

E-999/CI-89-212INITIATING PROCEEDING

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

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In the Matter of a Summary Investigation into Financial Incentives for Encouraging Demand-Side Resource Options for Minnesota Electric Utilities and Bidding Systems.

ISSUE DATE: May 23, 1989

DOCKET NO. E-999/CI-89-212

ORDER INITIATING PROCEEDING  
AND SOLICITING PROPOSALS AND  
COMMENTS

FINDINGS AND CONCLUSIONS

I. NEED FOR AN INVESTIGATION

Minn. Stat. § 216B.03 (1988) directs the Commission to set rates to encourage energy conservation and renewable energy use and to further the goals of sections 116J.05, 216B.164, and 216B.241, to the maximum reasonable extent. In Minn. Stat. § 116J.05, the Legislature found that the state has a vital interest in providing for increased efficiency in energy consumption and that it is in the public interest to encourage energy programs which minimize the need for increases in fossil fuel consumption and generating plants and provide for an optimum combination of energy sources.

The Commission has been, and continues to be, concerned that the current ratemaking process may tend to discourage utilities from making optimum use of demand-side resources, especially energy conservation, in their planning and investment decisions. Under the existing system, a utility has a financial incentive to meet and exceed the sales levels set in its most recent rate case, but little financial incentive to pursue projects which result in reduced electricity sales, with the resultant lost revenue margins.

The Commission believes that the widening evidence of the environmental effects of acid rain and global warming since the above legislation was enacted makes the desirability of increased efficiency in the use of energy even more evident and critical.

Emissions from the burning of fossil fuels, by electric utilities and other industries, appear to be significant contributors to these problems.

The Commission has been participating in and monitoring for several years the national discussion on barriers to implementation of integrated resource planning (also known as least cost planning),

in part through the National Association of Regulatory Utility Commissioners (NARUC) Committee and Staff Subcommittee on Energy Conservation. A number of state utility commissions have implemented financial incentive programs to encourage integrated resource planning and many more are seriously examining this issue.

In addition, a Commissioner and two staff analysts are members of the Interagency Task Force on Least Cost Planning formed in the Fall of 1988. These three members, along with other Commission representatives, actively participated in Task Force activities, including formation of its recommendations. One of the Task Force's recommendations is that the Commission conduct an investigation to evaluate various alternative methods of removing financial disincentives from demand-side management. It recommended that the investigation include a review of losses resulting from reduced energy sales as a consequence of demand-side management and of possible financial incentives to encourage adoption of demand-side options.

Under Minn. Stat. § 216B.21 (1988), the Commission may make a summary investigation "[w]henever the commission has reason to believe that . . . an investigation of any matter relating to any public utility should for any reason be made . . ."

As detailed above, the Commission has reason to believe that an investigation into financial incentives for integrated resource planning for electric utilities is necessary in order to help ensure that the optimum mix of demand- and supply-side resources will be used by Minnesota utilities. The Commission finds that it would be in the public interest to initiate a proceeding to gather and review proposals which address its concerns and allow the Commission to better carry out its statutory mandates.

The Commission will require all rate-regulated electric utilities with more than 500 customers in Minnesota to respond to the questions contained in this Order. The purpose of the size limitation is to exempt Northwestern Wisconsin Electric Company, with approximately 90 customers in Minnesota, from the requirement to answer. The Commission finds such a requirement could impose an unreasonable and excessive burden on Northwestern Wisconsin because of its small size and limited operations in Minnesota.

## II. PURPOSE AND GENERAL SCOPE OF PROCEEDING

The purpose of this proceeding is to require regulated electric utilities and encourage other interested persons to file proposals that remove disincentives and/or provide incentives to promote the adoption by electric utilities of cost effective demand-side management resource options. The Commission also wishes to encourage discussion, comparison, and evaluation of the proposals and their suitability for implementation in Minnesota.

The Commission recognizes that the potential financial consequences of decreased energy sales on company profitability may not be the only barrier to increased use of demand-side resources by electric utilities; it does, however, appear to be a major concern. Therefore, the primary focus of

this investigation will be a comparison of various types of financial incentives models which overcome or substantially mitigate this barrier.

Interested parties will be requested to assess whether and how the current ratemaking system in Minnesota tends to discourage demand-side resource options. They will be asked to propose and evaluate methods for removing financial disincentives to demand-side management resource options and for providing financial incentives that encourage utility adoption of demand-side resource options. Proposals may apply to one or more electric utilities that are subject to the rate regulation provisions of Minn. Stat. Chapter 216B. Generic proposals that could apply broadly to any utility or group of utilities are also encouraged.

The Commission is also interested in the appropriateness of using competitive bidding for meeting the capacity needs of electric utilities in Minnesota. The Commission is especially interested in whether and how a bidding program could substitute for or complement a financial incentives system in encouraging optimum use of demand-side resources. Parties are encouraged to discuss and evaluate supply- and demand-side bidding options for use in Minnesota.

The Commission requests that parties respond to the above issues by addressing the specific questions contained in Sections III and IV of this Order. In addition, parties may provide other information and discussion relevant to this investigation.

### III. SPECIFIC QUESTIONS ON INCENTIVE MODELS

A number of general alternatives to conventional rate base/rate of return regulation and specific financial incentives models have been proposed and discussed in journal articles and at conferences. Commission staff has grouped the major models into generic types for ease of discussion. This is not intended to limit discussion of other approaches of which parties may be aware and wish to propose.

The nine types of models identified do the following: expense all conservation, put all conservation investments in rate base, give rate of return bonuses for meeting conservation goals, index incentives to net system benefits achieved, give a "bounty" per energy unit saved, adjust revenues to match a base case forecast, share incentive benefits between shareholders and ratepayers, give a separate conservation rate of return, and charge a separate conservation rate.

To facilitate the comparison of financial incentives options in responding to the questions below, Commission staff has prepared additional materials, including spreadsheets and corresponding graphs, which help illustrate the short-run effects of certain base cases and the various generic types of financial incentives models on utility earnings, rates, and other measures. The spreadsheets, graphs, and explanatory materials are attached as an Appendix to this Order.

As an additional aid in analyzing financial incentive and bidding options, a bibliography is included as an Attachment to this Order. The bibliography lists some of the publications and articles which describe specific financial incentives models and provide general background information. Copies of the articles are available through the Department of Public Service Research and Information

Center.

The Commission requests that parties address the following issues and questions:

### Initial Considerations

1. What financial disincentives are present in the existing ratemaking process in Minnesota which may discourage electric utilities from making optimum use of demand-side resources? How significant a barrier is each of the disincentives you have identified?
2. What goals and objectives should be kept in mind when designing models which overcome the disincentives and/or to provide financial incentives for use of demand-side resource options by utilities?

### General Comparison and Evaluation of Models

3. List, in order of preference, the nine types of financial incentives models identified above and further described in the Appendix. Discuss the reasons for your preference rankings and the advantages and disadvantages you see in each type of model. Please do this even if you are suggesting adoption of a different type of approach or feel that the present regulatory system should not be changed.
4. a) Consider which model(s), of those identified above or others of which you are aware, would be best in theory if no barriers to implementation (such as data requirements, organizational structure, customer understanding) existed. b) What implementation barriers, if any, exist in the model(s) you chose? How could they be overcome or minimized?
5. Identify and discuss any characteristics of the state of Minnesota and the utilities within it which would affect the types of incentives likely to be most effective in Minnesota.

### Your Preferred Approach(es)

6. a) Describe in general the financial incentives proposal(s) which you would recommend for implementation in Minnesota if the Commission determines that changes to the current system are necessary.  
b) How does it overcome the disincentives identified in question 1?  
c) How does it meet the goals and objectives identified in question 2?

For each of your recommended proposals, and any other models you feel deserve consideration by the Commission, please include the following information, along with any additional data you feel is necessary for understanding and evaluating your proposal(s):

Application of your approach(es)

7. To whom does your proposal apply? If it is limited to certain utilities or types of utilities, discuss what characteristics (such as size, generating mix, service area) or other relevant factors are the bases for the limitation.
8. Describe the data and analytical requirements for developing, implementing, and monitoring your proposed incentives method. Include a discussion of how demand-side savings should be measured and verified.
9. Estimate the costs of developing, implementing, and monitoring your proposed method.
10. If not inherent in the model, how should utility conservation expenditures be recovered?
11. What is an appropriate level for an incentive when no formula for determining it is given? For example, if you are recommending a "bonus" types of model, what should the increase on the rate of return be?

Effects of your approach(es)

12. Consider the financial effect of the model on the following groups: the utility, the ratepayer, the participant, the non-participant, different customer classes, low-income households and renters, and any other groups you consider relevant. The accompanying spreadsheet and graphs may help you or you can develop your own system to clarify your comments.
13. How does your proposal induce and enable a ratepayer to use conservation programs provided by the utility? How does it compare to other models in this respect?
14. Is there any potential for abuse under your model by the utility or its customers? If so, discuss the how the potential can be minimized.
15. What is the effect of your approach on a utility's incentive to increase electric sales?
16.
  - a) What effect would your proposal have on other facets of utility operations?
  - b) Would it be compatible with other types of incentive programs (for example, those which encourage general operating efficiency or rate stability) if the Commission wished to implement such programs in the future?

17. Would implementation of your proposal require new or amended legislation or new or amended rules? If so, please identify the changes needed and, if possible, suggest proposed language.

#### General Design and Implementation Issues

18. In a number of models, the utility receives an incentive on all kWh savings by customers. Should the utility therefore be required to pay for all the conservation materials and installation costs that make those savings possible?
19. Should the incentive structure be symmetrical, with equivalent penalties for failure to perform least cost planning adequately?
20. Should an independent contractor or third party validate the accuracy of demand-side program impacts and cost estimates?
21. What criteria should the Commission use to evaluate and compare approaches for possible implementation in Minnesota?

#### IV. QUESTIONS ON BIDDING

1. What are the potential benefits of a supply-side bidding program in Minnesota? Of a demand-side bidding program? Of an all-source (demand- and supply-side) bidding program?
2. What barriers exist in Minnesota to developing and implementing a bidding program for electric utilities? How significant are these barriers and how could they be overcome?
3. Could a competitive, all-source bidding program substitute for a financial incentives system for encouraging utility consideration of demand-side resource options? Could it instead complement such a system?
4. Should the Commission pursue further investigation into the feasibility of bidding systems in Minnesota? If so, please outline the issues to be examined.

#### V. PROCEDURAL MATTERS

Interested persons have until July 7, 1989 to file initial proposals and comments with the Commission. Fifteen copies of all comments and proposals shall be filed. The Commission will compile a service list of those who commented, and any others the Commission deems appropriate,

and will distribute it to the parties. Parties will then have 7 days to serve copies of their initial comments on the service list.

Approximately a month from the receipt of initial comments, the Commission will schedule a discussion conference to include all parties that have filed comments. The purpose of the discussion conference is to allow for an exchange of views among interested parties and Commission staff, to identify areas of agreement and disagreement, and to focus issues for meaningful reply comments.

Following the discussion conference, the Commission plans to allow approximately 15 days for reply comments. The Commission will provide parties with additional procedural information, including specific dates for the discussion conference and reply comments, by further notice or order.

### ORDER

1. All interested persons are notified that, under the authority granted by Minn. Stat. § 216B.21, the Commission hereby initiates a summary investigation into the reasonableness of financial incentive methods that encourage Minnesota electric utilities to invest in demand-side resource options and into the need for bidding systems in Minnesota.
2. All rate regulated electric utilities with more than 500 customers in Minnesota shall, and other interested persons may, file initial proposals and comments on the issues discussed herein and answer the questions contained in sections III and IV. Initial filings are due July 7, 1989.
3. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION

Mary Ellen Hennen  
Executive Secretary

(S E A L)

Appendix (9 pages)  
Attachment [Bibliography] (2 pages)

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## APPENDIX

The following spreadsheets and graphs have been prepared by Commission staff to aid parties in the comparison of different types of financial incentives models and in answering the questions in the body of this Order. They show the short-run effects of various generic models on utility earnings, rates, and other components.

### Description of Models and Assumptions

A hypothetical utility has energy sales of 25,000 kWh per year in the "Base" case. In all the subsequent models, these sales are reduced to 22,500 kWh after conservation. Total rate base increases in all models where conservation is ratebased. Total expenses decrease since less fuel is required, but in some models the decrease is smaller because conservation is expensed. The rate of return on rate base has been set at 10%.

The abbreviated names of the models are explained as follows. The "Base" model shows the position before any conservation. In the "Customer" model, the utility is not paying for any conservation but sales and revenue are reduced by customer conservation. In the following models, the utility pays the same price for conservation but revenue loss is treated differently in each case as described below.

"Expense C" model = the utility expenses conservation.

"R-base C" model = the utility ratebases conservation.

"Bonus" model = the utility ratebases conservation and receives an additional 2% rate of return.

"Index" model = the utility ratebases conservation and receives an incentive equal to net system benefits.

"Bounty" model = the utility ratebases conservation and receives a fixed incentive per kWh saved.

"ERAM" model = (Electric Revenue Adjustment Mechanism) the utility expenses conservation and its revenues are adjusted to match the "Base" case.

"Share" model = the utility ratebases conservation and receives an incentive equal to half the annual earnings reduced by conservation.

"Sep-ROR C" model = (separate rate of return for conservation) the utility ratebases conservation and bills its customers for conserved kWh's at the same rate it bills them for used kWh's.

"Sep-Charg" model = (separate charge for conservation) the utility ratebases and expenses conservation, as appropriate, and bills its customers for conserved kWh's at the cost to provide the conservation plus a return per kWh equal to that which the utility receives per kWh sold.

### Explanation of Graphs

The graphs show the most important effects of each model. The "Cents" graphs show the rate impact in cents per kWh cost. The price per kWh sold and the price per kWh saved (where applicable) before the incentive is added in are reflected by "sales" and "saved". The price per kWh with the incentive is shown under "adjusted sales" and "adjusted saved". The final column notes the average kWh cost.

The second set of graphs, "Thousands," show the effect on the utility's annual revenues in thousands of dollars. Total expenses include any expensed conservation as well as usual expenses. "ROR" is the return on rate base in dollars. "Req Rev" reflects the revenue required by the utility to cover total expenses and a return to shareholders. "Tot Earn" (total earnings) shows "Ann Earn" (annual earnings) with the incentive added in. Finally, "Adj Rev Rq" is total earnings plus total expenses. (As can be seen in the spreadsheet formulas which follow, certain simplifying financial assumptions have been made.)

## Spreadsheet Formulas and Definitions

TOTAL RATE BASE = RATE BASE + CONSERVATION RATE BASE

TOTAL EXPENSES = EXPENSES + CONSERVATION EXPENSES

RATE OF RETURN = SET AT 10%

RETURN ON RATE BASE = TOTAL RATE BASE \* RATE OF RETURN

REVENUE REQUIRED = TOTAL EXPENSES + RETURN ON RATE BASE

RETURN ON RATE BASE SALES PRICE = RETURN ON RATE BASE/25,000

RETURN ON RATE BASE SAVED PRICE (for the "Sep-Charg" model) =

(CONSERVATION RATE BASE \* RATE OF RETURN/2500) + RETURN ON RATE BASE SALES PRICE

ANNUAL EARNINGS = (TOTAL KWH COST SALES \* ENERGY SALES + TOTAL KWH COST SAVED \* ENERGY SAVED) - TOTAL EXPENSES

INCENTIVE (Depends on Model) =

BASE, CUSTOMER, EXPENSE C AND R-BASE C MODELS = NOT APPLICABLE

BONUS MODEL = 0.02 \* TOTAL RATE BASE

INDEX MODEL = ANNUAL EARNINGS - BASE MODEL'S ANNUAL EARNINGS

BOUNTY MODEL = 3 \* ENERGY SAVED

ERAM MODEL = 8750

SHARE MODEL = 0.5 \* (ENERGY SAVED \* 5)

SEP-ROR C MODEL = REFLECTED IN THE "TOTAL KWH COST - SAVED" COLUMN AND IS THE SAME AS KWH SOLD PRICE

SEP-CHARG MODEL = REFLECTED IN THE "TOTAL KWH COST - SAVED"

COLUMN AND IS "EXPENSES KWH COST - SAVED" COLUMN + "RETURN ON RATE BASE - SAVED" COLUMN.

TOTAL EARNINGS = ANNUAL EARNINGS + INCENTIVE

EXPENSES KWH COST SALES = TOTAL EXPENSES/ENERGY SALES

EXPENSES KWH COST SAVED = CONSERVATION EXPENSES/ENERGY SAVED

TOTAL KWH COST SALES = EXPENSES KWH COST SALES + RETURN ON RATE BASE SALES PRICE

TOTAL KWH COST SAVED = EXPENSES KWH COST SAVED + RETURN ON RATE BASE SAVED PRICE

NEW KWH COST, SALES = TOTAL KWH COST SALES + INCENTIVE/ENERGY SALES

NEW KWH COST, SAVED (Depends on Model) =

BASE THROUGH SHARE MODELS = RATE OF RETURN \* TOTAL KWH COST SAVED

SEP-ROR C MODEL = NEW KWH COST, SALES

SEP-CHARG MODEL = TOTAL KWH COST SAVED + INCENTIVE/ENERGY

SAVED  
ADJUSTED REVENUE REQUIRED = TOTAL EARNINGS + TOTAL EXPENSES

AVERAGE KWH RATE (Depends on Model) =

BASE THROUGH SHARE MODELS = ADJUSTED REVENUE REQUIRED/ENERGY  
SALES

SEP-ROR C AND SEP-CHARG MODELS = ADJUSTED REVENUE REQUIRED/  
(ENERGY SALES + ENERGY SAVED)

## **BIBLIOGRAPHY**

This bibliography is included as an aid to interested persons for understanding and evaluating the issues being investigated in this proceeding. It is not intended to be a complete listing of all the literature available on these subjects.

Copies of the materials in the following bibliography are available at the Department of Public Service (DPS) and may be viewed during working hours. Copies can be purchased at a cost of 25 cents per page. Call Robin Jefferson, Research & Information Center of the DPS, at (612) 296-6913.

The Thomas Stanton paper outlines a number of specific models from which Commission staff developed several of the generic models contained in the Appendix.

## **FINANCIAL INCENTIVES**

### **MANY MODELS PAPERS**

Stanton, Thomas. Framing Paper: Financial Incentives for Utility Participation in Demand-Side Management to Encourage Customer Energy Efficiency. Office of Energy Programs, Michigan Public Service Commission, February 6, 1989.

31 pages.

### **SEPARATE RATE OF RETURN OR CHARGE FOR CONSERVATION PAPERS**

Cicchetti, Charles, & Hogan, William. Including Unbundled Demand Side Options in Electric Utility Bidding Programs. Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, August, 1988. 31 pages.

Lovins, Amory, and Hirst, Eric. "The Great Demand-Side Bidding Debate Rages On". The Electricity Journal, March, 1989, pp.34-43.

10 pages.

Sorrells, D.R. & L.L. "Leveling the Playing Field in Least Cost

Planning with the No Loser Model". State of Minnesota, Minnesota Public Utilities Commission, April, 1989.

9 pages.

Whittaker, M. Curtis. "Conservation and Unregulated Utility

Profits: Redefining the Conservation Market". Public Utilities Fortnightly, July 7, 1988, pp.18-22. 5 pages.

### **RATEBASING CONSERVATION PAPERS**

The Alliance To Save Energy. Ratebasing of Conservation Program

Costs. Discussion paper of the Alliance to Save Energy, Washington D.C., November 1987. 16 pages.

Katz, Myron B. Proper Utility Incentives: Everyone Wins.

Oregon Public Utility Commission, April, 1989. 7 pages.

### **EFFICIENCY INDEXING PAPERS**

Moskovitz, David, & Parker, Richard B. "How to Change the Focus

of Regulation so as to Reconcile the Private Interest with the Public Goals of Least-Cost Electric Planning". Presented to the Sixth NARUC Biennial Regulatory Information Conference, September, 1988. 16 pages.

### **INTRODUCTORY PAPERS**

Raskin, Paul, & Rosen, Richard. Ratemaking and Conservation:

The Tune Should Fit the

Dance. Energy Systems Research Group, Boston, October 27, 1988. 8 pages.

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Utilities and Their Regulators". Harvard Environmental Law Review, Vol. 10, 1986. 45 pages.

### **BIDDING**

Joskow, Dr. Paul L. et al. "The Great Demand-side Bidding

Debate". The Electricity Journal, August/September, 1988, pp.36-42. 7 pages.

Marritz, Robert O. "Investing in Efficiency". The Electricity

Journal, August/September, 1988, pp.22-35. 14 pages.

Sharp, Congressman Philip R. "The Case for Demand-side Bidding".

The Electricity Journal, August/September, 1988, pp.16-21. 5 pages.

**The spreadsheet and graphs accompanying this Order are available in hard copy form only from the Department of of Public Service.**