system, on the interchange system; and that the combustion turbines are really being meant to use peak, my answer would be "No."

But, in order to answer that question, I've

got to specifically go in and model it to find out the expected usage on those units.

Q I guess that's what I was trying to get from some of my questions earlier with the Company's last witness, because there has been a marked increased use of the combustion turbine in terms of hours of operation certainly between '76 and '77.

Do you have that number for '78? Or is it '77 and '78?

What were the years? '77 and '78?

MS. LASKA: Right, '77 and '78.

COMMISSIONER McCARTNEY: Before we get off of that, I would like to ask Dr. Proctor whether or not--

First of all, how long would it take you to make such a study?

WITNESS PROCTOR: Say, if we were doing it on a historical rather than a projected basis, a historical load basis rather than a projected basis--which I would have some feelings about that it really needs to be done on a projected basis.

But, say, we looked at the question that was raised about '76 and '77, it would probably take us a good month to put the data together and to put it through.

COMMISSIONER McCARTNEY: Not in time to be a late-filed exhibit in this case?

WITNESS PROCTOR: No. If we're getting into the projected area, in my testimony I stated I feel early 1980 would be the earliest, because then you're getting into load forecasting, which I emphasized isn't just forecasting the peak load. It's forecasting the whole load duration curve.

COMMISSIONER McCARTNEY: That's too late to do us any good?

WITNESS PROCTOR: Well, it would be too late on these two combustion turbines.

BY COMMISSIONER SLAVIN:

Q But it would be useful in terms of making longer range projections on strategies for either intermediate, oil fired, or additional base load, or what have you?

A Yeah. And I think it's a very important question, sure.

COMMISSIONER SLAVIN: I think that's all I have.

COMMISSIONER McCARTNEY: I have nothing further.

EXAMINER REIMNITZ: Anything further of the witness? Any redirect?

MS. LASKA: No.

Is this an appropriate time then for me to move that our Staff Exhibit No. 1 be accepted into evidence?

EXAMINER REIMNITZ: I think it would be appropriate.

Any objections to Staff Exhibit No. 1?

MR. BARNES: No objection.

COMMISSIONER SLAVIN: Do we need any kind of a reservation for a late-filed exhibit for the additional--

MS. LASKA: Yes. I'm sorry. That would be Staff Exhibit No. 2; the review of the years of the hearing on Callaway, the actual order for the certificate, the dates of the Rush Island cancellation, the type of load for those plants that were canceled, and the use of the Rush Island area now.

COMMISSIONER SLAVIN: No. I think we got that answered, the last one.

MS. LASKA: Okay.

EXAMINER REIMNITZ: I guess we need to reserve Staff Exhibit No. 2 for that information.

Thank you, Dr. Proctor.

(Witness excused.)

EXAMINER REIMNITZ: Is there anything further to be offered?

MR. RAGSDALE: Mr. Examiner, through the course of the hearing today, there have been references made to the answers the Company provided to our office for our

interrogatories.

I don't know whether there's any desire for the Commission to have that marked as an exhibit.

COMMISSIONER McCARTNEY: I think we might. It might be of some help.

MR. RAGSDALE: I have not prepared an appropriate number of copies. If that's desired, I can have that marked as an exhibit by the Reporter and make copies for her.

I don't know if that's contrary to any other party's feelings on that or not.

MR. BARNES: We would have no objection.

EXAMINER REIMNITZ: Are you talking about just the answers, or--

MR. RAGSDALE: Yeah. I think the interrogatories themselves are part of the pleadings. And I don't know what the status of the answers really is. There were references made to the answers in questioning.

EXAMINER REIMNITZ: If it's going to help anybody, a copy of the interrogatories were in the case file; and a copy of the answers are there, too. They're already in here. So, if that satisfies everybody's desires, we will--

Is there anything else to be offered?

(No response.)

EXAMINER REIMNITZ: Any desires to execute a waiver of the reading of the transcript by the Commissioners who have not been here throughout the proceedings?

MR. BARNES: We have so indicated the waiver of the requirement.

EXAMINER REIMNITZ: Any desires to submit any briefs?

MR. BARNES: We have no desire to.

EXAMINER REIMNITZ: Very well. I take it that's unanimous.

The matter will be submitted. Thank you.

WHEREUPON, the hearing of this case was concluded.

I N D E X

E X H I B I T S

APPLICANT'S EXHIBITS:	MARKED	RECEIVED
Exhibit No. 1 Map of Location of Proposed Meramec Combustion Turbine Unit	6	144
Exhibit No. 1A Map of Location of Proposed Sioux Combustion Turbine Unit	6	144
Exhibit No. 2 Map of Proposed Unit Sites; Relationship of Proposed Units with Existing Facilities	6	144
Exhibit No. 3 Property Description, Meramec Plant	6	144
Exhibit No. 3A Property Description, Sioux Plant	6	144
Exhibit No. 4 Prepared Testimony of Fred R. Platt, Jr.	6	144
Exhibit No. 5 Prepared Testimony of L. A. Esswein	6	144
Exhibit No. 6	*	
Exhibit No. 7	*	

STAFF'S EXHIBITS:		
Exhibit No. 1 Prepared Testimony of Michael S. Proctor	144	
Exhibit No. 2	*	

* To be Late Filed.

STATE OF MISSOURI

PUBLIC SERVICE COMMISSION

At an oral argument of the Public Service Commission, held at Jefferson City, Missouri, on the 10th day of July, ... 1979.

CASE NO. EA-79-119

In the matter of the application of UNION ELECTRIC COMPANY for permission and authority to construct, operate and maintain two combustion turbine generating units in the State of Missouri.

BEFORE:

PAUL W. REIMNITZ, Presiding,
CHIEF HEARING EXAMINER.
CHARLES J. FRAAS, JR., CHAIRMAN,
LEAH B. McCARTNEY,
ALBERTA C. SLAVIN,
LARRY W. DORITY,
COMMISSIONERS.

REPORTED BY:

ROBERT L. STRATMAN

APPEARANCES:

TREVA J. HEARNE, Assistant General Counsel,
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FOR: GENERAL COUNSEL OF THE MISSOURI PUBLIC SERVICE COMMISSION.

MICHAEL F. BARNES, Attorney,
WILLIAM E. JAUDES, Attorney,
1901 Gratiot Street,
P. O. Box 149,
St. Louis, Missouri 63166,

FOR: UNION ELECTRIC COMPANY.

PURSUANT to a Session Order of the Missouri Public Service Commission, dated the 29th day of June, 1979, entitled, "ORDER SCHEDULING ORAL ARGUMENT," "ORDERED: 1." of said Session Order provided as follows: "That an oral argument in Case No. EA-79-119 be, and is, hereby scheduled to be held before the Commission beginning at 1:00 p.m., on July 10, 1979, in the Commission's hearing room on the tenth floor of the Jefferson State Office Building, Jefferson City, Missouri."; at which time, date and place the following proceedings were had:

(Written Entries of Appearance filed.)

EXAMINER REIMNITZ: Let's go on the record.

The Commission has scheduled this time this afternoon for the purpose of oral argument in Case No. EA-79-119; in the matter of the application of Union Electric Company for permission and authority to construct, operate and maintain two combustion turbine generating units in the State of Missouri.

I wish the parties would make their appearance for the record at this time.

MS. HEARNE: Treva Hearne, Assistant General Counsel, for the Public Service Commission, P. O. Box 360, Jefferson City, Missouri.

MR. BARNES: Michael Barnes and William Jaudes for Union Electric Company, Post Office Box 149, St. Louis, Missouri 63166.

EXAMINER REIMNITZ: All right. Pursuant to our discussion off of the record, it is my understanding that the parties would like to have 15 minutes each, and the Staff has requested a possible five minutes for rebuttal.

And that being the case, Ms. Hearne, why don't you begin.

MS. HEARNE: Thank you.

Union Electric Company filed an application for a certificate of convenience and necessity with this Commission on November the 20th, 1978, to build and to construct two 50-megawatt combustion turbines at the Meramec and Sioux plants, as stated in the record.

After a hearing was held in this matter, on March 27, 1979, the General Counsel of the Commission submitted a Motion to Dismiss this case. The basis for this Motion is twofold. First of all, the statutory authority of the Commission, as it has been so construed by the Courts of this State, precludes the necessity of a regulated utility returning to this Commission each time it extends its transmission lines, or facilities, with certain conditions that I shall discuss further.

And, number two, the application was not filed in a manner so that it came before this Commission in time for it to make a meaningful decision in this case. First of all, I would like to discuss the statutory authority upon

which I base this Motion. Union Electric filed its application for a certificate of convenience and necessity under the auspices of 393.170, Revised Statutes of Missouri 1969. A plain meaning of this statute would certainly induce one to believe that it would have to apply to the time it started construction on a plant; however, in the legal profession, we all know that we must look to the judicial interpretation of the statutes before us. In the case, in the Harline case, Harline vs. the Public Service Commission, Chapter 393.170 is construed. In this case, "electric plant" is defined, or is limited in its definition. This case said that a regulated utility need not return to the Commission each time it extends its transmission lines, or facilities, an extension of its facilities.

The Commission then is left with the determination of what plant means in Chapter 393, Section 393.170. At one extreme, we have the UCCM case, 562 SW2d 688. This was the case in which--the Utility Consumers Council of Missouri versus the Public Service Commission, in the matter of the Callaway plant. The Court of Appeals said, in the first paragraph of that case, "Since the plant was to be constructed beyond the regular service territory of the Company, it was necessary for the Company to apply to the Commission for a certificate of convenience and necessity, construing Section 393.170."

Within the judicial extreme of the UCCM case and the Harline transmission line case, the Commission must determine what a "new plant," that would require the Company to come before it and apply for a certificate of convenience and necessity, means. The Company itself, in its Rush Island case, Case No. 17,139, gives some clue as to what the difference between a new plant and an extension of a plant means, in that it said, the Applicant, which was Union Electric, decided to build this plant rather than add to existing plant, in order to geographically balance its generating capacity. It was referring to adding to its plant, by asking for an application for it, by asking for authority to build a combustion turbine.

At that time, the Commission had not made a determination of what was an extension of plant, as opposed to a new plant. But I think it would be within the discretion of the Commission to, at this time, determine that a combustion turbine is an extension to plant, as opposed to a base load plant, which is a new plant. But whatever the Commission determines, and wherever it draws its definitional line, I submit, the General Counsel's office submits that it would be stretching the definitions of plant to the breaking point to include combustion turbines in 393.170.

A combustion turbine is an extension of a

plant, because it runs barely 400 hours a year, on an average; it is supplemental only. No company goes out to build a combustion turbine exclusive of, it is supplementing a base load or an intermediate base load plant. In fact, the two combustion turbines in the case before you will supplement the Meramec plant and the Sioux plant, in peak load demand.

The manner in which the issue of construction of combustion turbines can come before this Commission is set out, in fact, in 386.310, Section 386.310, of the Revised Statutes of Missouri. The Commission can rule on combustion turbines as to matters of safety, and when that equipment would interfere with the equipment of other utilities. If, at any time, a complaint regarding safety or the crossing of other utility lines or, in fact, if this combustion turbine was being built out of the certified area of the Company, the issue would come before this Commission.

I have compiled a chart, that tells us that many times cases of transmission lines and combustion turbines have come before this Commission. In fact, the Counsel of the Company today may tell you that this Commission has ruled on transmission lines and combustion turbines, and granted, in fact, certificates of convenience and necessity. The transmission lines were always issues

of safety, or out of the certified area, or were dealing with other utility line crossings.

The combustion turbine cases were not as clear; however, in 1973, Missouri Power & Light came before this Commission to ask for a grant of a certificate of convenience and necessity for a combustion turbine. The majority in that case, while mentioning Harline, determined that there were special circumstances, special circumstances that might, in fact, have been justified under 386.310, as I have already mentioned. In the dissent, Commissioner Clark determined that the Commission should not rule at all because of the Harline case.

There is statutory support to, in fact, dismiss this case, as it is before the Commission. But not only, but not only should this case be dismissed, because it is unnecessarily filed before this Commission because of the Harline case, but also there is support for the dismissal of this case on the application, on the application's merits itself.

Union Electric made this decision to build this combustion turbine in 1974. As I have already stated, the application was filed with this Commission on November 20, 1978. Union Electric has the right to the independent exercise of its management authority, as stated in State ex rel. Kansas City Transit, Incorporated, vs. the Public

Service Commission, 406 SW2d 5 (Missouri 1966), and in many other cases also. This Company is responsible for whether this decision was prudent and reasonable. It is for this Commission to determine if this construction was in the best interest of the ratepayers, when this Company comes before this Commission to include this construction in rate base.

Most important, it is a fact that this Commission had no choice in its decision, when this Company came before it with this application. If the Company's energy need forecast is correct, the Company needs an addition to its energy sources within two years. What other kind of energy source could be obtained within this time period? It takes six to seven years for actual on-line commercial operation of units, such as an intermediate base load, which is probably the next larger unit, that could be replaced--that could replace a combustion turbine.

It is important that the integrity of this Commission be protected, and that it be maintained, and that the Commission not be asked to, in effect, rubber-stamp the Company's decision. Union Electric Company determined to build this combustion turbine in 1973 and '74, it is merely coming before this Commission to make certain that this construction would be included in rate base,

and this is not the time for the Commission to make this decision. In fact, under Sections 386.320, 386.250 and 393.140, the general supervisory statutes that authorize the Commission to act with regard to regulated utilities, the Commission could have just cleared a path, if this case had been filed in a timely manner, asked this Company to come before it with an energy forecast, an energy need forecast, upon which this Commission could have made a timely and meaningful decision.

The General Counsel's office then submits, and respectfully requests, that this Commission dismiss this case that is before it now, in the matter of the application of Union Electric for authority to build the combustion turbines.

EXAMINER REIMNITZ: Mr. Barnes?

MR. BARNES: May it please the Commission, I would first like to note the odd posture we are in today. On the one hand, we have the Commission's Counsel arguing to limit the Commission's jurisdiction; and, on the other hand, you have Union Electric questioning that argument. But, nevertheless, here we are today.

First of all, do we need a certificate for the combustion turbines? Let's first look at the statute, 393.170 (1) says, in part, quote, "No electrical corporation shall begin construction of an electric plant without first

having obtained the permission and approval of the Commission." There is no mention in this wording of the idea of a certificated area. The term "electric plant" has been defined in 386.020 as "all real estate, fixtures, and personal property operated, controlled, owned, used, or to be used for, or in connection with, or to facilitate the generation, transmission, distribution, sale or furnishing of electricity."

Now Counsel has made the point that a combustion turbine is just an extension to a plant, but the definition says, when used in this Chapter, includes "all fixtures" for generation.

Now a combustion turbine costs about $8 million, and it is capable of generating up to 50 megawatts. We say that is not necessarily an extension to a plant, it is a plant by itself, and it is so unitized that it can have black start capability, that a combustion turbine can furnish the power to start up a plant that has become totally dead.

Relying on the wording of these statutes, we have always sought Commission approval for constructing generating units in our certificated areas; Meramec, 1950, and since the Harline case, there has been Portage des Sioux, 1963; Labadie, 1966; Rush Island, 1971; a combustion turbine at Howard Bend in '72; and a combustion turbine at Meramec in 1973. The Commission has never questioned our duty

to seek their approval in these cases. And, in fact, did not question our application in this case until a month after the hearing was held.

Counsel mentions a 1973 Order, in which the Commission granted approval for Missouri Power & Light to construct a combustion turbine, and I am not sure whether she agrees with that Order or not, but she cited the dissent as well as the majority, but in that case, the Commission said, "Special circumstances merit the Commission's scrutiny of the combustion turbine application of Missouri Power & Light." And the special circumstances cited were noise and other environmental considerations. Well, noise and other environmental considerations are factors in every combustion turbine, including the two that are at issue today. So, if we had relied on the '73 Missouri Power & Light case, then we would certainly have filed with the Commission, under this special circumstances idea, because our combustion turbines will have noise and other environmental factors.

And just what is a "special circumstance?" The term is very broad. The Commission has cited noise and environment. Well, a special circumstance could be cost, location, or the question of whether the combustion turbines are needed at all. The term is potentially so broad that we would have had to file all of our combustion turbine

applications with the Commission, or else maybe seek a formal ruling of the Commission in each case, that no special circumstances are involved in the application.

Counsel cites the Harline case as the authority for saying, we do not have to seek a certificate for combustion turbines within our certificated area. But we believe that Counsel gives this case, perhaps, too broad a scope. In the Harline case, what was at issue was a 69 KV transmission line within Mo Pub's certificated area. And the Court, in Harline, construed a 1938 Commission Order, No. 9470, that gave Mo Pub a certificate to serve Jackson County. Now the 1938 Order, by its wording, seems to limit Mo Pub's power under the blanket certificate granted therein, to construct all necessary transmission and distribution systems. The text of the Order mentioned only transmission and distribution systems, lines and facilities. It never mentions generating facilities in the '38 Order.

And, so, we believe the issue before the Court in Harline was limited to a consideration of a 69 KV transmission line. Now we think that the Harline decision is right; that is, the Court in Harline had the issue before it, can Mo Pub construct a 69 KV transmission line? They looked at the 1938 Order, which gave Mo Pub blanket authority to construct all necessary transmission

and distribution lines within its certificated area. But neither the '38 Order, nor Harline mentions generating facilities and combustion turbines, or generating facilities. We do not believe that Harline gives us the authority to construct generating units within our certificated area.

I would like to now address the issue of timeliness of our application, that Counsel has brought up. Counsel has noted that in '75, we committed to construct these two combustion turbines. That is not entirely right. If I can go outside of the record a little bit, in '75, we planned to build 28 combustion turbines through 1981. But it turns out we will build only five of those 28, and that includes the two that are at issue today. The number has been reduced as circumstances have changed. We carefully consider a number of past, present and future factors before we definitely decide to build a combustion turbine at a specific time, at a specific place.

The Commission Counsel seems to think that we should have come in in 1975 to get approval for all of these combustion turbines, but if we had, then I think our credibility, as well as the Commission's credibility, might have been damaged, if we were to seek approval for 28 combustion turbines, and then build only five. It would be a waste of both our time, and expense, and manpower, and yours, too. We believe that it is better to do as we did,

and wait until circumstances come together and produce a need for specific combustion turbines, at specific times.

Another factor is the time limits of 393.170. Section 3 of the statutes says, "Unless exercised within a period of two years from the grant thereof, authority conferred by such certificate of convenience and necessity, issued by the Commission, shall be null and void."

Now if we had received approval in '75 from the Commission for all of these combustion turbines, including the two in our present situation, they would have had to have been constructed by 1977, even though some of them would not be ready for operation until four years later, in 1981, such as the two here. Surely the Commission does not want this kind of situation.

General Counsel's argument ignores another factor; namely, that combustion turbines are so attractive because they have a relatively short lead time of two years, and this short lead time permits this planning flexibility, and is a major advantage of combustion turbines. We decided to wait to contract for these two combustion turbines until we were absolutely sure we would need them. We did not order them until we had weighed such factors as the availability of purchased power, actual and forecast peak demands, and the air pollution laws, another environmental situation.

Counsel has said that the timing of our filing has given the Commission the fairly limited alternative, which caused the absence of any opportunity for your meaningful judgment regarding the type of units to be constructed. I do not think the Commission would want to consider an application for combustion turbines that were just being, let's say, seriously considered by Union Electric. We could be accused of seeking an advisory opinion from the Commission prior to firmly contracting for the combustion turbine.

Now the Staff, in this case, I thought did a rather exhaustive analysis of our plans, and of the alternatives, and presented their findings at a full day's hearing last March. The rather voluminous record in this case indicates that we believe that the Staff had an opportunity to make a meaningful judgment in this matter.

In conclusion, I would like to sum up and say that we believe that our application was timely. If the Commission goes along with our legal arguments, and our statutory readings, and decides that they have jurisdiction to decide the matter, then we will await the outcome of that decision. We have gone in, based upon our reading of the case law and the statutes, we have pursued what we believe is a prudent business and legal course. We have come to you for permission to build these construction certificates. We do not want to have constructed this

$18 million worth of equipment, or be in the process of constructing them, and then have somebody come along and legally challenge us, our construction, because they say that we did not get Commission approval.

Finally, I would like to say that if the Commission does grant the Motion to Dismiss, then we will look forward to that Commission Order, a written Commission Order, which says that the Commission does not have jurisdiction when we want to build generating units in our certificated area, and in the future you will no longer see us, when we decide to build a generating unit within our certificated area.

Thank you very much.

COMMISSIONER McCARTNEY: Mr. Barnes, may I ask you something?

MR. BARNES: Sure.

COMMISSIONER McCARTNEY: Have either of the combustion turbines already been ordered, or has the building started?

MR. BARNES: The combustion turbines were ordered, were final ordered last August; construction has not begun. In fact, as we interpret the law, that we cannot begin construction until we have received a Commission determination.

COMMISSION McCARTNEY: May I ask how you

relate to the fact that you have ordered them already, prior to the decision of this Commission?

MR. BARNES: Yes. It takes about, from the time we place the order, due to the time--from that date, it takes about a year to fabricate these combustion turbines, at a plant somewhere else; that is, they are assembled to a certain degree, and it takes about a year.

COMMISSIONER McCARTNEY: Did it occur to you that the Commission had not given its permission?

MR. BARNES: Yes; it certainly did.

COMMISSIONER McCARTNEY: I suppose under such circumstances you would have been prepared to deal with the cost that you have incurred by ordering them for usage eventually?

MR. BARNES: You mean cost, as far as the rate base goes?

COMMISSIONER McCARTNEY: If the Commission had not--yes.

MR. BARNES: Or our own contract costs, you mean?

COMMISSIONER McCARTNEY: Yes.

MR. BARNES: In such a case, if the Commission had ruled against us, then we would have dealt with the combustion turbine manufacturer according to the contracts we have with him, which probably has some kind of penalty

provision. And I am not quite sure what would have happened to rate base, but that would have also had to have been considered.

COMMISSIONER McCARTNEY: Thank you.

COMMISSIONER SLAVIN: I have a question and a clarification. You stated that your original plan in 1975 was to construct 28 combustion turbines, is that correct?

MR. BARNES: Yes. That was what the situation looked like in '75, after Rush 1 and 2, or Rush 3 and 4 were constructed.

COMMISSIONER SLAVIN: And you made a decision at that time not to apply for permission to construct any of them,--

MR. BARNES: Yes.

COMMISSIONER SLAVIN: --is that correct?

MR. BARNES: Yes; that is correct. We decided to go in as the decisions became firm, as to when and where to build them.

COMMISSIONER SLAVIN: And your reason for that is that you must begin construction two years after you receive permission to construct them, is that correct?

MR. BARNES: That is certainly one of the prime considerations; yes, ma'am.

COMMISSIONER SLAVIN: And that you feel is a

restriction of the statute?

MR. BARNES: Yes. We have to exercise our authority within two years after you give it. And we interpret the term "exercise authority" is to at least have a substantial start on construction within those two years.

COMMISSIONER SLAVIN: Now are you construing ordering the combustion turbine as a substantial start?

MR. BARNES: No. We interpret start of construction or exercising authority as actually starting to construct the combustion turbine at the power plant site.

COMMISSIONER SLAVIN: And, so, that would involve some work at the construction site, and ordering a turbine would not satisfy that requirement of the law then?

MR. BARNES: No. We have never interpreted it that way, and I am not sure the Commission would want us to interpret it that way.

COMMISSIONER SLAVIN: No; I am just trying to figure out what your thinking is. If you were to apply in 1975, when you originally thought that you would need 28 units, could you not have proposed a construction schedule?

MR. BARNES: Yes. I am sure we had one in mind then, but the facts still would have been that some of the turbines would not actually be needed until 1981, and then how to get over that two-year limit that we have to start construction after your '75 decision.

COMMISSIONER SLAVIN: All right. Thank you.

EXAMINER REIMNITZ: Ms. Hearne?

MS. HEARNE: Yes. I would like to have a couple of quick points. As to the difference between an area certificate and a line certificate, the General Counsel's office has always held that an area certificate starts running after two years, whereas a line certificate or an individual certificate does not, which I think will alleviate the problem which has been brought up.

COMMISSIONER SLAVIN: Would you just take a moment and define the area certificate and a line certificate for us?

MS. HEARNE: The area certificate is the certificate for an area to serve, and that is when a company begins to serve an area, under 393.170. A line certificate--

COMMISSIONER SLAVIN: A geographical area?

MS. HEARNE: A geographical area. A line certificate is a line, a transmission line extending from one point to another. And that has been the interpretation of the General Counsel's office when those two years apply.

COMMISSIONER SLAVIN: I think I need further clarification. The Company is not asking to extend its certificated area,--

MS. HEARNE: No.

COMMISSIONER SLAVIN: --in terms of service?

MS. HEARNE: No.

COMMISSIONER SLAVIN: Is that the kind of area that you are talking about?

MS. HEARNE: When, for instance, a new company came in to operate within a certificated area, they would apply for a certificate of convenience and necessity. For instance, if Union Electric had begun in 1961,--

COMMISSIONER SLAVIN: Uh-huh.

MS. HEARNE: --it would have come to this Commission and said, "Can we serve this area" and not the area certificate. A line certificate is when a company has already been serving an area for 20 years, or something, and it is going to extend beyond its area, and so they would ask for a line certificate.

COMMISSIONER SLAVIN: And it is in that construction that you are talking about a transmission line?

MS. HEARNE: For instance,--

COMMISSIONER SLAVIN: How does a combustion turbine fit into your advice--

MS. HEARNE: I maintain that a certificate is not necessary for a combustion turbine, unless it is outside of their area, their certificated area, because it is an extension of a facility.

There were two other points that--there were

two other points. The Company's Counsel has applied the definition of an electric plant, from Chapter 386, to a section in Chapter 389--393, and I believe that we must look to the Harline case to interpret 393, in this case, when Chapter 386 includes the definition that has been referred to.

Also, about Commission precedent. We have a Missouri case, Mitchell v. the City of Springfield, 410 SW2d 585, the Springfield Appeals Court in 1966, and we have several Federal cases, of which I will only cite one, the NLRB vs. Sunnyland Packing Company, 557 Fed2d, 1157 (1977), which says that an administrative body, as long as it explains its reasons, is not held to its precedent, but may change its decision from a prior case, or may change its decision-making from the precedent that it has set, as long as it explains itself. It is not like a judicial court, that is held to the precedent that has been established. I think this is a well known administrative fact of law.

I would like once again to restate the conclusion that I have come to, that the general supervisory statutes of this Commission give it the opportunity to ask this Company to come before it at a time when a meaningful decision can be made. When this Company is assimilating the facts, and an energy forecast, the kind of construction that will be required to serve its customers, if the Company wanted

to come before the Commission in that instance, that would be a meaningful decision, and not on a case-by-case basis with each extension of facilities.

EXAMINER REIMNITZ: Ms. Hearne,--

MS. HEARNE: Yes, sir.

EXAMINER REIMNITZ: --does the position that you are espousing at this time apply only to combustion turbines being constructed in certificated areas, or all types of generating facilities?

MS. HEARNE: The Commission, in its discretion, can determine what the definition of electric plants is. I am only dealing with this case, and I am saying that combustion turbines, in this instance, is an extension of a facility within its certified area and does not require an additional certificate of convenience and necessity. It is not--the decision is not before this Commission, at this time, to determine whether a generating unit, such as a base load unit, does fall within this definition.

EXAMINER REIMNITZ: So, you are not trying to say that it applies, your position would apply to all generating units, or--

MS. HEARNE: I have only the dicta in the UCCM case, that refers to a Callaway unit.

EXAMINER REIMNITZ: Okay. Have you any suggestions or recommendations to the Commission as to what

types of occurrences or circumstances might make a difference as to whether it should or should not--I am thinking in terms of this case, where we have got--

MS. HEARNE: Uh-huh.

EXAMINER REIMNITZ: --a request for a certificate for a peaking unit.

MS. HEARNE: Okay.

EXAMINER REIMNITZ: I mean, how do we analyze these things, so they are necessary or not necessary?

MS. HEARNE: In Section 386.310, the Commission has power, after hearing, or by its own motion, to require the performance of any act which the health or safety of the customers or the public may demand. I believe this is broad enough authority, that the circumstances come before the Commission, at any time construction or other activity of a utility, the safety, or other circumstances that would affect the health or safety of the Public, would give this Commission authority to bring this case before them, or have it brought before them by means of a complaint.

In the Missouri Power & Light case, which we spoke of earlier, about the combustion turbine, it was the citizens in the Cole County area who were most concerned about this combustion turbine being in close proximity to their neighborhood, who brought this to the attention and intervened in the case, and wanted a hearing before the

Commission on certain issues.

COMMISSIONER SLAVIN: Is this your response to the Company's position, that they--if the Commission would rule as you are requesting, that we would never see them again?

MS. HEARNE: I feel that under Section 386.310, that the Commission, upon its own motion, or if there were complaints filed with the Commission, that certainly construction by the Company could come before the Commission.

COMMISSIONER SLAVIN: Does the burden of proof shift under those circumstances?

MS. HEARNE: It might. But the Commission, on its own motion, it would not; but complaints might.

COMMISSIONER SLAVIN: So that if the Commission were going to review, and the Company construed that it no longer had an obligation to bring any of its construction programs before the Commission --

MS. HEARNE: Yes.

COMMISSIONER SLAVIN: --for approval, then for the Commission to act, we would have to await a complaint or initiate--

MS. HEARNE: Or upon our own motion; yes.

COMMISSIONER SLAVIN: --our own investigation, is that correct?

MS. HEARNE: Or, on the other hand, using your

general supervisory statutes, have this Company come before this Commission with a ten-year plan, energy forecast and construction plan.

COMMISSIONER SLAVIN: Again, that would be at the Commission's initiative?

MS. HEARNE: Yes.

EXAMINER REIMNITZ: Anything further?

(No response.)

EXAMINER REIMNITZ: Thank you.

This oral argument will be concluded.

WHEREUPON, the hearing of this oral argument was concluded.
