NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF:

PUBLIC MEETING

DISCUSSION OF POWER NEEDS OF

PENNSYLVANIA-NEW JERSEY- MARYLAND

Place - Washington, D. C.

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

PUBLIC MEETING

DISCUSSION OF POWER NEEDS OF

PENNSYLVANIA-NEW JERSEY-MARYLAND

Room 1130
1717 H Street, N. W.
Washington, D. C.

Thursday, 14 June 1979

The Commission met, pursuant to notice, at 2:45 p.m.

BEFORE:

DR. JOSEPH M. HENDRIE, Chairman

VICTOR GILINSKY, Commissioner

RICHARD T. KENNEDY, Commissioner

PETER A. BRADFORD, Commissioner

JOHN F. AHEARNE, Commissioner

PRESENT:

Messrs. Haines, Como, Fowlkes, Hoyle, and Bickwit.

P R O C E E D I N G S

CHAIRMAN HENDRIE: If we could come to order, the Commission meets this afternoon to hear discussions of the power needs in the Pennsylvania-New Jersey-Maryland area; and, in sort of two relays I think, we will start out and have a brief statement from Bill Lindsay from the Federal Energy Regulatory Commission.

And let's see, Frank, are you going to -- have you got a thing you'd like to say to us?

MR. HAINES: Well, sir, we have written up the answers to the questions that we think you're interested in. We can either give them to you or speak to it.

CHAIRMAN HENDRIE: Well, why don't we see if Commissioners have questions, and others -- let's see, Frank and Bill -- perhaps we can introduce the gentlemen at the table.

MR. HAINES: Yes, sir, this is Anthony Como, who works in the Power Supply Planning Branch with me.

MR. FOWLKES: I'm Ed Fowlkes with the FERC. I'm in the Special Investigation Branch.

CHAIRMAN HENDRIE: Glad to have you with us, Ed. Why don't you go ahead.

MR. LINDSAY: Thank you, Mr. Chairman.

It's my understanding that our concern here today is with generating capacity within the PJM pool, and that you

would like to hear a little bit about the PJM pool, which is the largest power pool in the United States. Its members consist of 10 investor-owned signatories -- or eight, if you count the two GPU members as one, plus four associate members, co-ops in public systems.

It covers a wide geographic area, including three-fourths of Pennsylvania, most of New Jersey, a large part of Maryland, and small parts of -- well, all of the District of Columbia, and a small part of Virginia.

It's load in 1979 -- it's peak load is estimated to be 33,320 megawatts. It member systems serve over 7 million customers, a population -- an area having a population of over 21 million people.

It's a centrally dispatched power pool; planning for the pool is well coordinated among the members of the pool It is heavily interconnected with systems around the pool, including the Allegheny Power System and New York Power Pool, Virginia Electric and Power Company, Cleveland Electric Illuminating Company.

It operates upon the basis of a power-pooling agreement, which is a contract among the signatories to the pool, which sets forth the mutual understandings among them for the structure and operation of the pool.

The pool consists of a series of committees: a management committee, a planning committee, a planning and

engineering committee, an operating committee, all of which include in it representation from the various memberships.

The pooling agreement establishes principles of coordinating planning and operation, establishes generating capacity obligation and transmission obligations, establishes rates for capacity deficiencies and rates for the interchange of energy within the pool and provides for arrangements with non-pool members, PJM versus others.

It has a series of interconnection agreements, interchange agreements with all of the major systems with which it is interconnected which I mentioned.

The pooling agreement itself is regulated by the Federal Energy Regulatory Commission. We treat the pooling agreement as a rate schedule, such that we regulate not only the rates, but all of the terms and conditions of the pooling agreement.

The rates, however, that are charged by the individual members of the pool, if they are retail rates, they're regulated by the state commissions; if they are rates to wholesale customers -- municipals, co-ops, and whatnot -- they are regulated by us.

As of the end of 1978, the nuclear proportion of the installed capacity of the pool was approximately 15.4 percent, as compared with 35.2 percent coal, about 42 -- 43 percent oil, and the rest natural gas, a small amount of natural gas, and

about 5.7 percent hydro.

From the standpoint of electrical energy generation projected for 1979, nuclear represents about 28-1/2 percent, coal represents 49.3 percent, oil roughly 20 percent, and the rest, natural gas and hydro.

The pool engages, as I mentioned, in interchange with other systems that surround it -- it serves as the link between the Northeast -- that is, New York and New England -- and the rest of the United States.

In order for power to pass through there, pass from New England and New York to the rest of the United States, it must go through PJM unless it can pass through Canada.

Much of the interchange that's going on at the present time is in the form of economy energy, purchases on the part of the PJM pool from systems to the west that generate with coal, which has the effect of displacing oil fire generation on the PJM system.

Generally those transactions take place on a split savings basis. The decremental cost of PJM -- cost as compared with the incremental cost of the coal generator and the coal generator charges it's own cost, plus half the difference.

With respect to the resources of th PJM pool, it's operable install capacity, after schedule and maintenance, for the summer of 1979, is approximately 41,450 megawatts -- 41,457 megawatts.

The projected load for the summer of '79 is 33,320 megawatts, so that the installed reserve is 8137 megawatts, or percent reserved -- that is, percent reserved, as compared with projected peak load of 24.4 percent. That's without Salem No. 2. It is also without TM 1 and 2, and without Bergen No. 1, without Eddystone No. 1 -- and, as I said, without Salem No. 2, as deducted from 200 megawatts of schedule maintenance.

The Salem, in the reserve percentage, would go to 27.8 percent. The required reserve on the PJM system is a number which is calculated upon the basis of load probability studies. And as I understand it, the pool's calculations, based upon loss-of-load probability of one day in 10 years, is 25.5 percent.

If you accept that as an appropriate reserve for the pool, then it's apparent that the reserves that the pool has for 1979 are certainly in the general order of magnitude of that percentage, so that the problem here -- the absence of Salem No. 2 cannot be said to clearly put the pool into a deficient position, although it tends to be on the edge of one day in 10-year probability estimate.

COMMISSIONER AHEARNE: Bill, do you assume the Beaver Valley in --

MR. LINDSAY: Is Beaver Valley in? Beaver Valley is part of the Duquesne; it's not part of PJM.

COMMISSIONER AHEARNE: Okay.

MR. LINDSAY: The numbers for the summer of 1980 that I have are not greatly different from percent reserves, are not greatly different from those of 1979, so there's a general proposition, it seems to me, it is fair to say the problem with Salem No. 2 is not so much a reliability problem as it is a problem of economics, a problem of the loss of generation, which is exceeding the low-cost generation. This is an area that I believe Frank Haines will discuss in some detail.

CHAIRMAN HENDRIE: Thank you.

COMMISSIONER AHEARNE: Thank you, Bill.

COMMISSIONER GILINSKY: Thank you.

CHAIRMAN HENDRIE: Would you go back and tell me again -- I missed a number. What is present installed generating capacity in the pool?

MR. LINDSAY: The present installed generating capacity, if you -- well, it's 45,047 megawatts.

If you subtract out TM 1 and 2, 1656 megawatts, Bergen No. 1, 287;Eddystone No.1, 332; and Salem No. 2, 1115 -- my number included Salem -- you get an operable, installed capacity of 41,657.

And then, as I understand it, there's 200 megawatts of schedule maintenance, which reduces that to 41,457.

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CHAIRMAN HENDRIE: Thank you.

Okay, let's see -- Frank, you supplied us with a sheet?

MR. HAINES: Yes, sir. We addressed three questions, one of which Mr. Lindsay has covered, the smallest part of it is the reserved margins.

Two points we would like to cover are, one, our best estimate based on the data available to us on the replacement costs of the energy, and we have calculated them for the months of September, October, and November.

We have done this by making assumptions for the heat rate, the capacity, and the fuel costs for Salem 2 and from average land values for PJM -- would give us the replacement costs of the oil that would be otherwise burned -- actually the system costs, which in this case is oil. And these are quoted on my sheet.

The fuel cost is given in million BTUs per hour, is roughly 4.7 mils per kilowatt hour; and that's the cost of the nuclear fuel that would be used. And the replacement cost, which is either dollars per million Btu per million kilowatt hour or mils per kilowatt hour, is 28 mils, 31 mils, and 29 mils, respectively, in September, October, and November.

And these particular values are the values we determine by talking to PJM system people. We observe that they are not unlike numbers we have seen in the past for other

calculations we have done at earlier times on the PJM and other systems.

We observed that these numbers have to be found out for this situation, because we have TM 1 and 2 down. Therefore, our estimate for the costs of September, October, November are respectively $441,000 per day for September, 498,000 for October, and 468,- for November. This is caused by the load variations and the small amount of changes in capacity.

The other point that we would like to make is the replacement, the source of the replacement energy. Our best estimate, both from examining the capacity that's on this system and which is confirmed by what PJM is telling us, is -- that it is oil burned, and we believe that it will be 37,000 barrels per day.

We also -- just to add a little background to this -- looked up the 20 largest oil deliveries to electric utilities in the United States and observed that of those 20, five of them are on the PJM system. PJM system is a very heavy oil-burning system.

COMMISSIONER AHEARNE: Your assumption then, Frank, is rather than buying coal-fired power from the West, that they would use their excess oil capacity. Is that correct?

MR. HAINES: Our understanding is based on the way the system is now running and what the people that we have at Valley Forge would tell us, which is that the coal system

is already exporting -- the system is using as much coal as it can already. Therefore, the replacement would be oil.

COMMISSIONER AHEARNE: I understand, from Bill's numbers, that the replacement capacity they have is oil.

My question is: Is it your assumption, rather than importing coal-generated electricity, that they would instead use their own excess oil capacity?

MR. HAINES: We would expect them to use the economic capacity. Our understanding is that's an oil burner. In other words, if there is coal available, it is coming into the system. It would continue. We understand the system to be operating on economics; and on economics, it's calculating oil as replacement. If there's coal that's cheaper that's available to the system, we anticipate that it will continue to come in, that it is an economic system. That's our understanding.

Our Valley Forge operation would suggest that this is the case.

COMMISSIONER AHEARNE: So you're saying that the stage they are now in -- that they are importing a level that it would be cheaper for them to burn oil than it would be to try to get more in coal imported electricity.

MR. HAINES: No, we understand that all the coal that's available being used on the system, either it's being brought in, but it is using its maximum available coal

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from any place it can get it.

I don't mean to quibble with you.

COMMISSIONER KENNEDY: He's talking about something else. He's talking about wheeling in additional power that is coal generated from outside the system.

MR. HAINES: We would not think that is available base load.

MR. LINDSAY: They would continue to bring in pretty much what they bring in now. This stuff would replace oil just as -- just replace additional oil fire generation, in addition to what the coal is already displacing.

Understand, they're only bringing in coal-fired generation of maybe what -- 14-, 1500 megawatts? -- which apparently is a very high percentage of what is possible for them to bring in economically. That is, there are constraints on the transmission. There are constraints on what's available out there, and our understanding is they are bringing in most of what can be brought in.

COMMISSIONER AHEARNE: And they couldn't bring in any more, you are saying? Any large amounts?

MR. LINDSAY: If they're going to bring in more, they're going to have to both find more, and either reduce the reliability on the transmission or increase the capability of the transmission, or something of that sort.

MR. HAINES: We've looked as far West as Commonwealth

Edison, and we have asked, for different purposes, what coal is available and what they can do with coal; and what we find out is the coal that's available when people don't need it -- in other words, the coal is base loaded, and if they want to export, they're going to try to trade to get somebody else's coal when the load is down. That's sort of the case all the way across the Mississippi River.

COMMISSIONER BRADFORD: How did you decide 70 percent was the right capacity factor?

MR. HAINES: We feel that that is a proper target for Salem 2.

COMMISSIONER BRADFORD: For any unit in its first month's operation?

MR. HAINES: When the system is up and running? That is the number that we would use, 70 percent.

COMMISSIONER BRADFORD: Right from day one?

MR. HAINES: No, we wouldn't think that day one is September or October necessarily. What we're saying is in the months of when that system hits an operational period, when it first comes on -- obviously, it's coming on, but there is some point in there that we're not able to estimate exactly when that unit will come up, and people will try to generate and get it up and run.

And when it runs in that mode, that's the replacement cost. Up until that time, I wouldn't think that would be

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replacement costs.

COMMISSIONER BRADFORD: Do you know whether, for nuclear units of this size, during their first six months of operation, 70 percent is the average?

MR. HAINES: We would think that the unit -- first six months of operation would not be from the day it got a core load. We would think at some point it comes on-line; we would think the core load is down -- would bring the operation into the fifth month, or the sixth month it would come up and start to run.

COMMISSIONER BRADFORD: You are using 70 percent here for the months of September, October, November.

MR. HAINES: We're saying if the power plant -- if the operators of the power plant feel that it can be brought up and put on-line for the month that it runs, or for whatever part of the month that it runs, that that's appropriate.

We're not saying that it's an annual capacity factor. Our belief is, if we understand reactors, that they run and they get brought down; they run, they get brought down. And the time that they are up we chose to use the 70 percent capacity factor for that time frame. We don't think it's 100 percent.

COMMISSIONER BRADFORD: But are you saying then that during these months you also anticipate days when it will be at zero?

MR. HAINES: We would think that a new power plant would be brought down and come up.

COMMISSIONER BRADFORD: So that 70 percent wouldn't in fact be a monthly capacity factor?

MR. HAINES: I don't know that I want to say what a monthly capacity factor is.

COMMISSIONER BRADFORD: But it sounds as though 70 percent is the number you are using for the days when it's working.

MR. HAINES: That is right.

COMMISSIONER BRADFORD: And so the monthly figure could only be lower than 70.

MR. HAINES: If it ran more than 70 percent during some part of the month, we would just assume it's an average 70 percent. It was an assumption on our part. We observed that it's about 4-7/10 cents for the nuclear, and the cheapest alternative is 29 cents, so that there's a great difference in price. And whether that 4.7 is 5 or 4, it's still a very big difference.

The the big difference is not whether the power plant is up or not, but whether or not the replacement power is at a certain price.

COMMISSIONER BRADFORD: Well, but if the right capacity factor were -- the monthly average were to turn out to be 30 percent, instead of 70 percent, it would change these

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numbers a lot, wouldn't it?

MR. HAINES: Yes, it would.

COMMISSIONER BRADFORD: Have you made any calculation to assume, in the way the rate setting normally works, when the plant comes into operation, that will be the first time it goes in the rate base -- that is, at the moment the customers aren't paying the capacity costs?

MR. HAINES: We have not addressed the issue of rates at all.

COMMISSIONER BRADFORD: So that these figures --

MR. LINDSAY: I can tell you a little bit about that. The two principal owners of this plant are Public Service Electric and Gas, located in New Jersey, and Philadelphia Electric, located in Pennsylvania.

We checked with the state commissions of those two states, and my understanding is that Pennsylvania doesn't have any of this in the rate base, but New Jersey does. So presumably the rate payers in Pennsylvania won't be paying anything until it comes on the line, at which time they'll pay the full cost. The rate payers in New Jersey are paying for it already.

COMMISSIONER BRADFORD: The full cost or some part of it?

MR. LINDSAY: They say that they're full share -- they're told that they're paying their full share.

COMMISSIONER BRADFORD: Whatever that means.

MR. LINDSAY: Whatever that may be.

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COMMISSIONER BRADFORD: But then at least as to Pennsylvania, it sounds as though these savings are 441, 498, and 468. You would need to subtract from that the capital costs that would then come into the rate base.

MR. LINDSAY: It depends on whether you're talking about savings to the rate payers, or the saving to the company. The company, of course -- it's a large saving. The rate payer -- it's not so large.

If -- and depending upon how that eventually gets handled, if it doesn't go in the rate base, they're going to continue to accumulate AFUDC so that the rates later on would higher; yes.

MR. HAINES: But the cost that we're quoting is the cost that drops off the system when the oil plant drops off the system. That's where the savings is.

When the oil plant comes off the system, that cost is avoided.

COMMISSIONER BRADFOR. The fuel cost is avoide

MR. HAINES: Yes.

COMMISSIONER BRADFORD: But the capital cost of the fuel plant would not be reflected in the rate.

MR. HAINES: This does not address capital costs.

COMMISSIONER GILINSKY: I'm not sure I understood your answer to Commissioner Bradford. Is 70 percent, in fact, a reasonable capacity factor to use on the basis of historical

experience, with historical plants?

MR. HAINES: I would think, on a month-by-month basis, once the plant is working and it has been turned over for dispatch -- on a month-by-month basis, that would not be a -- that wo ld not be a particularly bad figure.

What we would think would happen is on a yearly basis there would be times when the plant would be brought back down, and the overall annual capacity factor would stay up. We would think it would stay up there, probably be as good a number as any we would use.

COMMISSIONER GILINSKY: But does that reflect looking at our experience of start-up of plants, or is it simply an average figure that you're familiar with for capacity factors of nuclear plants?

MR. HAINES: We have used a wide range of numbers for capacity factors in nuclear plants, depending upon the time frame that we're addressing. None of the things we do, as we go back and look at the NRC gray book, when we talk about power plants and find out what the record is, and very often use that historical track record -- good or bad, we have observed the nuclear plants in New England, many of them have capacity factors like this that are mature for the long run.

COMMISSIONER GILINSKY: I know that.

I just wondered if you felt the first several months of operation --

MR. HAINES: I think is the number I would think would be appropriate on a month-by-month basis, but I think there would be some months down the road where it's brought down so that it stays down sometime; there's no more 70 percent --

COMMISSIONER GILINSKY: We all understand that this is an estimate. It could be higher; it could be lower.

The question is: Over these months, is that a reasonable --

MR. HAINES: I would think if the power plant was brought up and turned over to the dispatcher to use --

COMMISSIONER BRADFORD: You're sort of passing each other, aren't you?

When would you expect that to happen?

MR. HAINES: In about six months.

COMMISSIONER BRADFORD: Sixth month from the time fully loaded?

MR. HAINES: No, from the time the Commission says go.

COMMISSIONER BRADFORD: If we said go today, the sixth month would be November. And the savings you're quoting are for September, October, Novemi :

MR. HAINES: We wrote numbers for September, October, November, because we don't know how well they're going to do. We observed this is one of the few power plants where the

schedule has never slipped in the times we looked at it.

We were surprised. We sent back to see how many times the schedule has slipped, and they held their own.

So I'm not about to say that these gents can't deliver in October or September.

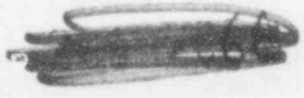
COMMISSIONER BRADFORD: But they haven't themselves said this a target.

MR. HAINES: We haven't discussed this with the owners?

MR. FOWLKES: I think I might clarify something here. We're looking at system-for-system planning purposes. A new plant like this -- in your programs, you would probably put in a higher forced outage rate, representing that unit is new unit or an immature unit.

However, over the long run -- in terms of including that unit for planning purposes in the program, you would probably use the capacity factor that might come out to around 70 percent, representing the fact that you now have a mature forced outage rate.

However, once this unit comes into operation, it's my understanding that PJM will run this unit as a base-load unit; and it would use this unit in its economic dispatch, such that it would generally have a low increment of cost and therefore be operating a hundred percent unless there was some failure of the unit, so that on a normal day-to-day basis, the



unit will be running all the time.

So when you talk about immature, forced outage rates, that's generally in terms of a planning program or a planning activity.

But in terms of your day-to-day operation, this unit would be dispatched when it's available; unless there's some mechanical failure or other failure, it will be on the line a hundred percent, because it's among the lowest cost capacity within PJM.

COMMISSIONER BRADFORD: But you're talking really about the period of time once the start-up testing is completed and it's become commercial.

Before that, as they're going through testing, they're just going to be -- have to be times when we they can't be operating at anything like a hundred percent.

MR. FOWLKES: That's correct, but they will be other times -- periods, normal pretest, precommercial period where the plant might be at a hundred percent. It might be for a day or for two days.

COMMISSIONER BRADFORD: I guess I'd have to say I'd be pretty surprised though if it averaged out at 70 percent during these particular months.

MR. FOWLKES: Oh, in the pre-test period, you would probably be correct. We would probably be lower for the whole period, the three-month period.

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COMMISSIONER BRADFORD: I see.

MR. FOWLKES: Another thing, on the imports, any time the incremental cost within PJM is higher than an incremental cost on another system, for example ECAR to the West, which is a coal-based system, and ECAR has capacity that it can sell to PJM, they would, of course, ship that energy to PJM and PJM would contract to purchase it because it would be more economical for their customers.

And we got an estimate from PJM indicating that on the average it would expect to be importing somewhere between 5 and 6 percent of their supply requirements for using all different types of rate schedules.

One might be emergency of some kind, some of it might be economy and some might be some firm schedule for power. And they normally have a scheduled import of 180 megawatts from PASNY and the New York Power supply.

And that was included in our capability.

CHAIRMAN HENDRIE: Gentlemen, I think it would be helpful if we went forward with the second part.

Th ee gentlemen, hopefully, will be available for questions.

COMMISSIONER AHEARNE: I have some questions. ARe they coming back?

CHAIRMAN HENDRIE: They are going to be right over here.

COMMISSIONER AHEARNE: I just wanted to straighten out a few sets of numbers.

CHAIRMAN HENDRIE: Thank you very much.

COMMISSIONER AHEARNE: Don't disappear.

(Whereupon, at 3:15 p.m., the hearing was adjourned.)

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