

Approved: Carl Dean Holmes
4/29/94 Date

MINUTES OF THE HOUSE COMMITTEE ON ENERGY AND NATURAL RESOURCES.

The meeting was called to order by Chairperson Carl Holmes at 3:30 p.m. on February 23, 1994 in Room 526-S of the Capitol.

All members were present except: Representative Russ Mills - Excused
Representative Walker Hendrix - Excused

Committee staff present: Raney Gilliland, Legislative Research Department
Dennis Hodgins, Legislative Research Department
Mary Torrence, Revisor of Statutes
Shirley Wilds, Committee Secretary

Conferees appearing before the committee: Ken Grotewiel, KS Representative, District 92
William Craven, KS Natural Resource Council
Don Low, KS Corporation Commission
Dennis M. Langley, Bishop Group, Ltd, Lenexa
Lee Sippel, KS Power and Light Co
Earnie Lehman, Western Resources
Bruce Graham, KS Electric Power Coop Inc

Others attending: See attached list

Chairperson Holmes opened the meeting announcing to interested Committee members two items available to them upon adjournment of today's meeting: 1) copies of expenditures from the State Water Plan (receipts and transfers); and 2) in response to questions on the fee fund, a letter from the Corp of Engineers, indicating their plans to raise the park fees within the Corps facilities.

The Chair also announced that the Subcommittee on Sludges and Residues will meet upon adjournment of today's Standing Committee meeting.

Chairperson Holmes told the Committee he has not scheduled any bills to be worked in today's meeting, scheduling them for tomorrow.

Hearing on 3005:

The Honorable Ken Grotewiel. (See Attachment #1) Representative Grotewiel said the purpose of **HB 3005** is to explore alternative energy sources for electrical generation, citing five key attributes of the legislation.

- It preserves the traditional electrical delivery system while using cleaner or totally non-polluting fuels.
- It provides operating experience for utility companies on a small scale, using the new technologies in advance of making decisions on the construction of major generating capacity.
- It will not jeopardize the financial health of the utilities or put an undue hardship on the ratepayer.
- It begins the process of moving toward new domestic state fuel sources.
- It takes a long-range view by exploring the possibility of generating electricity from fuels that are environmentally safer (and promote the Kansas economy).

Dennis Langley. On behalf of the Kansas Pipeline Operating Company, Kansas Natural Gas Company and Kansas Pipeline Company (having approximately 1,300 miles of regulating natural gas line) Mr. Langley spoke of three general areas to support this legislation.

Mr. Langley recommended two changes for **HB 3005**: clarify the language regarding generating capacity and for excess capacity and on Page 1, line 43, change the word "may" to "shall."

In the United States 10-12% of the total electricity is generated by alternate sources and Mr. Langley said Kansas is replete with

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MINUTES OF THE HOUSE COMMITTEE ON ENERGY AND NATURAL RESOURCES, Room 526-S Statehouse, at 3:30 p.m. on February 23, 1994.

sunshine and wind, providing an ideal setting for technological research for alternative energy sources. He added Kansas is one of the last states to be progressive in this area. (For example, New York utilities have pledged to develop 387 MW of renewal energy by the year 2010; New England has pledged to reduce emissions by 20%, shifting to either natural gas or alternative energy sources.)

Losing jobs and severance tax in Kansas and substituting a dirtier fuel for cleaner fuel is not a reasonable rationale, particularly when one considers the depressed oil and gas industry. There are 8,000 jobs (with \$225 million in wages) in the natural gas industry alone in the state that are productional-related. Kansas taking coal in from another state displaces the use of natural gas, taking jobs and severance tax out of our state - and causes increased pollution.

Addressing environmental attributes for this legislation, Mr. Langley reported on a study done by the Environmental Protection Agency and Harvard School of Public Health (one of the cities used in the study was Topeka). The original report completed in 1991 (updated this year) documents that 60,000 persons die annually as a result of coal-fired power plant production; deaths, morbidity, and disease take place below the Clean Air Act threshold. He said sulphur dioxide emissions are responsible for roughly one-third of all emissions in the United States, with the exception of automobiles. According to the office of the Environmental and Technological Assessment of the United States, 50,000 deaths occur annually as a result of sulphur dioxide emissions and in excess of 100,000 from related diseases. Keeping these statistics in mind, Mr. Langley said natural gas is a bridge to alternate energy, and coal power plants cost more to use as opposed to the gas powered plants. When considering the so-called greenhouse- effect gases, natural gas has 58% less CO₂ emissions per BTU, as compared to coal and alternative energy which has no CO₂ emitted.

Mr. Langley said to look at the costs involved in building a natural gas power plant vs the nuclear powered plant, adding the costs as is done in any competitive business, natural gas would be only about half the cost. In addition it costs more to build a coal powered plant. The degenerative effects of a coal powered plant has about 20% corrosion within the plant each year, which is an added cost for clean up - there is no such replacement with natural gas. A capitalized investment in coal is far more expensive than investment in natural gas. When capitol cost is considered, the most expensive source per MW is nuclear; second being coal; and the least expensive source of traditional sources is natural gas.

When considering the potential costs, a possible cleaner environment, and retaining jobs in Kansas, Mr. Langley supports the legislation offered in **HB 3005**.

Bill Craven. (See Attachment #2) Mr. Craven considers this to be important legislation, having great potential for the state of Kansas. He maintains that the state needs a clear policy statement from the Legislature that renewable energy systems must be considered in meeting Kansas' future electrical generation needs. He said the Legislature has to provide the vision and leadership to begin the process, with the matter being decided by that body and not the KCC. Some points Mr. Craven used to support his view:

- It applies only to utilities regulated by the KCC with more than 10,000 retail customers.
- The bill does not require additional excess capacity.
- Those utilities that seek additional capacity are to consider renewable energy systems and/or renewable energy/natural gas hybrid systems.
- Utilities are permitted to act in a timely fashion without administrative costs.
- The requirement for the use of renewable systems would not apply if the cost was greater than 15% higher than the lowest cost alternative before the year 2000 (10% thereafter).

Mr. Craven offered several reasons to develop renewable energy resources in Kansas. He offered that it would provide a hedge against an uncertain energy future; it could reduce the transfer of monies to other states; and help mitigate the risk of global warming. He said the most import factor is that eventually there will have to be reliance on renewables for much of the energy use. By initiating this transition in an objective and cautious manner it offers a positive opportunity for success - at the lowest cost.

Recognizing there are opponents to this issue and citing some of their possible arguments, Mr. Craven concluded that development of renewal energy resource is a legitimate public policy objective providing many lasting benefits. He urged favorable consideration of **HB 3005**.

Don Low. (See Attachment #3) Mr. Low provided a summary to the Committee of incentives for renewal resources under current statutes, the proposed IRP rules and this legislation. He reported that under the current statutes a bonus return rate is allowed on investment in renewable resources. Also, the Commission has under consideration, staff proposed rules regarding Integrated Resource Planning requirements for electric utilities. He said those rules would require utilities to comprehensively examine various cost considerations in their acquisition of energy resources, including demand-side resources. Mr. Low also

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provided information concerning the possible amount of renewable energy capacity which would be required under this bill.

Jerome Sippel. (See Attachment #4) Mr. Sippel offered testimony on the potential impact of this bill on KCPL from a system planning perspective. Elaborating on several topics (technical issues, rates, regulations, etc.), including the ramifications of requiring his company to add specific types of generating resources, he spoke in opposition to this bill.

Among many of his concerns Mr. Sippel said the bill does not provide sufficient time for utilities to properly site renewable sources, especially wind farms. He said the wind data collected in the KEURP study is outdated. He said it would be best to update this before utilities invest millions of dollars in wind power. The author of this study, Dr. Johnson, indicated that the entire study would be performed in three years at an estimated cost of \$500,000. Given the time frame to update this study, Mr. Sippel said it is unreasonable to expect Kansas utilities to generate 2% of energy sales with renewable resources prior to the year 2000. Mr. Sippel said KCPL is fully supportive of developing renewable technologies, but that it would be prudent to delay a major expenditure until the results of that study are available.

KCPL will continue to review the potential of renewable resources on their system. He said renewable resources may eventually rival the cost of conventional resources, thereby being justified by economics and not legislative mandate.

Mr. Sippel said this legislation could put KCPL in the position of prematurely committing to a resource option that has not been proven to be economically available, and the bill does not provide sufficient time to complete a siting study.

Jim Ludwig. Mr. Ludwig introduced Mr. Earnie Lehman to the Committee, explaining his position with Western Resources is Director of Electric and Gas Rates.

Earnie Lehman. (See Attachment #5) As Director of Electric and Gas Rates for Western Resources, Mr. Lehman said they support continued research and development of renewable energy sources. However, this bill mandates that electric utilities buy energy from renewable sources at above market prices, if necessary, before it is needed to serve their customers. Passage would lead to higher electric rates and place their industrial customers at a disadvantage with their competitors in neighboring states. There would also be a reduction of natural gas use to generate electricity.

Although they oppose **HB 3005**, Mr. Lehman said Western Resources will continue to research and develop renewable energy sources and make them more economical. He maintains the development of renewable energy must occur through research and demonstration projects until renewable energy is economical enough to compete with existing energy sources.

Bruce Graham. (See Attachment #6) In explaining the not-for-profit business of the KEPCo, Mr. Graham reported they became an organization in 1975 to provide their members with an adequate and dependable power supply - at the lowest possible cost. The 23 rural cooperatives provide retail electric distribution to rural homes, farms and business in their particular eastern area of the state.

Although HB 3005 would not have any immediate effect on KEPCo, he said eventually this legislation would increase the cost of providing electricity (and perhaps prematurely) add unneeded capacity in Kansas. He explained that his organization purchases approximately one-third of its electric supply from investor-owned utilities in Kansas which would be subject to the provisions in this bill. Eventually the costs would reach the retail bills of the rural electric consumer.

Also, Mr. Graham said he is concerned with the mandate to utilize certain generation sources. It is the view of KEPCo that the mandate included in this bill to utilize resources, regardless of their economic impact, would be counter productive. Due to the sparse population of the rural service areas, such service is generally at a higher cost, and it would further compound the problem if this bill were to be adopted.

Chairperson Holmes referred the Committee to additional written testimony from Joe Bahr, Director of WestPlains Energy (See Attachment #7).

Upon completion of a lengthy discussion between the Committee and conferees regarding renewable energy concepts and all facets of **HB 3005**, the meeting adjourned at 5:30 p.m.

The next meeting is scheduled for February 24, 1994.

KEN GROTEWIEL
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TOPEKA

HOUSE OF
REPRESENTATIVES

COMMITTEE ASSIGNMENTS
MEMBER: ENERGY AND NATURAL RESOURCES
TAXATION
JOINT COMMITTEE ON PENSIONS,
INVESTMENTS AND BENEFITS

February 23, 1994

TESTIMONY

TO: House Energy and Natural Resources Committee

FROM: Representative Ken Grotewiel

RE: HB 3005, Alternative Energy Sources for Electrical Generation

I support HB 3005 for the following reasons:

1. It preserves the traditional electrical delivery system while using cleaner or totally non-polluting fuels.
2. It provides operating experience for utility companies on a small scale using these new technologies in advance of making decisions on the construction of major generating capacity.
3. It makes this experience a reality without jeopardizing the financial health of the utilities or putting an undue hardship on the ratepayer.
4. It begins the process of moving toward new domestic state fuel sources as this state becomes a net-importer of traditional fossil fuels.
5. It takes a long range view by exploring the possibility of generating electricity from fuels that are environmentally safer and which promote the Kansas economy.

Thank you for your consideration of this forward looking bill.

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Attachment #1
2/23/94*



Kansas Natural Resource Council

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Testimony of William Craven Legislative Coordinator, Kansas Natural Resource Council and Kansas Sierra Club

H.B. 3005 Renewable Energy Development Act

Thank you, Mr. Chairman, and members of the committee, for an opportunity to testify on this important bill. I would be hard-pressed to come up with a more important bill this session which has such great potential to help Kansas, environmentally and in several other respects.

By way of background, this bill is the product of input from several different sources. Of particular importance in developing the approach used in this bill was the input and guidance of Mr. Dale Osborn, who you remember briefed the committee on current wind-powered generating technologies earlier this session. I spoke with Mr. Osborn this morning, and he asked me to keep him informed on the committee's progress. Kenetech Corp., the company for which Mr. Osborn works, remains quite interested in helping Kansas utilities develop the indigenous wind resource of our state.

Helping Kansas utilities is actually what this bill is all about. It was drafted in an attempt not to be confrontational or to create divisions. As I explain the points of this bill, I hope each of you comes to understand that. I remain willing to work out technical matters with the utility companies, but I also remain convinced that the state needs a clear policy statement from the legislature that renewable energy systems must be considered in meeting Kansas' future electrical generation needs.

Key points about this bill include:

1. It applies only to utilities regulated by the KCC with more than 10,000 retail customers. It does not represent an additional planning burden for the state's small municipal or cooperative utilities.

2. The requirements of the bill are triggered by the need for additional generating resources. It does not require additional excess capacity.

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3. The bill requires that utilities which seek additional capacity consider renewable energy systems, or renewable energy/natural gas hybrid systems, and that it could not acquire generation from other sources until two percent of its needs come from these sources. After January, 2000, the percentage increases to five percent.

4. Research and evaluation projects are exempted from the siting act, subject to KCC approval, which permits utilities to act in a timely manner without the administrative costs inherent in a siting act hearing.

5. The requirement for the use of renewable systems would not apply if the cost was greater than 15 percent higher than the lowest cost alternative before the year 2000, and 10 percent thereafter. Cost would be based on levelized cost over the life of the renewable energy system. Using levelized costs means that the benefit of stable energy prices from renewable systems is fairly reflected in the analysis. Today, the customer essentially bears all the risk of future fuel cost increases. Using levelized costs to evaluate renewable and conventional fossil systems insures an objective comparison. Iowa's Public Utilities Board recently issued an order using this method in response to a law enacted by the Iowa Legislature. I can provide copies should the committee require them.

Turning now to the question of why Kansas should develop renewable energy resources, I'd like to make some brief points:

1. Renewable energy resources have stable costs, providing a hedge against an uncertain energy future, and the risk of inflation.

2. The use of renewable energy resources is essentially pollution-free.

3. The use of Kansas' renewable resources could reduce the transfer of money to other states for generating fuel.

4. The sales of biomass fuel and royalty payments from wind farms offers new sources of income to Kansas farmers.

5. The use of renewable resources will help mitigate the risk of global warming. Whatever your perspective on that issue, efforts at the federal and international level clearly suggest that reducing carbon dioxide emissions will be a goal and perhaps a requirement in this decade.

6. Hybrid systems using renewable energy and Kansas natural gas may offer a very reliable and low pollution source for electricity.

7. Most importantly, eventually we will have to rely on renewables for much of our energy. Initiating such a transition in an objective, gradual, cautious, and conservative way offers a far greater opportunity for success at the lowest cost.

The next issue is this: Why should the Kansas legislature make such a clear policy statement on the development of renewable energy? The answer is that the legislature has to provide the vision and the leadership to begin this process. Renewable energy policies exist all across the nation. In Texas, Texas Utilities, one of that state's largest utilities, has announced plans to install a 65 mW wind farm and a 1 mW photovoltaic plant. Central and Southwest, a large investor-owned utility in Dallas which provides service in Oklahoma all the way to the Kansas border, has initiated a five-year, \$10 million program to test and evaluate renewable energy technologies. Northern States Power in Minnesota has announced plans to build a 100 mW wind farm in the southwest corner of that state, closer to Topeka than to Garden City. In Iowa, the legislature recently passed a law calling for up to 100 mW of renewable energy capacity. Other state and utility-led renewable energy development initiatives are underway in Oregon, Washington, Idaho, Arizona, New York, Virginia, Vermont, and Wisconsin. Part of Virginia's effort focuses on attracting photovoltaic manufacturers as a long-term source of good jobs. Yet in Kansas, rich in renewable resources, nothing is happening. Our regulated electric utilities have not taken the initiative, due at least in part because no one in state government has encouraged them to do so.

This matter needs to be decided by the legislature and not by the KCC, because this is inherently a public policy initiative. Also, this bill sets goals and permits incentives, items unlikely to originate from a regulatory agency.

As a proponent, it is inevitable that I will try to anticipate the arguments offered against this bill. The likely issue is cost--that the provision allowing 15 percent higher cost (10 percent after 2000), will increase rates. The response is this: If the entire 2 percent goal were reached, and if the cost of the renewable energy systems were the full 15 percent higher than the conventional systems, the increase in rates, if passed through to the ratepayer, would be three-tenths of one percent. That's not much for the benefit of initiating the development of Kansas resources with so many advantages, including long-term energy price stability. Just think how different the Kansas energy scene would be if such a stringent limitation had been applied to Wolf Creek and Holcomb. Those plants would not exist, and electricity in Kansas would undoubtedly be much cheaper.

Another possible argument is that the KCC's Integrated Resource Planning process is intended to address meeting future energy needs at the lowest cost, and it should be allowed to run its course without guidance or interference from the legislature. The argument is flawed for several reasons: The IRP process itself tends to favor existing technologies. Second, the KCC initiated its IRP hearings two years ago, in no small part in response to a bill requiring it which was passed out of this very committee. Third, the IRP process is now stuck in a debate about whether environmental externalities should be considered, and that process's completion is several months, if not years, away. Finally, utilities may argue that the threat of competition precludes them from making investments that in any way could drive up cost, even a fraction of one percent. Development of renewable energy resources is a legitimate public policy objective with many benefits. If the threat of competition prevents utilities from actively participating in this development process, then perhaps it will be necessary to pass the torch to the competition, by extending retail wheeling access to renewable energy/natural gas hybrid power producers.

Mr. Chairman and members of the committee, I urge favorable consideration of this bill, and I will try to respond to any questions.

BEFORE THE HOUSE
ENERGY AND NATURAL RESOURCES COMMITTEE

PRESENTATION OF THE
KANSAS CORPORATION COMMISSION ON
H.B. 3005

The KCC neither supports or opposes this bill. Our purpose is simply to provide some information relating to renewable resources. Attached a brief summary of incentives for renewable resources under current statutes, the proposed IRP rules and H.B. 3005.

As you know, current statutes allow for a bonus rate of return on investment in renewable resources. Also, the Commission has under consideration, staff proposed rules regarding Integrated Resource Planning requirements for electric utilities. Those rules would require utilities to comprehensively examine various cost considerations in their acquisition of energy resources, including demand-side resources. Although the rules allow for incentives for renewable energy resources, and renewable resources may have a cost advantage over other supply resources when environmental externalities are considered under a Societal Cost Test, there is no "quota" under the rules as contained in this bill. We have also attached some information concerning the possible amount of renewable energy capacity which would be required under this bill.

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Discussion of Renewable Energy Incentives

The following is a discussion of the various renewable energy incentives either currently enacted or proposed. The objective of this discussion is to provide a brief outline of these initiatives without a detailed analysis of the different interactions between incentives. In addition, this summary does not intend to address complex issues such as interstate power pool arrangements or economic impacts.

Incentives under KSA 66-117(d)

This statute authorizes the Kansas Corporation Commission (KCC) to allow an additional 1/2 to 2% rate of return for investments in renewable energy resources. Renewable resources are defined to include not only supply-side but also demand-side resources (such as energy conservation). After a public hearing, this additional rate of return may be given to the utility if the KCC finds it is warranted.

The existing statute serves to motivate utilities to consider renewable resources when they otherwise would only consider conventional generating units to meet new capacity. The utility is still held accountable for making prudent choices in its planning and procurement. However, the additional incentive should motivate utilities to select renewable energy resources when they are equivalent in cost to conventional resources.

Incentives under the KCC staff proposed IRP rule

The proposed IRP rule requires the utility to develop three separate least cost plans, the Supply-Only plan, the Total Resource Cost plan and the Societal Cost plan. The Supply-Only plan is based on meeting the future energy requirements of the utility's customers with only the least cost supply-side resources (in the case of electric utilities this is electric generating plants). The Total Resource Cost plan and the Societal Cost plan both allow the consideration of demand side management (DSM) programs, as well as supply-side resources in developing the least cost plan.

The Societal Cost plan is similar to the Total Resource Cost plan, with one exception. The Societal Cost plan requires some evaluation of externalities. The objective underlying the utilities Societal Cost plan is to minimize the social cost, that is, the direct and indirect costs (i.e., environmental costs), of meeting their customer's energy needs. Renewable energy supply-side resources receive favorable treatment in the Societal Cost plan due to the environmental costs that are associated with conventional supply-side resources. All three plans developed in the IRP would have to consider uncertainties, such as future fuel costs or future environmental regulation costs.

After formulating the three least cost plans the utility then develops a preferred plan. The preferred plan may be identical to either the Total Resource Cost plan or the Societal Cost, or some combination of the two. The preferred plan must be accepted by the KCC after public notification and input.

The analysis of externalities under the Societal Cost plan includes the consideration of the environmental costs to society of any potential energy resource. The effect is to add this cost when contemplating supply-side resources that actually "use" the environment, even if those costs are not directly charged to the resource. This would make future conventional supply-side resources, such as pulverized coal units, more expensive when compared to other alternatives that do not have the same environmental costs. Most renewable resources (such as wind generation, solar photovoltaics, solar thermal and demand-side measures) would have either no or very little environmental impact. While some renewable energy supply-side resources (such as burning biomass, for example) could be assessed a societal cost due to externalities, most renewable resources become relatively more attractive. Any renewable resource implemented under the IRP would still qualify for favorable rate of return treatment under KSA 66-117(d)

Incentives Under the Proposed Legislation, HB #3005

This proposal would require each utility to acquire renewable energy resources to supply at least 2% of the utility's total energy sales by 1996 and at least 5% of the total energy sales by 2000 before adding any conventional supply-side resources. The only exception would be if the KCC determined that the levelized cost over the life of the renewable energy resource was 15% greater than the lowest cost alternative source. The levelized cost of the alternative resource must also consider future fuel costs and future mandatory environmental regulatory risks.

[Note: While it is not explicitly stated, it is assumed that this legislation refers only to supply side renewable energy resources and does not consider DSM or conservation resources.]

As noted above, the utility would still be subject to the IRP requirements (assuming the rules are approved) and qualify for favorable rate of return treatment under KSA 66-117(d). The only difference is that in constructing the Preferred Plan under the IRP, some percentage of the resources chosen to meet customer energy needs would be mandated as renewable energy supply-side resources. The utilities would be required to purchase these renewable resources regardless of cost (up to the 15% Levelized cost restriction).

Impact of HB 3005 on Kansas Utilities

Affected Utility	1992 Sales (MWhr)	Renewable Energy Sales (1)		Renewable Generation (2) rating of all units	
		1996 (MWhr)	2000 (MWhr)	1996 (MW)	2000 (MW)
Western Resources *	16576799	331536	828840	18.92	47.31
West Plains	2864236	57285	143212	3.27	8.17
Kansas City Power & Light	3557904	71158	177895	4.06	10.15
Empire Distric Electric**	408231	8165	20412	0.47	1.17
Midwest Cooperative	828730	16575	41437	0.95	2.37
Wheatland Cooperative	543128	10863	27156	0.62	1.55
Pioneer Cooperative	193373	3867	9669	0.22	0.55
Total	24972401	499448	1248620	28.51	71.27

Note: Sales are based on 192 annual reports (FERC form 1 and state amendments)

* KPL and KGE figures combined

** 1992 KS customers were 9733, this assumes they grow past 10,000

(1) based on 2% and 5% of 1992 sales (1992 sales were low this is conservative)

(2) based on 100% of rated generation 50% of the time (extremely optimistic for wind, unachievable for solar)

**TESTIMONY BEFORE THE
HOUSE ENERGY COMMITTEE**

Prepared by
Jerome L. Sippel
Manager-Operations Planning and Budgeting
Kansas City Power & Light Company

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jerome L. Sippel. My business address is 1201 Walnut Street, Kansas City, Missouri 64105.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Kansas City Power & Light Company (KCPL) as Manager-Operations Planning and Budgeting.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I graduated from Purdue University in 1967 with a Bachelor of Science Degree in Electrical Engineering. In 1973, I received a Masters of Engineering Degree in Nuclear Engineering from Iowa State University. I have been a Registered Professional Engineer in the State of Kansas since 1978.

I joined KCPL in 1977 as an Assistant Project Engineer in the Nuclear Power Department. In 1979, I was promoted to Nuclear engineer and in 1980 I became Manager of the Nuclear Power Department. I left that department later in 1980 to assume the position of System Planning Engineer. In January of 1983, I again assumed the position of Manager of the Nuclear Power Department and held that position until November of 1984, when I became Assistant to the Director of Power Supply.

In January of 1987, I was promoted to Manager of the Operations Planning and Budgeting Department. As Manager of Operations Planning

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and Budgeting, I am primarily responsible for KCPL's generation planning functions, including the economic analysis of system expansion alternatives.

Q. WHAT IS THE PURPOSES OF YOUR TESTIMONY?

A. The general purpose of my testimony is to discuss the potential impact of House Bill No. 3005 (the Bill) on KCPL from a system planning perspective. Specifically, I will discuss the following topics:

1. The process currently used to evaluate alternative generating resources, focusing primarily on renewable resources.
2. The ramifications of requiring KCPL to add specific types of generating resources which are not economically justified.
3. The feasibility of adding renewable resources within the time frame stated in the Bill.
4. Ongoing efforts by KCPL to identify potential applications of renewable resources in the State of Kansas.

Q. HOW DOES KCPL SELECT NEW GENERATING RESOURCES FOR SYSTEM EXPANSION?

A. KCPL uses a process known as "integrated resource planning" (IRP) to select new generating resources for system expansion. The IRP process provides a framework for evaluating alternative generating resources on a consistent and unbiased basis. The evaluation is performed in two phases: (1) resource screening, and (2) final integration.

The screening process calculates the cost of individual resources as measured by the levelized average cost of generation (\$ per kWh). The resources are then ranked based on the cost profiles, with the lowest cost alternatives being the most desirable. The rankings are used to condense the extensive list of available resources into a small portfolio of viable alternatives for KCPL. This portfolio is passed on to the integration phase of the IRP process.

The integration phase combines the most economic generating resources with demand-side management programs to develop long-term

capacity expansion plans. A computer model is used to calculate the cost of various combinations of capacity resources. The integration process provides a method of identifying the combination of resources which satisfies KCPL's future power requirements while minimizing the cost to shareholders and ratepayers. Whereas, the screening phase focuses on the economics of individual resources, the integration phase captures the synergies that exist by combining various resources.

Q. IS THE IRP PROCESS SUPPORTED BY STATE REGULATORS?

A. Yes. In fact, the Missouri Public Service Commission (MPSC) recently established rules requiring electric utilities to file an integrated resource plan every three years. KCPL will make its first IRP filing with the MPSC in July of 1994. The Kansas Corporation Commission (KCC) is currently developing a similar set of requirements, so I anticipate filing an IRP in Kansas at a later date.

Q. IS KCPL EVALUATING RENEWABLE RESOURCES IN THE IRP PROCESS?

A. Yes. KCPL has evaluated a wide range of renewable technologies including wind turbines, photovoltaic cells, geothermal units, and solar thermal units. These resources proved to be much more costly than conventional types of generation. The highest ranking renewable resource in the screening process was wind power, so I will concentrate the remainder of my discussion on this technology.

Q. HOW WOULD HOUSE BILL NO. 3005 IMPACT THE IRP PROCESS?

A. The IRP process is designed to identify the mix of resources which satisfies customer power needs at the lowest cost. House Bill No. 3005 would force KCPL to reduce the usage of existing resources by setting aside a specific amount of future energy production to be done by renewable resources, regardless of the economics. This would lead to a "suboptimal" mix of generating resources and higher electric rates for customers.

Q. WHAT DO YOU MEAN BY A MIX OF RESOURCES?

A utility system is comprised of a variety of generating resources with each resource serving a very specific function. The function of a generating resource is referred to as its duty cycle. The three primary duty cycle classifications include base load, intermediate load, and peaking. The percentage of resources in each of the three categories is referred to as the system mix. KCPL's system mix is 73% base load and 27% peaking.

Q. WHAT IS THE DISTINCTION BETWEEN BASE LOAD, INTERMEDIATE LOAD, AND PEAKING RESOURCES?

A. An electric utility system always requires an underlying minimum load which is referred to as "base load." Although system load fluctuates over the course of a year, the load never drops to zero barring a catastrophic event. Generating resources designed to meet the "base load" of a utility system are called base load resources. A base load resource such as a pulverized coal unit requires a large capital investment; however, the operating costs for this type of resource are very low. Utilities use base load units to generate the bulk of the energy required by the system. By generating a large number of kWh, the capital investment can be offset by the low operating expense on an average cost basis (\$ per kWh).

Generating resources designed to handle short term fluctuations in system load are called peaking resources. In contrast to base load resources, peaking resources have a low capital cost and high operating costs. Peaking resources are not used to generate large quantities of energy due to the high operating costs. A gas-fired combustion turbine (CT) is an example of a peaking resource.

Intermediate load resources provide a third alternative for capacity planning. Intermediate load resources have a moderate capital cost and moderate operating costs. These resources are used to satisfy seasonal customer loads with significant energy requirements. Peaking resources are not suited for this type of energy intensive load due to high operating costs,

but the energy requirement is not large enough to justify a base load unit. A wind turbine is an example of an intermediate load resource.

Q. WHY WOULD THE BILL RESULT IN A SUBOPTIMAL SYSTEM MIX?

A. As you can see from the definitions I provided, the selection of new generating resources is dictated by the energy needs of the system. The economics of a generating resource is a function of the tradeoff between capital cost and operating cost. Since the KCPL system consists primarily of base load resources, there is no immediate need for additional sources of energy. In fact, the system does not appear to require a new energy resource until the middle of the next decade. The short-term needs of the system are limited to peaking resources. KCPL plans to use a combination of combustion turbines (CTs), purchase power contracts, and demand-side management programs to meet these needs.

This Bill would force KCPL to install renewable resources rather than more cost effective measures to meet the short-term capacity needs of the system. This creates a mismatch between the duty cycle of the resource and the system energy needs. Since the system does not need another energy resource, the energy from a wind turbine would simply displace generation from KCPL's existing coal-fired units. The avoided cost of generation from a coal unit is not sufficient to justify the added capital cost of a wind turbine. Consequently, installing wind turbines would increase the overall cost of energy service. This is suboptimal since KCPL would be forgoing a lower cost mix of capacity resources.

Q. HOW MUCH MORE COSTLY IS A WIND TURBINE THAN A COMBUSTION TURBINE?

A. The installed cost of a 100 MW wind farm is estimated at \$107,100,000 in 1993 dollars. In contrast, the same 100 MW of CT capacity costs only \$49,600,000. However, wind turbines impose additional costs to a utility system which are not readily apparent.

Q. WHAT ADDITIONAL COSTS DO WIND TURBINES IMPOSE?

- A. KCPL is required to maintain adequate generation to serve the maximum one-hour load or "peak load" of the system. As customer load growth causes the peak load to increase, new resources are added to the utility system. Therefore, KCPL must be able to depend on the capacity of a generating resource during peak load periods. KCPL's annual peak load historically occurs between June 1st and September 30th.

The power output of a wind turbine is dependent upon the prevailing wind speeds. The State of Kansas typically experiences high wind speeds in spring and fall while summer wind speeds are fairly low. This wind profile suggests that the availability of wind turbine capacity coincident with system peak is very low. As a result, redundant resources must be installed in order to have adequate capacity to meet the system peak load.

Q. WHAT IS THE SOURCE OF YOUR WIND SPEED DATA?

- A. In 1984, the Kansas Electric Research Program (KEURP) sponsored a study to determine the potential for wind power in Kansas. The study was directed by Dr. Gary Johnson of Kansas State University. The scope involved both the collection and analysis of wind speed data for six sites in Kansas. Wind speeds were monitored at heights of 10 meters, 30 meters, and 50 meters for 12 months. This was the most comprehensive source of wind speed data available to KCPL; however, it is somewhat outdated.

Q. HOW MUCH CAPACITY COULD BE EXPECTED FROM A WIND TURBINE DURING PEAK LOAD PERIODS?

- A. The monthly wind speed data from the KEURP study was used to assess the capacity value of a 100 MW wind farm during peak load periods. The wind farm was presumed to be located in Oakley Kansas, one of the windiest sites in the KEURP study. The daytime wind speed data for the months of June through September were converted into cumulative probability distributions. Using these distributions, it was possible to probabilistically project the expected wind speed during peak load periods.

Based on these calculations, wind turbines would only have a 23% coincidence factor with KCPL's peak load. This means that a 100 MW wind farm in Oakley Kansas would only provide 23 MW of capacity during peak load periods. Stated another way, KCPL would need to install 4 MW of wind turbine capacity for every 1 MW of capacity required to meet the system peak load. The cost of installing redundant capacity is a hidden cost of wind power.

Q. HOW MUCH RENEWABLE CAPACITY WOULD KCPL BE REQUIRED TO INSTALL UNDER THE BILL?

A. The Bill would initially require 2% of energy sales to be produced with renewable resources. Based on forecasted sales for 1994, this translates into approximately 100 MW of wind turbine capacity to be phased in as KCPL's system requires new capacity. As mention previously, the 1993 installed cost for a 100 MW wind farm is estimated at \$107,100,000. Since this wind farm is expected to provide only 23 MW of capacity on peak, an additional 77 MW of redundant capacity must be installed to satisfy the total system requirement. KCPL would desire to choose a lower cost alternative than wind turbines to provide the redundant capacity. Assuming a CT was selected as the backup resource, the wind farm would effectively cost \$145,292,000. The alternative is to satisfy the entire 100 MW requirement with a CT at a cost of just \$49,600,000 (1993\$). Eventually, the Bill would require KCPL to generate 5% of its energy with renewable resources which compounds the problem.

Q. WHY ARE YOU CONCERNED ABOUT THE COST OF RENEWABLE RESOURCES IF KANSAS REGULATORS GRANT RECOVERY?

A. I am concerned for two reasons. First, selecting new resources, which are not the most economical for the system, will unnecessarily increase customer electric rates. Since businesses often consider the cost of electric service in siting new industrial facilities, Kansas would be at a competitive

disadvantage compared to other states without similar legislation. Eventually, this would weaken the Kansas economy.

My second concern stems from the fact that KCPL's decisions are subject to review by Commissions in both Missouri and Kansas. Even if the KCC grants full recovery of renewable resources, there is no guarantee that the MPSC will do the same. In fact, the MPSC endorses least cost planning which directly conflicts with the spirit of the Bill.

Q. DO YOU HAVE ANY OTHER CONCERNS ABOUT THE BILL?

- A. Yes. The Bill does not provide sufficient time for utilities to properly site renewable resources, especially wind farms. This is particularly concerning since wind power is the most economic renewable resource.

As I mentioned previously, the wind data collected in the KEURP study is outdated. Before utilities invest millions of dollars in wind power, it would be appropriate to update the study. KCPL contacted the original author of the KEURP study, Dr. Gary Johnson, to discuss a time schedule for a new study.

Dr. Johnson indicated that the entire study could be performed in three years at an estimated cost of \$500,000. Given that the permitting and construction of a wind farm requires at least 2 years, it would take a minimum of 5 years to develop a commercial project. Even if the study commenced on January 1, 1995, a wind farm would not go in-service until January of 2000. As a result, it is unreasonable to expect Kansas utilities to generate 2% of energy sales with renewable resources prior to the year 2000.

Q. DOES KCPL SUPPORT THE DEVELOPMENT OF RENEWABLE RESOURCES?

- A. Yes. KCPL fully supports the development of renewable technologies. Our support is reflected by our affiliation with industry research groups such as the Electric Power Research Institute (EPRI), the Midwest Research Institute, the Utility Photovoltaic Group, and the Kansas Electric Utility Research Program (KEURP). In fact, KEURP recently contracted with Meridian

Corporation to devise a renewable energy research and development plan. The KEURP project will assess the potential of various renewable resources in the State of Kansas. In addition, it will identify those resources which deserve further study. It would be prudent to delay a major expenditure on a wind study until the results of the KEURP study are available.

KCPL is also participating in a small scale research project on photovoltaic cells in conjunction with EPRI, the Shawnee Mission Park System, and United Solar. The project is designed to evaluate the benefits of photovoltaic roofing material. The roofing material is being installed on a new administrative building in Shawnee Mission Park. Monitoring equipment will be used to gather data at the test site. This project is expected to be in-place by the summer of 1994.

KCPL will continue to review the potential of renewable resources on our system. The costs of renewable technologies have declined significantly over the past 10 years. If this trend continues, renewable resources may eventually rival the cost of conventional resources. Then, the use of renewable resources will be justified by economics rather than legislative mandate.

Q. DO YOU SUPPORT HOUSE BILL NO. 3005?

A. No. The Bill is not in the best interest of KCPL ratepayers or the Kansas economy. If enacted, KCPL would be required to begin installing wind energy units to meet its 1998 need for capacity. This legislation could put KCPL in the position of prematurely committing to a resource option that has not been proven to be economically available. The economics would be proven or disproved by a comprehensive study as described by Dr. Johnson. Unfortunately, the Bill does not provide sufficient time for utilities to complete a siting study and install the renewable resources.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. Thank you.

**TESTIMONY TO THE
HOUSE ENERGY AND NATURAL RESOURCES COMMITTEE
ON HB 3005**

By Earnie Lehman, Director of Electric and Gas Rates
Western Resources, Inc.

February 23, 1994

Mr. Chairman and members of the Committee:

I am Earnie Lehman, Director of Electric and Gas Rates for Western Resources. Western Resources opposes HB 3005. We support continued research and development of renewable energy sources. This bill, however, attempts to leapfrog that research by simply mandating that electric utilities buy energy from renewable sources at above market prices if necessary, before it is needed to serve our customers. Passage of this bill would lead to higher electric rates for all our customers and place our industrial customers at a disadvantage with their competitors in neighboring states. It would also result in a reduction in the amount of natural gas we use to generate electricity.

The harm the bill does is traceable to its requirements that certain percentages of the electricity we sell must be from renewable resources, even if bought at a premium price, before we buy energy under a new purchase agreement or before we extend any existing agreement under which we buy capacity or energy. We would have to buy renewable energy costing as much as 15% more than the cost from a nonrenewable alternative source through 1999, after which the cost penalty would reduce to 10%. The cost calculations must be approved by the KCC and must be "levelized," meaning that renewable energy costs could be even higher than 15% above our alternatives for a few years if the KCC thinks the cost of the alternative will go up more than the cost of the renewables over time.

*Energy! Natural Resources
Attachment #5
2/23/94*

This bill would cost our customers money beginning in 1996. By requiring that no less than 2% of the energy we sell to Kansas customers annually by 1996 be from renewable resources, this bill would force Western Resources to burn less of its most costly fossil fuel (usually natural gas) and buy more expensive renewable energy instead. It would force us to reduce the amounts of natural gas that we buy and raise rates by \$1 to \$2 million annually. After 1999, the cost penalty could exceed \$5 million a year when at least 5% of our energy must be from renewable sources.

While the language of the bill is somewhat unclear, we interpret it as preventing us from extending the agreements under which we exchange energy with out-of-state utilities until we meet the renewable energy targets. This would reduce our ability to save money when a neighboring utility can sell us its excess energy at a reduced price. The bill would also temporarily prevent us from buying energy from a nonrenewable qualifying facility such as a cogeneration plant, violating federal law.

While we oppose the bill, we will continue to research and develop renewable energy sources and make them more economical. Western Resources supports the Kansas Electric Utility Research Program, the Electric Power Research Institute, and the Gas Research Institute. Three million dollars goes to KEURP and EPRI, and we fund the Gas Research Institute through payments to interstate pipelines.

We urge you to reject HB 3005. The development of renewable energy must occur through research and demonstration projects until renewable energy is economical enough to compete with existing energy sources. We are not aware of any legislative mandate similar to this bill in any nearby state and cannot support a measure that will make Kansas bear the extra cost of renewable energy not required by other states.



Kansas Electric Power Cooperative, Inc.

• CHARLES W. TERRILL — EXECUTIVE VICE PRESIDENT
& CHIEF EXECUTIVE OFFICER

gordon

**February 23, 1994
House Energy and Natural Resources Committee
Testimony on House Bill 3005**

Kansas Electric Power Cooperative (or KEPCo) is a not-for-profit wholesale power supplier owned by 23 rural electric cooperatives (RECs) in Kansas. These cooperatives provide retail electric distribution service to rural homes, farms and businesses in an area roughly comprising the eastern two-thirds of Kansas but stretching west to include RECs like CMS in Meade, Victory in Dodge City, and Norton-Decatur in Norton. KEPCo was organized in 1975 to provide our members with an adequate and dependable power supply--at the lowest possible cost.

KEPCo would not be affected immediately by the provisions of this bill. Our 23 members serve about 95,000 retail consumer meters but KEPCo, as a wholesale power provider, does not have retail consumers.

However, KEPCo appears today because in our opinion H.B. 3005 would eventually increase the cost of providing electricity and perhaps prematurely add unneeded capacity in Kansas. KEPCo purchases approximately one-third of its electric supply from investor owned utilities in Kansas which would be subject to the provisions of this bill. Those increased costs would be passed through to their retail customers as well as to wholesale customers like KEPCo. Eventually the costs would reach the retail bills of the rural electric consumer.

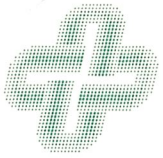
We are also concerned with the mandate to utilize certain generation sources. In order to provide a mix of power supply resources that deliver dependable, environmentally sound, and least-cost power, utilities carefully consider all available resources including renewable and demand-side measures. The mandate included in this bill to utilize resources, regardless of their economic impact, would be counter productive.

Rural consumers generally have the highest cost of service due to their sparsely populated service areas. The adoption of criteria as identified in this bill would further compound the problem. Because of these issues, KEPCo is in opposition to the bill before you.

Thank you for this opportunity to express our concerns.

*Energy & Natural Resources
Attachment # 6*

2/23/94



HOUSE COMMITTEE ON ENERGY AND NATURAL RESOURCES

**TESTIMONY IN OPPOSITION TO
HOUSE BILL 3005**

Mr. Chairman and members of the committee:

Thank you for allowing me the opportunity to present written testimony in opposition to HB 3005.

My name is Joe Bahr and I am Director of Rates and Regulation for WestPlains Energy.

WestPlains Energy, a division of UtiliCorp United, Inc., provides electric service to more than 138,000 customers in 122 communities in Kansas and 33 communities in Colorado. The larger communities served in Kansas include Dodge City, Liberal, Great Bend and Concordia. In Kansas, WestPlains works closely with two other UtiliCorp divisions, Peoples Natural Gas and Kansas Public Service by pooling resources, in order to maximize efficiencies and quality of service.

These written comments have been prepared in response to the Sierra Club's sponsorship of House Bill 3005, "Renewable Energy Development Act". Because WestPlains Energy (WPE) serves approximately 65,000 customers in central and southwest Kansas we have a vested interest in the proposed legislation. WPE would like to center its argument around the following general points of contention:

Integrated Resource Planning (IRP) -- The Kansas Corporation Commission currently is addressing utility supply side as well as customer demand issues in its open docket on IRP rulemaking. Many parties including utilities such as WPE, as well as the Sierra Club, have been participants in this process to "write" the rule which will direct the utility planning process. A provision in the rule requires all utilities to consider renewable resources in its evaluation of supply side resources. Furthermore, the planning forum will be open to public participation. The IRP is the logical vehicle to address alternative resources and environmental externalities where all of the appropriate economical and operational considerations can be evaluated in total.

Energy: Natural Resources
attachment # 7
2/23/94

Burdensome Economic Impact on Customers -- Two and one-half percent of WPE's total electric energy sold annually for ultimate consumption in Kansas represents over 37 million kilowatt-hours. From an optimistic outlook, the cost of renewable energy is generally at two to five times as high as the cost of fossil fueled generation. The incremental increase in cost is projected at \$1 to \$3 million. Large volume customers would be more adversely affected based on a greater proportion of total usage. WPE's industrial customers compete in regional and global markets and electric service is a prime cost of doing business. If Kansas were to adopt this legislation, its companies would be at a severe disadvantage in competing with businesses outside the state.

Measured Social Impact on State of Kansas? -- The Sierra Club has not demonstrated that measurable benefits outweigh the costs to be derived from utilities using renewable resources. This committee should not be swayed to believe that there is a significant social benefit to be realized from renewables. WPE fossil fired generating plants, of which several are gas fired, have and will continue to be in compliance with the 1990 Clean Air Act Amendment (CAAA). All sources of purchased power or new facilities will also maintain compliance. The CAAA is the applicable avenue to focus on environmental and related emission concerns.

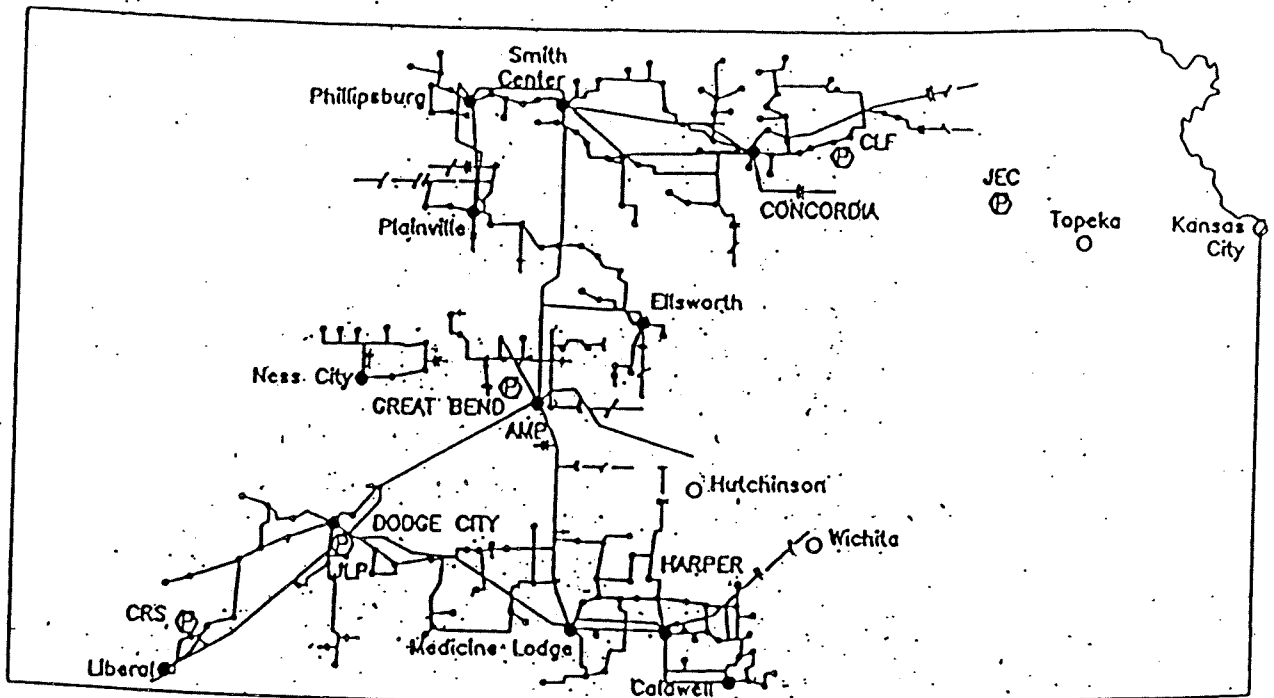
Command and Control of Utilities -- WestPlains is positioning itself to compete in an ever evolving competitive industry. Likewise with its customers, WPE competes in a market that does not stop at the state line. Any additional layer of control and cost is detrimental to WPE maintaining its position in relation to alternative power suppliers. The mandate of utilizing renewables could place WPE in a situation of investing in unproven technologies that would have an additional risk of recovery of capital.

This concludes WPE written comments and we extend our appreciation to each of the committee members for taking the time to read this. We welcome the opportunity to participate in this legislative process if further information or clarification is required.

Thank you.

Joe Bahr
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WESTPLAINS ENERGY-KANSAS SERVICE AREA



WESTPLAINS ENERGY COLORADO SERVICE AREA

