

MINUTES OF THE House SUB COMMITTEE ON Energy

The meeting was called to order by Representative Keith Farrar at
Chairperson

3:30 ~~am~~/p.m. on March 1, 1983 in room 519-S of the Capitol.

All members were present except:

Committee staff present:

Ramon Powers, Research Department

Conferees appearing before the committee:

- HB 2425 - Mary Abbott Mills.
Mark Buck, Kansas Electric Utilities Research Program.
HB 2199 - Representative Ken Grotewiel.
Stevie Stephens.
Cindy Entriken.
Ralph Estes.
Robert Hagan, Kansas Gas and Electric Company.
HB 2121 - Representative Keith Farrar.
Lowell Case, Mobil Oil Corporation.

HB 2425 - An act concerning the state corporation commission; authorizing the creation of the Kansas energy research and development board.

Vice-chairman Keith Farrar reminded Subcommittee members that testimony was continuing on HB 2425, since there had not been ample time to hear all conferees at the 8:00 a.m. meeting earlier in the day.

Mary Abbott Mills, Wichita, testified in support of HB 2425. She said that research and development surcharge funds should be put to use in Kansas universities and research centers where emphasis is placed on applied technology which benefits Kansans. She outlined several research-project areas which could be addressed in Kansas if monies were available (see attachment 1).

Mark Buck, coordinator of the Kansas Electric Utilities Research Program (KEURP), testified in opposition to HB 2425. He said that if they perceived its intent correctly, it was unnecessary legislation. He said it would severely limit the benefits from electric power research and development now available to Kansas electric customers and would be an inefficient use of the funds earmarked for such research and development. He noted that six electric utilities created KEURP which became operational in February 1982. Since then, he noted, seven applied research and development projects have been approved and funded. He elaborated on KEURP's mission and objectives; benefits received from the Electric Power Research Institute; and, discussed further concerns he had regarding HB 2425 (see attachment 2).

A brief question and answer period followed the presentations of testimony on HB 2425.

HB 2199 - An act concerning nuclear powered energy generating facilities; relating to the decommissioning thereof.

Representative Ken Grotewiel, sponsor of HB 2199, testified in support of the bill. He said that passage of the bill would create a committee to study the methods of decommissioning a nuclear-powered generating facility in Kansas and the projected costs of such activity. He said it also would explore the methods of financing the various alternative methods of decommissioning. He provided background information on decommissioning costs (see attachment 3).

Stevie Stephens, Tonganoxie, testified in support of HB 2199. She addressed

CONTINUATION SHEET

MINUTES OF THE House SUB COMMITTEE ON Energy,
room 519-S, Statehouse, at 3:30 ~~am~~/p.m. on March 1, 1983

the technology and some of the associated costs of decommissioning. She said that decommissioning is of such a complex nature, that to ensure safe and proper procedures, it requires the formation of the committee provided for in HB 2199. She elaborated on methods of decommissioning with their associated costs (see attachment 4).

Cindy Entriken testified in support of HB 2199. She noted there are six entities who play a role in the decommissioning of nuclear-powered generating plants in Kansas. They are: Nuclear Regulatory Commission; U.S. Department of Energy; Kansas Corporation Commission; Kansas Department of Health and Environment; Kansas Gas and Electric Company; and, the Kansas Legislature. She detailed each entity's responsibility and the actions each has taken regarding decommissioning (see attachment 5).

Dr. Ralph Estes, Wichita, testified in support of HB 2199. He addressed the costs involved in decommissioning a nuclear-powered generating facility and the methods to be used in decommissioning. He related these concerns to the Wolf Creek Generating Station and their impacts on Kansas ratepayers, taxpayers, and utilities (see attachment 6).

Dr. Robert Hagan, Kansas Gas and Electric Company, testified in opposition to HB 2199. He said he was responsible for Licensing, Nuclear Fuel Supply, Nuclear Safety, Nuclear Fuel Engineering, and Radiological/Environmental aspects of the Wolf Creek Nuclear Generating Station. He indicated that the bill appears to address three concerns. First, he said, was an apparent lack of knowledge and experience regarding the decommissioning of nuclear facilities; second, safety considerations regarding the decommissioning of nuclear facilities; and, third, the funding of the decommissioning of nuclear facilities. He noted that the purpose of his testimony was to indicate to the Subcommittee that those three areas of concern do not warrant further legislation (see attachment 7).

A brief question and answer period followed several of the presentations of testimony on HB 2199.

HB 2121 - An act concerning the production and conservation of natural gas.

Representative Keith Farrar, sponsor of HB 2121, provided a brief overview of the bill. He noted that the intent of the bill is to protect correlative rights.

Lowell Case, Mobil Oil Corporation, testified in opposition to HB 2121. He proposed an amendment to delete wording "except that the daily takes of gas from any well in an unprorated gas pool shall now exceed 25% of its openflow" found on lines 52 through 54 of the bill.

A brief question and answer period followed the presentations of testimony on HB 2121.

There being no further business to come before the Subcommittee, the meeting adjourned at 5:00 p.m.

The next meeting of the Subcommittee will be held March 2, 1983.

Rep. Keith Farrar, Vice-chairman

TO: KANSAS HOUSE ENERGY SUBCOMMITTEE - ENERGY AND
NATURAL RESOURCES COMMITTEE

TESTIMONY BY: Mary Abbott Mills, 1141 North Market, Wichita, Kansas 67214

In the 1960's and early 70's, energy was cheap. Big construction projects meant a savings for the consumer. No one minded paying a little extra for research and development of future energy sources or where the money went. Utilities have spent millions of dollars of rate-payers money out of the state. Now that many ratepayers are finding it difficult to meet their skyrocketing utility bills it becomes increasing more important to put those funds to good use in Kansas universities and research centers. Emphasis should be placed on applied technology which benefits Kansans. Distribution of those funds needs to be handled by an entity that has the consumers' best interest in mind, not the utility company's. With proper handling, increases in future energy costs can be cut and kept at an acceptable level.

Now in the State of Kansas, we have a glut of electricity and natural gas, but that won't always be the case. It is the time to prepare for those years. Large corporations are already moving in that direction. Vulcan Chemical, KG&E's largest customer, has installed a co-generation facility. This decision will save Vulcan millions in the coming years because of increases in efficiency of the system.

Other areas of the country are moving in a similar direction. A company in California, Pyro Sol Corp., has a system capable of disposing of 50 tons of rubbish a day and turning it into electricity. The system generates enough electricity to run itself and 1,200 homes for a month. Another company, Watson Biogas Systems, has begun to recover and process landfill gas, while turning it into electricity and selling it to Southern California Edison. To many Kansans these ideas may seem somewhat far-fetched, but ideas such as these can be part of the answer to our future energy needs.

An area of study that will help our present energy crisis is load management. New power plants are built to meet peak demand. Construction of these plants is what has and will make our electric rates increase at an alarming rate. We need to send a price signal to rate-payers, letting them know that electricity at certain times of the day is much more expensive than at other times of the day. Whether it be metering techniques, conservation rates, interruptible rates, or higher prices during peak times, shaving the peak will save us all money if

Attachment 1 3-1-83

TO: ENERGY COMMITTEE

TESTIMONY OF Mary Abbott Mills

March 1, 1983

both the short and long run. Another load management area is weatherization. Currently we pay utility bills of the low income through the LIEAP Program. This does nothing to lower peak demand. We need research on the most cost effective methods of weatherization.

Some of these ideas are being acted upon in Kansas. But I fear it is too little too late. This bill provides what we need in Kansas. It puts Kansans to work by funneling monies we now pay into applied research done in Kansas to benefit all Kansans.

Mary Abbott Mills
1141 North Market
Wichita, Kansas 67214

Consumer Information

HOUSE BILL NO. 2425

STATEMENT OF
MARK A. BUCK
PRESENTED ON BEHALF OF
THE ELECTRIC COMPANIES ASSOCIATION OF KANSAS
AND THE
KANSAS ELECTRIC UTILITIES RESEARCH PROGRAM

BEFORE THE
HOUSE SUBCOMMITTEE ON ENERGY

MARCH 1, 1983

Good morning. My name is Mark Buck. I am the Coordinator of the Kansas Electric Utilities Research Program (KEURP), and responsible for the day-to-day administrative, financial and legal operation of KEURP.

House Bill 2425 is an ambiguous piece of legislation. If we perceive its intent correctly, it is unnecessary. Furthermore, it would severely limit the benefits from electric power research and development (R&D) now available to Kansas electric customers and be an inefficient use of the funds earmarked for such R&D.

In 1981, six electric utilities signed an agreement which created the Kansas Electric Utilities Research Program (KEURP). KEURP became operational in February, 1982. Since that time, seven applied research and development projects have been approved and funded. Contracts for five of the projects have been signed and work is proceeding. The projects currently being conducted include site evaluations for six potential windfarms in Kansas, a study of techniques to minimize damage to electric lines caused

by wind and ice. participation in a solar energy research program being conducted by the University of Kansas, and application of a computer program developed by the Electric Power Research Institute (EPRI) to better manage utilities' loads and thereby control the costs of producing electricity.

The Mission and Objectives of the Kansas Electric Utilities Research Program are attached as Exhibit A. A review of Exhibit A reveals that the goals of KEURP are, if not identical, designed to meet the critical objective set forth in Section 2 of House Bill 2425: utilization of Kansas energy resources in a cost efficient manner by determining, studying and applying the best available technologies. Thus, the proposed establishment of an energy R&D board would be duplicative of KEURP's activities.

I would like to point out one stated objective in the bill which would be unwise to support. This objective, appearing in lines 0025 and 0026, is to support research and development programs "designed to reduce the energy import needs of the State of Kansas". At times, electricity can be and is purchased from other states at a cost which is less than the cost to produce electric power in Kansas. This "importation" saves ratepayers money and hence should not be discouraged.

An examination of Section 4 lends further support to the conclusion House Bill 2425 is unnecessary. That section provides that the Corporation Commission shall establish a board of directors reflecting public and private sectors, establish guidelines for R&D projects, and ensure that funded projects meet those guidelines

and do not overlap with research conducted by other organizations. What is proposed to be accomplished by the bill is already being implemented in an effective manner by KEURP.

KEURP research projects are considered, selected and supervised by two committees reflecting both private and public interests. The Technical Committee is comprised of a representative from each of the six member electric utilities, one representative from each of the seven educational institutions governed by the Kansas Board of Regents (University of Kansas, Kansas State University, Wichita State University, Emporia State University, Pittsburg State University, Fort Hays State University and the Kansas Technical Institute), and a staff member of the Kansas Energy Office. A staff member of the State Corporation Commission attends each committee meeting and serves as a non-voting liaison between KEURP and the Commission. Each Technical Committee member is required to be knowledgeable in the production, distribution, and utilization of electric energy. This Committee solicits and considers proposals for projects from a technical standpoint. If justified on the basis of potential benefits to Kansas utilities and ratepayers, economic efficiency, probability of success, is consistent with KEURP goals and not duplicative of other research efforts, the proposal is approved for consideration by the Executive Committee.

Members of the Executive Committee are an appointee from the Kansas Board of Regents, the Director of the Kansas Energy Office and the Chief Executive Officer of The Kansas Power and Light Company,

Kansas Gas and Electric Company, Kansas City Power & Light Company, Western Power-Centel, Midwest Energy, Inc., and The Empire District Electric Company. This board analyzes the proposals and approves a budget if the project is consistent with KEURP's Mission and Objectives and warranted in terms of benefits and costs. Once approved, the project is returned to the Technical Committee to solicit competitive bids or award a sole source contract. The project is then supervised and managed by designated committee members.

You should note that the Corporation Commission has existing powers to oversee the activities of KEURP to ensure that the best interests of Kansas ratepayers are being met by research endeavors.

The enactment of House Bill 2425 would also unnecessarily dilute the amount of money available to fund research projects. The creation of a state energy R&D board would require expenditures for administrative expenses, including salaries, equipment, office overhead, et al. Such expenditures would reduce the amounts now apportioned for conducting research endeavors. This result seems particularly inefficient in terms of economics in light of KEURP's performance of functions virtually identical to those of the proposed board.

House Bill 2425's most serious deficiencies, due to lack of clarity and detriment to Kansas electric ratepayers, lay in Section 3. That section, in lines 0031 through 0033, grants authority to electric utilities to impose and collect a surcharge from its customers. Electric utilities currently have this

authority and have been collecting a surcharge from customers to support electric power research and development since 1972. I have attached as Exhibit B a copy of the order of the State Corporation Commission in which the matter was considered and ruled upon. Because one surcharge is already being collected, the bill leaves it unclear as to whether an additional surcharge would be imposed to support the Kansas energy research and development board. We would welcome the legislative approval of additional expenditures for research and development which could discover improved methods to reliably produce electric power at the least cost.

However, we fear that this is not the bill's intent. Instead of supplementing current research efforts, this proposed legislation could be construed as authorizing a confiscation of the current R&D surcharge and redirection of funds for electric R&D in a manner detrimental to utilities and their customers.

On page 5 of Exhibit B, the Corporation Commission made the following finding:

"By reason of the scope and necessity of this long range research and development program and the amount of applicants' contributions thereto, and the overall benefits ultimately accruing to the electric users, it is fair, equitable and in the public interest that such costs be funded by a surcharge as proposed by the applicants."

The research and development program discussed in the order was the support of the Electric Power Research Institute (EPRI). The rationale for the formation of EPRI, and its goals and objectives

are set forth in the order. One conclusion reached by the Corporation Commission, on page 3 of Exhibit E is as follows:

"The electric utility industry, government officials and regulatory officials, including this Commission, believe that a massive electric power industry research and development (R&D) program, administered by EPRI, is a necessity to meet ever-growing energy demands in ways that are reliable, economical and environmentally acceptable."

This necessity, to meet ever-growing energy demands in ways that are reliable, economical and environmentally acceptable, has not disappeared. In ten years of operation, EPRI has made dramatic progress toward the achievement of this goal.

EPRI is incorporated as a non-profit, public-interest scientific organization. It is supported by member payments from the electric utility industry. Current membership is drawn from all segments of the industry; of the approximately 600 members, 41 percent are electric cooperatives, 38 percent are municipal and public power systems, 21 percent are investor-owned, and a small percentage are federal power agencies.

EPRI plans, funds and manages a nationwide coordinated R&D program for the electric utility industry in the United States. EPRI's research represents a consensus of industry needs and is closely coordinated with all member participants. In addition, close coordination with U. S. government agencies is maintained in order to maximize the benefits from both public and private funds that are being invested in energy research.

The industry cannot rely on equipment manufacturers to address the needs of electric utilities. Manufacturing firms in the electric

power industry concentrate most of their R&D funds on shorter term product improvements which can lead to increased competitiveness. They have neither the financial resources nor the incentive to develop unilaterally the wide spectrum of new technological options which will be required by the utility industry.

Nor can individual utilities nor all utilities within a state's boundaries adequately meet their own research needs. Given the utilities' requirement for new technology, and their responsibility to participate in the national R&D program, the following reasons endorse the conclusion that a centrally-focused, industry-supported R&D effort is both essential and cost-effective:

- The complexity, urgency, and magnitude of the technological issues facing the industry require a broad mix of skills and a substantial level of effort which are beyond the resources of an individual utility or small group of utilities.
- The coordinated R&D program sponsored by EPRI promotes the rapid implementation of new technology by involving the users in the development process and by disseminating the results to the entire industry.
- EPRI provides a critical mass of talent to respond rapidly to technical issues while avoiding duplication of utility effort.
- EPRI also encourages financial participation by

equipment suppliers and the federal government in R&D programs of special interest to the electric utilities and their customers.

To facilitate its role as the prime source of information on electric power R&D activities, a computer database of all EPRI, individual utilities and governmental agency sponsored research projects was developed. As members of EPRI, each Kansas electric utility has access to a nationwide research data base. All Kansas electric utilities who are EPRI members have profited from this information.

The benefits to electric utilities have been substantial. I have attached as Exhibit C a partial listing of the estimated savings individual utilities have reported as first-time users of EPRI research results. Furthermore, the advantages enjoyed by Kansas electric utilities from membership in and interaction with EPRI have been wide-ranging and well worth the investment by Kansas ratepayers. The following is a partial listing of the ways in which one Kansas electric utility has profited from its membership in EPRI. This listing was compiled from testimony given on behalf of the Kansas City Power and Light Company in a recent rate hearing:

- Company employees attended approximately 30 EPRI seminars and workshops in 1982. The benefits were two-fold in that a forum was provided for direct communication of research results to KCP&L and an opportunity was given to employees to meet and

discuss similar problems and solutions with their counterparts at other utilities.

- KCP&L's contribution to EPRI will be \$10 million over the next five years. The expected EPRI budget for research addressing problems and potential refinements directly applicable to KCPL's system for that same period is expected to be \$900 million. By sponsoring basic research through EPRI, KCP&L amplifies its research investment by 90 times.
- Six KCP&L dispatch personnel have received valuable training on a system dispatch simulator developed with EPRI funds.
- EPRI sponsored R&D has allowed KCP&L to forego conducting its own research projects on certain topics of concern to the Company. For example, KCP&L avoided an expenditure of \$490,000 in 1979-80 due to findings made in a \$10 million EPRI project on load management techniques which were to be studied by KCP&L. Because of other extensive work completed and now being done by EPRI, KCP&L has been able to make more informed decisions about techniques for other forms of load management. KCP&L has also implemented a program to promote energy efficiency in new home construction based upon test results

achieved in EPRI projects. Additional savings were realized in an ice-storage for a home cooling project as a result of studies sponsored by EPRI.

- EPRI-developed guidelines on acceptable methods of disposing of PCB's enabled KCP&I to quickly respond to EPA complaints concerning PCB storage methods.
- A savings of \$3 million over the next 30 years may be realized from an EPRI project to develop economical ways to remove PCB's from transformer oil.
- Within the last six years, steam turbine blades have failed at a cost of \$1 million to KCPL. EPRI research has developed a new blade material which may last the life of the turbine, thereby saving as much as \$5-\$6 million.
- Tree growth retardants formulated in EPRI projects are being used by KCPL which may save \$300,000 a year in tree-trimming expense. It is also expected that line damage from trees during storms will be mitigated. A large percentage of the outages caused by the June 7, 1982 storm, which cost \$2 million to repair, was tree-related.
- An invaluable reference manual on how to implement the Public Utilities Regulatory Policies Act (PURPA) resulted from EPRI-sponsored research. It has been

and is used extensively by KCP&L and is deemed invaluable by personnel of the Company. It may enable significant savings to be passed on to ratepayers from improved load control techniques.

- KCPL is using and will use computer programs designed to assist KCP&L to operate more efficiently and reliably. The cost savings estimate from using these models approaches \$1 million.

Please keep in mind that the foregoing was merely a sample of the economic and intangible benefits realized by one of the EPRI-member electric utilities in Kansas.

Against this backdrop of good flowing to Kansas electric companies from their membership in EPRI, the real evil of House Bill 2425 becomes apparent: its enactment would cause Kansas electric utilities to lose their membership in EPRI and the resulting benefits. Kansas electric utilities currently contribute 80% of the monies collected through the R&D surcharge to EPRI as membership dues. In 1983, this amount will be approximately \$2,744,000. Of the remaining 20%, 15%, \$514,525, is used to fund KEURP, and the remaining 5% is retained by the individual utilities to conduct in-house R&D.

However, under the terms of Section 3, assuming no additional surcharge is contemplated, 40% of the existing R&D surcharge would be paid to the Kansas electric R&D fund and 60% would be distributed to EPRI, KEURP and Kansas utilities. Because

of a recently-enacted membership policy, an electric utility can not be a member of EPRI, and hence receive full membership benefits, unless it pays an amount computed with formulas based on revenues and kilowatt hours sold. Even if all of the 60% designated as available for support of EPRI in HB 2425 were allocated, this amount would not be sufficient to meet the EPRI membership standards.

Not only would Kansas electric utilities, and hence their ratepayers, be severely damaged by such an enactment, KEURP would also feel substantial effects. EPRI has treated KEURP as a member because it was formed by EPRI member utilities, and hence afforded KEURP access to all of its resources. Were it not for EPRI assistance, input and guidance, KEURP would not have been operational as quickly as it was. EPRI is essential to KEURP in its evaluation of potential projects in that through use of its information transfer systems, it is assured KEURP's efforts are not duplicative of others. The availability of EPRI research results offers promising opportunities to apply such results to Kansas electric systems and thereby benefit electric customers. In fact many KEURP projects are continuations, applications and/or improvements on developments and studies either made or contributed to in some manner by EPRI.

Other advantages accruing to KEURP as a result of its affiliation with EPRI include technical advice on existing and contemplated projects at no cost to KEURP, supplying technical journals and research reports to Kansas state universities without charge, and sharing of proven techniques to manage research projects. If

House Bill 2425 is made law, KEURP would be deprived of these and many other benefits which enhance the cost-effectiveness of KEURP expenditures.

Fragmentation of research and development efforts at the individual utility or statewide level would eliminate all advantages of size, expert placement and management of R&D contracts, and coordination. It is our belief that the existing method by which electric research and development is funded and implemented gives the greatest benefit to Kansas ratepayers. On behalf of the Kansas electric utilities which support EPRI, we would respectfully ask that House Bill 2425 not be recommended for passage.

Thank you for your kind attention. I would be pleased to answer any questions or supply subcommittee members with further information.

MISSION AND OBJECTIVES
KANSAS ELECTRIC UTILITIES RESEARCH PROGRAM

Mission:

The exclusive mission of the Kansas Electric Utilities Research Program (KEURP) is to provide to each of the participating Kansas electric utilities the results of applied research (including demonstration projects) related specifically to those matters which

- (i) are generally unique or common, based on local operating conditions, to the design, construction, operation or economics of electric systems in Kansas;
- (ii) can be more efficiently and effectively pursued on a joint basis; and
- (iii) would enhance reliability or affect economics of operation of their electric systems;

for the purpose of giving each participant the opportunity to (a) continue to furnish reliable electric service to the public and (b) minimize its future electric service rates, all for the benefit of its Kansas customers.

Objectives:

The mission of KEURP will be achieved through accomplishment of the following objectives:

1. Ascertain and study those conditions, problems and concerns which are common to Kansas electric utilities.
2. Keep advised and informed of electric power research and development relevant to Kansas electric utilities.
3. Establish and maintain communication with organizations performing research, development and demonstration projects which may benefit Kansas electric utilities and ratepayers.
4. Ascertain and study those conditions, natural and renewable resources which are present in Kansas and which may enable Kansas electric utilities to produce electric power in an economically feasible manner.

5. Demonstrate, apply or improve upon research results achieved by other organizations which are economically justified in terms of potential costs and benefits.
6. Formulate and pursue original applied research, development and demonstration projects which are economically justified in terms of potential costs and benefits.
7. Conceive and carry out projects designed to improve Kansas electric utilities' load factors.
8. Undertake projects which make maximum utilization of Kansas natural resources and conditions in the context of the production, conservation and management of electric power.
9. Utilize viable state of the art technologies to effectuate peak load management and conservation by Kansas electric utilities and ratepayers.
10. Utilize viable state of the art technologies to improve the reliability and efficiency of transmitting and distributing electric power.
11. Transfer the results of KEURP research, development and demonstration projects to the Kansas electric utilities.
12. Assist each Kansas electric utility in selecting and applying those KEURP research results which will best benefit the utility and its customers.
13. Give priority to Kansas state universities to conduct or participate in KEURP projects which are compatible with academic settings to stimulate the growth and development of such universities' expertise in electric power research and development and assure the availability of technically qualified youth for industry employment.

THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the matter of the application of) DOCKET NO. 96,518-U
Central Telephone & Utilities)
Corporation, for authority to revise)
its tariff to provide a surcharge for)
certain sums to be expended for)
research and development.)

In the matter of the application of) DOCKET NO. 96,546-U
Kansas City Power & Light Company)
for authority to surcharge certain sums)
to be expended for research and)
development.)

In the matter of the application of) DOCKET NO. 96,551-U
The Empire District Electric Company)
for authority to surcharge certain sums)
to be expended for research and)
development.)

In the matter of the application of) DOCKET NO. 96,552-U
The Kansas Power and Light Company)
for authority to surcharge certain sums)
to be expended for research and)
development.)

In the matter of the application of) DOCKET NO. 96,555-U
Kansas Gas and Electric Company)
for authority to surcharge certain sums)
to be expended for research and)
development.)

In the matter of the application of) DOCKET NO. 96,556-U
Central Kansas Power Company, Inc.)
for authority to surcharge certain sums)
to be expended for research and)
development.)

MEMORANDUM OPINION

Each of the above-captioned companies filed applications with this Commission seeking authority to surcharge certain sums to be expended for research and development. These verified applications were consolidated for hearing on November 15, 1972, pursuant to due and proper notice.

Appearances entered at the November 15, 1972 hearing were as follows: Richard C. Byrd, Ottawa, Kansas, appearing on behalf of Central Telephone & Utilities; Winton A. Winter, Ottawa, Kansas, appearing on behalf of Kansas City Power & Light Company; Mr. Basil W. Kelsey, Kansas City,

Missouri, also appearing on behalf of Kansas City Power & Light Company, Richard C. Byrd, Ottawa, Kansas, appearing on behalf of The Empire District Electric Company; James L. Grimes, Jr., Topeka, Kansas, appearing in behalf of Kansas Power & Light Company; Ralph Foster, Wichita, Kansas, appearing in behalf of Kansas Gas and Electric Company, and Thomas E. Gleason, Ottawa, Kansas, appearing on behalf of Central Kansas Power Company. James E. Wells, General Counsel, Kansas Corporation Commission and William Morrissey, Assistant General Counsel, K. C. C., appearing on behalf of the Commission staff and the public generally.

The Commission determined that separate orders would be issued upon final determination of the issues presented at the hearing. In order to facilitate the issuance of separate orders, it was decided to issue this memorandum opinion covering the issues considered.

BACKGROUND

The applicants have been engaged for years in research and development, but to meet current needs, such research and development must be expanded. In 1965, Electric Research Council (now Electric Power Research Institute, EPRI) was organized by concerned and knowledgeable persons. The council then established a Research & Development (R&D) Goals Task Force to review the future needs of the industry and to establish R & D Goals, together with timetables, priorities and cost estimates for attaining the same. The Task Force completed its study in June, 1971, and issued a report entitled "Electric Utilities Industry Research and Development Goals Through the Year 2000", which is a part of the Commission's records and judicially noted herein.

This comprehensive report determined that the most effective manner of accomplishing an expanded research and development program was through creation of a new organization to be known as Electric Power Research Institute (EPRI) for which Articles of Incorporation were filed in the District of Columbia on March 23, 1972. Bylaws were adopted by the Board of Directors on June 1, 1972, and received in evidence at the November 15, 1972 hearing.

GOALS

The electric utility industry, governmental officials and regulatory officials, including this Commission, believe that a massive electric power industry research and development (R & D) program, administered by EPRI, is a necessity to meet ever-growing energy demands in ways that are reliable, economical and environmentally acceptable. The cost of such a program should properly be a part of electric service costs in that electric users will ultimately benefit from attainment of the goals established, to-wit:

- (1) To produce, transmit, and distribute electric energy in ways that are compatible with a healthy and pleasant environment;
- (2) To satisfy the increasing demands on electric systems;
- (3) To serve customers reliably;
- (4) To achieve more efficient systems, improve utilization of present fuels, develop new fuels, and discover ways to improve load factor and utilization of facilities, and thus contribute to keep the price of electricity at lowest practical levels;
- (5) To minimize the drain on natural resources;
- (6) To increase the efficiency of consumer use of electric energy; and
- (7) To make a positive contribution toward improving the environment by developing uses of electricity for solving other environmental problems.

The above-described plan is to accomplish the foregoing goals through projects given the highest priority as critically important to the total industry such as:

- (1) Bringing the fast breeder reactor to commercial availability by the mid-1980's;
- (2) Steadily improving conventional energy conversion systems, including fuel processing to reduce pollutants from the combustion of fuels, of which coal gasification holds great promise;
- (3) Establishing the scientific feasibility of fusion within five to eight years, and make fusion commercially available by the end of this century.
- (4) Developing bulk power transmission, with capacities on the order of four to ten times higher than the best available today, both overhead and underground, AC and DC, and narrow the cost differential between overhead and underground lines.
- (5) Beginning immediately the building of adequate test facilities for transmission and distribution R & D;
- (6) Rapidly improving the technology and equipment for the control of oxides of sulfur and nitrogen; and particulates resulting from the combustion of fossil fuels;

- (7) Develop better methods to utilize a / or dissipate waste heat;
- (8) Developing electric user equipment to improve the environment, including electrochemical batteries and other components for electric transportation;
- (9) Exploring ways for the electric user to more efficiently utilize electric energy in all of its uses; and
- (10) Developing a Natural Fuels Model as a means of continually updating the long range physical and economic availability of energy sources which may be used in the United States for conversion into saleable electric power. Usage, discovery, and costs of raw material recovery, refining, transportation, and conversion would be included.

PLAN FOR FINANCING
RESEARCH AND DEVELOPMENT COSTS

The Edison Electric Institute, a trade association of the electric industry's investor-owned utilities, including applicants, has planned the financing of the share of the expanded R & D program to be borne by the private sector of the industry. A three-year transition program adopted in December 1971 calls for the investor-owned segment of the industry to increase collective R & D funding from a level of approximately \$31.5 million in 1972, to approximately \$75.1 million in 1973, and \$118.9 million in 1974. Contribution on a like basis from the government-owned and cooperative-owned segments of the electric industry would increase the 1974 total funding to about \$177 million although the goal proposed for total industry R & D in 1974 is \$150 million.

The applicants herein seek approval of their participation in The Edison Electric Institute Program for funding R & D projects through the Electric Power Research Institute. The formula for determining each company's share for funding the industry's investor-owned segment of the R & D program for 1973 and 1974 is based on a combination of kilowatt hour sales and company revenue from sales of electric energy to ultimate consumers, including special contracts, excluding inter-departmental sales and wholesale sales for resale, weighted on a basis of 66 2/3% of the amount to be raised based on kilowatt hour sales of the utilities and 33 1/3% on the revenues from such sales.

That under this formula, the contributions for 1973 will be based upon actual 1971 Kansas sales and revenues and the 1974 contributions will be based on estimated sales and revenues for 1972 until the actual figures can be determined.

<u>Contributions for Year</u>		
	<u>1973</u>	<u>1974</u>
Central Telephone & Utilities Corp.	\$65,396.93	\$104,072.71
Kansas City Power & Light Co.	89,563.91	142,976.62
The Empire District Electric Co.	13,014.92	20,097.91
The Kansas Power and Light Co.	262,732.71	419,465.47
Kansas Gas and Electric Co.	257,032.00	402,537.00
Central Kansas Power Co. Inc.	17,612.36	27,191.60

COMMISSION REQUIREMENTS FOR
IMPLEMENTATION OF THIS PROGRAM

By reason of the scope and necessity of this long range research and development program and the amount of applicants' contributions thereto, and the overall benefits ultimately accruing to the electric users, it is fair, equitable and in the public interest that such costs be funded by a surcharge as proposed by the applicants. This method will permit immediate recovery of the annual costs of the research effort and provide accountability in accordance with the Commission's direction. That the applications should be granted with provisions and applicants permitted to file and place into effect their proposed R & D surcharge tariffs to become effective with bills rendered on and after January 1, 1973.

Each applicant should file with the Commission on a monthly basis the unit surcharge rates to be applied under the surcharge tariff. Further, such applicant should be required to establish accurate and complete books of accounts setting out the total amounts collected under said surcharge and be required to make annual reports notifying the Commission of the total sums collected and sums expended for the research and development program herein described. Further, at least ninety (90) days prior to January 1, 1974 and the first day of each calendar year thereafter, each applicant should be required to determine and certify to the Commission for its review the aggregate amount and the basis of the determination of the sum required to support proportionately

Power Research Institute. It is further required that the applicants submit contribution schedules and information such as budgets, progress reports and other relevant data received from the Electric Power Research Institute to the Commission for its use in reviewing the aggregate amount each applicant will contribute to the program.

COMMISSION FINDINGS

1. The Commission finds the proposed surcharge tariff will not increase or enhance the applicants' earnings, its sole purpose being to fund the research and development program contemplated and the same is not, unduly preferential, unjustly discriminatory or otherwise in violation of any of the provisions of the Public Utility Regulation Act, K. S. A. Chapter 66, as amended.

2. The decision rendered herein is compatible with the Economic Stabilization Program of the President of the United States and specifically the criteria issued by the Price Commission wherein the need for the surcharge tariff is cost-justified and does not reflect future inflationary expectations.

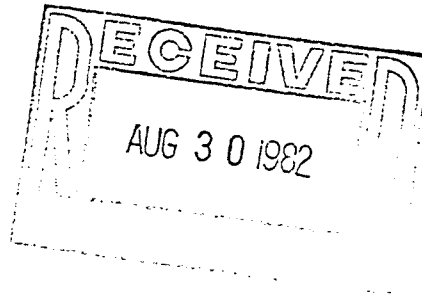
The applications in the captioned dockets are hereby granted with provisions and each applicant is permitted to file and place into effect its proposed R & D surcharge tariff to become effective with bills rendered on and after January 1, 1973.

Each applicant is required to establish accurate and complete books of account, make the reports and furnish the information heretofore described.

Accordingly, appropriate orders in accordance with the views and findings herein expressed will be entered this date for each of above-captioned applicants. This memorandum opinion is hereby incorporated and made a part of each order.

COMMISSIONERS

Topeka, Kansas
December 13, 1972

EPRI

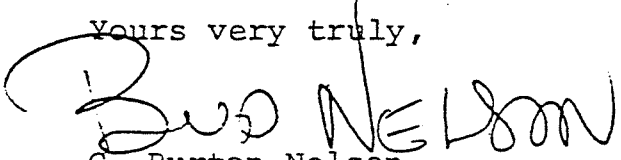
August, 1982

TO: Holders of the EPRI Document "Understanding Electric Power Research and Development"

Enclosed is the latest addition to "Understanding Electric Power Research and Development," the white, loose-leaf-bound EPRI reference book. Please add the enclosed "Technology Applications" sheets (Appendix D) to those already in your binder and remove the two "Technology Applications" sheets which have been withdrawn per the enclosed letter from Wayne Seden.

The cumulative total savings of applications of EPRI research are now truly substantial. It should be kept in mind that the "Technology Applications" show only the first utility user (or an early utility user) of each of these technologies. When one considers that several utilities can use the technologies and that most of the uses of EPRI's research are not included on these sheets, the total benefits to the U.S. ratepayers is substantially greater still. We hope you will be able to use this material to better tell the EPRI story.

Yours very truly,


C. Burton Nelson
Director
Regulatory Relations

CBN:lr

Enclosures
- Ltr. dtd. 8/5/82

EXHIBIT C

TECHNOLOGY APPLICATIONS ORIGINATING FROM EPRI PROJECTS -- NUMERICAL ORDER

TECH.APP # RP.#	UTILITY REPORTING	PROBLEM	EPRI SOLUTION	ESTIMATED ANNUAL SAVINGS
0109B RP502	American Electric Power Co.	Steam turbine rotor reliability	Advanced lifetime prediction models	94,000
0110F RP534	Colorado Ute Electric Assn.	Post combustion particulate removal	Fabric filters cost performance data	726,000
0111C RP212	Bonneville Power Administration	Biological deterioration of wood poles	Treatment with fumigants	1,206,000
0112C RP579	Bonneville Power Administration	Transformer noise suppression	Tuned sound barrier panels	WITHDRAWN
0113B RP342 RP889	Consumers Power Co.	Constrained operating limits of nuclear reactors	Advanced thermal hydraulic code (RETRAN)	393,000
0114B RP509	Consumers Power Co.	Nuclear fuel rod failure	Fuel performance prediction model	536,000
0115C RP260	Utah Power & Light Co.	Availability of transmission line right-of-way	Reference manual for compact line design	11,300
0116C RP671	Florida Power & Light Co.	Corrosion of bare copper neutral conductors	Semi-conducting thermoplastic jackets	40,000
0117B RPT116	Northeast Utilities Co.	Boiling water reactor pipe cracking	Stress corrosion resistant materials	613,000
0118B RP641	Tampa Electric Co.	Boiler feed pump reliability	Established reliability design criteria	33,200
0119C RP68 RP566	Bonneville Power Administration	Need for UHV transmission	Design handbooks for EHV and UHV transmission	4,441,000
0120F RP537	Tennessee Valley Authority	Meeting SO ₂ emission standards	Retrofit with cocurrent scrubbers	WITHDRAWN
0221C RP930-1	Consolidated Edison Co. of New York	Need fire resistant transformer	Vapor cooled two-phase transformer design	13,300
0222F RP786-1	Tampa Electric Co.	FGD sludge disposal	Economic/engineering FGD disposal manual	130,000
0223B RP1246-1	Philadelphia Electric Co.	Need for relief valve position indicator	Strap-on acoustic transducers	651,000
0224C RP742	Utah Power & Light Co.	Potential hazards between electrical facilities and adjacent structures	Reference book for dual right-of-way	14,200
0225A RP983	Detroit Edison Co.	Need for continuous assay of coal	Neutron activation analysis instrumentation and equipment with sulfur meter	10,840,000
0226B TPS78-755	Florida Power & Light Co.	Locating condenser tube leaks	Portable freon-based tracer & detector system	270,000
0227C RP748-1	Consolidated Edison Co. of New York	Catastrophic loss of large transformers	Continuous gas and oil monitor for fault detection	375,000

The TechApp number code is as follows: 1st and 2nd digit, year and quarter of publication; 3rd and 4th digit, annual number sequence; letter, R&D category. The six R&D categories are: A. Fuel Processing (FP), B. Electric Power Generation (EPG), C. Transmission and Distribution (T&D), D. Energy Storage and Management (ES&M), E. Energy Analysis (EA), and F. Environmental Assessment and Control (EA&C).

TECH. APP.# RP.#	UTILITY REPORTING	PROBLEM	EPRI SOLUTION	ESTIMATED ANNUAL SAVINGS
02288 RP970	Texas Utilities Generating Co.	Need to predict generator stator winding failures	On-line monitors for electric generators	2,877,000
02298 RP643-1	Long Island Lighting Co.	Corrosion control in combustion turbines	Corrosion monitoring and control system	52,000
02318 RP718	Tennessee Valley Authority	Increasing environmental constraints	Performance and cost improvements in atmospheric fluidized bed combustion	136,000
0430C RP214	Ohio Edison Co.	Tree growth in power lines	Chemical injection to slow tree growth	205,000
0432C RP1280	Jersey Central Power & Light Co.	Costly transmission line structural foundation	Improved design methods	276,000
0433C RP7847-1	Sacramento Municipal Utility District	High cost of underground transmission	Increased pulling lengths for pipe type transmission cable	31,500
0434C RP478	Arizona Public Service Co.	Breaker switching restrike problem	SF ₆ single-pressure puffer breaker	1,250
0435C RP792 RP1278	Georgia Power Co.	Damaged transmission lines due to aeolian vibration	Procedure for in-service inspection coupled with use of dampers	156,000
0436C RP425	Virginia Electric & Power Co.	Costly two pad construction for air gap surge arrestors	Metal oxide nonlinear resistors	577,000
0437B RP1184	Boston Edison Co.	Optimization of power plant performance	Dynamic performance modelling of fossil plants	1,585,000
0438B RPS115	Rochester Gas & Electric Corp.	Lengthy procedure for nuclear steam generator tube inspections	Multifrequency eddy current testing	1,413,000
0439B RP894-3	Sacramento Municipal Utility District	Lengthy time requirement for refueling LWRs.	Analysis and ranking of limiting factors	381,000
0440E EURDS	Virginia Electric & Power Co.	Compliance with Public Utility Regulatory Policies Act (PURPA)	Electric Utility Rate Design Study (EURDS)	54,000
0441F RP202	Carolina Power & Light Co.	Fly and bottom ash disposal	Leachate data and analysis on ash ponding	2,117,000
1201A RP1338-2	Pennsylvania Electric Co./New York State Electric & Gas Corp.	Magnetite loss in coal cleaning process	Improved coal cleaning process design	2,605,000
1202B RP1079	Florida Power & Light Co.	Combustion turbine fuel costs	Use of blended residual oil	704,000
1203B RP724	Tampa Electric Co.	Control of particulate emissions	Flue gas conditioning with aqueous ammonium sulfate	743,000
1204B RPT109-2	Boston Edison Co.	Intergranular stress corrosion cracking in BWR piping	Last pass heat sink welding method	216,000
1205B RP895	Jersey Central Power & Light Co.	Uncertainties in nuclear reactor core analysis	Power shape monitoring system (PSMS)	3,003,000
1206C RP7815	New York State Electric & Gas Corp.	Cost of field-molded or hand-taped splices	Underground factory-molded 138 kV splice	9,600
1207C RP7861-1	Arizona Public Service Co.	Time requirement for analyzing soil thermal resistivity	Portable soil thermal property analyzer for field application	5,000

TECH. APP. # RP.#	UTILITY REPORTING	PROBLEM	EPRI SOLUTION	ESTIMATED ANNUAL SAVINGS
1208C RP478	Carolina Power & Light Co.	Fast fault isolation in high voltage transmission circuits	SF ₆ puffer breaker for fault isolation	39,000
1209C RP7849	Carolina Power & Light Co.	Cost comparison uncertainties of underground/overhead transmission	Compilation of reliable underground transmission line cost information	737,000
1210E RP1107	The investor-owned electric utilities of New York	Inability to demonstrate the optimum reserve capacity	Refinement of over/under generation capacity planning model	505,000,000
1211F RP681-1 RP1642	Southern California Edison Co.	Uncertainty of data and analyses used to establish air quality standards	Reassessment of Community Health & Environmental Surveillance System (CHESS) Studies	135,763,000
1412A RP724-2	Gulf Power Co.	Precipitator disfunction due to high resistivity ash	Sodium conditioning of the feed coal	552,000
1413A RP1758	Northeast Utilities Co.	Failure of stainless steel cladding on nuclear fuel rods	Better understanding of pellet-clad interaction and cladding stresses	621,000
1414A RP586	Arkansas Power & Light Co.	Qualification of 16x16 nuclear fuel assemblies	Precharacterization of the fuel pellets and rods	202,000
1415B RP1348-1	Southern California Edison Co.	Conflicting data on wind turbines and performance characteristics	Consolidated reporting on wind turbine performance	74,000
1416B TPS77-715	Pacific Gas & Electric Co.	Potential control room errors in a power plant	Human factors engineering of control board panels	728,000
1417B RPV102	Kansas City Power & Light Co.	New requirements for testing nuclear primary safety & relief valves	Industry-wide valve test program	938,000
1418B RP1398	Northeast Utilities Co.	Disc cracking on large low pressure steam turbine rotors	Better predictive method for crack propogation	6,106,000
1419B RP822	Rochester Gas & Electric Corp.	Inspecting thick-section nuclear components in hostile environments	New portable high energy radiographic equipment	45,000
1420B RP741-1	Southern California Edison Co.	Training of personnel and evaluating chemical analysis procedures	Mobile geothermal test laboratory	36,000
1421C RP763	Pacific Gas & Electric Co.	System stability models require large data input & long run times	Dynamic equivalent representation simplifies system stability analysis	38,000
1422E RP1303	Pacific Gas & Electric Co.	Load forecasting under uncertainty	Workshops & seminars on load forecasting under uncertainty	179,000
1423F RP1308-2	Salt River Project	Monitoring plumes in rugged terrain areas	Air-mounted lidar system	273,000
2201B RP911	Commonwealth Edison Co.	Need for analysis of fossil-plant conversions	Computer model identifies hardware- and operational- changes required	\$217,000
2202B RP1265-1-1	Boston Edison Co.	Reliability of coal pulverizers	Developed guidelines for pulverizer performance improvement	\$935,000

TECH.APP # RP.#	UTILITY REPORTING	PROBLEM	EPRI SOLUTION	ESTIMATED ANNUAL SAVINGS
2203B RP1266-5	Union Electric Co.	Weld failures on boiler tubes	Radiographic technique detects dissimilar welds nearing failure	\$2,964,000
2204B RP1265-7	Boston Edison Co.	Feedwater heater failures	Identified design changes to reduce failure frequency	\$2,344,000
2205C RP850	Carolina Power & Light Co.	Need for effective control in complex distribution systems	Developed an automated communication and control system	\$5,016,000
2206C RP849-2	Long Island Lighting Co.	Need to analyze breaker failures in substation environments	Developed trailer for on-site data acquisition (RTDDAS)	\$78,600
2207C RP1352-1	Idaho Power Co.	Reliability in transmission line structures	Developed improved computer design procedure (POLEDA-80)	\$54,000
2208C RP1142-1	Consolidated Edison Co. of N.Y.	Short-circuit current protection in distribution	Developed improved, less expensive current limiting device	\$269,000
2209C RP667	Los Angeles Dept. of Water & Power	Lost time in HVDC transmission switching	Developed breaker capable of switching HVDC	\$115,000
2210F RP49-1	Potomac Electric Power Co.	Uncertainty on acceptable limits for thermal discharge	Demonstrated ecological effects of once-through cooling	\$42,402,000
2211F RP1002	Idaho Power Co.	Electrocution of birds (raptors) on rural power lines	Modification of poles "preferred" by raptors	\$344,000
2212F RP1263-1	Idaho Power Co.	How to handle PCBs and meet EPA rules	Established PCB guidelines	\$14,600

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KEN GROTEWIEL
 REPRESENTATIVE, NINETY SECOND DISTRICT
 611 WEST 12TH
 WICHITA, KANSAS 67203



TOPEKA

HOUSE OF
 REPRESENTATIVES

COMMITTEE ASSIGNMENT
 HOUSE OF REPRESENTATIVES
 1983

March 1, 1983

PRESENTED TO: ENERGY SUBCOMMITTEE OF THE ENERGY AND NATURAL
 RESOURCES COMMITTEE

BY: Ken Grotewiel
 RE: HOUSE BILL 2199

INTRODUCTION

Nuclear waste is a concern of everyone. While the type of waste that gets the most attention is the spent fuel from nuclear plants, the plant itself is rarely considered as waste. However, that is exactly the case once the productive life of the plant is finished, and provisions will have to be made at some time to dispose of the plant in its entirety.

PURPOSE OF HOUSE BILL 2199

Decommissioning is the term applied to efforts to neutralize a plant once its useful life is spent. Presently, while all parties involved have at least considered future solutions to plants no longer in operation, no real substantive work has been completed to my knowledge.

Passage of this bill would create a select committee to study both the methods of decommissioning in Kansas and the projected costs of such activity. In addition, it would explore the methods of financing the various alternative methods of decommissioning.

BACKGROUND

What to do with a nuclear plant when it is no longer productive is a long-range problem. If one allows 30 years for its productive life, and 30 years to cool down, decommissioning will begin in the year 2043! Thus, to provide a durable and dependable funding method is of the utmost importance.

Just to gauge the scope of decommissioning a plant the size of Wolf Creek, up to 13,000 cubic yards of radioactive solid waste and up to 159,000 gallons of aqueous radioactive wastes could be generated.

Page No. 2

PRESENTATION TO: ENERGY SUBCOMMITTEE OF ENERGY
AND NATURAL RESOURCES COMMITTEE

RE: HB 2199

The estimated cost of decommissioning a 60 megawatt plant at present is at least \$40 million. One estimate for another plant the same size is \$133 million. If decommissioning expenses go up proportionately as the size of plants increases, the decommissioning of Wolf Creek could cost well over \$2 billion.

CONCLUSION

It concerns me that so little has been done regarding a situation that has the potential of being such a huge problem, both in a technical and financial sense. Creation of this select committee would insure that the State of Kansas would have access both to the size of the problem and its potential costs. Anything short of this would be short changing the Kansas of 80 years from now.

KEN GROTEWIEL
State Representative
District 92

KG/sw

RE: HOUSE BILL 2199

I WOULD LIKE TO ADDRESS THE TECHNOLOGY AND SOME ASSOCIATED COSTS OF DECOMMISSIONING. THIS IS THE NECESSARY FINAL PHASE OF ALL NUCLEAR POWER PLANTS. IT IS OF SUCH A COMPLEX NATURE THAT TO INSURE SAFE AND PROPER PROCEDURES IT REQUIRES THE FORMATION OF THE COMMITTEE PROVIDED FOR IN HB 2199.

DECOMMISSIONING MEANS THE REMOVAL FROM OPERATION OF ALL NUCLEAR REACTOR FACILITIES AND THE DISPOSAL OF ALL RADIOACTIVE WASTE AND RESIDUE. THE PURPOSE OF DECOMMISSIONING IS THE SAFE AND PERMANENT RELEASE OF THE REACTOR PROPERTY TO UNRESTRICTED USE. THE NUCLEAR REGULATORY COMMISSION DOES NOT PRESENTLY REQUIRE A DECOMMISSIONING METHOD TO BE SELECTED BY THE UTILITY PRIOR TO OPERATION. HOWEVER, REGULATIONS ARE BECOMING MORE STRINGENT AS MANY PLANTS ARE NEARING THEIR LIFE EXPECTANCY AND WILL HAVE TO BE DECOMMISSIONED. THE LARGEST REACTOR TO BE DECOMMISSIONED WAS ONLY 22 Mw. THE GOVERNMENT'S 60 Mw SHIPPINGPORT REACTOR IS SCHEDULED TO BEGIN ITS FIVE YEAR PROCESS OF DECOMMISSIONING AT AN ESTIMATED \$40 MILLION. IT SHOULD BE RECOGNIZED THAT THE GOVERNMENT OPERATES ITS OWN WASTE FACILITIES AND IT IS UNCLEAR WHETHER THESE ESTIMATES INCLUDE THOSE SUBSTANTIAL EXPENSES. IN THE WOLF CREEK APPLICATION, ^{THIS} WOULD AMOUNT TO \$800 MILLION. HOWEVER, ONE UTILITY HAS ALREADY REQUESTED A \$133 MILLION RATE INCREASE FOR DECOMMISSIONING OF THEIR 63 Mw REACTOR. THIS EXTRAPOLATED AT WOLF CREEK WOULD BE \$2.4 BILLION. IT BECOMES OBVIOUS THAT DECOMMISSIONING IS AN ENORMOUS DIRECT EXPENSE OF NUCLEAR GENERATION AND MUST BE CONSIDERED IN DEPTH.

THERE ARE AT PRESENT THREE APPROVED METHODS OF DECOMMISSIONING: MOTHBALLING IN WHICH THE FACILITY IS PUT INTO PROTECTIVE STORAGE

FOR 30 TO 100 YEARS WHILE SOME OF THE RADIOACTIVITY WEARS OFF. IT IS LEFT INTACT EXCEPT FOR THE REMOVAL OF FUEL ASSEMBLIES, RADIOACTIVE FLUIDS AND WASTE THAT ARE DISPOSED OFF-SITE. THIS METHOD IS ONLY TEMPORARY AND MUST BE FOLLOWED BY COMPLETE DISMANTLEMENT AND REMOVAL AFTER THIS PERIOD OF TIME. DUE TO SURVEILLANCE, LICENSE MAINTENANCE AND OTHER COSTS GENERATED DURING ITS "DORMANT" PERIOD, MOTHBALLING IS THE MOST EXPENSIVE METHOD.

ENTOMBMENT REQUIRES THAT THE FACILITY BE ENCASED IN A LONG-LIVED MATERIAL SUCH AS CONCRETE. THIS MAY SOON NO LONGER BE A VIABLE OPTION. RECENTLY DISCOVERED HIGH CONCENTRATIONS OF RADIOACTIVE PRODUCTS SUCH AS NIOBIUM-94 AND NICKEL-59 WITH HALF LIVES OF 20,300 YEARS AND 80,000 YEARS RESPECTIVELY, WILL OBVIOUSLY LAST FAR BEYOND THE LIFE EXPECTANCY OF CONCRETE OR SIMILAR MATERIALS. THIS HAS LONG BEEN THE METHOD FAVORED BY THE UTILITIES, BUT IT MAY SOON BE UNACCEPTABLE.

DISMANTLEMENT CALLS FOR THE FACILITY TO BE TAKEN APART AND CONTAMINATED MATERIAL REMOVED FOR DISPOSAL AT A WASTE DISPOSAL SITE. THIS COULD REQUIRE COMPLETE DEMOLITION AND REMOVAL OF THE ENTIRE FACILITY. THIS IS THE METHOD PREFERRED BY THE NUCLEAR REGULATORY COMMISSION SO THEREFORE I WILL ADDRESS IT IN DETAIL. I HAVE PROVIDED ONE OF THEIR CHARTS OUTLINING THE PROCESS.

THE FIRST STEP IS PLANNING AND PREPERATION WHICH BASICALLY CONCERNS SURVEY RELATED COSTS AND FACILITATION PLANNING. DECOMMISSIONING SHOULD BE PLANNED FOR DURING THE DESIGN PHASE OF THE PLANT FOR EXPEDIENCY AND COST AND RADIATION EXPOSURE REDUCTIONS. ANY COST INCREASES DURING CONSTRUCTION ARE OFF-SET BY REDUCED COSTS DURING DECOMMISSIONING AND OPERATION.

THE FOLLOWING ARE FACILITATION ALTERNATIVES WHICH THE COMMITTEE PROPOSED BY HB 2199 COULD ASSESS IN DETERMINING COSTS OF DECOMMISSIONING, SPECIFICALLY AT WOLF CREEK.

- A) IMPROVED DOCUMENTATION SHOWING CONCRETE POURS, REBAR LOCATIONS, EQUIPMENT PLACEMENT, AND SO ON.
- B) IMPROVED ACCESS IN THE FORM OF REMOVABLE ROOFS AND WALL PANELS.
- C) SUBSTITUTION OF MATERIALS SUCH AS REPLACING STAINLESS STEEL WITH ZIRCOLOY WHICH WOULD REDUCE THE FORMATION OF COBALT-60 AND REDUCE WORKER EXPOSURE TO RADIATION.
- D) DESIGN OF BIOLOGICAL SHIELD IMPLEMENTING EASY REMOVAL AND ELIMINATING HIGH DOSE RATE CONDITIONS OF DRILLING AND BLASTING.
- E) TECHNIQUES FOR PROTECTION AND REMOVAL OF CONCRETE INCLUDING SURFACES PROTECTED BY VARIOUS COATINGS THROUGHOUT THE PLANT'S LIFE, AND FLOORS AND WALLS PROTECTED BY CARBON STEEL LINERS WOULD ALSO FACILITATE REMOVAL OF CONTAMINATED CONCRETE.
- F) SPECIAL SHIELDED MAINTENANCE SHOP WOULD ALLOW SHIELDED DISMANTLING OF THE LARGEST PIECES OF EQUIPMENT.
- G) IMPROVED SHIELDING WOULD REDUCE BACKGROUND LEVELS OF RADIATION AND ALLOW FOR SHIELDED VEHICLES AND ROBOTS TO PERFORM REMOTE ROUTINE DECOMMISSIONING FUNCTIONS.
- H) REDUCTION OF RADIOACTIVE WASTE BY VOLUME BY INCENERATION.
- I) SPECIAL TOOLS SUCH AS SHIELDED CRANE-MOUNTED ENCLOSURES FOR OBSERVATION AND UNDERWATER TORCHES.

BASICALLY ALL OF THESE WOULD REDUCE DECOMMISSIONING COSTS BY REDUCING LABOR EXPENSES AND WORKER EXPOSURE TO RADIATION. MANY OF THESE COULD BE INCORPORATED AT WOLF CREEK IF THEY ARE NOT ALREADY PLANNED FOR. THESE COULD BE TAKEN INTO CONSIDERATION WHEN DETERMINING EFFICIENT DECOMMISSIONING STRATEGIES.

THE COST OF A TERMINATION STUDY IS HIGHLY VARIABLE DEPENDING ON THE NUMBER OF MEASUREMENTS AND SAMPLES REQUIRED. THE COST OF CONDUCTING A SURVEY ON A LARGER SITE WILL GREATLY EXCEED A SMALLER SITE. THE FOLLOWING ARE NUCLEAR REGULATORY COMMISSION ESTIMATES IN 1980 DOLLARS OF SOME SURVEY COSTS.

- A) MATERIALS WHICH INCLUDE TOOLS, SAMPLE CONTAINERS, LABELS, PROTECTIVE CLOTHING, ETC. ARE CONSERVATIVELY ESTIMATED AT \$2000.00
- B) INSTRUMENTS AND EQUIPMENT REQUIRING PURCHASE OF SURVEY EQUIPMENT AT APPROXIMATELY \$100,000.00
- C) THE EXPENSE OF TAKING SOIL SAMPLES INVOLVE DRILLING RIGS AT \$500.00 PER DAY AND COSTS OF UP TO \$10.00 PER FOOT FOR EACH HOLE AUGERED AND SAMPLED. IF IT IS NECESSARY TO DRILL THROUGH ASPHALT OR CONCRETE THESE ESTIMATES WOULD RISE TO \$25.00 PER HOLE.
- D) ANALYTIC COSTS ARE VARIABLE DEPENDING ON THE NUMBER OF SAMPLES REQUIRED, THE ANALYSIS NECESSARY, AS WELL AS THE LEVELS OF RADIATION. PREPERATION FOR EACH SAMPLE IS \$25.00 AND MOST ANALYSIS RUNS BETWEEN \$100.00 TO \$350.00 PER SAMPLE.
- E) LAND SURVEY APPROXIMATED AT \$3,000.00 TO \$8,000.00 PER 20 ACRES.
- F) REPORT PREPARATION REQUIRES SERVICES FOR EVALUATING AND PREPARING REPORTS ESTIMATED AT \$5,000.00 PLUS MATERIALS SUCH AS PAPER, FILM, PRINTING, COPYING, ETC.

THE SECOND ITEM ON THE CHART IS CHEMICAL DECONTAMINATION. THESE ARE ESTIMATES FOR CHEMICALS, LABOR AND ELECTRICITY WHICH APPROACHES \$300,000.00. THIS DOES NOT INCLUDE COSTS OF WATER OR ITS EVAPORATION OR SOLIDIFICATION OF RADIOACTIVE REMAINS.

NUMBER THREE IS THE REMOVAL OF RADIOACTIVE EQUIPMENT FROM THE REACTOR BUILDING. THIS REPRESENTS 42,000 CUBIC FEET OF DEBRIS, REQUIRING OVER 200 TRUCK SHIPMENTS AT A COST OF \$3 MILLION.

THE FOURTH STEP IS REMOVAL OF NON-RADIOACTIVE EQUIPMENT FROM THE REACTOR BUILDING OF ALMOST 600,000 CUBIC FEET OF MATERIAL REQUIRING OVER 1,100 TRUCK SHIPMENTS@APPROXIMATELY \$2 MILLION, PLUS FURTHER COMBUSTIBLE MATERIALS, SPENT RESINS, FILTERS, AND SO ON COSTING \$700,000.00 FOR REMOVAL.

THE FIFTH STEP INVOLVES DECONTAMINATION OF THE REACTOR BUILDING. IT IS IMPORTANT TO UNDERSTAND THAT ALL SITES READY FOR DECOMMISSIONING HAVE ALREADY BEEN DECONTAMINATED. THIS INCLUDES THE PROCESS OF REMOVING HIGHLY RADIOACTIVE MATERIALS BEFORE DEMOLITION BEGINS. REMOVAL OF AN INTACT REACTOR PRESSURE VESSEL IS DONE BY LIFTING IT THROUGH A HOLE CUT IN THE DOME OF THE CONTAINMENT BUILDING OR ADJACENT FUEL BUILDING ROOF. INTACT REMOVAL OF THIS VESSEL IS ESTIMATED AT OVER \$8 MILLION, REMOVAL IN SEGMENTS AT OVER \$5 MILLION. CUTTING UP THE VESSEL, HOWEVER; RESULTS IN MORE RADIATION EXPOSURE TO WORKERS. DETERMINATION NEEDS TO BE MADE ON THIS OPTION. ONCE THE VESSEL IS REMOVED 8 MILLION POUNDS OF CONTAMINATED MATERIAL MUST BE DISPOSED OF AT COSTS APPROACHING \$1 MILLION. THE CRANE AND OTHER EQUIPMENT MUST ALSO BE CUT UP AND TREATED AS WASTE.

THE SIXTH AND SEVENTH STEPS ARE DECONTAMINATION AND DISMANTLEMENT OF THE AUXILLARY BUILDING AND FUEL BUILDING. THIS ESTIMATED 30½ MILLION POUNDS OF MATERIAL WILL COST \$4½ MILLION TO TEAR APART.

THE NEXT FOUR STEPS REQUIRE THE DEMOLITION OF THE ENTIRE STRUCTURES TO THE GROUND, WHICH INCLUDES THE DEMOLITION OF THE COOLING TOWERS. AS A 5,000 ACRE COOLING LAKE REPLACES THESE COOLING TOWERS AT WOLF CREEK, THE COMMITTEE WOULD NEED TO INVESTIGATE THE PROCEEDURE FOR REMOVAL AND DECONTAMINATION OF THE WATER IN THE LAKE.

THE FINAL SITE SURVEY IS THE TWELFTH STEP. IT REQUIRES A EXTENSIVE SURVEY AT \$50.00 PER HOUR OF THE ENTIRE 10,000 ACRE SITE. THIS IS TO INSURE THAT RADIATION STANDARDS HAVE BEEN MET. IF THEY HAVE NOT THEN CORRECTION METHODS MUST TAKE PLACE.

THE FINAL PROCEEDURE IS THE BACKFILLING OF CAVITIES LEFT BY DEMOLITION OF BUILDINGS FOLLOWED BY LANDSCAPING.

DURING ALL OPERATIONS OVER-SIGHT BY A QUALITY ASSURANCE STAFF HAS ESTIMATED LABOR COSTS OF ALMOST \$1 MILLION.

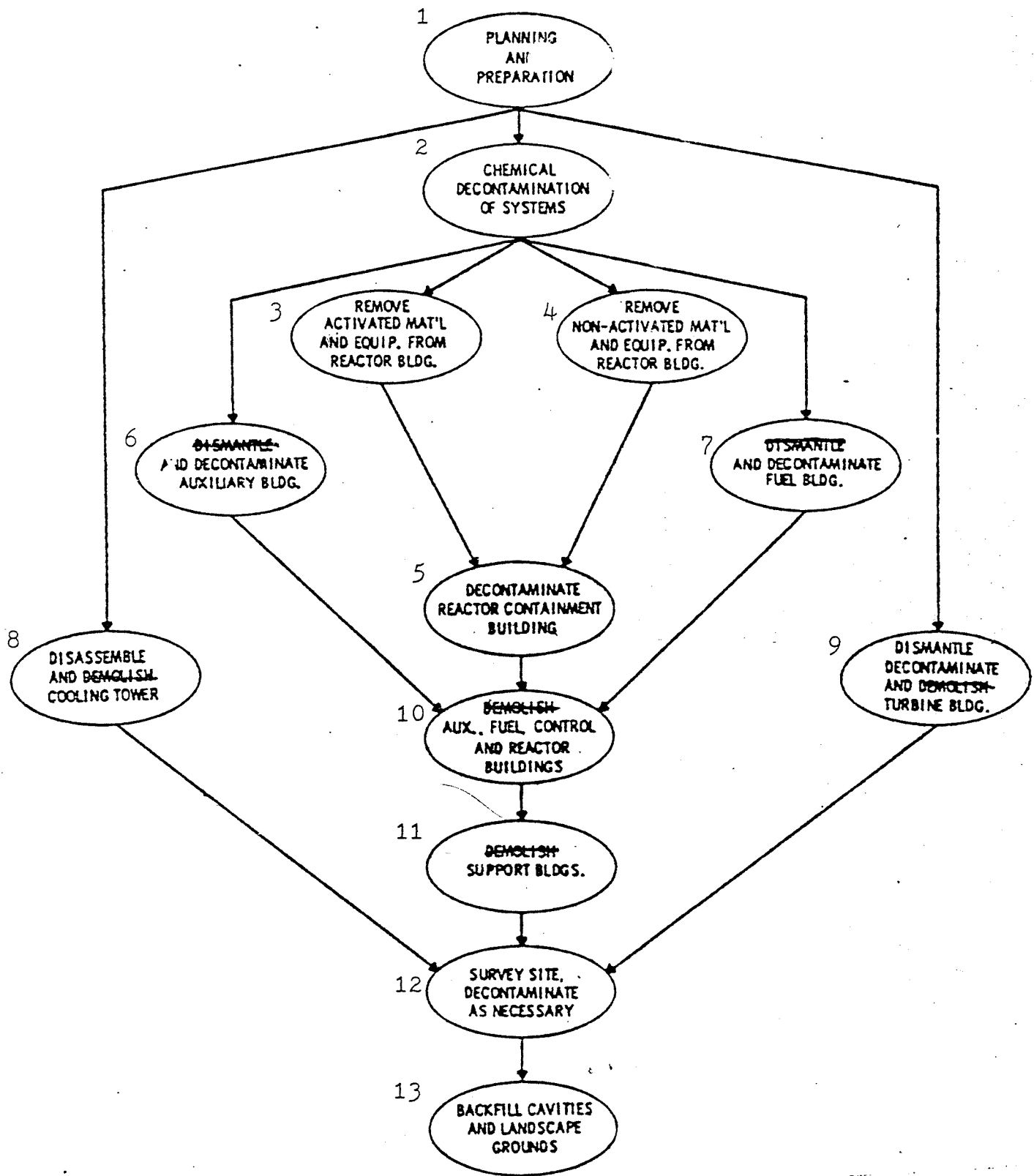
I HAVE ADDED ONE FURTHER CATEGORY WHICH THE CHART DID NOT ADDRESS. A 1200 Mw REACTOR RESULTS IN 630,000 CUBIC FEET OF WASTE. IT IS ASSUMED THAT MANY RADIOACTIVE VESSEL COMPOUNDS WILL BE PLACED IN SHALLOW TRENCH BURIAL. THE LARGE AMOUNTS OF NIOBIUM, NICKLE, AND CARBON MAY, HOWEVER; REQUIRE AN ADDITIONAL \$2 MILLION TO BURY THESE MATERIALS IN HIGH-LEVEL WASTE FACILITIES. SPENT FUEL REMOVAL AND TRANSPORTATION TO A WASTE REPOSITORY WOULD BE ANOTHER \$2½ MILLION, AND THIS DOES NOT INCLUDE ESTIMATES ON HANDLING CHARGES AT THE REPOSITORY.

FEDERAL STANDARDS DO NOT EXIST WHICH SPECIFY HOW CLEAN A FACILITY OR SITE MUST BE BEFORE A LICENSE CAN BE TERMINATED. THE ENVIRONMENTAL IMPACT STATEMENT TALKS OF A POINT WHEN IT IS NO LONGER COST EFFICTIVE TO CLEAN-UP AT 10 MILLIREMS PER YEAR LIMITED RESIDUAL DOSE LEVEL. IT SHOULD BE DECIDED WHETHER THIS ALLOWS FOR UNRESTRICTED FUTURE LAND USE FOR SUCH THINGS AS HOUSING DEVELOPMENTS OR SCHOOLS.

THIS HAS NOT BEEN AN ATTEMP TO COMPLICATE THE ISSUE OR PUT YOU TO SLEEP. WHAT I HAVE ATTEMPTED TO DO IS EXPOSE YOU TO SOME OF THE MANY FACETS OF THIS PROCESS AND PARTICULARLY TO IMPRESS UPON YOU THAT DECOMMISSIONING INVOLVES MANY PROCEEDURES OF GREAT COMPLEXITY WHICH NEED TO BE MORE FULLY UNDERSTOOD AND DEVELOPED. KANSAS MUST BE ASSURED OF THE ADEQUACY OF FINANCING

FOR THE SAFETY AND WELFARE OF ITS CITIZENS. I URGE YOU TO
SUPPORT HB 2199 TO SELECT A COMMITTEE TO DO JUST THAT.

Stevie Stephens
Route #1
Tonganoxie, Kansas 66086



To: Energy and Natural Resources Sub-Committee

3/1/83

From: Cindy Entriiken, legislative intern

Re: Decommissioning nuclear power plants

There are 6 entities who play a role in decommissioning of nuclear power plants here in the state of Kansas. They are the Nuclear Regulatory Commission (NRC); The U. S. Department of Energy; the Kansas Corporation Commission (KCC); the Kansas Department of Health and Environment; Kansas Gas and Electric (KG&E); and the legislature.

The NRC is responsible for licensing, regulating, and assuring the decommissioning of commercial nuclear power plants. (Government Accounting Office, 1982, p. 1) The agency, in its regulations, requires that a licensee must submit a plan for decommissioning for approval by the NRC at the same time that a licensee applies for an operating license.

The Commissions regulations currently impose few requirements with respect to decommissioning. On the safety side, they require an operating license applicant to submit, as part of the financial qualifications inquiry, information showing that it "possesses or has reasonable assurance of obtaining funds necessary to cover . . . the estimated costs of permanently shutting the facility down and maintaining it in a safe condition." 10 CFR 50.33(f); see also 10 CFR Part 50, Appendix C, I.E, and II.B. Safety requirements concerning termination of facility licenses are spelled out in general terms by 10 CFR 50.82, but that provision only comes into effect when a licensee seeks to dismantle or decommission a facility. From an environmental standpoint, decommissioning is not specifically covered by regulation. But the costs of decommissioning (both environmental and economic) necessarily comprise a portion of the cost-benefit analysis which the Commission must make. See 10 CFR 51.23(c) and 51.26(a). Very general guidelines as to what information concerning decommissioning an applicant must supply appear in Regulatory Guide 4.2, "Preparation of Environmental Report for Nuclear Power Stations" (NUREG-0099, July 1976), § 5.8 (Nuclear Regulatory Commission Issuances, Vol. 9, January 1 to June 30, 1979, p. 313)

As early as 1978, the NRC announced intentions of revising the rules and regulations concerning decommissioning and in 1979 published Decommissioning Commercial Nuclear Facilities: A Review and Analysis of Current Regulations. In a February 23, 1983 interview with Ms. Claire Miles, a public affairs specialist for the NRC, Ms. Miles stated that, five years later the NRC is still in the process of developing rules and regulations

for decommissioning; there are no proposed rules at this time; and she did not know when those rules would be done.

The NRC, or states which participate in the NRC Agreement States Program, licenses low level nuclear waste sites. Currently there are three low level waste sites, one each in South Carolina, Washington, and Nevada. Low level waste from a decommissioned nuclear plant in Kansas would go to one of those three sites at the present time. (Allen, personal interview, 2/25/83)

The U. S. Department of Energy is responsible for developing a high level nuclear waste site to dispose of high level waste. There currently is no high level waste site in the United States although the Department of Energy has several barrels of high level waste in storage.

The Kansas Corporation Commission oversees and regulates utilities in Kansas.

The Commission has a legal duty under Kansas law, including that set forth at K.S.A. 66-101 et. seq., to make such investigations as it deems necessary to insure that the acts and practices of its regulated public utilities which affect or relate to the utilities' services, performed or to be performed, are both reasonable and efficient. . . .The Commission believes that it is in the public interest for it to conduct an investigation at this time into all the acts and practices of the electric utilities which own Wolf Creek which may contribute directly or indirectly to the ultimate costs of constructing, operating, maintaining, and decommissioning the Wolf Creek nuclear facility and to hold such formal public hearings as may be necessary to determine if practices or acts of said utilities relating to services performed or to be performed for the public are in any respect unreasonable, unfair, unjust, inadequate or inefficient. (Kansas Corporation Commission, in the matter of a general investigation by the Commission of the projected costs and related matters of the Wolf Creek nuclear generation facility at Burlington, Kansas, Docket No. 120,924-U, November 14, 1979)

According to Emily Wellman, KCC analyst for Wolf Creek, the KCC does not require a decommissioning plan for a nuclear power plant at this time, and no public hearings regarding the decommissioning of Wolf Creek are planned at this time.

The role of the Kansas Department of Health and Environment would be to measure the radiation levels of a decommissioned nuclear power facility. According to Gerald Allen, Director of the Bureau of Radiation Control for the Kansas Department of Health and Environment, with regard to HE 2199, it would be appropriate for a staff person from Health and Environment to offer information about radiation dose levels for a study of appropriate decommissioning methods.

Kansas Gas and Electric is in the process of developing a qualified bidders' list to analyze different methods of decommissioning Wolf Creek, studying the cost of decommissioning, making a recommendation for the best method of decommissioning Wolf Creek, and gathering funds to pay for decommissioning. According to Randy Kloefkorn, Supervisor of Project Planning and Controls for KG & E, the person finally chosen to do the study will be someone within the nuclear power industry with expertise from other decommissioning projects, possibly an architectural engineering firm.

KG&E must submit a decommissioning plan to the NRC at the time that the utility company requests an operating license. One must be cautious, however, in accepting the cost estimates from a source closely associated with the nuclear power industry. In a hearing before the Atomic Safety and Licensing Board on March 6, 1979, in the matter of Pennsylvania Power and Light Company and the Allegheny Electric Cooperative, the Board found with respect to the decommissioning plan for the Susquehanna Steam Electric Station that:

The Applicants have underestimated both the health costs and the monetary costs of decommissioning the Susquehanna facility. The monetary cost estimates are derived from an industry-sponsored study which is obviously biased, with cost estimates far below what the actual cost of decommissioning will be. Such cost will at least be equal to the cost of construction. Further, the statement by the Applicants that it is "generally agreed" that the decommissioning of a large nuclear power facility poses no new occupational or environmental hazards is erroneous. There are serious radiation hazards, particularly for workers. (Nuclear Regulatory Commission Issuances, volume 9, January 1, 1979-June 30, 1979, p. 315)

Seventeen states including Kansas have introduced bills which would create commissions to study decommissioning and the costs associated with decommissioning. Of those 17 states, 5 states, Oregon, Massachusetts, Maine, Pennsylvania, and New Hampshire have enacted laws dealing with decommissioning.

In 1979 a bill was introduced in the Kansas Senate Transportation and Utilities committee which would have directed "the State Corporation Commission to study the costs of decommissioning a nuclear reactor from the viewpoint of the costs borne by ratepayers." (Burns, et al, 1982, p. 125) That bill was reported adversely by the committee only because of the belief that the federal government, through the NRC, was already conducting a similar study and would be making recommendations by 1980 at the latest. We now know that, 4 years later, those new regulations are not ready although the NRC has conducted numerous studies such as:

-Plan For Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities, 1978

- Decommissioning Commercial Nuclear Facilities: A Review and Analysis of Current Regulations, 1979
- Facilitation of Decommissioning Light Water Reactors, 1979
- Technology, Safety and Costs of Decommissioning a Reference Pressurized Water Reactor Power Station, 1979
- Technology, Safety and Costs of Decommissioning a Reference Uranium Fuel Fabrication Plant, vol. 1 and 2, 1980
- Monitoring for Compliance with Decommissioning Termination Survey Criteria, 1981
- Draft Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, 1981
- Technology, Safety and Costs of Decommissioning Nuclear Reactors at Multiple-Reactor Stations, 1981

TESTIMONY OF DR. RALPH ESTES, WICHITA, REGARDING HOUSE BILL 2199

UNANSWERED QUESTIONS:

- * HOW MUCH WILL DECOMMISSIONING OF THE WOLF CREEK NUCLEAR GENERATING STATION COST?
- * WHAT DECOMMISSIONING METHOD WILL BE USED?
- * HOW WILL THE DECOMMISSIONING OF WOLF CREEK BE FUNDED?
- * WHO WILL PAY FOR DECOMMISSIONING?
- * WHAT WILL THE CAPACITY FACTOR BE FOR UTILIZATION OF WOLF CREEK?
- * DURING THE PERIOD ALLOWED FOR RADIATION DECAY, LIKELY TO BE 100+ YEARS, WILL THE PROPERTY BE OFF THE PROPERTY TAX ROLLS? WILL THERE BE PRESSURE FOR THE STATE, AND THUS ALL TAXPAYERS, TO MAKE UP THIS LOSS TO THE COMMUNITY?
- * HOW WILL THE INTERNAL REVENUE SERVICE TREAT COLLECTIONS FROM RATEPAYERS FOR DECOMMISSIONING?
- * HOW WILL CHANGING PUBLIC AND LEGISLATIVE ATTITUDES AFFECT KANSAS AND FEDERAL SAFETY REGULATIONS THAT WILL ULTIMATELY CONTROL DECOMMISSIONING?
- * WILL WASTE DISPOSAL FACILITIES BE AVAILABLE IN 40 YEARS, OR IN 40 + 100 YEARS, TO RECEIVE THE SPENT FUEL CELLS AND THE DISMANTLED PLANT? WILL EACH STATE BE REQUIRED TO ABSORB ITS OWN NUCLEAR WASTE?

RALPH ESTES
3926 EAST FIRST
WICHITA, KANSAS 67208
(316) 682-3673

Attachment 6 3-1-83

RE: HB 2199, Forming a Select Committee to Study the Decommissioning of Nuclear Facilities in Kansas

Testimony of Dr. Ralph Estes, Wichita, Kansas

March 1, 1983

UNANSWERED QUESTIONS:

HOW MUCH WILL DECOMMISSIONING OF THE WOLF CREEK NUCLEAR POWER PLANT COST?

Connecticut Public Utilities Control Authority used 10% of construction costs. This would be \$240 million for Wolf Creek if construction costs don't continue to increase (Accountants for the Public Interest - API, p. 35.)

Nuclear Engineering International, the industry magazine, stated that "the general consensus is that the cost of dismantling a nuclear station will be about 10 to 15% of the original capital cost, escalated to the time of dismantling." (1979 Article; API, p. 35).

For Wolf Creek this would mean a cost from \$240 to \$360 million for decommissioning.

Nobody knows. In a study by Battelle-Pacific Northwest Laboratory for the NRC, Richard Smith said: "To the question of are we going to present you with a range of costs, I think the answer to that is no. You can put in your own choice of assumptions and add up a new total." (p. 2 of "Background appendix", Maine report; cited NUREG/CP-008, p. 162 for quote)

And KCC, in its KEP Co/Wolf Creek Order in October of 1980 said: "There is no source, including the NRC, which can be turned to in order to obtain a reasonable and reliable estimate of the expense the KEPCo ratepayers will incur in decommission this plant."

KG&E seems at best confused or ambivalent. In their response this month to the stockholder proposal of the Sisters of St. Joseph, they say they estimate "it will cost approximately \$100 million to decommission a plant the size of Wolf Creek."

But according to the KCC in its KEPCo order, KG&E maintains that approximately one-quarter of the 4.00 percent depreciation rate applied to the Wolf Creek Plant represents a provision for projected decommissioning expenses. Over the course of the life of this plant, this provision will generate approximately \$400,000,000 to be used for decommissioning expenses."

Construction costs have escalated some 400% in 10 years. Will decommissioning costs escalate at the same rate? There is good reason to believe that public concern over exposure to radiation and nuclear waste disposal will produce regulations and restrictions that will greatly increase the costs of decommissioning nuclear power plants.

WHAT DECOMMISSIONING METHOD WILL BE USED?

Three methods are commonly considered.

Testimony of Dr. Ralph Estes, Wichita, Kansas

1. Immediate dismantlement and removal of all material at shutdown. This method is considered in all cases to be dangerous to health because of the radiation levels involved.
2. Mothballing - placing a radioactive facility in a safe storage condition, under guard, allowing for decontamination some years later. Most authorities and decommissioning plans choose this method, with final removal scheduled for, typically, 100 plus years after shutdown to allow radiation levels to drop and thereby permit economically feasible removal techniques.
3. Entombment - to encase and maintain a radioactive facility in concrete or similar material until the radioactivity decays to a level acceptable for unrestricted use. Since such decay would take many thousands of years, entombment essentially involves creation of a permanent, surface level waste disposal facility. (ref.: NUREG/CR-0672, vol. 1, pp. 4-4ff.)

Clearly the method chosen will affect the health and safety of Kansans. Authorities recommend that the decommissioning method be selected during or prior to construction, to permit design features that will reduce decommissioning costs and hazards. This has not been done according to my knowledge.

What method has KG&E (and presumably Kansas City Power and Light, as well as Kansas Electric Co-operative Inc.) selected? None. (Stockholder proposal, Reid and Priest letter, p. 6)

HOW WILL THE DECOMMISSIONING OF WOLF CREEK BE FUNDED?

Accountants for the Public Interest recommends a funded reserve through an external trust established in a financial institution, and controlled to insure the safety and preservation of the fund.

The Nuclear Regulatory Commission is considering only three allowable alternatives:

1. Licensee arranges payment by third parties, such as insurers. It is my understanding that no such insurance is currently available.
2. Licensee prepays decommissioning costs into a fund, either:
 - a. before startup or
 - b. by installment each year into a dedicated fund segregated from company control. (GAO/EMD-82-40, p.23)

What is KG&E considering? Besides the NRC alternatives, KG&E is considering financing decommissioning in the capital markets at the time of decommissioning (who would buy such bonds? what security?), or by charging ratepayers after decommissioning, ratepayers who would never have used the power they would be partially paying for. (S/h proposal)

WHO WILL PAY FOR THE DECOMMISSIONING?

Users of Wolf Creek power during its productive life?
Future ratepayers after Wolf Creek is decommissioned?
Stockholders, if the future ratepayers successfully challenge service

rates that include a provision for decommissioning of a plant whose power they never used?

Taxpayers of Kansas, if the stockholders' capital isn't sufficient to cover the decommissioning costs or if the utility companies otherwise become insolvent or go bankrupt? This has already happened in other states, Tennessee and New York, to cite two examples where the state was forced to pay for decommissioning. (GAO/EMD-82-40, p.22)

WHAT WILL THE CAPACITY FACTOR BE FOR UTILIZATION OF WOLF CREEK?

KG&E is projecting range of 65-70%, well above the 59% estimated by industry expert, Charles Komanoff (API, p. 38).

DURING THE PERIOD ALLOWED FOR RADIATION DECAY, LIKELY TO BE 100+ YEARS, WILL THE PROPERTY BE OFF THE PROPERTY TAX ROLLS? WILL THERE BE PRESSURE FOR THE STATE TO MAKE UP THIS LOSS TO THE COMMUNITY?

HOW WILL THE INTERNAL REVENUE SERVICE TREAT COLLECTIONS FROM RATEPAYERS FOR DECOMMISSIONING?

Probably as not taxable, if deposited into a state-controlled fund. However, with all the uncertainty surrounding this question - a formal answer should be sought from the IRS.

HOW WILL CHANGING PUBLIC AND LEGISLATIVE ATTITUDES AFFECT KANSAS AND FEDERAL SAFETY REGULATIONS THAT WILL ULTIMATELY CONTROL DECOMMISSIONING?

WILL WASTE DISPOSAL FACILITIES BE AVAILABLE IN 40 YEARS, OR IN 140 YEARS, TO RECEIVE THE SPENT FUEL CELLS AND THE DISMANTLED PLANT? WILL EACH STATE BE REQUIRED TO ABSORB ITS OWN NUCLEAR WASTE?

These are some of the serious questions concerning decommissioning of nuclear power plants that can, depending on their answers, have significant differential effects on the citizens of Kansas. They have not been addressed for Wolf Creek.

An NRC study on decommissioning expresses the problem well:

Both Federal and State Governments have the responsibility to protect the health and safety of their citizens. In connection with this responsibility, a state in which a nuclear power plant is located has several financial concerns. It is concerned with the utility having sufficient funds to decommission the plant after shutdown, and the availability of funds for unexpected contingencies during both plant operation and plant decommissioning. If the utility defaults or goes bankrupt, the state may have to assume financial responsibility for decommissioning. (NUREG/CR-0672, v.1,p. 6-1)

Citing the desirability of financial assurance for decommissioning, the NRC Report continues:

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RE: HB 2199

Testimony of Dr. Ralph Estes, Wichita, Kansas

First, since most nuclear power plants are expected to operate 30 to 40 years and ultimate decommissioning may be delayed 50 to 100 years following final shutdown, predicting the financial stability of the utility involved is uncertain at best. Second, the utility may postpone decommissioning because it has no direct economic incentive to decommission a shutdown plant. Finally, a severe accident such as occurred at Three Mile Island Generating Station II in March, 1979, may financially cripple even a large, well-insured utility. For these reasons, there is a need to take steps to ensure the availability of funds for decommissioning.

A first step, and a prudent, low-cost one, is the appointment of select committee, as was appointed by the Main Legislature to seek, for the legislature and for the people of Kansas, answers to the question here cited.

Dr. Ralph Estes
Wichita, Kansas

TESTIMONY OF DR ROBERT C HAGAN

Manager Nuclear Services, Kansas Gas & Electric Co

House Bill No 2199

Good afternoon, my name is Bob Hagan. I have responsibility for Licensing, Nuclear Fuel Supply, Nuclear Safety, Nuclear Fuel Engineering, and Radiological/Environmental aspects of the Wolf Creek Nuclear Generating Station. I have spent over 20 years in the field of nuclear power, beginning with my experience as a naval officer responsible for the training of the crews of nuclear submarines.

The purpose of my testimony is to indicate three reasons why you should take no further action with respect to House Bill 2199. From reading the bill, it appears to me that it addresses three concerns. First, an apparent lack of knowledge and experience regarding the decommissioning of nuclear facilities. Second, safety considerations regarding the decommissioning of nuclear facilities; and third, the funding of the decommissioning of nuclear facilities. The purpose of my testimony is to indicate to you that those three areas of concern do not warrant further legislation.

First, I should explain that the nuclear industry has substantial knowledge and experience in the decommissioning of nuclear facilities. In recent years, several small nuclear facilities have been decommissioned and generic studies on decommissioning of larger plants have been done using this information. In the

Environmental Report for the Wolf Creek Station, for example, there is a discussion on decommissioning with specific reference to a study (the Batelle Study 1978) which was performed on a plant similar to the Wolf Creek Station. Since the Batelle Study, further information has been gained, and further studies have been performed on nuclear plant decommissioning. With specific respect to Wolf Creek, we are now at the stage where we are ready to perform a site specific decommissioning study utilizing the latest techniques and information available. This work is being planned with consultants who are experts in the field. The purpose of this study will be to evaluate the various available options for decommissioning and arrive at acceptable methods for decommissioning Wolf Creek. It will estimate specific costs of decommissioning in 1983 dollars. It is our intention to have this study updated periodically, perhaps every five years, to incorporate new federal regulations, new decommissioning techniques, and knowledge gained from other plant decommissionings. Of course, the owners of the Wolf Creek Station will make this study available to the public and specifically, to the Kansas Corporation Commission for their information and use in discharging their regulatory responsibility.

The second area which I want to address is the safety aspects of decommissioning. Certain provisions of House Bill 2199 indicate concern for the safe decommissioning of nuclear power plants in Kansas. Let me assure you that safety is, and will be, the foremost consideration of the owners of the Wolf Creek Station in

determining the appropriate method for decommissioning the Wolf Creek Station. I should also point out to you that Federal laws and regulations are already in place which address the safety related aspects of decommissioning. In addition, the Nuclear Regulatory Commission is presently reviewing its regulations regarding the safety aspects of decommissioning, and it is expected that in the near future, new and more rigorous comprehensive regulations will be promulgated. In short, to the extent that House Bill 2199 would involve the State of Kansas in the safety aspects of decommissioning, it would simply duplicate areas which are presently covered by the Federal Government.

Finally, House Bill 2199 addresses the matter of appropriate funding for the decommissioning of nuclear power plants. In our opinion, this is a matter which is already within the jurisdiction of the State Corporation Commission; and therefore, it does not require further legislation.

In conclusion, House Bill 2199 will only duplicate existing information and regulation which is already in place at the Federal and State level; and therefore, you should take no further action with respect to it. I will be happy to answer any questions you might have.

Thank you.