



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 6 1979

Docket Nos. 50-424
and 50-425

Georgia Power Company
ATTN: Mr. W. E. Ehrensperger
Senior Vice President -
Power Supply
P. O. Box 4545
Atlanta, Georgia 30302

Gentlemen:

SUBJECT: GANE REQUEST FOR RECONSIDERATION OF 10 CFR 2.206 ACTION
(ALVIN W. VOGTLE NUCLEAR PLANT, UNITS NOS. 1 AND 2)

I enclose for your information a copy of a petition filed on behalf of Georgians Against Nuclear Energy (GANE) which requests that the Director of Nuclear Reactor Regulation reconsider his April 13, 1979, denial of GANE's earlier petition filed under 10 CFR 2.206.

GANE's latest petition is also being treated under 10 CFR 2.206 of the Commission's regulations, and accordingly, appropriate action will be taken on the petition within a reasonable time. I also enclose for your information a copy of the notice that will be filed for publication with the Office of the Federal Register.

Sincerely,

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosures:

- 1) Ltr 5/1/79 G. Flack to
H. R. Denton
- 2) Federal Register notice

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cc: Mr. I. S. Mitchell, III
Vice President and Secretary
Georgia Power Company
P. O. Box 4545
Atlanta, Georgia 30302

Mr. Ruble A. Thomas
Vice President
Southern Services, Inc.
P. O. Box 2625
Birmingham, Alabama 35202

Mr. J. A. Baily
Project Licensing Manager
Southern Company Services, Inc.
P. O. Box 2625

George F. Trowbridge, Esq.
Shaw, Pittman, Potts and Trowbridge
1800 M Street, N. W.
Washington, D. C. 20036

Mr. L. T. Gucwa
Nuclear Engineering Department
Georgia Power Company
P. O. Box 4545
Atlanta, Georgia 30302

Mr. W. R. Holland
Bechtel Power Corporation
P. O. Box 60860
Terminal Annex
Los Angeles, California 90060

Mr. H. A. Sindt
Westinghouse Electric Corporation
P. O. Box 355
Pittsburgh, Pennsylvania 15230

State of Georgia
Office of Planning Budget
Room 615B
270 Washington Street, S.W.
Atlanta, Georgia 30334

Office of the County Commissioner
Burke County Commission
Waynesboro, Georgia 30830

EIS Coordinator, Region IV Office
U.S. Environmental Protection
Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30308

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

GEORGIA POWER COMPANY)
(Alvin W. Vogtle Nuclear)
Plant, Units 1 & 2)

Docket Nos. 50-424
50-425

REQUEST FOR ACTION UNDER 10 CFR 2.206

Notice is hereby given that by petition dated May 1, 1979, the Georgians Against Nuclear Energy (GANE) requested that the Director of Nuclear Reactor Regulation reconsider his April 13, 1979, denial of GANE's earlier petition under 10 CFR 2.206.

GANE's latest petition is being treated as a request for action under 10 CFR 2.206 of the Commission's regulations, and accordingly, action will be taken on the petition within a reasonable time.

Copies of the petition are available for inspection in the Commission's Public Document Room at 1717 H Street, N.W., Washington, D. C. 20555 and in the local public document room at the Burke County Library, 4th Street, Waynesboro, Georgia.

FOR THE NUCLEAR REGULATORY COMMISSION

Harold R. Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 6 day of June, 1979.

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JOHN R. MYER
THOMAS A. BOWMAN
ROBERT H. STROUP
GARY FLACK

ATTORNEYS AT LAW

1818 HEALEY BUILDING
57 FORSYTH ST., N.W.
ATLANTA, GEORGIA 30303

404/522-1934

May 1, 1979

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket Nos. 50-424 and
50-425

Dear Mr. Denton:

I represent Georgians Against Nuclear Energy (GANE) and want to thank you for your letter of April 13 regarding the CFR 2.206 Request of GANE. However, on behalf of GANE, I respectfully urge you to reconsider your denial for the reasons set forth on the enclosed Request for Reconsideration of CFR 2.206 Request of GANE Based on Supplemental Information. Mark Chopko in the Office of the General Counsel expressed an interest in this matter and I am sending a copy of this letter and the Request for Reconsideration to him.

GANE appreciates your attention to this matter. We urge an expedited review of this matter which was initiated on October 30, 1978

Very Truly Yours,

Gary Flack

Gary Flack

GF/tj

cc: Mark Chopko

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of :
: GEORGIA POWER COMPANY :
: (Alvin W. Vogtle : DOCKET NOS. 50-424
: Nuclear Plant : 50-425
: Units 1 and 2) :
:

REQUEST FOR RECONSIDERATION OF CFR 2.206 REQUEST OF GANE
BASED ON SUPPLEMENTAL INFORMATION

In reviewing the request for action of GEORGIANS AGAINST NUCLEAR ENERGY (GANE) the Office of Nuclear Reactor Regulation erred by construing the request too narrowly. Simply stated, the contention of GANE is that there is no need for the two Vogtle Plants, and at minimum, the Nuclear Regulatory Commission should conduct hearings to determine whether there is a need for either of the plants. Further, the data which is the basis for the Director's denial is inaccurate and dated. The Applicant continues to revise downward its estimates of future peak demand. There are several reasons for this conclusion which may be briefly summarized as follows:

1. The final environmental impact statement regarding the Vogtle Plants is in violation of NEPA in that it fails to consider conservation as an alternative to its nuclear power.

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2. The applicant has made materially false statements to the NRC in the licensing regarding a) the need for power and b) implementation of load management techniques.

3. Since the NRC issued a construction permit to the Applicant, circumstances and data have so changed as to mandate the revocation of the permit.

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I. THE FINAL ENVIRONMENTAL IMPACT STATEMENT REGARDING THE VOGTLE PLANTS IS IN VIOLATION OF NEPA IN THAT IT FAILS TO CONSIDER CONSERVATION AS AN ALTERNATIVE TO ITS NUCLEAR POWER.

The National Environmental Protection Act of 1969 (NEPA) 83 Stat. 852, 42 U.S.C. §§4321, et seq., imposes an obligation on the Nuclear Regulatory Commission (NRC) to incorporate environmental considerations into all its major decisions including whether to license a nuclear plant. The Council on Environmental Quality (CEQ) has established regulations governing the preparation of an environmental impact statement (EIS). The CEQ has established guidelines for the preparation of an EIS which are set forth at 40 CFR Part 1500, 30 FR 20550 (1973). Section 1500.8a(4) requires that among the points an EIS must cover are alternatives to the proposed action including alternatives that will significantly conserve energy. This regulation was to apply to every final EIS filed after January 28, 1974. See, generally, Vermont Nuclear Power Corp. v. NRDC, 435 U.S. 519, 533-4 (1978).

The final EIS in this proceeding was prepared after January 28, 1974. Yet, it fails to consider conservation as an alternative to the construction of the nuclear plants. See Final Environment Impact Statement Related to the Proposed Alvin W. Vogtle Nuclear Plant, Unit 1,2,3, & 4, §9.1.1. An intervenor in the proceedings, the Georgia Power Project, clearly framed the

conservation issue in the evidentiary phase of the licensing proceedings. The Applicant also submitted evidence. Yet, the NRC failed in its legal obligation to consider conservation as an alternative. The insistence by GANE that conservation be considered is not a mere procedural delaying tactic. Rather, it goes to the heart of the GANE 2.206 Request that the NRC did not consider all the alternatives to a nuclear plant. GANE submits that consideration of the conservation alternative as required by NEPA will eliminate the need for one or both of the Vogtle units.

The failure of the NRC to consider conservation as a reasonably available alternative is a violation of law under NEPA. The construction of the Vogtle plants should not proceed until the NRC holds hearings to determine whether conservation can significantly reduce the need for power and eliminate the need for one or both of the currently planned Vogtle facilities.

II. THE APPLICANT HAS MADE MATERIALLY FALSE STATEMENTS TO THE NRC IN THE LICENSING REGARDING a) THE NEED FOR POWER AND b) IMPLEMENTATION OF LOAD MANAGEMENT TECHNIQUES.

Section 50.00 of the Rules and Regulations of NRC, 10 CFR Ch. 1, et seq., provides for the revocation, suspension or

modification of a construction permit for cause. If an applicant makes a material false statement of fact in the application proceedings, then the NRC has the authority to modify the license. The NRC should use this authority to suspend the construction license because Applicant has made to false material statements regarding the need for power.

(a) The Applicant has stated in these proceedings that it needs all the output from Vogtle to adequately serve the Georgia territory. The Applicant assured the NRC (even as its smaller partners reduced their shares to those currently existing), that the Applicant needed 50% of the output of the Vogtle plants for its own retail customers. These statements were false. Exhibit 1, attached hereto, but only recently obtained by a State of Georgia official, documents this assertion. The letter shows that while the Applicant was making these assurances of need to the NRC, it was in fact seeking to sell 30% of the Vogtle output for use outside the Georgia territory. The Applicant is rumored to have made similar approaches to other power companies in North Carolina, South Carolina, Tennessee, Mississippi, Alabama, and Florida. The Applicant knew in 1976 that it would not need the full output of both Vogtle plants; it should have directly advised the Licensing Board of the NRC, instead of making a material false statement as to its need for power. For attempting to mislead the NRC into granting a

construction permit without accurately reflecting the need for power, the NRC should revoke the construction permit to at least conduct hearings on Applicant's need for power.

(b) The second material misstatement also occurred in licensing proceedings, but relates to load management. The Applicant announced it would use load management techniques, particularly to reduce summer air conditioning peak demand. The Applicant estimated the savings of generation capacity to be 950 MW. The Applicant's statement and these forecasts were false. In proceedings before the Georgia Public Service Commission (GPSC) the Applicant has recently stated its refusal to make full use of the broad range of load management devices particularly those to conserve air conditioning power. The Applicant has implemented a broad load management policy, despite its representation to the NRC to the contrary. The Applicant's president and its general manager of economic services presented some reasons for its change in policy. Exhibit 2, attached hereto supports the use of load management in Marietta, Georgia.

The point is not to decide on this record whether the Applicant's original position or its new position is correct. The point is that the NRC, to the extent it considered load

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management techniques, was told by the Applicant that it was using the conservation techniques. This statement is false. The NRC is entitled to conduct hearings to determine whether load management is, as the Applicant originally testified, a useful alternative to Vogtle.

III. SINCE THE NRC ISSUED A CONSTRUCTION PERMIT TO THE APPLICANT, CIRCUMSTANCES AND DATA HAVE SO CHANGED AS TO MANDATE THE REVOCATION OF THE PERMIT.

Green County Planning Board v. FPC, 559 F. 2d 1227 (2nd Cir. 1976), cert. denied, 434 U. S. 1086 (1978) indicates that the Agency should reopen the NEPA record if the new information will correct erroneous factual assumptions; such is the instant case. GANE is not seeking to re-litigate old issues. Rather, it seeks to correct a major miscalculation that has become apparent since the NRC issued a construction permit to the Applicant: there is no need for the generating power represented by Vogtle 1 or 2.

Since the NRC issued the Vogtle construction permit to the Applicant, the bias in the Applicant's economic model to estimate peak demand has become more apparent. Also, substantial changes in many of the terms of the model - including conservation availability, economic growth and alternative energy sources have combined to reduce the peak demand beyond the Applicant's forecasts.

The Applicant historically has over-estimated peak demand. This fact was demonstrated in the recent hearings before the Georgia Public Service Commission (GPSC) which concluded in April, 1979. In the 1977 hearings, the Applicant forecast peak demand for the Georgia territory as set forth in Exhibit 3, Col. 2, attached hereto. In March, 1979, using the same econometric model, the Applicant again predicted peak demands for the next ten years. These estimates are set forth in Exhibit 3, Col. 3, attached hereto. A comparison of the two columns indicate that in the intervening 2 1/2 years, the Applicant has recognized it has overestimated peak demand by approximately 13%. For example, in 1976, the Applicant forecast the 1979 peak demand for the Georgia territory to be 12,534 MW; in March, 1979, the Applicant predicted the peak to be only 10,891 MW. This constitutes a reduction in peak demand by 1,643 MW or approximately 13.1%. This reduction in 1979 peak demand is the equivalent of the output of Unit 1 and half of Unit 2 of Vogtle facilities. The difference between the prediction for 1978 and the actual peak demand in 1978 was also approximately 13%.

On March 5, 1979, the Applicant somewhat reduced its estimates of peak demand that it had provided to the NRC less than 6 weeks earlier. Since the NRC staff relied on these estimates, the basis for the Director's denial is erroneous. While the new estimates, (Col. 3, Exhibit 3) are only moderately less than the January estimates, reported to the NRC, they too overstate peak demand.

Even when all the information used in the Applicant's model is current, the forecast is still defective. For example, the Applicant's August, 1978 estimate of peak demand for 1978 overestimated the 1978 peak demand (which occurred in August) by approximately 1%. This indicates not only that forecasting is an art not a science, but that even with current, accurate input, the model still overestimates annual peak demand. For these reasons, GANE questions the usefulness of the Applicant's predictions of peak demand, particularly in the more distant future. The GPSC has recognized the historical inaccuracies of the Applicant's past estimates of peak demand; it commissions an independent analysis of future peak demands. Historically, this independent analysis yields lower estimates of growth and future peak demand than those of the Applicant. In the most recent hearing, the independent analysis was not completed because the Applicant refused to provide complete current data. GANE submits that the theoretical bias in the Applicant's long range predictions is approximately 13%.

The difficulties of forecasting peak demand are not solely due to the theoretical model of the Applicant. The predictive data which is fed into the model are constantly being revised. For example, two factors considered by the Applicant in making its estimate of future peak demand are the growth of gross production in Georgia and the nation. The forecasting service have produced their projections of economic growth in the past year. One forecaster lowered his projection of the growth in

Georgia's gross state product. In April, 1978, he expected Georgia gross state product in 1979 to grow by 4.4% from its level in 1978. In August, 1978, he expected gross state product to grow by only 3.8%. Similarly, Chase Econometrics Associates have lowered their projection growth of gross national product for 1979 from 4.3% projected in April, 1978, to 2.5% projected in August, 1978. These changes necessarily lowered the Applicant's estimate of peak demand.

A more dramatic change in the model is the new national energy policy which evolved in 1978. The National Energy Conservation Policy Act of 1978 is one

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part of this plan. This Act makes conservation a national priority. President Carter referred to conservation as the cornerstone of the National Energy Plan. The provisions of the new Act include an energy conservation program for residences, weatherization grants for low income families, a solar energy loan program, an energy conservation loan program, grants to improve the energy efficiency of schools and hospitals, energy audits for public buildings, and improved efficiency standards for electrical appliances. GANE believes that these programs will have the effect that Congress intended, i.e., to reduce the demand for energy in every state, including reducing the demand for electricity in Georgia by the mid-1980's. The Applicant was unable to estimate for GANE the impact of the National Energy Act on its peak demands. Undoubtedly, the peak demand will decrease, perhaps by 1000 MW by the late 1980's.

Load management devices can decrease the demand for electricity. As noted above, the Applicant no longer intends to make full use of these devices which have a proven effectiveness in reducing demand - particularly the air conditioning peak summer demand - which is the basis of the Applicant's demonstration of need. Since the Applicant no longer intends to implement load management, its forecast of peak demand do not reflect this savings. GANE submits that the peak demand forecasts supplied by the Applicant and used by the Office of Nuclear Reactor

Regulation in analyzing the need for Vogtle Nuclear Plant, overstate the need by the estimated 700 megawatts. Certainly, the load management devices could be installed and functioning by the late 1980's which would reduce demand at 700 MW by that time.

The example of solar energy, cited by GANE in its 10 CFR 2.206 Request, is but one environmentally benign energy source that GANE intended as an example of an alternative to nuclear energy. The Federal Energy Administration established a Task Force on Solar Energy Commercialization which developed lower costs than the ^{NRC} staff used. However, the staff suggests that based on a Department of Commerce study, solar energy might provide 124 MW of electric energy in 1985 and 1500 MW by the year 2000. These estimates suggest that in 1989, there will be 490 MW of electric energy available from solar sources in the Georgia territory which will replace traditionally generated electricity.

GANE submits that by the late 1980's other alternative energy sources will be operating in Georgia. GANE lacks the resources to forecast how much electricity these alternative energy sources will provide by the late 1980's. It is certain they will provide some, particularly if the Applicant wants alternative sources (see Exhibit 4).

The Applicant expects Units 7 and 8 of Goat Rock to come on line with a total additional capacity of 67 MW in 1989. This

to the denial.
prediction is reflected on page 32 of Appendix A. This document lists the Applicant's forecast of its expanded capacity for each year through 1990 and the various units of which will leave or enter service changes in its generators. However, despite this addition of the 67 MW Goat Rock generator, the Applicant's chart shows a 68 MW reduction of capacity rather than an increase of 67 MW. The chart shows no units retired from service.^{1/} For this reason GANE queries whether the real capacity for 1989 is 135 more than that shown, i.e., whether the capacity should be 20,084 MW rather than the 19,949 MW entry. If the capacity is erroneously listed, we presume that the capacity for 1990 is also erroneous.

Circumstances have changed since the NRC issued a construction permit to the Applicant. The bias in the Applicant's economic forecasting model has become more apparent. New national legislation has been passed with the goal of conserving energy and reducing demand. The Applicant has failed to implement fully load management devices as it once promised it would. The Applicant may have an increase in 1989 capacity of 67 MW rather than a 68 MW decrease as it predicted. Currently predicted implementation of solar energy, wind power, biomass fuels and

^{1/} In testimony before the GPSC, the Applicant testified it found it more economical to rebuild existing generators, rather than retire them.

cogeneration have not been adequately accounted for by the Applicant. The Applicant now anticipates selling of 26.75% of Plant Scherer's 3232 MW capacity. Both the Applicant and the NRC Staff question how GANE expects the deficiency in generation capacity to be made up. GANE submits the following highlights of the discussion supra assure adequate capacity in the late 1980's without construction of the 2200 MW Vogtle plant:

SAVINGS (MW)	JUSTIFICATION
2196	13% bias in econometric forecast for 1989
1000	National Energy Conservation Policy Act of 1978
700	Additional load management
490	Extrapolated solar implementation
135	Goat Rock
865	Retention of full interest in Plant Scherer

These savings are not hard sophisticated econometric forecasts, but the Applicant's estimates have not had great predictive value. The summary of savings is more than double the capacity of Vogtle. The bias in the Applicant's model grows as it attempts to predict the more distant future.

The summary of savings does not include Secretary of Energy Schlesinger's recommendation that the Government aim at obtaining 12% of its energy from solar power by the year 2000. The summary of savings does not include cogeneration (e.g. the TVA proposal), wind power, or biomass energy. The summary itself may be too conservative. GANE cannot simply indicate a

single source to replace the capacity of Vogtle 1 and 2. However, the summary of savings indicates cumulative sources which make the construction of Vogtle unnecessary.

The circumstances and data discussed in this section have not been previously considered by the NRC. Objective consideration of the changed circumstances and facts warrants hearings to determine whether there is truly a need for either Vogtle 1 or Vogtle 2. Although GANE believes the record is clear that neither plant is necessary, it is possible that the NRC might choose to hold hearings as to the necessity of only Vogtle 2; GANE submits that the NRC should fully consider the need for both units. The cost of discontinuing construction is much less at this stage of the proceedings than it will be when the Applicant seeks an operating permit. For these reasons, we think the NRC should conduct hearings on need at this time.

IV. CONCLUSION

The NRC should suspend the Applicant's construction permit and hold hearings to determine the need for Vogtle 1 and Vogtle 2. The NRC has not met its NEPA obligations to consider conservation as an alternative to nuclear power. The Applicant has made false statements of material facts in the licensing proceedings. Conditions and data have changed substantially since the construction permits were granted. All of these factors warrant further hearings to determine whether one or both of

the Vogtle plants are necessary.

Respectfully submitted,

Gary Flack

Gary Flack
Counsel for GANE
1515 Healey Building
57 Forsyth St., N.W.
Atlanta, Georgia 30303

(404) 522-1934

Dated: May 1, 1979

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Exhibit 1

GULF POWER COMPANY

POST OFFICE BOX 1151
PENSACOLA, FLORIDA 32520

April 15, 1976

R. F. ELLIS, JR.
PRESIDENT

Mr. Robert W. Scherer, President
Georgia Power Company
Post Office Box 4545
Atlanta, Georgia 30302

Dear Mr. Scherer:

Despite our frenzied efforts of the past several weeks, we have been unable to comply with your time schedule requirements for Gulf Power Company to purchase a 30 percent undivided proprietary interest in the Alvin W. Vogtle Nuclear Plant near Augusta, Georgia.

It is regrettable that customers of Gulf Power Company will be deprived of the availability of the lower cost power from the Vogtle Plant. Purchase of 30 percent of the capacity of the two 1,150MW units to be in service in 1983 and 1984, respectively, at lower installed costs per MW than the proposed Ellis Plant fossil units in approximately the same time frame, would have allowed Gulf to defer indefinitely the installation of the Ellis Units. With the much lower busbar energy costs from the Vogtle Nuclear Units over the 30-year life of the plant, substantial savings in electric power costs would have accrued to all of Gulf's customers.

As you know, we requested the assistance of the four Rural Electric Cooperatives we serve to expedite the anti-trust review required by the Nuclear Regulatory Commission, thereby allowing us to meet your very tight time schedule. Unfortunately, our request fell on deaf ears because the only response we've received has been one of noncommitment. With the Oglethorpe Electric Membership Corporation having 30 percent participation, the Municipal Electric Authority of Georgia having 17.7 percent participation, and the City of Dalton, Georgia, having 1.6 percent participation, it is inconceivable that there could be any anti-trust implications.

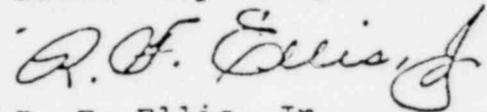
We have emphasized to the Rural Electric Cooperatives in Northwest Florida the need to move quickly in order to avoid jeopardizing the licenses and permits that you have for Plant Vogtle. They all realize that a full anti-trust review would

April 15, 1976

undoubtedly require an unacceptable delay in moving forward with construction plans, and that, with their consent, the anti-trust review should be handled routinely and quickly.

We are at a loss to understand what the Rural Electric Cooperatives in Northwest Florida hope to accomplish. What they have done through their failure to respond favorable to our request is to deny their own customers and all of Northwest Florida the availability of lower cost nuclear power.

Yours very truly,



R. F. Ellis, Jr.

RFEjr:ccg

cc: Chairman W. T. Mayo
Florida Public Service Commission
700 South Adams Street
Tallahassee, Florida 32304

Mr. M. J. Parish, III, Manager
Choctawhatchee Electric Cooperative,
Inc.
Post Office Box 512
DeFuniak Springs, Florida 32433

Mr. Henry F. Pruett, Manager
Escambia River Electric Cooperative,
Inc.
Post Office Box 428
Jay, Florida 32565

Mr. Walter V. Pruitt, Jr., Manager
Gulf Coast Electric Cooperative,
Inc.
Post Office Box 217
Wahatchka, Florida 32465

Mr. George E. Barfield, Manager
West Florida Electric Cooperative
Association, Inc.
Post Office Box 127
Graceville, Florida 32440

Representative R. L. F. Sikes
Rayburn Building
Room 2269
Washington, D. C. 20515

Senator R. B. Stone
Senate Office Building
Room 1327
Washington, D. C. 20510

Senator L. M. Chiles, Jr.
Senate Office Building
Room 2107
Washington, D. C. 20510

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Exhibit 2

A REPORT OF AN EFFECTIVE
LOAD MANAGEMENT SYSTEM
SECOND YEAR'S OPERATION
COBB ELECTRIC MEMBERSHIP CORPORATION
MARIETTA, GEORGIA

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Respectfully submitted:

A. W. Barrett P.E.
Manager of Electric Plant Operations

Cobb EMC is a distribution cooperative in Marietta, Georgia, 25 miles northwest of Atlanta serving 35,000 consumers in an area within a 12 mile radius of the headquarters. In late 1975, a decision was made to improve the deteriorating annual load factor which had fallen to 0.37 due largely to adding approximately 3,000 consumers per year, most with central air conditioning, with all other major loads served with natural gas. Very little commercial load was being added, and the system peak was becoming strongly dominated by residential air conditioning. The cost of wholesale power had risen sharply during the early 1970's, and had become a large percent of the total cost of operations for the cooperative. More emphasis had been placed on demand charges at the time when demand was increasing faster than consumption. That decision to improve a poor load factor during 1976 by radio controlled air conditioner switches had proven successful, and established the fact that a wholesale power purchaser could control that cost to a significant degree.

As reported in the results of the 1976 operation, a net reduction of \$227,942.00 was obtained in the cost of wholesale power between September of 1976 and September of 1977. This savings produced a 2.19 year payback period for the \$500,000.00 investment which had been the original projected results. This had been recognized as a prudent investment producing a revised annual load factor of 0.39, and a decision was made in December of 1976 to expand control efforts for 1977.

The expanded system was to include a total of 8,000 switches on central air conditioners, and a new system to incorporate an old principal of load control by voltage reduction.

With one years operation of the Motorola air conditioner switches as history, the projected savings under the wholesale power rate adopted in August of 1976 were easy to obtain, and the method of operation would be identical. However, less information

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was available to indicate the savings in peak demand which could be achieved through voltage control, especially on a system which was dominated by inductive motor load. A feasibility study was performed which made no attempt to totally predict savings, but showed that under present wholesale power cost, economic justification for the expenditure of \$150,000.00 existed if only one 5/8% step of voltage reduction could be obtained at peak. A copy of this study is in Appendix A.

The system to achieve voltage control was selected in January of 1977, and in its final form the following features were incorporated into the system:

- 1) cathode ray tube display
- 2) light pen operation with keyboard backup
- 3) system load display in megawatts updated each 2 minutes
- 4) station load display in kilowatts updated each 2 minutes
- 5) station kilowatt hours displayed by stations for the preceding hour
- 6) hard copy print-out on the hour of system megawatt demand and station kilowatt hour usage
- 7) status display of each feeder breaker, ground switch, reclosing relay switch, and each voltage regulator, and alarms for each change of status
- 8) voltage level readouts on each feeder
- 9) amperage readouts on each phase of each feeder
- 10) gate alarm and status of each station gate
- 11) regulator to auto or manual and status display
- 12) control of each feeder breaker to trip or close
- 13) control of each non reclosing switch to on or off
- 14) control of each ground relay cutout switch to on or off
- 15) voltage control in increments of 1.5 volts from 0 to 7.5 volts by system, station or by feeder, and return to reset

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- 16) channel failure alarms
- 17) local to remote status and alarm
- 18) hard copy print-out of all switching functions
- 19) hard copy print-out of analog readings upon command
- 20) abnormal list function
- 21) abnormal log function
- 22) initial installation with 12 stations with 45 feeders with expansion capacity to 30 stations with 6 feeders each

Each of the features of the system was considered important, and many can be demonstrated to have monetary advantage, but the cost of wholesale power had risen to \$52.57 per year per kw of peak billing demand, and this factor alone was used to make all economic justifications, and will be used to make all monetary saving calculations.

In January of 1977 full efforts were being directed toward obtaining consent from an additional 3,000 members with central air conditioners to install the radio receiver switch. The members were being asked to join an existing 5,000 members toward a stated saving goal of \$1,000,000. This goal was again to be reached by strictly voluntary participation with no special incentive offered. The method of contacting the consumers was to be through brochures mailed to all whose consumption had exceeded 1,200 kwh during June, July, August or September of 1976. In addition the bill message, and personal efforts of employees and members of the ladies task force were utilized to a very successful degree. One disadvantage existed at this point because no dependable estimate could be made concerning the number of central units on the system for which control consent couldn't be obtained. The total goal of 8,000 units would represent almost 23% of all residences served, and led to early large scale

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efforts to obtain consents. Due to all combined efforts, 3,000 consents were obtained by June, and an added 300 switches were ordered in July to match the 3,300 consents.

The physical installation was accomplished by the same heating and cooling contractor used for the 1976 project. The agreement was the result of open bids with some 40 contractors invited to bid with 10 responding, and the low bid was \$14.50 per switch installed. This figure included one callback without regard to cause with no cost involved.

The installation of the Supervisory Control and Data Acquisition System was to be accomplished by Cobb EMC personnel and required rewiring of all breaker controls and regulator controls. Concrete pads for the station remote cabinets and circuits were installed during February, March, and April so that wiring could begin in May with a cut-in deadline of July 1, 1977. Telephone data grade circuits were ordered in January for June 1st operation, and were finally the last link ready for operation in July. The master station of the SCADA system was delivered in early July, and was operational prior to the July billing peak which occurred on July 21st.

Prior to this peak some tests were performed in an attempt to determine what actual results could be expected from voltage reduction. During one of these test the voltage was lowered the maximum 7.5 volts for a short period of time, and a reduction of 1,000kw was noted on a station supplying 12,000kw demand. This 8.3% load reduction for a 6.25% voltage reduction did not appear unexpected since much of the load present at that time was not inductive motor load as this station supplied 21,000kw at peak. However, the test did cause enough concern about the voltage levels that the next test involved measurement of weatherhead voltage levels at remote locations during control with the minimum allowable level set at 112 volts. At no time during the operation of voltage control was any consumer supplied less than 112 volts to the weatherhead that can be

determined, even with extensive voltage chart measurements. No brown-outs were imposed nor is it intended that any ever be caused. The conclusion of all measurements and objectives left the basic operation at a maximum of 6.0 volts reduction or 5%.

With few exceptions which represent small portions of the system load, the voltage level settings in the station regulator control panels are set on 123 volts plus 6 volts resistive compensation and 3 volts reactive compensation. Since most voltage regulators operate at less than rated load, the resulting voltage output can vary from about 130 volts without control to 124 volts with control on heavily loaded feeders, and a maximum of 124 volts on lightly loaded feeders without control to 118 volts under control. If the levels are set correctly, a system-wide reduction of 6.0 volts will affect all consumers on a nearly equal basis on feeders between the station regulators and the field regulators. Eleven sets of platform mounted regulators serve small amounts of the system demand, and to make certain reductions applied equally to all consumers these field regulators were equipped with modified receiver switches from the air conditioner project which could be discretely controlled from the manual encoder of the Motorola system. With the selection of the proper code the remote regulators can be turned off in their present position or the voltage output can be reduced by 3.0 volts. Again, if voltage levels are correctly set, the load reduction from voltage control should be on a near equal basis to all consumers.

One of the points of the feasibility study had been the need of a system to provide central office control to increase safety. During the first week of operation, this consideration proved valid when a collector in the Member Service Department was enroute home from work, and noted a primary conductor down. The area was sandy and dry, and had not operated the station breaker. No light calls had been received from consumers beyond this break in the line, but the line was energized on the source side. The

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employee proceeded to a telephone, and reported the conditions to the dispatcher, and the line was de-energized within seconds. When the employee returned to the scene, members of the public had gathered, and were within reach of the conductor.

Again, this condition was repeated at another location when an Operations Department employee noted a hot conductor on a city sidewalk, and called the dispatch room from a telephone. Upon returning to the scene, it was found that the Fire Department had arrived, and removed the line, apparently after the line had been de-energized by SCADA. This occurred even though this person had left people to guard the hot line, and upon the arrival of the Fire Department they felt their responsibility had ended. No definite results can be claimed from either of these incidents, but certainly safety was increased, and life was protected with the system.

During the first three months of operation a total of 82 "R" switches were opened by SCADA, and logged to work crews. Man hours and truck miles have been directed toward more productive goals because of central office ability to operate these function switches.

In June, tone test of the radio control air conditioner system were conducted to measure the effect remaining from the 5,000 units of 1976 installation, and the added 3,000 units. On several occasions and successive days with mid 80's temperature, all ten tones were sent, and the effect monitored on the telemetry system. The expected load drop of all 8,000 switches would be 42,000kw if no diversity existed. The 42,000kw reflects the reduction in size of the average air conditioner controlled from the 6.0kw average of the first 5,000 units from 1976 to an average of 5.25kw of the blended 8,000 units. Apparently, efforts to reach consumers with larger units in 1976 had proven successful. Any difference in the test results and the maximum 42,000kw would be air conditioning diversity at the existing temperature. The results indicated consistently

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between 45% and 55% diversity as expected from 1976 test. This gave adequate proof that the system was operable, and no house by house inspection of the 1976 switches would be necessary. The question of when such checks will be required is delayed until similar tests show lower diversity factors.

The operation of the voltage system did not begin until after the June billing peak, but air conditioner switches were operating on a 26% inhibit cycle on the June 13th peak day. The new kw reduction for that day was established to be 10,367kw due in full to 26% curtailment of air conditioners, and the reduction of 635kw from two large commercial loads. On this day, the diversity factor netted 89%. Since the billing demand for June was on the current month and not 1976 ratchet, the dollars difference in actual and the bill recalculated with the 10,367kw added shows \$48,076.11 saved in June.

In July, the voltage control system was in operation and did reduce the system voltage by 6.0 volts. The 8,000 air conditioner switches were in operation on the July 21st peak, and it was apparent that a new all time record demand was being set. The 26% curtailment had been effective in the 7 out of each 27 minutes in the cycle, and fewer complaints had been received than was expected. Since it was believed this was the hour that would ultimately count for ratchet demand, it was decided to reduce the operating time to 7 off of a 20 minute cycle, or a net reduction of 35%. After the peak, the control time was returned to 26% and operated one additional hour. After this added hour controls were released and the results noted on the telemetry charts. (See Appendix B) The first release was air conditioning and the second voltage. When these charts are interpolated to show the entire Cobb system and 35% curtailment of air conditioning, the net return to the system is 20,930kw, even 1½ hours past peak. During peak the demand was 115,725kw which indicates a demand of

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136,655kw would have resulted without control. The wholesale revenue meters did show a demand of 136,858 off peak when controls were not in use. Again in July, the billing demand was on current month peak and the calculations used for the June savings reflect \$137,091.50 saved in July.

During the billing months of August and September the system was utilized during billing peak even though the July peak was not exceeded. However, had the controls not been in use, the bill for August would have been \$113,538.25 higher than actual and \$115,988.47 higher in September.

Due to the complex wholesale power rate structure, no precise dollar can be assigned to each kw until bills are calculated under expected conditions without controls, and the actual bills subtracted. These calculations were made for the 8 months of October, 1977, through May, 1978, and the resulting dollar savings was found to be \$685,666.80. When combined with June through September, the total savings will be \$1,100,360.00.

The announced savings goal of \$1,000,000 has been surpassed with a capitol investment of \$955,000. Of the 20,930kw which had been eliminated from the billing peak in July, the air conditioner system eliminated 14,437kw, and the voltage controls reduced demand by 6,493kw. A proportional distribution of dollars was applied to the \$1,100,360.00 resulting in an allotted savings of \$762,180 from an investment of \$775,000 with the air conditioner system for a payback of 12 1/3 months or 1.02 years. A similar assignment shows the SCADA system savings to be \$338,180 with an investment total of \$180,000 to yield a payback period of 6 1/2 months or 0.53 years. Each of these payback periods appear exceptional as most investments by electric suppliers have paybacks in large multiples of these values. The overall investment of \$955,000 produced a payback of 0.87 years or just over 10 months.

As stated earlier, voltage reduction test had indicated greater than expected effect in load drop to establish and document this result. The process was used on occasions with recordings generated on the telemetry system. The charts of 3 stations under indicated voltage drops, and the kw reductions are shown in Appendix C.

The expected kwh consumption as projected from July, 1977, through June, 1978, is 425,000,000kwh. The \$1,100,360 saved will reflect a reduction in the cost of wholesale power to Cobb EMC in this 12 month period of 2.60 mils per kwh in comparison to what the cost would have been without load management. This saving will be returned to the membership through the standard wholesale power adjustment calculations.

It is not intended to imply that all operations were completed without difficulty. The use of the air conditioner control system for 32 days during the hottest summer in recent years resulted in a few complaints, almost all of which were prior to the July 21st peak. These complaints were not excessive and to date, 85 of the 8,000 switches have been removed. It appears that a removal rate of approximately 1% can be expected.

Since the Advanced Control System, SCADA system is serial number one, some difficulties were anticipated. These were handled promptly, and did not cause any long lasting ill effects. The single major problem resulted in the first month of totally unreliable telephone line operation. If this situation improves, it will be considered a small effort to achieve the expected 0.42 annual load factor. This is combined with the fact that other distribution cooperatives in Georgia experienced an average of 18.36% increase in billing demand while Cobb EMC maintained a 3.54% increase with an 8% increase in consumers served, to demonstrate the positive results. As supporting information, an increase of 17.01% in the kwh usage for the first 9 months of 1977 was noted as compared to the same 9 months of 1976.

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One of the stated objectives of Cobb EMC was to install an effective load management system which would provide positive control of the system load and system cost through voluntary consent. That objective has been reached to a very large degree even to the extent of approaching saturation of the possible air conditioner units that are available. Until this time little, if any, justification existed for supplying financial rate incentive to the volunteers since not all members had accepted or rejected the opportunity to participate. Therefore, an injustice could have been created by rewarding a member for agreeing to help eliminate a problem he had helped create. However, it is expected that the expansion for the 1978 program will approach consent saturation. Now a special incentive to more equitably return the savings to those who have participated must be studied. This could affect the per member savings from \$21.78 average per year when returned to 35,000 members to a maximum of \$95.27 per year if returned to the 8,000 participants. To each of these numbers another \$9.66 would be added due to voltage control. This would make respective total savings of \$31.44 per year and \$104.93 per year.

It should be noted that something less than the total savings from either system would be returned to the participating members since the cost of the system will be paid by all members. Also, the main difference in rate incentive should occur between members with controlled air conditioners and those with non controlled air conditioners, while those without air conditioning should have no penalty due to air conditioning peak.

With the clear demonstration that any electric supplier can have control of demand cost, and in fact delay major expenditures of capital, every effort should be expended to institute and expand reasonable means of load management. As the cost of electrical capacity increases, as it is certain to do, other loads and other means will become feasible and desirable. It is and shall remain the goal of Cobb EMC to find these means.

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EXHIBIT 3

APPLICANT'S ESTIMATE OF PEAK HOUR DEMAND (MW)

<u>YEAR</u>	<u>10/76 ESTIMATE</u>	<u>3/79 ESTIMATE</u>	<u>% REDUCTION</u>
1976	9,086	-	-
1977	10,093	-	-
1978	11,429	-	-
1979	12,534	10,891	13
1980	13,281	11,551	13
1981	14,149	12,098	15
1982	14,966	12,652	16
1983	15,937	13,162	17
1984	16,967	13,797	19
1985	17,980	14,423	20
1986	-	15,036	-
1987	-	15,680	-
1988	-	16,229	-
1989	-	16,893	-
1990	-	17,605	-
1991	-	18,357	-
1992	-	19,153	-

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NEW YORK TIMES 4/13/79

Schlesinger Would Spend 2.5 Billion on Solar Power

By RICHARD HALLORAN

Special to The New York Times

WASHINGTON, April 12 — Secretary of Energy James R. Schlesinger has recommended to President Carter that the Federal Government spend \$2.5 billion to stimulate the development of solar energy in the mid-1980's, with the aim of having the nation get about 12 percent of its energy from solar power by the year 2000.

If adopted, the proposal would be the first sizable Federal commitment to solar energy.

In a memorandum to the President, Mr. Schlesinger also recommended a personal commitment by President Carter to solar power; Administration partnership with all sectors of the economy to promote it; specific Presidential goals, and an announcement by Mr. Carter in a nationwide address or Congressional speech.

The memorandum, a copy of which was obtained by The New York Times, summarizes a policy review within the Administration promised by the President when he attended the Sun Day celebration in Denver last May and includes Mr. Schlesinger's recommendations. It comes in the wake of the Pennsylvania nuclear accident, but was not written as a response to it.

Administration officials said that a "decision memorandum" for Mr. Carter was being prepared by Stuart E. Eizenstat, his senior adviser on domestic affairs, with a Presidential solar message expected within a few weeks.

The main findings of the policy review were that "solar energy offers numerous important advantages over competing technologies and significant potential exists for expanding its use."

The option recommended by Mr. Schlesinger would, he said, "increase the Federal budget by \$2.5 billion cumulatively through 1985 for financial incentives." The increases would be above those in the Energy Department's budget but would not start until the fiscal year 1982, which begins in October 1981.

The memo said that "tax incentives and credit assistance to such near-term technologies as passive solar, solar hot water and industrial process heat would be provided," and the use of solar energy in Federal buildings would be made more effective.

The option Mr. Schlesinger recommended falls short of a more dramatic commitment, as sought by solar advocates, listed as spending of \$6 billion in 1980, \$44 billion by 1985, and between \$81 and \$113 billion by the year 2000, and a less costly option, \$160 million in added spending until 1985.

ATLANTA CONSTITUTION 4/20/79

NUCLEAR PLANT DEMONSTRATION

TVA Board OKs Waste Heat Plan

KNOXVILLE, Tenn. (AP)— The Tennessee Valley Authority's directors gave the go-ahead Thursday for developing a \$30 million industrial park that will utilize waste heat from the Watts Bar Nuclear plant 40 miles northeast of Chattanooga.

The TVA board authorized a \$2.7 million program to begin installing piping for the proposed 400-acre Rhea County industrial park adjacent to the Watts Bar plant and to conduct a marketing analysis.

TVA Power Manager Hugh Parris said the park would be the nation's first large-scale demonstration in which waste heat generated by a power plant is put to a wide variety of uses.

Several greenhouse operators already have expressed an interest in locating in the park and a TVA-commissioned study by the Battelle Institute says meat processors and laundry detergent manufacturers also could profitably utilize the waste heat.

TVA already has experimented with the concept with a greenhouse that is heated and cooled by waste heat from its Browns Ferry nuclear plant near Athens, Ala.

Parris said TVA also is studying the prospect of developing more industrial parks at the sites of other nuclear plants the government utility is building.

"When you go out after industry and are able to tell them that you have a

steady source of energy not coming from Saudi Arabia, this might be a very good basis for acquiring growth, new jobs and prosperity in the area," TVA Chairman S. David Freeman said.

"Everytime the OPEC cartel meets, this concept has a breakthrough," Freeman said, referring the Organization of Petroleum Exporting Countries. "The cost effectiveness of these parks will grow by leaps and bounds as OPEC continues to raise the price of oil."

TVA plans to begin generating electricity from the Watts Bar plant in 1981 and open the industrial park a year later. Approximately \$18.5 million of the \$30 million cost will go towards developing the waste heat distribution system.

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Solar Mirror Tested

Collectors Destined For Coweta Factory

By Chuck Bell 3/30
Constitution Staff Writer (5)

Experimental solar energy hardware destined to provide more than half the power to run a Coweta County factory has passed its first tests and has lived up to its developers' expectations.

The prototype of a solar collector that will be used to concentrate sunlight in the Solar Total Energy—Large Scale Experiment at Shenandoah in Coweta County was tested at the Sandia Laboratories in Albuquerque, N.M., and produced temperatures as high as 600 degrees F—about 100 degrees hotter than the heat most kitchen ovens are capable of producing—while operating at an efficiency of 60 percent. In other words, 60 percent of the sunlight that hit the device was converted into usable energy.

The prototype consists of a parabolic mirror 5 meters (16½ feet) in diameter and a cup-shaped collector filled with stainless steel tubes through which a heat-gathering fluid can be pumped. The full-scale version, which will be installed at the Bleyele America Inc. knitwear factory at Shenandoah, will have 192 reflectors, each with a diameter of 7 meters (23 feet).

The Bleyele solar energy system, being developed by the Space Division of General Electric, will be the largest industrial solar energy installation in the United States when it becomes operational in 1981. It is expected to provide at least 60 percent of the energy requirements of the 42,000-square-foot factory, including electric power for lights, motors and sewing machines, process steam for the presses and hot and chilled water for space heating and cooling.

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When the system is in operation, the reflectors, aimed continuously at the sun by a two-axis tracking control, will concentrate sunlight on high-temperature receivers at their focal points. A special oil called Therminol flowing through the receivers will carry heat to a steam generator.

Steam from the generator will drive a turbine connected to an electric generator, which, in addition to providing power for the plant, will be interconnected with the Georgia Power Co. system. The steam also will be used to power an absorption-type air conditioning unit.

A tank of Therminol will be used to store heat for use at times when the sun isn't shining.

Jud Poche, program manager for the General Electric Space Division, said the parabolic dish reflectors were chosen for the system because they produce higher efficiencies than parabolic trough reflectors of the same area.

"Results from the initial tests confirmed our high expectations for the parabolic dish collector," Poche said.

He noted that the actual reflectors used at the Bleyele factory should perform better than the prototype. The concentration ratio of the prototype collector is 150 to 1 while the full-scale collector will concentrate sunlight at a ratio of 253 to 1. The operating temperature is expected to be 750 degrees F, with efficiencies even greater than those demonstrated by the prototype.

One advantage of the system is a unique construction method designed to reduce cost. The parabolic dishes are constructed by bolting together die-stamped aluminum panels. This is cheaper than fabricating each dish as a single piece.

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ATLANTA JOURNAL 4/27/79

Coming to Georgia

Windmills to Blow Puff of Energy

By JOHN REETZ
Journal Staff Writer

Electricity-producing wind machines — basically sophisticated versions of the rickety old wooden windmill — may soon be installed in Georgia's coastal and mountain regions as part of a nationwide effort to show they are feasible for energy production.

Federal Department of Energy officials are preparing to begin a search for possible locations for the machines.

The wind machines will be placed, at no charge, on large farms, multifamily residential areas, small industrial plants or other sites that would require a small amount of energy.

Georgia's coastal and mountainous regions are considered likely spots for the wind machines, according to the DOE's Bill Rankin, coordinator of the program in eight Southeastern states.

"Naturally some states have higher wind potentials than others," Rankin said. "In the Southeast, we have some good possibilities: The mountains of Tennessee, around the Mississippi River near Memphis, the mountains of North Carolina and north Georgia and the Outer Banks of North Carolina."

A huge wind generator with a rotor span of 200 feet is currently being built in the mountains of western North Carolina. At wind speeds of 24 mph, it will provide power to more than 500 homes that are supplied by the Blue Ridge Electrical Membership Corp.

But the wind machines that may be located in Georgia will be much smaller.

State energy offices, the DOE and the manufacturers will help pick the best locations.

Rankin said the nationwide program, funded at \$4 million for this fiscal year, was originally designed to provide at least two wind machines for each state. "But the

states that indicate little interest will probably get none and those states that are very eager will probably get three or four," he said.

Mark Zwecker, head of Georgia's energy office, said state officials plan to work with DOE to install wind machines in the state. "We wouldn't pass up that type of opportunity," Zwecker said.

Although the coast and mountains are good possibilities, Zwecker said wind "sometimes shows up where you least expect it, so really all of Georgia has the potential."

The wind machines, with rotor diameters of 10 to 30 feet, each cost from \$50,000 to \$100,000 and will produce less than 100 kilowatts. "They will supply more than a residence," Rankin said. "They produce for something that's approximately as big as a good-sized farm or cattle ranch or several residences."

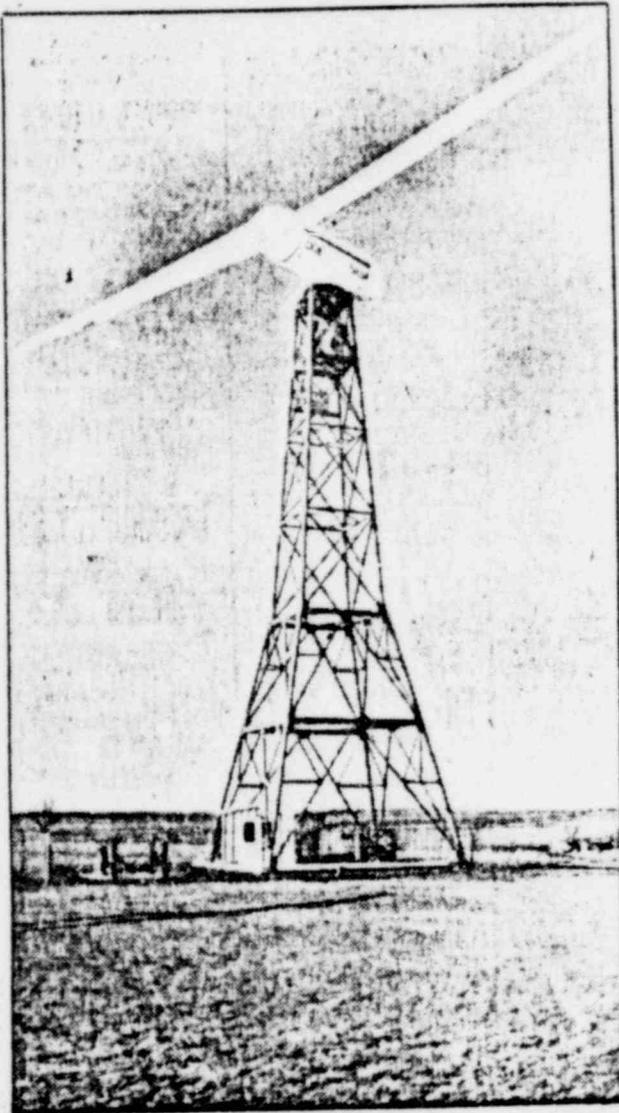
The government contractor will install the wind machines, and at the end of a year, they will be given to the owner of the property.

Rankin said the program is not aimed at testing the capabilities of the wind machines. "We know they work," he said. "This is aimed at getting at what we call institutional barriers — getting utilities to be receptive to small wind generated power."

"Most utilities aren't interested in something this small," he said.

Because of the unreliability of the wind, the utilities would be asked to provide back-up power. The utilities' willingness to participate will influence the final site selection, he said.

There also may be cases where the owner of a wind machine produces more power than is needed, so Rankin said both utilities and public service commissions would have to decide if that extra power could be sold to the larger utilities.



NASA windmill in operation in New Mexico

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