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Re: Midland Suspension Hearing

Gentlemen:

I am responding to the Board's request for information with regard to the following three points:

1. To give the Board an idea of the number of persons involved in providing inputs to Mr. Heins, which he utilized in his own studies, the results of which are related in his testimony and exhibits.

2. To give the Board our views on the best procedure for informing the Board more fully as to the underlying methods and assumptions which resulted in the inputs utilized by Mr. Heins and Mr. Keeley in the studies which are related in their testimony and exhibits.

3. To list those open matters which require a decision by the Board.

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Before proceeding with a discussion of points 1 and 2, however, there are a few points which I would like to make. Cases such as the one before this Board are somewhat unique in that they do not present questions solely of "who did what to whom" where the critical factual question may be what a witness saw or did himself and what he knows "of his own knowledge" or what is simply hearsay. The questions in this case with regard to Mr. Heins, for example, relate to whether a corporation's planning for the future is reasonable and realistic; whether its analyses and projections of future generating requirements and energy sales are reasonable, given the current state of the art for the making of such projections and the currently available facts; and whether contingencies planned for, and assumptions made as to the future, are reasonable. Not that such assumptions and projections are exact, for no one can hope to be exact about the future, but that they are reasonable projections of what is likely to happen.

In order to make such far-reaching studies, which include projections of what the state of the economy is likely to be during the next ten years, how life-styles are likely to change, population growth estimates, etc., a corporation must employ a variety of persons who keep track of historical and recent trends with regard to specific indicators and have the knowledge and experience to evaluate those trends and what they portend for the future. Inputs for such projections can include, for example, governmental studies regarding such matters as economic and population growth.

Clearly, such studies must comprise a corporate effort: no one man can do it all, no one man can be familiar with all of the inputs, no one man can carry all of the details with regard to such studies around in his head. Each person involved must rely on the expertise of many other persons within the Company. They consult with each other, each providing the other with inputs necessary to allow the other to perform his functions. Naturally, when one is asked whether he, "of his own knowledge," can state that a person he has consulted with used the proper inputs in performing an analysis, the person asked will respond that you will have to ask the person who did that particular analysis.

In presenting its suspension case, Licensee put forth as its witness the man who did the final analysis, who synthesized the work of all the others and made the ultimate studies and judgments as to planning Licensee's system for the next ten years. Furthermore, Licensee offered to provide as a witness to respond to questions any person within its employ or that of its agents and consultants who had an input to the final study. And Licensee continues to be prepared to provide any such witness. It is then up to the Board and the other parties to the proceeding to determine the degree of detail which they wish to

inquire into. Once questions of detail beyond the personal knowledge of the witness are asked, Licensee must be given the opportunity to respond to such questions with an appropriate witness. It is after all, the knowledge and planning of the corporation which is the question here, not that of a particular witness. It is in the nature of these proceedings that no one witness can respond to all detailed questions regarding computer programs, inputs and outputs of studies and evaluations which were provided to him by other corporate experts and that, when such questions are raised, the appropriate expert will be called. It is simply not permissible to allow a party to raise such questions on cross-examination of a witness and then to object to the production of the appropriate witness to answer the questions. It is not permissible for that party to argue that he doesn't want to hear the answer now, that the mere fact that the first witness didn't know the answer proves that the corporate study is deficient. That is not the way to arrive at a fair evaluation of the merit of the corporate study. Licensee must be permitted to respond to questions raised by putting forth the testimony of the appropriate expert.

The question was raised at the hearing of whether all such potential witnesses should be available on-call in Chicago or whether some other more practical arrangement should be made, which would allow them to remain in Jackson, Michigan doing their usual tasks, and require them to come to Chicago, if and when needed to testify. This is why the Board asked the first question: how many people are involved. The following is an attempt to advise the Board on this point.

1. Input with regard to Cost of Production and Loss of Load Probability Assessment Portions of Mr. Heins' testimony.

Including Mr. Heins, at least 19 persons provided inputs to the analyses with regard to Loss of Load and Production Costing presented in Mr. Heins' testimony and exhibits. These inputs included the following matters:

1. Data with regard to existing and expected generating capability and reserve availability of ECAR, Ontario Hydro, Detroit Edison and other interconnected companies.

2. Prices of external power.

3. Plant normal maximum operating levels.

4. Maintenance expectations.

5. Heat rate data

6. Nuclear fuel costs

7. Fossil fuel costs

8. Historical load data (which is then input to the load analysis and load model, the output of which is then input to both production cost data and reliability data).

9. Projected availability, random outage rate and scheduled maintenance.

10. Historical availability, random outage rate and scheduled maintenance (this is input only to the reliability program).

11. Projected loads and generating requirements (generation models are used with regard to both production costing and reliability programs).

12. Factors affecting current and future operating levels of steam generator plants (including Palisades).

13. In-service dates and capacities for future units.

14. Environmental deratings and the like

15. Unit net demonstrated capabilities.

16. Capability of internal and external transmission.

Outputs for the production costing program include:

1. Economic dispatch

2. Fuel Costs
   a. Unit-by-unit
   b. Total

3. Unit-by-Unit capacity factor

4. Luddington pumped storage plant operation

5. Emergency purchase in Megawatts, Meggawatt-hours and dollars.

6. Detroit Edison - nonreplacement energy

7. Detroit Edison - economy energy

8. Fuel use: coal - tons
   oil - barrels
   gas - Mcf

Outputs for the reliability program include:

1. Days required to purchase
2. Magnitude of required interconnection support
3. Frequency distribution of required support
4. Cumulative distribution of required support
5. System average random outage rate
6. Megawatt outage distribution.
7. Effect of second system.
8. Optimum maintenance schedule.
9. Positive to negative (P/N) days ratio.

2. Long-Term Load Forecast

At least 18 persons contributed inputs to the long-term load forecast portions of Mr. Heins' testimony. The key assumptions utilized in the forecast are listed at pages 1.1-16 to 1.1-19 of the Environmental Report Supplement filed by Licensee on October 26, 1976, as amended by ERS Amendment No. 1, filed November 19, 1976 (these pages are attached to this letter for ease of reference). Pages 1.1-1 to 1.1-16 of the ERS, as amended, discuss such related matters as energy conservation, effect of price elasticity and rate structure, which were considered.

Similarly, many persons provided input on a variety of other matters covered in the testimony, such as costs due to a delay caused by suspension and costs of abandonment of Midland and proceeding with an alternative.

Licensee is prepared to provide witnesses to respond to questions regarding all of these matters when and if they are required at the hearings. There is no way of determining who is required, on what point, or when they should appear until a question is raised on cross-examination which relates to the work of any given expert. Licensee believes that it can generally provide such witnesses on short notice except in unusual circumstances. It would suggest operating, as a general rule, on 24-hours notice, except in such circumstances when a witness is unavailable due to illness, travel or the like. Licensee is prepared to attempt to accommodate the schedules of the Board and the other parties, including the schedule of Intervenors'

consultant, Richard Timm. If Intervenors will advise Licensee of the specific inputs on which they wish to cross-examine, Licensee will attempt to make the appropriate witnesses on such inputs available on mutually convenient dates. It can make witnesses available on the questions which the Board would like to hear addressed further on dates when Mr. Timm cannot be present, or if Intervenors prefer, on dates when he is present.

Licensee is also prepared, in light of the questions raised at the last hearing by Intervenors and by the Board (see request of Dr. Leeds at Tr. 2040) to provide witnesses who will explain: the nature of a load forecast and how it is done, the inputs to it and its outputs, the probability encoding analysis and the analysis done by Mr. Bikel in his confirmatory study. It is prepared to tender witnesses who can explain the nature of a loss of load probability study and production costing runs, the methodology and inputs and outputs for such analyses. It is also prepared to tender witnesses who can provide similar information with regard to the development of the costs of a delay due to suspension and the costs of abandonment of Midland and proceeding with an alternative. Witnesses are available to testify with regard to the availability of funds to finance the Midland project and the probability of Palisades operating in the future at its current megawatt rating, questions which arose at the last hearing and which the Board indicated it wished to hear further on.

Licensee prepared and submitted testimony which it believes supports its case that a suspension is not warranted. As questions are raised with regard to assumptions, analyses, inputs, etc., which went into the preparation of the prepared testimony, it must be permitted to augment its case, just as it would be permitted to do at a trial. The Board must remember that at a trial, a party puts on one witness at a time who is then cross-examined and that a party is then free to submit additional witnesses to cover questions which arose on cross-examination of any prior witness. Licensee cannot be foreclosed from that right here simply because it provided the testimony of the witnesses it originally intended to submit in written form in advance of the hearing. Licensee must be given a full opportunity to respond to such questions as are raised during the proceedings, particularly in light of the nature of these proceedings: the complexity of the matters presented and the fact that no one witness can be expected to carry all of this information around in his head. Intervenors cannot be heard to ask a question of one witness, have the witness tell them that the information is available from someone else whom Licensee is willing to produce as a witness, and then argue that they are not interested in hearing the response from the additional witness, that the fact that the first witness could not answer

is conclusive as to the lack of knowledge of the corporation as a whole, that Licensee should be foreclosed from responding and that its construction permits should be suspended. Such a procedure would be a clear denial of due process.

The consequences of a suspension in this case would be extraordinarily severe. The costs of such a delay, stated in Mr. Keeley's testimony, are astronomical. The Board has heard from Dow as to the potential effect of a suspension on that company. And it is aware of the need for the plant and the serious effects on Licensee if the plant is delayed by a suspension. The Board cannot do as Intervenors request: suspend the construction permits without allowing Licensee to respond to questions raised on cross-examination.

Finally, Licensee lists those matters which are before the Board for resolution at this time:

1. Licensee's motion to establish a firm schedule and procedures per its Motion and Memorandum of December 13, 1976 and its letter of January 17, 1977.

2. Licensee's motion regarding the issues in these procedures per its Motion and Memorandum of January 13, 1977.

3. The propriety of the preparation of Mr. Temple's testimony.

4. Objections by Licensee and Staff to Interrogatories submitted by Intervenors.

5. Licensee's Motion to Certify the Board's ruling regarding privilege on certain documents covered by the Briefs of December 30, 1976.

6. Other claims of Licensee regarding privilege relating to documents which the Board has reviewed (Licensee has not received a list of the Board's initial ruling on privilege, and the Board will recall that Licensee requested an opportunity for argument as to privilege on these documents).

7. Dow's motion to withdraw as a party.

8. Various Motions to Strike which the Board reserved ruling on in the transcript.

Respectfully submitted,

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SERVICE LIST

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of Michigan, will in all likelihood cause it to take a cautious and moderate approach toward such changes. Consequently, Consumers Power believes that consumption patterns are very unlikely to deviate substantially from those currently projected and reflected in its forecasts for the period through the early 1980s. Finally, on the basis of evidence currently available, Consumers Power believes that, even should such radical changes in rate design and price levels be instituted, they would have a much less significant effect on customer demand at the time of system peak load than they would have on overall consumption levels.

1.1.1 Load Characteristics

1.1.1.1 Load Analysis

Historical peak load data and forecasted peak loads are listed in Table 1.1-1 for the years 1966 through 1984. Projected data over the complete life of the facility are not available. Data are shown for Consumers Power alone, combined with Detroit Edison, and for ECAR. Table 1.1-2 lists historical and projected energy requirements for the same period. The projected data for Consumers Power and Detroit Edison are as shown in the 1976 ECAR response (dated April 1976) to FPC Docket R-362, Order 383-3, with adjustments to reflect most recent forecasts.

Figure 1.1-1 shows Consumers Power's load duration curve for the year 1975. Current peak demand and energy forecasts support the extension of this data to 1981 and 1982 conditions without significant modification.

1.1.1.2 Demand Projections

The projections of peak demand and energy requirements appearing in Tables 1.1-1 and 1.1-2 are based upon forecasted energy sales to customers. Table 1.1-3 lists historical and projected sales to ultimate customers for the period 1966 through 1984.

Electric Sales Projections

Consumers Power's electric sales forecasts are developed to cover three periods, each done by class of service, but each by a methodology and in a level of detail dictated by their ultimate use. The budget year projection (developed in September of the previous year) is a monthly forecast based upon an in-depth analysis of monthly sales and includes local input from the Company's geographical regions. The first year beyond the budget year is an annual projection that is developed based upon the information and insight gained from the budget year forecast. And

the long-term projection, beyond the second year out, is developed based upon long-term trends in the economy, population and energy use. Each forecast is reviewed by the Company's senior Management. It is the long-term forecast of sales which is of interest for the period during which Midland is to be in service.

Shown below are the key assumptions upon which Consumers Power's long-term energy sales forecast is based. The information is given for each customer classification.

I. Residential

A. The service area adult population projection is based on the State of Michigan report "Population Projections for the Counties of Michigan;" October 1974. The population is expected to grow at an annual rate of about 1.6 percent even though zero net migration is assumed.

B. The ratio of adults per year-end customer (adults per residential meter) is expected to drop from about 1.79 in 1975 to about 1.70 by 1986 and about 1.68 by 1990. This is a much less precipitous drop than occurred during the 1960s and reflects a slowdown in the growth of second homes and adults living alone.

C. Residential domestic average use is expected to grow at approximately 2 percent per year through 1990 compared with about 4 percent annual growth during the 1960s. This reduced growth rate reflects conservation, price elasticity and the development and promotion of more efficient appliances.

D. It is assumed that the heat pump will be used by about 10 percent of new electrically heated homes by 1980 and that this percentage will increase to 30 percent by 1990. The heat pump is assumed to have a seasonal performance factor of 1.6 (ie, it is 1.6 times as efficient as resistance heating).

E. It is expected that shortages of alternate fuels will cause an increasing saturation of residential electric space heating.

F. Based on the above assumptions, total residential sales are expected to grow at an annual rate of approximately 5.2 percent through 1986 compared with an annual growth rate of about 6.5 percent for the 1964 through 1974 period.

II. Commercial

The historic growth rate of Consumers Power's commercial electric sales is 9 percent. Based on recent trends and subjective analysis by Business Code, future commercial sales are projected to grow at a rate of 5.5 percent to 6 percent per year. The reduced growth rate is expected because of conservation and price elasticity and the belief that commercial lighting and air conditioning have reached a high saturation level. An offsetting factor is the potential for greater use of electricity for space heating and water heating as other fuels become less readily available.

III. Industrial

A. Sales to General Motors

Estimates of kWh sales to GM are based on a regression model using GM vehicle production and time as independent variables. Exhibit A shows this model and the model used to project sales excluding GM and Dow. The current forecast assumes that GM vehicle production will grow at a relatively slow rate in the future and that total industry passenger car production will not exceed the 1973 level of 9.7 million until 1981. It is assumed that vehicle production will increase at a decreasing rate in the future, with total industry passenger car production reaching approximately 10.8 million by 1985, 12.0 million by 1990, and 13.3 million by 1995. To reflect continued conservation by the automakers, it is assumed that future kWh sales to GM will grow at the rate projected by the model from a depressed 1976 starting point. This subjective adjustment for conservation and price elasticity has the effect of reducing future sales [illegible] to GM accounts by about 10 percent below the values pro[illegible] the models.

B. Sales to Dow Chemical - [illegible]

Forecasted sales to Dow are based on discussions between Consumers Power and Dow representatives.

C. Industrial Sales Excluding GM and Dow

Sales to industrial customers other than GM and Dow are forecast using the FRB Manufacturing Index as the independent variable, with the results of the model tempered to reflect the recent leveling off in the ratio of sales of electricity per unit of FRB index. This tempering also can be interpreted as reflecting conservation.

POOR ORIGINAL

D. Total Industrial Sales

Using the above approaches and assumptions and also analysis of industrial sales by Business Code, industrial sales excluding Dow are projected to grow at a long-term annual rate of approximately 5 percent in the future compared with an annual rate of about 7 percent for the 1960s and early 1970s.

IV. Other

Streetlighting sales are projected to grow at a long-term rate of 3 percent per year. Interdepartmental sales are expected to remain fairly level, while sales to other utilities are expected to grow at a rate of about 5 percent per year.

V. Total

The above class-by-class projections result in a total forecasted sales growth rate for Consumers Power of approximately 5.2 percent per year after 1977.

Energy Requirements and Peak Load Projections

Consumers Power's peak load projections are developed from its sales forecasts. Since the sales forecasts measure energy requirements at the point of sale and energy losses take place between the generation facilities and the point of sale, the sales forecasts must be multiplied by an efficiency factor to determine the amount of generation necessary to meet the sales forecasts. The efficiency factor is a ratio of sales to generation calculated on the basis of historical trends, modified to reflect known or expected factors that will influence efficiency. Application of the efficiency factor results in an estimate of the total generation requirement in kWh necessary to meet the annual sales forecast. The expected peak load is calculated by dividing the average demand (ie, the total generation requirement divided by the hours in the year) by the estimated annual load factor for the year. The annual load factor is a ratio of average demand to peak demand.

Annual load factors are developed from historical relationships of load factors based on summer maximum demands and winter maximum demands. In projecting future load factors, consideration is given to the impact of such things as energy conservation, pricing of energy, availability of gas with the resultant effect on the use of electricity for heating, load management and general economic conditions. Since some of these factors tend to improve load factor and others tend