Approved February 21, 1983
Date

MINUTES OF THE HOUSE COMMITTEE ON ~~ASSESSMENT AND TAXATION~~.

The meeting was called to order by Representative Jim Braden at
Chairperson

9:00 a.m./~~p.m.~~ on February 8, 1983 in room 519S of the Capitol.

All members were present except: Representatives Turnquist and King who were excused.

Committee staff present:

Wayne Morris, Research Department
Tom Severn, Research Department
Don Hayward, Revisor of Statutes' Department
Nancy Wolff, Secretary to the Committee

Conferees appearing before the committee:

Representative Ron Fox
Ed Peterson, Kansas Corporation Commission
Robert Riordan, KP&L for The Electric Companies of Kansas
Harold Shoaf, Kansas Electric Cooperatives
Lawrence Potter, Council Bluffs, IA., for InterNorth, Inc.
James W. Ingram, Gas Service Company
Steve Montgomery, The Department of Revenue
Representative Dean Shelor
Fred Allen, Kansas Association of Counties

The meeting was called to order by the Chairman. The minutes of the meetings held on January 28 and January 31 were approved as read.

Hearings were scheduled on House Bill 2065, which would add "heat pumps" to the definition of a solar energy system under the solar energy income tax credit statutes, and House Bill 2141, which would enact a new section in the Kansas Statutes Annotated which would require the county treasurer to notify the landowner of delinquent oil and gas property taxes.

Representative Ron Fox appeared to explain the reasons behind the introduction of House Bill 2065 and stated that his primary purpose was to clarify "solar energy systems" as are currently defined in K.S.A. 1982 Supp. 79-32,169. For this reason, he was requesting a technical interpretation be considered by the committee rather than consideration from a taxation standpoint. (Attachment I)

Appearing on behalf of the Kansas Corporation Commission, Ed Peterson, Assistant General Counsel, presented a copy of the Opinion rendered by the State Corporation Commission of the State of Kansas, which states: 1. Heat pumps offer the potential for substantial energy conservation and for a more efficient use of limited fossil fuel resources; 2. Heat pumps would be beneficial to the state's energy policy and to the state's economy and, therefore, should be encouraged by state policy; and 3. Air-to-air and ground-coupled heat pumps meet the definitions and technical specifications of solar equipment contained in K.S.A. 1981 Supp. 79-32,169 and the rules and regulations promulgated thereunder. (Attachment II)

The Chairman expressed surprise that the Corporation Commission had the time and staff to conduct hearings of this nature, particularly since the opinion has no effect. He pointed out that the Department of Revenue issued an opinion in September, 1976, that heat pumps do not qualify for the solar energy tax credit.

Robert F. Riordan, of The Kansas Power and Light Company, appeared on behalf of the Electric Companies Association of Kansas, in support of House Bill 2065. (Attachment III)

Tom Severn of staff, appeared briefly to review the Fiscal Note for House Bill No. 2065 and the fiscal impact of this legislation. According to the

Fiscal Note, the impact on the State of Kansas for 1983 would be approximately $1.41 million. (Attachment IV)

Harold Shoaf, Kansas Electric Cooperatives, appeared in support of House Bill 2065 and stated that heat pumps should be included as a priority device in the State's energy policy. (Attachment V)

Lawrence Potter, Peoples Natural Gas Company, a division of InterNorth, Inc., appeared in opposition to House Bill 2065 and stated that his company was in favor of the current statutes which allow tax credits to those who install devices capable of using renewable sources of energy, i.e., active solar, passive solar and wind systems. (Attachment VI)

James Ingram, Vice President of Marketing for the Gas Service Company, appeared in opposition to House Bill 2065 and stated that his organization could see no reason to provide energy tax credit incentives for electric heat pump systems which could lead to fossil fuel depletion in excess of that currently experienced with other heating systems not afforded the luxury of tax incentives. (Attachment VII)

Steve Montgomery of the Department of Revenue appeared to state that since the solar energy tax credit legislation was passed, the Department has taken the stand that although heat pumps are energy efficient, they simply do not feel they are within the definition of solar energy system as the law is now stated.

Hearings were then held on House Bill 2141 which would require the county treasurer to notify the landowner of delinquent mineral taxes on a piece of property.

Representative Shelor appeared to give the background on this legislation and stated that he personally had a piece of property on which the lessee of the mineral rights failed to pay his taxes and the mineral rights were sold at auction. If Mr. Shelor had been aware that the taxes were delinquent, he would have had the opportunity to purchase the mineral rights himself.

Representative Shelor did feel there was a deficiency in the language in the bill and presented an amendment to correct this problem. (Attachment VIII)

The Chairman presented a letter from Barney E. Sullivan, Energy Reserves Group, who also felt that there was a deficiency in the language of House Bill 2141 and presented a possible amendment to the bill to correct the deficiency. (Attachment IX)

Fred Allen, Kansas Association of Counties, appeared in opposition to House Bill 2141 in its present form, but understood that Representative Shelor wishes to make changes in the bill that would make it acceptable. He stated that once they were advised of the changes in their final form, they would advise the committee of their views. (Attachment X)

The meeting was adjourned.

DATE: Feb. 8, 1983

GUEST REGISTER

HOUSE

ASSESSMENT & TAXATION
COMMITTEE

NAME	ORGANIZATION	ADDRESS
BILL EDDS	REVENUE	TOPEKA
M. BESHEARS	"	"
Steve Montgomery	"	"
Don Stewart	Kansas Energy Office	"
Dale Satterthwaite	The Gas Service Co.	"
James Ingram	" " " "	Overland Park Ks
L.A. Potter	Peoples Natural Gas Co. Div. InterNorth, Inc	Co. Bluffs, IA.
Don Willoughby	InterNorth, Inc.	Topeka
JANET STUBBS	KBAK	TOPEKA
MOKHTEE AHMAD	DIV. OF BUDGET	TOPEKA
Mike Woolf	Union Gas System, Inc	Independence
Don Stallwell	" " " "	"
Gene Brown	" " " "	"
Roland Eureka	Ks Natural Resource Council	Topeka
Ruth Wilkin	Girl Scouts	"
Cynthia Jerner	Speaker's office	"
DWAYNE ZIMMERMAN	THE ELECTRIC CO's ASSOC. OF KS.	TOPEKA
TERRY L. OLIVER	EMPIRE DISTRICT ELECTRIC CO.	COLUMBUS
Roy D. Shenkel	K.C.P.&L. Co.	K.C.
Terry Conrad	KG&E	Topeka
Edward Peterson	KCC	Topeka
PHIL DUBACH	KCC	TOPEKA
Ron Calbert	U.J.U.	Newton
Harold Shoaf	KEC	Topeka

DATE: 2-8-93

GUEST REGISTER

HOUSE

ASSESSMENT & TAXATION
COMMITTEE

NAME	ORGANIZATION	ADDRESS
Bill Ohlemeier	KANS. ELECTRIC COOP	TOPEKA

RON FOX
REPRESENTATIVE, TWENTY-FIRST DISTRICT
JOHNSON COUNTY

STATE OF KANSAS

TOPEKA

HOUSE OF
REPRESENTATIVES

ATTACHMENT I

COMMITTEE ASSIGNMENTS
MEMBER: EDUCATION
ELECTIONS
ENERGY AND NATURAL RESOURCES

HB 2065

February 8, 1983

I wish to thank you for your time and consideration on HB 2065.

Before we get too involved in the hearings, I would like to clarify the legislative intent of HB 2065. The intent is to clarify a technical question related to the interpretation of "solar energy systems" in KSA 1982 Supp. 79-32, 169. The question is not one of adding a new exemption but to clarify.

I wish to emphasize the question -

1. Clarification
2. Technical interpretation, not taxation.

Your decision should not be based upon the tax issue but based upon the technical question.

"Are heat pumps solar devices as defined in existing statutes?" I believe they are.

The legislative intent of those statutes was to promote those measures which would result in a decrease in consumption of non renewal energy source. In order to promote that saving, a tax incentive was provided. Even with the apparent glut of energy, the realization is that it is only a temporary glut. Energy sources are still finite with the exception of solar. If we are to provide leadership in the energy conservation and insure adequate supplies for future generations, we must explore all possible energy saving methods. By clarifying the law

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and making clear that heat pumps are in fact solar devices, then we are insuring energy for future generations.

The State Corporation Commission in an opinion issued Dec. 17, 1982 concurred with my opinion that "heat pumps" are solar devices as defined.

In the Department of Revenue's letter dated Sept. 8, 1976, to Charles D. Carey, The Department ruled heat pumps do not constitute a solar energy system. The opinion is based upon the assumption of direct collect and transfer. No where in the statute is the word "direct" or "directly" used. In fact, the opposite could be inferred where "incident solar radiation" is spelled out in the statute. Incident light from the sun is light striking a surface. Hence, the sun striking the atmosphere is in fact incident light, and simply put, a heat pump is a device designed to collect and convert that incident solar energy into heat if we consider the atmosphere as part of the heat pump system.

This is the same principle utilized in a solar panel. The only difference is the "surface." In a solar panel, we utilize a man made surface to convert light energy in to heat energy.

The Department of Revenue states "Because the statute contemplates man made, rather than natural solar collectors, a heat pump itself does not satisfy the statutory definition. In reviewing the minutes of the hearings from 1976 and the statutes, I can find nothing to support this position. In fact, the water used in some solar panels is a "natural" solar collector.

In a letter dated Jan. 18, 1983 to me from the Department of Revenue, it was inferred that by allowing solar tax credit for heat pumps a precedent would be established where attic fans, ceiling fans, etc.

might also be eligible.

This is absurd. It is apparent if this is to be believed someone does not understand the difference in a heat collecting device e.g. heat pumps, and an air movement device e.g. fans. In order to insure this committee understands, a technical explanation will be provided by other conferees.

I wish to close with one parting thought - the electromagnetic spectrum is a continuum. The location of a particle on that spectrum is dependent on the energy. When energy is given up, heat may be released. Be it air, glass or water, this principle is the same. It is this principle which allows all solar devices to work, heat pumps included.

Thank you.

THE STATE CORPORATION COMMISSION

OF THE STATE OF KANSAS

Before Commissioners: Richard C. (Pete) Loux, Chairman
Jane T. Roy
Phillip R. Dick

In the matter of a general investigation into the classification of heat pumps for tax purposes.) Docket No. 134,550-U

OPINION

Now, the above-entitled matter comes on for consideration and determination by the State Corporation Commission of the State of Kansas. The Commission, having examined its files and records and being fully advised in the premises, makes the following findings and order:

1. The Commission initiated an investigation into the classification of heat pumps for tax purposes by an order dated July 28, 1982. That order listed two specific issues which the Commission wanted to address:

(1) Whether heat pumps are a desirable alternative, the use of which should be fostered by state government;

(2) Whether heat pumps can appropriately be classified as solar energy property consistent with state laws and regulations concerning solar energy property tax credits.

The order also set the matter for hearing on August 9, 1982. The hearing was conducted for the limited purpose of receiving evidence which may assist the Commission in resolving the issue; therefore, the hearing was conducted on an informal basis.

2. Appearances at the hearing included the following:

John K. Rosenberg, and David Black, appearing on behalf of Kansas Power and Light Company;

Drue Jennings, appearing on behalf of Kansas City Power and Light Company;

C. Edward Peterson, Assistant General Counsel, appearing on behalf of the Commission's staff and the public generally.

Also in attendance were representatives from the following companies and institutions:

> The Coleman Company, Wichita, Kansas; Lennox Industries; Heating and Cooling Distributors; Kansas Electric Utilities Research Program; University of Kansas Center for Research, Inc.; The General Electric Company; The Gas Service Company; The Kansas Energy Office; Centel Corporation; and Midwest Energy.

3. Four parties presented statements for the Commission's general information during the hearing. Persons presenting statements included: Harold M. Hubbard, on behalf of Midwest Research Institute in Kansas City and Solar Research Institute in Golden, Colorado; Robert F. Riordan on behalf of University of Kansas Center for Research, Inc.; Marvin Stacken on behalf of The Kansas Power and Light Company; and Phil Umrigar on behalf of the Coleman Company. At the close of the hearing, the Commission determined the record should remain open for an additional 15 days, during which three parties filed written statements: the General Electric Company; the Kansas City Power and Light Company; and the Carrier Air Conditioning Company. In addition, staff was directed to continue its investigation in this matter.

4. Relative to the first issue to be considered, whether heat pumps are a desirable alternative which should be fostered by state government, the statements presented at hearing were favorable towards heat pumps generally and supportive of a state policy fostering heat pump installations. The statement of Dr. Hubbard addressed this issue directly:

> ...I can say that the evidence is clear that heat pumps make more efficient use of our energy resources than conventional heating and cooling devices. Therefore, the installation of heat pumps would have a salutary effect of significantly reducing

> conventional energy demand and fossil fuel consumption. The savings of heat pumps are a function of geographical location. And, you can find lots of figures on that. Some I've seen recently from General Electric indicated that energy savings of heat pumps are about 50% in a place like Miami or New Orleans and about 23 to 25% in Kansas City. Those are not my figures and are not ERI's figures but they are figures which are in the literature. (T.R. p.9).

The reasons for the potential energy savings were given by Mr. Stacken of Kansas Power and Light Company. Mr. Stacken stated

> "a heat pump actually provides more heat than the electrical energy used to withdraw the heat from the air or groundwater. High efficiency heat pumps produce an average of 2.3 times as much energy as they require to operate in a normal Kansas winter. The result is a reduction in energy use compared to resistence heating of about 43%. Compared with gas heat, a heat pump will reduce energy used by 65%." (Tr. p. 24)

As noted in the written comments of General Electric Company, heat pumps present an additional advantage because heat pumps may help to better utilize electric generating capacity. Heat pumps would be used in both the winter and summer in contrast to the summer use of the traditional air conditioning unit. Therefore, increased use of heat pumps could improve the load factor of an electric utility.

5. Based upon the testimony described in Paragraph 4 above, the Commission finds that heat pumps offer a number of advantages. Heat pumps may present the opportunity for the consumer to reduce energy consumption, and therefore, energy costs.[1] Heat pumps also provide a means by which the consumption of limited fossil fuel resources can be reduced. Finally, heat pumps offer an opportunity for better use of existing electric generation and delivery systems. As a result of this finding, the Commission concludes that heat pumps are a desirable alternative

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1. Residential Energy Economics Project, Report of Black & Veatch Consulting Engineers, Prepared for Kansas City Power & Light Company, Kansas Gas and Electric Company, and Empire District Electric Company. The report lends strong support to the conclusion that heat pumps are more energy efficient than conventional furnaces and air conditioners. Portions of the findings are attached hereto as Appendix "A".

and the increased use of heat pumps should be encouraged by state government policy.

6. Before discussing the issue of the classification of heat pumps as solar energy property for purposes of tax credits, it is appropriate to briefly review the legal framework for solar tax credits. The solar tax credit is authorized by K.S.A. 1981 Supp. 79-32,166. This section provides:

> (a) Any resident individual taxpayer who completes installation of a solar energy system supplying energy for such taxpayer's principal dwelling prior to July 1, 1983, or who acquires title to a dwelling prior to July 1, 1983, which dwelling is to be used as taxpayer's principal dwelling and is supplied energy from a solar energy system for which the credit allowed by this section has never been claimed, shall be entitled to claim a credit in an amount equal to thirty percent (30%) of the cost of such system, including installation costs, or one thousand five hundred dollars ($1,500), whichever is less,...

A similar credit is afforded for property used in trade or business under K.S.A. 79-32,167, with the exception that the total credit can equal $4,500. The statutory definition of solar energy systems is contained in K.S.A. 1981 Supp. 79-32,169. It provides:

> (a) "Solar energy system" means either an active or passive solar system or a wind system.
>
> (b) "Active Solar system" means a system of apparatus and equipment capable of collecting and converting incident solar radiation into heat, mechanical or electrical energy and transferring these forms of energy by a separate apparatus to storage or to a point of use (including, but not limited to, water heating, spacing heating or cooling, electric energy generation or mechanical energy generation).
>
> (c) "Passive solar system" means a space heating, heating and cooling, or hot fluid heating system which is characterized by reliance principally on natural conduction, conduction and radiation for heat transfer, and which collects and stores

thermal energy from the sun by devices that are structurally integrated with occupied space, including but not limited to a storage wall, a storage roof, a greenhouse, an atrium or sun space, reflector assemblies, shading devices, or reflective surfaces or glazings.

(d) "Wind system" means a system of apparatus and equipment capable of intercepting and converting energy into mechanical or electrical energy and transferring these forms of energy by a separate apparatus to the point of use or storage.

K.A.R. 92-12a-2 lists the energy systems which the Department of Revenue has determined eligible for tax incentives. Included on the list are: active solar systems used for space heating or space cooling or for hot water heating and wind systems supplying energy to a separate point of use or storage (K.A.R. 92-12a-2(a).

6. The testimony at the hearing and the subsequently filed written comments all suggest that heat pumps fit within the specifications for solar energy systems in the statutes and rules and regulations. Dr. Hubbard stated that heat pumps easily fit within the definitions of solar property, because heat pumps are a system capable of collecting and converting incident solar radiation into heat and transferring the heat energy to a point of use. (TR p. 10.) Dr. Hubbard illustrated how two types of heat pumps (ground-coupled heat pumps and air-to-air heat pumps) qualify for classification as solar systems. A ground-coupled heat pump gathers heat from the ground, stores the heat in slabs of concrete in the ground, then transfers this heat through a heat exchanger into a structure to warm the structure. (TR p. 11.) Dr. Hubbard noted that even during the winter the ground is heated by incident solar energy. Air-to-air heat pumps operate on a similar principle and therefore can be classified as solar property. Air-to-air heat pumps pull air from the outside through

a heat exchange unit which extracts heat from the outside air and then transfers the heat into the structure to heat the structure. Like the ground, air is warmed by incident solar radiation in all seasons. (TR. p. 12.) As described by Dr. Hubbard, heat pumps operate as a system which transfers incident solar heat caused by solar radiation to a point of use, i.e., the home or place to be heated. Heat pumps capitalize upon solar energy by converting that energy into thermal energy which is used for space heating.

7. The statement of Dr. Riordan concurred that air-to-air heat pumps qualify as solar energy property. Mr. Riordan stated:

> [A]n air-to-air heat pump collects a finite volume of ambient air from the atmosphere surrounding it, acts upon the thermal energy contained in that volume of air, then transfers thermal energy contained in that volume of air to the point of use. The finite volume from which the heat pump can draw and act upon constitutes its collection area. This collection area is bounded by the ground, and the distance that the heat pump can draw ambient air. Therefore, a heat pump's collection area is definable and does exist. I would like to add that in the last testimony we mentioned about the natural collection system. This is one of the types of things we're talking about right here. Within this collection area, incident solar radiation is received and converted to heat or thermal energy. While it is recognized that this solar collection--energy process is not defined as though "Solar collectors" were used, the Kansas statute does not specify the method of collection, not how much must be collected, nor the efficiency of conversion. The statute only specifies the collection of incident solar radiation must exist....[I]n air-to-air heat pumps, the thermal energy volume in the volume of air is absorbed, act[ed] upon and transferred to the point of end use. In this case, to be used for space heating. Of particular note, this direct usage of solar radiation is in real-time, the same as active and passive solar systems. (Tr. p. 17-18)

These comments were concurred in through the statement of Mr. Umrigar, who stated:

> The principle of operation of an air source heat pump [is] based on collecting heat from the outside air and through a refrigeration cycle and converting it and delivering it into the indoors for comfort. The source of heat for the heat pump and the basic premise of its operation is to obtain that heat from the outside air. And, the sole source of heat to the outside air is solar. So, in its basic, basic definition the air source heat pump is a device that converts solar energy into usable heat. (Tr. p. 30)

8. In reviewing the information contained in Paragraphs 5 through 7 of this opinion, the Commission finds that air-to-air heat pumps and ground-coupled heat pumps act in a manner that allows them to be categorized technically as solar devices. Each system, as indicated by statements presented to the Commission, utilizes incident solar energy, each converts the incident solar energy into heat energy or thermal energy, and each system transfers the thermal energy by a separate apparatus into storage or to the point of use for purposes of space heating. Consequently, heat pumps appear to be active solar systems as defined by K.S.A. 79-32,169.

THEREFORE, THE COMMISSION IS OF THE OPINION THAT:

1. Heat pumps offer the potential for substantial energy conservation and for a more efficient use of limited fossil fuel resources;

2. Heat pumps would be beneficial to the state's energy policy and to the state's economy and, therefore, should be encouraged by state policy;

3. Air-to-air and ground-coupled heat pumps meet the definitions and technical specifications of solar equipment contained in K.S.A. 1981 Supp. 79-32,169 and the rules and regulations promulgated thereunder.

The Commission retains jurisdiction over the parties and the subject matter to enter such order or orders as it shall deem proper.

Dated: December 17, 1982

Loux, Chmn.; Roy, Com.; Dick, Com.

Acting Executive Secretary

CEP:ps

APPENDIX "A"

TABLE 7-4. ENERGY COST COMPARISON

Appliance: Furnaces and Heat Pumps
Location: Overland Park

Year	Appliance Type	Annual Energy Cost, $			Cumulative Energy Cost, $			Cumulative Present Worth of Energy Cost, $		
		Low Usage	Average Usage	High Usage	Low Usage	Average Usage	High Usage	Low Usage	Average Usage	High Usage
1982	Electric Furnace	464	929	1,393	464	929	1,393	422	845	1,266
	Gas Furnace Standard	235	470	705	235	470	705	214	427	641
	Gas Furnace High Eff.	203	406	609	203	406	609	185	369	554
	Add-on Heat Pump	205	409	614	205	409	614	186	372	558
	Heat Pump System	220	440	660	220	440	660	200	400	600
1983	Electric Furnace	464	929	1,393	928	1,858	2,786	805	1,612	2,418
	Gas Furnace Standard	270	540	810	505	1,010	1,515	437	874	1,310
	Gas Furnace High Eff.	233	467	699	436	873	1,308	377	755	1,131
	Add-on Heat Pump	222	444	667	427	853	1,281	370	739	1,109
	Heat Pump System	220	440	660	440	880	1,320	382	764	1,145
1984	Electric Furnace	464	929	1,393	1,392	2,787	4,179	1,154	2,310	3,464
	Gas Furnace Standard	317	634	951	822	1,644	2,466	675	1,350	2,025
	Gas Furnace High Eff.	274	548	821	710	1,421	2,129	583	1,167	1,748
	Add-on Heat Pump	246	491	737	673	1,344	2,018	555	1,108	1,663
	Heat Pump System	220	440	660	660	1,320	1,980	547	1,094	1,641
1985	Electric Furnace	502	1,003	1,505	1,894	3,790	5,684	1,497	2,995	4,492
	Gas Furnace Standard	369	739	1,108	1,191	2,383	3,574	927	1,855	2,782
	Gas Furnace High Eff.	319	639	957	1,029	2,060	3,086	801	1,603	2,402
	Add-on Heat Pump	279	558	837	952	1,902	2,855	745	1,489	2,235
	Heat Pump System	238	475	713	898	1,795	2,693	710	1,419	2,128
1986	Electric Furnace	541	1,083	1,624	2,435	4,873	7,308	1,833	3,668	5,500
	Gas Furnace Standard	428	856	1,284	1,619	3,239	4,858	1,193	2,386	3,579
	Gas Furnace High Eff.	370	740	1,109	1,399	2,800	4,195	1,031	2,063	3,090
	Add-on Heat Pump	316	631	947	1,268	2,533	3,802	941	1,881	2,823
	Heat Pump System	257	513	769	1,155	2,308	3,462	869	1,737	2,606
1987	Electric Furnace	585	1,169	1,754	3,020	6,042	9,062	2,163	4,328	6,491
	Gas Furnace Standard	487	973	1,460	2,106	4,212	6,318	1,468	2,935	4,403
	Gas Furnace High Eff.	421	841	1,261	1,820	3,641	5,456	1,268	2,537	3,802
	Add-on Heat Pump	353	706	1,060	1,621	3,239	4,862	1,141	2,279	3,421
	Heat Pump System	277	554	831	1,432	2,862	4,293	1,026	2,050	3,075
1988	Electric Furnace	631	1,262	1,894	3,651	7,304	10,956	2,487	4,975	7,463
	Gas Furnace Standard	534	1,067	1,601	2,640	5,279	7,919	1,742	3,483	5,225
	Gas Furnace High Eff.	461	923	1,383	2,281	4,564	6,839	1,505	3,011	4,512
	Add-on Heat Pump	386	771	1,156	2,007	4,010	6,018	1,339	2,675	4,014
	Heat Pump System	299	598	897	1,731	3,460	5,190	1,179	2,357	3,535
1989	Electric Furnace	683	1,365	2,048	4,334	8,569	13,004	2,805	5,612	8,418
	Gas Furnace Standard	607	1,214	1,822	3,247	6,493	9,741	2,025	4,049	6,075
	Gas Furnace High Eff.	525	1,050	1,573	2,806	5,614	8,412	1,750	3,501	5,246
	Add-on Heat Pump	432	863	1,296	2,439	4,873	7,314	1,540	3,077	4,619
	Heat Pump System	324	646	970	2,055	4,106	6,160	1,330	2,658	3,988
1990	Electric Furnace	738	1,474	2,212	5,072	10,143	15,216	3,118	6,237	9,356
	Gas Furnace Standard	659	1,317	1,976	3,906	7,810	11,717	2,304	4,608	6,913
	Gas Furnace High Eff.	569	1,139	1,707	3,375	6,743	10,119	1,991	3,984	5,970
	Add-on Heat Pump	468	935	1,404	2,907	5,808	8,718	1,739	3,474	5,214
	Heat Pump System	349	698	1,048	2,404	4,804	7,208	1,478	2,954	4,432
1991	Electric Furnace	796	1,591	2,387	5,868	11,734	17,603	3,425	6,851	10,276
	Gas Furnace Standard	715	1,430	2,145	4,621	9,240	13,862	2,580	5,159	7,740
	Gas Furnace High Eff.	618	1,236	1,853	3,993	7,989	11,972	2,229	4,460	6,684
	Add-on Heat Pump	508	1,014	1,521	3,415	6,822	10,239	1,935	3,865	5,801
	Heat Pump System	377	754	1,131	2,781	5,558	8,339	1,624	3,245	4,868
1992	Electric Furnace	860	1,719	2,580	6,728	13,453	20,183	3,727	7,453	11,181
	Gas Furnace Standard	775	1,551	2,326	5,396	10,791	16,188	2,852	5,703	8,555
	Gas Furnace High Eff.	670	1,340	2,009	4,663	9,329	13,981	2,464	4,930	7,388
	Add-on Heat Pump	550	1,098	1,648	3,965	7,920	11,887	2,127	4,250	6,378
	Heat Pump System	408	814	1,222	3,189	6,372	9,561	1,767	3,530	5,296

TABLE 7-5. ENERGY COST COMPARISON

Appliance: Furnaces and Heat Pumps
Location: Wichita

Year	Appliance Type	Annual Energy Cost, $			Cumulative Energy Cost, $			Cumulative Present Worth of Energy Cost, $		
		Low Usage	Average Usage	High Usage	Low Usage	Average Usage	High Usage	Low Usage	Average Usage	High Usage
1982	Electric Furnace	438	875	1,313	438	875	1,313	398	795	1,193
	Gas Furnace Standard	229	459	688	229	459	688	208	417	625
	Gas Furnace High Eff.	198	397	595	198	397	595	180	361	541
	Add-on Heat Pump	197	394	591	197	394	591	179	358	537
	Heat Pump System	207	414	622	207	414	622	189	377	565
1983	Electric Furnace	452	903	1,355	889	1,778	2,667	771	1,542	2,313
	Gas Furnace Standard	268	535	803	497	994	1,491	430	859	1,289
	Gas Furnace High Eff.	231	463	694	429	860	1,289	371	744	1,114
	Add-on Heat Pump	219	437	656	416	831	1,247	360	719	1,079
	Heat Pump System	214	428	642	421	842	1,263	365	730	1,096
1984	Electric Furnace	469	938	1,407	1,358	2,715	4,074	1,124	2,246	3,370
	Gas Furnace Standard	314	628	942	811	1,622	2,433	666	1,331	1,997
	Gas Furnace High Eff.	272	543	814	701	1,403	2,103	575	1,152	1,726
	Add-on Heat Pump	245	490	736	661	1,321	1,982	544	1,087	1,632
	Heat Pump System	222	444	667	644	1,286	1,930	532	1,064	1,596
1985	Electric Furnace	510	1,020	1,530	1,868	3,735	5,604	1,472	2,942	4,414
	Gas Furnace Standard	366	732	1,098	1,177	2,354	3,531	916	1,831	2,747
	Gas Furnace High Eff.	316	633	949	1,017	2,036	3,052	791	1,581	2,374
	Add-on Heat Pump	279	557	837	940	1,879	2,819	735	1,468	2,204
	Heat Pump System	242	483	725	885	1,769	2,654	697	1,394	2,091
1986	Electric Furnace	569	1,139	1,708	2,438	4,874	7,312	1,825	3,649	5,475
	Gas Furnace Standard	424	848	1,272	1,601	3,202	4,803	1,179	2,358	3,537
	Gas Furnace High Eff.	367	733	1,099	1,384	2,769	4,151	1,019	2,039	3,057
	Add-on Heat Pump	319	638	957	1,260	2,516	3,776	933	1,864	2,798
	Heat Pump System	270	539	809	1,155	2,308	3,464	865	1,729	2,594
1987	Electric Furnace	640	1,278	1,918	3,077	6,152	9,230	2,186	4,371	6,558
	Gas Furnace Standard	482	964	1,447	2,083	4,166	6,250	1,451	2,901	4,353
	Gas Furnace High Eff.	417	834	1,250	1,801	3,603	5,401	1,254	2,510	3,762
	Add-on Heat Pump	362	722	1,084	1,621	3,239	4,860	1,137	2,272	3,410
	Heat Pump System	303	606	909	1,458	2,914	4,372	1,036	2,070	3,106
1988	Electric Furnace	670	1,339	2,009	3,747	7,491	11,239	2,530	5,058	7,589
	Gas Furnace Standard	529	1,057	1,586	2,612	5,223	7,836	1,722	3,444	5,167
	Gas Furnace High Eff.	457	914	1,370	2,258	4,517	6,771	1,489	2,979	4,465
	Add-on Heat Pump	391	780	1,171	2,012	4,019	6,031	1,338	2,672	4,011
	Heat Pump System	317	634	952	1,776	3,548	5,324	1,199	2,396	3,595
1989	Electric Furnace	703	1,404	2,107	4,450	8,896	13,346	2,858	5,713	8,571
	Gas Furnace Standard	601	1,202	1,803	3,213	6,425	9,639	2,003	4,005	6,008
	Gas Furnace High Eff.	520	1,039	1,558	2,778	5,556	8,329	1,731	3,463	5,192
	Add-on Heat Pump	433	865	1,298	2,445	4,884	7,328	1,540	3,075	4,617
	Heat Pump System	333	665	998	2,109	4,213	6,322	1,354	2,706	4,060
1990	Electric Furnace	735	1,470	2,205	5,185	10,366	15,551	3,170	6,337	9,507
	Gas Furnace Standard	652	1,304	1,956	3,865	7,729	11,595	2,279	4,558	6,838
	Gas Furnace High Eff.	564	1,127	1,690	3,342	6,683	10,019	1,971	3,941	5,909
	Add-on Heat Pump	465	928	1,392	2,909	5,812	8,721	1,737	3,469	5,207
	Heat Pump System	348	696	1,045	2,457	4,910	7,366	1,502	3,001	4,503
1991	Electric Furnace	769	1,537	2,307	5,954	11,903	17,857	3,466	6,930	10,396
	Gas Furnace Standard	708	1,416	2,124	4,573	9,145	13,719	2,552	5,104	7,657
	Gas Furnace High Eff.	612	1,224	1,834	3,954	7,907	11,853	2,207	4,413	6,616
	Add-on Heat Pump	499	996	1,495	3,408	6,908	10,216	1,929	3,853	5,783
	Heat Pump System	364	728	1,093	2,821	5,638	8,459	1,643	3,282	4,925
1992	Electric Furnace	806	1,612	2,419	6,760	13,515	20,276	3,749	7,495	11,243
	Gas Furnace Standard	768	1,535	2,303	5,341	10,680	16,022	2,821	5,642	8,464
	Gas Furnace High Eff.	663	1,327	1,989	4,617	9,234	13,842	2,439	4,878	7,313
	Add-on Heat Pump	536	1,070	1,607	3,944	7,878	11,822	2,117	4,228	6,346
	Heat Pump System	382	764	1,146	3,204	6,401	9,605	1,776	3,550	5,326

TABLE 9-8. ENERGY COST COMPARISON. HEATING AND COOLING

Appliance: Replacement of Air Conditioner
Location: Overland Park

Year	Replacement	Annual Energy Cost, $ Low Usage	Annual Energy Cost, $ Average Usage	Annual Energy Cost, $ High Usage	Cumulative Energy Cost, $ Low Usage	Cumulative Energy Cost, $ Average Usage	Cumulative Energy Cost, $ High Usage	Cumulative Present Worth of Energy Cost, $ Low Usage	Cumulative Present Worth of Energy Cost, $ Average Usage	Cumulative Present Worth of Energy Cost, $ High Usage
1982	Electric Standard A/C	367	733	1,098	367	733	1,098	334	666	998
	Electric High Efficiency A/C	336	671	1,007	336	671	1,007	306	610	916
	Add-on Heat Pump	337	672	1,007	337	672	1,007	306	611	915
	Gas Air Conditioner	403	806	1,210	403	806	1,210	367	732	1,100
1983	Electric Standard A/C	411	821	1,230	777	1,554	2,328	674	1,345	2,014
	Electric High Efficiency A/C	378	755	1,133	713	1,427	2,140	618	1,234	1,851
	Add-on Heat Pump	363	725	1,087	699	1,397	2,094	607	1,210	1,813
	Gas Air Conditioner	461	921	1,382	864	1,728	2,591	748	1,494	2,242
1984	Electric Standard A/C	468	935	1,400	1,245	2,490	3,728	1,025	2,047	3,067
	Electric High Efficiency A/C	423	864	1,297	1,146	2,291	3,437	942	1,883	2,826
	Add-on Heat Pump	397	792	1,186	1,096	2,190	3,280	905	1,805	2,705
	Gas Air Conditioner	537	1,074	1,612	1,401	2,802	4,203	1,151	2,301	3,453
1985	Electric Standard A/C	538	1,076	1,611	1,782	3,566	5,339	1,392	2,783	4,167
	Electric High Efficiency A/C	498	997	1,495	1,644	3,288	4,932	1,283	2,564	3,848
	Add-on Heat Pump	448	895	1,340	1,543	3,085	4,620	1,210	2,417	3,620
	Gas Air Conditioner	624	1,249	1,873	2,025	4,051	6,076	1,577	3,154	4,733
1986	Electric Standard A/C	622	1,244	1,863	2,404	4,809	7,202	1,779	3,555	5,324
	Electric High Efficiency A/C	576	1,153	1,729	2,220	4,441	6,661	1,640	3,280	4,921
	Add-on Heat Pump	510	1,019	1,526	2,053	4,103	6,146	1,527	3,050	4,568
	Gas Air Conditioner	723	1,446	2,169	2,748	5,497	8,246	2,026	4,052	6,079
1987	Electric Standard A/C	710	1,419	2,126	3,114	6,228	9,327	2,180	4,355	6,524
	Electric High Efficiency A/C	658	1,314	1,972	2,878	5,755	8,633	2,012	4,021	6,034
	Add-on Heat Pump	576	1,152	1,726	2,629	5,255	7,871	1,853	3,699	5,542
	Gas Air Conditioner	823	1,645	2,469	3,571	7,143	10,714	2,491	4,980	7,473
1988	Electric Standard A/C	768	1,535	2,300	3,882	7,764	11,627	2,574	5,143	7,704
	Electric High Efficiency A/C	713	1,426	2,139	3,591	7,181	10,772	2,378	4,754	7,132
	Add-on Heat Pump	620	1,239	1,855	3,249	6,495	9,726	2,171	4,335	6,493
	Gas Air Conditioner	900	1,799	2,699	4,472	8,942	13,414	2,953	5,904	8,858
1989	Electric Standard A/C	853	1,706	2,556	4,735	9,470	14,183	2,972	5,939	8,897
	Electric High Efficiency A/C	795	1,591	2,387	4,386	8,771	13,158	2,749	5,495	8,246
	Add-on Heat Pump	678	1,360	2,030	3,927	7,850	11,756	2,487	4,967	7,441
	Gas Air Conditioner	1,019	2,037	3,057	5,490	10,979	16,471	3,428	6,853	10,285
1990	Electric Standard A/C	917	1,833	2,746	5,653	11,303	16,930	3,360	6,717	10,061
	Electric High Efficiency A/C	857	1,712	2,569	5,243	10,483	15,727	3,112	6,222	9,335
	Add-on Heat Pump	726	1,451	2,174	4,654	9,301	13,931	2,795	5,583	8,362
	Gas Air Conditioner	1,103	2,206	3,309	6,594	13,185	19,780	3,894	7,790	11,688
1991	Electric Standard A/C	986	1,972	2,954	6,639	13,275	19,884	3,740	7,477	11,200
	Electric High Efficiency A/C	922	1,845	2,767	6,165	12,328	18,494	3,467	6,933	10,402
	Add-on Heat Pump	779	1,556	2,330	5,433	10,857	16,261	3,095	6,183	9,261
	Gas Air Conditioner	1,195	2,390	3,585	7,789	15,575	23,365	4,356	8,711	13,070
1992	Electric Standard A/C	1,060	2,120	3,175	7,698	15,395	23,059	4,112	8,200	12,313
	Electric High Efficiency A/C	993	1,987	2,979	7,158	14,315	21,474	3,816	7,630	11,446
	Add-on Heat Pump	662	1,323	1,980	5,083	10,162	15,210	2,884	5,762	8,626
	Gas Air Conditioner	1,293	2,588	3,881	9,082	18,163	27,246	4,810	9,618	14,430

TABLE 9-9. ENERGY COST COMPARISON, HEATING AND COOLING

Appliance: Replacement of Air Conditioner
Location: Wichita

Year	Replacement	Annual Energy Cost, $			Cumulative Energy Cost, $			Cumulative Present Worth of Energy Cost, $		
		Low Usage	Average Usage	High Usage	Low Usage	Average Usage	High Usage	Low Usage	Average Usage	High Usage
1982	Electric Standard A/C	358	716	1,074	358	716	1,074	325	651	976
	Electric High Efficiency A/C	327	656	983	327	656	983	297	596	893
	Add-on Heat Pump	326	651	977	326	651	977	296	592	888
	Gas Air Conditioner	393	788	1,181	393	788	1,181	357	716	1,073
1983	Electric Standard A/C	403	806	1,209	761	1,522	2,283	659	1,317	1,975
	Electric High Efficiency A/C	372	742	1,114	699	1,398	2,097	605	1,209	1,814
	Add-on Heat Pump	354	708	1,062	680	1,359	2,039	589	1,177	1,765
	Gas Air Conditioner	456	911	1,367	849	1,699	2,548	734	1,469	2,203
1984	Electric Standard A/C	457	914	1,371	1,218	2,436	3,654	1,002	2,004	3,006
	Electric High Efficiency A/C	424	847	1,271	1,123	2,245	3,368	923	1,846	2,769
	Add-on Heat Pump	388	776	1,165	1,068	2,135	3,203	880	1,760	2,641
	Gas Air Conditioner	531	1,062	1,592	1,380	2,760	4,140	1,133	2,267	3,400
1985	Electric Standard A/C	524	1,048	1,572	1,742	3,484	5,226	1,360	2,719	4,080
	Electric High Efficiency A/C	487	974	1,461	1,609	3,219	4,828	1,256	2,511	3,767
	Add-on Heat Pump	437	873	1,311	1,505	3,009	4,514	1,179	2,356	3,537
	Gas Air Conditioner	617	1,233	1,850	1,997	3,993	5,990	1,555	3,109	4,663
1986	Electric Standard A/C	604	1,207	1,811	2,346	4,692	7,037	1,735	3,470	5,204
	Electric High Efficiency A/C	562	1,123	1,685	2,171	4,342	6,513	1,604	3,209	4,813
	Add-on Heat Pump	499	997	1,496	2,005	4,006	6,010	1,489	2,976	4,465
	Gas Air Conditioner	713	1,427	2,140	2,710	5,420	8,130	1,997	3,996	5,992
1987	Electric Standard A/C	687	1,374	2,062	3,033	6,066	9,099	2,123	4,245	6,368
	Electric High Efficiency A/C	639	1,278	1,918	2,810	5,620	8,431	1,965	3,930	5,895
	Add-on Heat Pump	567	1,132	1,699	2,571	5,139	7,709	1,809	3,615	5,425
	Gas Air Conditioner	811	1,622	2,435	3,521	7,043	10,565	2,455	4,911	7,366
1988	Electric Standard A/C	744	1,487	2,231	3,777	7,553	11,330	2,504	5,008	7,513
	Electric High Efficiency A/C	694	1,386	2,080	3,503	7,006	10,510	2,320	4,641	6,962
	Add-on Heat Pump	606	1,210	1,816	3,177	6,349	9,525	2,120	4,236	6,357
	Gas Air Conditioner	888	1,774	2,662	4,409	8,817	13,227	2,910	5,821	8,732
1989	Electric Standard A/C	827	1,653	2,480	4,603	9,206	13,810	2,890	5,779	8,669
	Electric High Efficiency A/C	774	1,547	2,321	4,277	8,553	12,831	2,682	5,363	8,045
	Add-on Heat Pump	659	1,316	1,975	3,835	7,665	11,499	2,427	4,849	7,278
	Gas Air Conditioner	1,004	2,008	3,012	5,413	10,825	16,239	3,379	6,758	10,137
1990	Electric Standard A/C	888	1,777	2,665	5,492	10,983	16,475	3,266	6,533	9,800
	Electric High Efficiency A/C	833	1,666	2,499	5,110	10,219	15,330	3,035	6,069	9,105
	Add-on Heat Pump	701	1,401	2,101	4,536	9,066	13,601	2,724	5,444	8,169
	Gas Air Conditioner	1,087	2,174	3,262	6,500	12,999	19,501	3,840	7,680	11,521
1991	Electric Standard A/C	956	1,912	2,868	6,448	12,894	19,343	3,635	7,270	10,906
	Electric High Efficiency A/C	898	1,796	2,693	6,008	12,015	18,023	3,381	6,762	10,143
	Add-on Heat Pump	747	1,492	2,239	5,283	10,657	15,840	3,012	6,019	9,032
	Gas Air Conditioner	1,178	2,357	3,535	7,679	15,356	23,036	4,294	8,589	12,884
1992	Electric Standard A/C	1,028	2,055	3,083	7,476	14,949	22,426	3,995	7,990	11,986
	Electric High Efficiency A/C	967	1,933	2,900	6,975	13,947	20,923	3,720	7,439	11,160
	Add-on Heat Pump	796	1,590	2,386	6,079	12,147	18,225	3,291	6,576	9,868
	Gas Air Conditioner	1,276	2,551	3,826	8,954	17,907	26,862	4,741	9,483	14,225

STATEMENT

By

Robert F. Riordan
The Kansas Power and Light Company
on behalf of
The Electric Companies Association of Kansas
before the
House Assessment and Taxation Committee
February 8, 1983

Mr. Chairman and Members of the Committee:

My name is Robert F. Riordan, and I am the Executive Director, Special Projects, of The Kansas Power and Light Company. I am here representing The Electric Companies Association of Kansas to express support for HB 2065, wherein it is proposed that the definition of a solar energy system includes heat pumps, along with active and passive solar systems and wind systems.

I will begin by giving you a brief background outline of my activities in the solar energy field.

I have been actively involved with solar energy since 1975: working with Wilson and Company, Engineers and Architects, Salina, Kansas, as a project manager for solar and conservation projects; president of a firm selling solar energy systems and analyzing potential markets; energy research coordinator for the State of Kansas; and from 1979-82 as Director of the Applied Energy Research Program (AERP) at the University of Kansas Center for Research, Inc., and Director of the Energy Research Center at the University of Kansas. During this time, I did consulting work in the solar energy field for the Department of Energy,

Solar Energy Research Institute, Electric Power Research Institute, Jet Propulsion Laboratory and private industry.

I was a charter member of the Kansas Solar Energy Society Board of Directors. Since 1980, I have been a member of the Department of Energy Solar Thermal Power Program Review Panel.

I received a B.S. Degree in Engineering from the United States Naval Academy and a M.S. Degree in Meterology from the Naval Postgraduate School.

In my previous positions at the University of Kansas, I presented a statement in August 1982, on behalf of the University of Kansas Center for Research, Inc., to the Kansas Corporation Commission to propose that air-to-air heat pumps be considered "solar energy systems" as defined by K.S.A. 1980 Supp. 79-32, 169, and therefore eligible for tax credits and accelerated amortization on a per system basis. I believe that the information contained in the statement is pertinent to HB 2065, and would like to review it with you.

Before doing that, I would like to bring the following to the attention of the Committee.

During the same hearing, Dr. Harold Hubbard, a Senior Vice President at the Midwest Research Institute and Director of the Solar Energy Research Institute, Golden, Colorado, along with representatives of private industries, also presented statements.

I believe that the statement of Dr. Hubbard, who is the Director of the nation's primary federal laboratory for solar energy research, is singularly significant to your deliberations. He has said:

"...I can say that the evidence is clear that heat pumps make more efficient use of our energy resources than conventional heating and cooling devices. Therefore, the installation of heat pumps would have a salutary effect of significantly reducing conventional energy demand and fossil fuel consumption. The savings of heat pumps are a function of geographical location. And, you can find lots of figures on that. Some I've seen recently from General Electric indicated that energy savings of heat pumps are about 50% in a place like Miami or New Orleans and about 23 to 25% in Kansas City. Those are not my figures and are not SERI's figures but they are figures which are in the literature."

"...Given this definition, we at SERI, as the primary national laboratory for solar energy research, would clearly classify heat pumps as a device which makes indirect use of incident solar radiation. An analogous technology for the indirect use of solar radiation is the use of wind generators -- for it is the sun which heats the air and causes the winds."

"...Therefore, in order to qualify as an active solar system under Kansas law, as I understand it, and I am not a lawyer, it must

> be a system which is capable of collecting and converting incident solar radiation into heat and transferring this energy to a point of use. As a scientist, I would say that heat pumps fit easily within this definition. Ground-coupled heat pumps fit perfectly within the definition, and air-to-air heat pumps also fit the definition, although the fit is not as obvious as with ground-coupled heat pumps."

And his summary:

> "As the Kansas statutes recognize wind systems and passive solar systems, there should be no problem in principle in recognizing the indirect collection and storage of incident radiation as a solar system eligible for favorable treatment under Kansas tax statutes."

Because of Dr. Hubbard's national and local stature, and the significance of his statement, I have attached a copy for your perusal.

Also attached is a copy of my presentation to the KCC. Because of its length and technical nature I won't go into it in detail but basically, what it says is:

1. Because an air-to-air heat pump does collect and convert incident solar radiation into heat and transfer that heat to point of use, I believe that it meets the same criteria used in HB 2065 to qualify active solar systems as a solar energy system.

2. If wind systems are considered to be "solar energy systems" as a result of indirect usage of solar radiation, it is proposed that an air-to-air heat pump also be considered a "solar energy system" because it collects, converts and transfers solar energy and because of its ability to use the indirect results of solar radiation, in real-time, for use.

In summation, I concur with Dr. Hubbard in that it is my belief that the statute clearly enables heat pump devices to be defined as a solar energy system, and that the Kansas Legislature would experience little difficulty in adopting that position.

As a result of testimony made before the Kansas Corporation Commission, and a review by that panel, the KCC has stated it is of the opinion that:

1) Heat pumps offer the potential for substantial energy conservation and for a more efficient use of limited fossil fuel resources;

2) Heat pumps would be beneficial to the State's energy policy and to the State's economy, and, therefore,

should be encouraged by State policy; and,

3) Air-to-air and ground-coupled heat pumps meet the definitions and technical specifications of solar equipment contained in KSA 1981 Supp. 79-32, 169, and the rules and regulations promulgated thereunder.

Dr. Hubbard, based upon his expertise as head of the Solar Energy Research Institute, has indicated he believes heat pumps meet the criteria of being classified as solar energy devices. The Kansas Corporation Commission, following hearings and a review of pertinent material, has issued an opinion that heat pumps meet the definitions and technical specifications of solar equipment under Kansas statutes.

Based upon my work and expertise in the solar energy field, I concur with the opinions of Dr. Hubbard and the Kansas Corporation Commission, both within the technical guidelines of the scientific community and within the definitions of Kansas statutes.

DRAFT

TESTIMONY

Chairman Loux, Commissioner Roy and Commissioner Dick - my name is Dr. Harold M. Hubbard. It is a pleasure to have the opportunity to address this Committee on the important issues you are considering today.

I will begin by giving you an outline of my background. I am a native son. I have a B.S. degree in Chemistry and a Ph.D. in Analytical Chemistry - both from the University of Kansas. I have spent most of my professional career as a research scientist or managing research. I spent 18 years with DuPont prior to accepting a position with the Midwest Research Institute in 1970 in Kansas City. I am presently a Senior Vice President at MRI and the Director of the Solar Energy Research Institute located in Golden, Colorado.

The mission of the Solar Energy Research Institute is to be the nation's primary federal laboratory for solar energy research. SERI was established by the Solar Energy Research, Development and Demonstration Act of 1974 (P.L. 94-573, presently codified at 42 U.S.C. 5559).

The legislation which created SERI defines solar energy as "energy which has recently originated in the sun, including direct and indirect solar radiation and intermediate solar energy forms such as winds, sea thermal gradients, products of photosynthetic processes, organic wastes, and others." Given this definition, we at SERI, as the primary national laboratory for solar energy research, would clearly classify heat pumps as a device which makes indirect use of incident solar radiation. An analogous technology for the indirect use of solar radiation is the use of wind generators - for it is the sun which heats the air and causes the winds.

Of course this Committee must be guided not be definitions contained in the federal laws but by the language of the applicable Kansas statutes. I will therefore try to focus the remainder of my statement on the Kansas statutory language and the issues set forth in the Committee's Order.

I should begin by stating what a heat pump is. It is a reversible heating and cooling mechanism which consists of coils, a heat exchanger and a compressor. The heat pump has the capacity to extract heat from a source - the ground or the air, for example, and to efficiently transfer that heat through the heat exchanger to its destination - the living room of your house perhaps. Let me now try to focus on the issues which concern this Committee. I will give more specifics on heat pumps later when I discuss particular applications of them.

The first issue posed is "Whether heat pumps are a desirable alternative, the use of which should be fostered by state government?" This is clearly a policy question which is best decided by those elected to decide public policy issues. However, as a scientist, I can say that the evidence is clear and compelling that heat pumps are more energy efficient than conventional heating and cooling devices. Therefore the installation of a large number of heat pumps would have the salutory effect of significantly reducing energy demand and consumption. The energy savings of heat pumps is a function of geographical location. They can save over 50% of your heating bill in locations such as Miami or New Orleans to 23% in Kansas City. The figures I have quoted are from a General Electric publication. This provides our first clue

that heat pumps are solar related devices in that the savings from their use is a function of local ambient temperatures which is, of course, a function of the amount and angle of the incident solar radiation.

The second issue before the Commission is, "Whether heat pumps can appropriately be classified as solar energy property consistent with state laws and regulations concerning solar energy property tax credits?" To properly answer this question one must first look to the definitions contained in the Kansas statutes. The first definition which must be considered is that of a "solar energy system" which is defined as "either an active or passive system or a wind system."

An active solar system is defined as "a system of apparatus and equipment capable of collecting and converting incident solar radiation into heat, mechanical or electrical energy and transferring these forms of energy by a separate apparatus to storage or to point of use (including but not limited to, water heating, space heating or cooling electric energy generation or mechanical energy generation).

Therefore, in order to qualify as an active solar system under Kansas law, as I understand it, and I am not a lawyer, it must be a system which is capable of collecting and converting incident solar radiation into heat and transferring this energy to a point of use. As a scientist, I would say that heat pumps fit easily within this definition. Ground-coupled heat pumps fit perfectly within the definition and air-to-air heat pumps also fit the definition, although the fit is not as obvious as with ground-coupled heat pumps.

A ground-coupled heat pump is a heat pump that uses the ground - like your backyard - for both the collector and storage systems. One accomplishes this by burying large slabs of concrete a few feet below the surface and connecting them by plastic pipes to a pump and to the heat exchanger. During the day the ground is heated by the incident solar radiation. The heat is collected and stored by the ground and the slabs of concrete. Then when the pump is turned on the heat is transferred through the heat exchanger to warm your home. Using the ground as the collector and storage system eliminates the need for expensive flat plate collectors and storage tanks. Thus it is clear that ground-coupled heat pumps fit within the definition of an active solar system.

The case for classifying air-to-air heat pumps as active solar systems is just as compelling although not as obvious at a first glance. An air-to-air heat pump pulls air through it with a fan and extracts heat from the surrounding air. The air, like the ground, is warmed by incident solar radiation. Thus instead of the ground being the collector and storage system, the air acts as the collector and storage system. This creates some problems in defining the boundaries of the collector as the bounds will be a function of air density and the power of the fan. But the fact that it is difficult to define the boundaries of the collector and storage system does not make it function any less as a storage and collection system. The specific heat of the air will be lower resulting in a less efficient system but this would probably be more than offset by the fact that air-to-air heat pumps are much cheaper to install.

As the Kansas statutes recognize wind systems and passive solar systems, there should be no problem in principle in recognizing the indirect collection and storage of incident radiation as a solar system eligible for favorable treatment under Kansas tax statutes.

I will be happy to answer any questions from the Commission.

STATEMENT

Regarding

CATEGORIZING HEAT PUMPS AS SOLAR ENERGY DEVICES AS DEFINED BY K.S.A. 1980 SUPP. 79-32,169

by

Robert F. Riordan, Director
Applied Energy Research and Public Service Program
University of Kansas Center for Research, Inc.
2291 Irving Hill Drive
Lawrence, Kansas 66045

STATEMENT

My name is Robert F. Riordan, and I am the Director of the Applied Energy Research and Public Service Program at the University of Kansas Center for Research, Inc., 2291 Irving Hill Drive, Lawrence, Kansas 66045.

I have been actively involved with solar energy since 1975: working with Wilson & Company, Engineers and Architects as a project manager for solar and conservation projects; head of a firm selling solar energy systems and analyzing potential markets; energy research coordinator for the State of Kansas; and for the last three years in my present position. One of the projects I manage at this time is working with five electric utilities to address solar energy issues. I have been a member of the Department of Energy Solar Thermal Power Program Review Panel since 1980.

I received a B.S. degree in engineering from the United States Naval Academy in 1964 and a M.S. degree in Meteorology from the Naval Postgraduate school in 1971.

Purpose

The purpose of this statement is to propose that air-to-air heat pumps be considered "solar energy systems" as defined by K.S.A. 1980 Supp. 79-32, 169, and therefore eligible for tax credits and accelerated amortization on a per system basis.

Discussion

The only definition of a solar energy system which can be used to determine if an energy system qualifies as a solar energy system for the Kansas tax credit is found in K.S.A. 1980 Supp. 79-32,169. This Statute

used as the basis to determine if an air-to-air heat pump qualifies to be categorized as a solar energy system eligible for a Kansas tax credit for a solar energy system.

This Statute recognizes both direct and indirect usage of solar radiation, as well as using the energy from solar radiation in both real-time and time-delayed situations. The direct usage of solar radiation is found in the definitions of active and passive solar energy systems; in both systems, real-time and time-delayed usage is allowed to qualify a system. The indirect usage of solar radiation is found in the definition of a "wind system." It is significant that in this indirect case only real-time use of the energy from solar radiation is allowed to qualify a system.

Reviewing the K.S.A. 1980 Supp. 79-32,169 definition of a solar active system, which is a direct usage of solar radiation--

> "Active solar system" means a system of apparatus and equipment capable of collecting and converting incident solar radiation into heat, mechanical or electrical energy and transferring these forms of energy by a separate apparatus to storage or to point of use (including, but not limited to, water heating, space heating or cooling, electric energy generation or mechanical generation.)

Note that, among other things, there is no reference to the amount of incident solar radiation required to be collected, whether the collection area must be of a particular size or confined, the efficiency of the system, how often or when it operates, how the energy is transferred, or the amount of energy that must be transferred either to storage or to the point of use. The only thing required of an active solar system is that it be a system of apparatus and equipment capable of collecting and converting incident solar radiation into heat, mechanical or electrical energy and transferring

ese forms of energy by a separate apparatus to storage or to point of use.

Under this definition, I believe that an air-to-air heat pump does qualify as a solar energy system. This belief is based on the following three reasons.

Reasons

First, the definition for a heat pump in the Energy Reference Handbook, Third Edition, 1981, is:

> heat pump - a reversible heating and cooling mechanism that can produce additional usable heat from the amount stored, such as a mechanical refrigerating system which is used for air cooling in the summer and which, when the evaporation and condenser effects are reversed, can absorb heat from the outside air or water in winter to raise it to a high potential so that it can also be used for winter heating.

Second, an air-to-air heat pump collects a finite volume of ambient air from the atmosphere surrounding it, acts upon the thermal energy contained in that volume of air, then transfers the thermal energy contained in that volume of air to the point of use. The finite volume from which the heat pump can draw and act upon constitutes its collection area. This collection area is bounded by the ground, and the distance that the heat pump can draw ambient air. Therefore, a heat pump's collection area is definable and does exist.

Within this collection area, incident solar radiation is received and converted to heat (thermal energy). While it is recognized that this solar energy collection process is not defined as though "solar collectors" were used, the Kansas Statute itself does not specify the method of collection,

r how much must be collected, nor the efficiency of the conversion. The Statute only specifies that collection of incident solar radiation must exist.

Third, in an air-to-air heat pump, the thermal energy in the volume of air is absorbed, acted upon, and transferred to the point of end use. In this case, to be used for space heating. Of particular note, this direct usage of solar radiation is in real-time, the same as active and passive solar systems.

Conclusion

Because an an air-to-air heat pump does collect and convert incident solar radiation into heat and transfer that heat to point of use, I believe that it meets the definition of an active solar energy system, using direct solar radiation in real-time, as defined by K.S.A. 1980 Supp. 79-32,169.

Air-to-air heat pumps have the added advantage that they can also indirectly use the results of solar radiation in real-time, just as wind energy systems do in intercepting and converting wind energy. Both air-to-air heat pumps and wind energy systems use the energy that is collected and available in the atmosphere. The wind system uses kinetic energy, i.e. that energy which a body (the atmosphere) possesses as a consequence of its motion. The air-to-air heat pump system uses thermal energy (heat), i.e. a form of energy transferred between systems by virtue of a difference in temperature, and existing only in the process of energy transformation.

If wind systems are considered to be "solar energy systems" as a result of indirect usage of solar radiation, it is proposed that an air-to-air heat pump also be considered a "solar energy system" because it collects, converts and transfers solar energy and because of its ability to use the indirect results of solar radiation, in real-time, for use.

ATTACHMENT IV
REVISED

27 | 2065
Fiscal Note | Bill No.
1983 Session
February 7, 1983

The Honorable James D. Braden, Chairperson
Committee on Assessment and Taxation
House of Representatives
Third Floor, Statehouse

Dear Representative Braden:

SUBJECT: Revised Fiscal Note for House Bill No. 2065 by Representatives Fox, Farrar, et al.

In accordance with K.S.A. 75-3715a, the following revised fiscal note concerning House Bill No. 2065 is respectfully submitted to your committee.

House Bill No. 2065 is an act which would expand the definition of "solar energy system" in K.S.A. 1982 Supp. 79-32,169 to include a heat pump; that is, any device which absorbs heat from one area and transfers it to another area for heating purposes and which reverses such process for cooling purposes. The provisions of this bill shall be applicable to all taxable years commencing after December 31, 1982. This act, if enacted into law, shall take effect and be in force from and after July 1, 1983.

I have just received additional data concerning the shipment of heat pumps to the state of Kansas. The American Air Conditioning and Refrigeration Institute, Arlington, Virginia, provided the following data over the telephone to the Department of Revenue.

Year	Heat Pump Shipments to Kansas	Tax Credit = 1983 Prices at 30% rate
1975	665	$ 498,750
1976	1,368	1,026,000
1977	2,363	1,772,250
1978	2,553	1,914,750
1979	1,397	1,047,750
1980	995	746,250
1981	808	606,000
Jan-June 1982	691	518,250

It was pointed out by industry sources that the data were shipments and not sales. However, it is generally thought that these shipments are sold relatively quickly; that is, the inventory of heat pumps held by distributors are kept at low levels. The decrease in the shipments of heat pumps during 1980 and 1981 reflect the depressed economic conditions in the housing industry. Shipments during the first six months of 1982 provide some encouragement of a recovery in the sales of heat pumps. The industry sources indicated that the estimated shipments for the

last six months of 1982 will be about the same as the first six months, making the calendar year 1982 total equal to about 1,382 heat pumps.

In light of this new data base, the fiscal impact in my previous fiscal note is conservative. As discussed in the original fiscal note, the average cost including installation of the heat pump is about $2,500. The individual income tax receipts to the State General Fund are expected to decline by $2,500 x 0.30 = $750 per heat pump. The Department of Revenue has estimated from the above data base that about 1880 heat pumps would be sold in Kansas during 1983. The individual income tax receipts to the State General fund will then be decreased by $750 x 1880 = $1.41 million. However, it must be noted that since under the present law, the solar energy system income tax credit will expire for installations made after July 1, 1983. Thus, under current law, the individual income tax receipts to the State General Fund would be expected to decline by about $0.705 million in FY 1984.

If House Bill No. 2045, as introduced by Representative Sughrue is passed into law, then the solar energy system income tax credit will be extended to January 1, 1986. The fiscal impact for this bill will be summarized according to the following scenarios:

	State General Fund FY 1984	
	Revenues	Expenditures
Income Tax: Corporate and Individual (Present Law)	($705,000)	
- or -		
Income Tax: Corporate and Individual (HB 2045)	($1,410,000)	
Administrative Cost[1]		$4,364
School District Income Tax Rebate		*

[1] As submitted by the Department of Revenue. In order to process the increased number of solar energy system income tax credits, the Tax Examiner II position that currently spends 50% of that position's time processing approximately 500 solar energy credits would need to devote that position's entire time examining, auditing and corresponding with taxpayers that would now be able to claim an income tax credit since they had installed a heat pump unit. The other functions currently being performed by the Tax Examiner II would necessitate that the Department request a Tax Examiner II position (one-half time) in the Omnibus Appropriation Bill if this bill is enacted. This would result in additional annual expenses in FY 1984 of approximately $4,364 ($17,386 x .5 (½ time) x .5 (6 mos.) = $4,364).

* The School District Equalization Act provides that each school district receives an income tax rebate equal to 20 percent of the resident individual income tax liability after tax credits, except those credits for taxes paid to another state and for withholding and estimated tax payments. The net fiscal impact will be a reduction in state expenditures since not all of the rebate decrease is offset by the increase in state aid. Assuming that 90% of the claims are residential, then the loss in individual income taxes for FY 1984 will be:

0.9 x $705,000 = $634,500 - Present Law
0.9 x $1,410,000 = 1,269,000 - HB 2045

The School District Equalization Income Tax Rebate is expected to decrease by:

Under Present Law

$634,500 x 0.33 x 0.20 = $41,877 - May 1984 (FY 1984)
$634,500 x 0.67 x 0.20 = $85,023 - FY 1985

HB 2045

$1,269,000 x 0.33 x 0.20 = $83,754 - May 1984 (FY 1984)
$1,269,000 x 0.67 x 0.20 = $170,046 - FY 1985

M. Ahmad

Mokhtee Ahmad
Financial Economist
For the Director of the Budget

MA:bj

TESTIMONY PRESENTED TO THE HOUSE ASSESSMENT AND TAXATION COMMITTEE PERTAINING TO HB 2065 BY HAROLD SHOAF, FEBRUARY 8, 1983.

Mr. Chairman and members of the Committee, my name is Harold Shoaf, I am Director of Government Relations, Public Affairs for the Kansas Electric Cooperatives. The Kansas Electric Cooperatives (KEC) is the statewide organization of thirty-seven (37) electric cooperatives serving electricity to more than 450,000 Kansans.

The rural electrics of Kansas support HB 2065 because heat pumps should be included as a priority device in the state's energy policy. In previous messages to the legislature the Governor has stressed the importance of alternative energy sources and conservation as essential in meeting the state's energy needs. In Docket No. 134,550-U, the State Corporation Commission investigated the classification of heat pumps for tax purposes to determine whether heat pumps were desirable alternatives to be fostered by state government. In a final order issued, December 17, 1982, the Commission concluded that "(1) heat pumps offer the potential for substantial energy conservation and for more efficient use of limited fossil fuel resources; (2) heat pumps would be beneficial to the state's energy policy and to the state's economy and, therefore, should be encouraged by state policy." In the same order the Commission also found that air to air and ground coupled heat pumps should be included in the definition of active solar systems to qualify for the state's solar tax credit.

For many years the rural electrics have encouraged and supported the use of heat pumps for home heating and cooling use by consumer members. A rural electric cooperative in Central Kansas has recently performed field testing of add-on heat pump water heaters. By using a heat pump, a 50% energy savings resulted compared to the conventional electric water heating. Dollar savings range from 40% to 60% when a

heat pump is added to a conventional propane or electric water heater.

On the state and national level, legislation has been enacted providing tax credits for development of alternate energy sources such as solar, wind, biomass, and cogeneration. Persons who use these technologies have been exempted from stringent state and federal utility regulation to encourage development of the resources. In addition, a great deal of money has been spent in development of conservation programs for weatherization of homes and other structures. The RECs of Kansas believe that heat pumps are an energy conservation device which have been developed to state of the art technology for broad application. Heat pumps are readily available for use by the vast majority of energy consumers whereas other alternative energy sources such as solar and wind may not be appropriate or available in many situations and at this time may not be technically proven for general use.

Since our State's objective is to promote conservation of energy through the wise use of energy and promotion of alternative energy sources, use of the heat pump should be encouraged together with all other alternative energy sources.

Mr. Chairman and members of the Committee, thank you for this opportunity to express our thoughts regarding the value of heat pumps to the consumer of rural electric cooperatives.

Legislature of the State of Kansas

House Bill Number 2065

Testimony at Topeka on February 8, 1983

Peoples Natural Gas Company Witness - Potter

My name is Lawrence Potter, 25 Main Place, Council Bluffs, Iowa. I am employed by Peoples Natural Gas Company, Division of InterNorth, Inc. Peoples Natural Gas Company is a natural gas distribution utility which operates in Kansas and several other states. It is subject to the jurisdiction of the Kansas Corporation Commission in Kansas with respect to its service and rates. I've worked for Peoples since 1947. In 1976 I became Director of Marketing and in January 1980 I began my present job as Director of Marketing Projects for Peoples Natural Gas Company.

Peoples serves approximately 38,000 customers in Kansas. Of that number, approximately 32,000 are residential customers. Peoples serves a number of small and medium size communities located mostly in the Southwestern area of Kansas. In addition, we serve a small number of commercial and industrial customers in Central Kansas.

As Director of Marketing Projects, I am familiar with the Residential Conservation Services Program and energy conservation practices. As a Regulated Utility we are actively involved in Residential Conservation Service Programs in Kansas, Colorado, Texas, Nebraska, Iowa and Minnesota. We are currently involved in a joint weatherization program in Iowa. We believe that our customers can best be served with programs that reduce their energy usage.

I am here to encourage you to not pass House Bill Number 2065 but retain the current statute KSA 1982 Supp. 79-32,169. The current statute provides for tax credit to those who install devices capable of using renewable sources of energy. These are active solar system, passive solar system and wind system. These systems utilize renewable energy. Providing a tax credit for these devices compliments the Federal tax credit allowance. I have with me the IRS Form 5695, Residential Energy Credits which cites those items which qualify for the credits. It also has specific exclusion including heat pumps, both air and water. The addition of "Heat Pump" in House Bill Number 2065 is contradictory to the existing tax credit allowance. The heat pump does not use a renewable energy source. Its energy source is electricity that is usually generated by the use of coal, natural gas, oil or nuclear fuel, all non-renewable fuels. These cannot be included in the same category as the sun and wind. I believe that passage of House Bill No. 2065 is really a marketing assistance program for heat pumps and does not effectively increase the use of renewable source energy or reduce the use of non-renewable source energy. I strongly urge you to consider the intent of customer tax credits and vote against passage of House Bill No. 2065.

General Instructions

Paperwork Reduction Act Notice.—The Paperwork Reduction Act of 1980 says we must tell you why we are collecting this information, how we will use it, and whether you have to give it to us. We ask for the information to carry out the Internal Revenue laws of the United States. We need it to ensure that you are complying with these laws and to allow us to figure and collect the right amount of tax. You are required to give us this information.

Two energy credits make up the residential energy credit, each with its own conditions and limits. These credits are based on: (1) Costs for home energy conservation, and (2) Costs for renewable energy source property.

The credit is based on the cost of items installed in your principal residence after April 19, 1977, and before January 1, 1986.

Purpose.—Use this form to figure your residential energy credit if you had qualified energy saving items installed in your principal residence. The instructions below list conditions you must meet to take the credit. If you have an energy credit carryover from the previous tax year and no energy saving costs this year, skip to Part III of the form. Attach Form 5695 to your tax return. For more information, please get **Publication 903,** Energy Credits for Individuals.

What is your principal residence?—To qualify as your principal residence, your residence must be the home in the United States where you live (you may own it or rent it from another person).

A summer or vacation home does not qualify.

For energy conservation items to qualify, your principal residence must have been substantially completed before April 20, 1977. A dwelling unit is considered substantially completed when it can be used as a personal residence even though minor items remain unfinished.

Special Rules.—If you live in a condominium, cooperative apartment, occupy a dwelling unit jointly, or share the cost of energy property, see **Publication 903** for more details.

What are energy saving items?—You can take the credit for energy conservation and renewable energy source items.

Energy conservation items are limited to:

- insulation (fiberglass, cellulose, etc.) for ceilings, walls, floors, roofs, water heaters, etc.
- storm (or thermal) windows or doors for the outside of your residence.
- caulking or weatherstripping for windows or doors for the outside of your residence.
- a replacement burner for your existing furnace that reduces fuel use. The burner must replace an existing burner. It does not qualify if it is acquired as a component of, or for use in, a new furnace or boiler.
- a device for modifying flue openings to make a heating system more efficient.
- an electrical or mechanical furnace ignition system that replaces a gas pilot light.
- a thermostat with an automatic setback.
- a meter that shows the cost of energy used.

To take the credit for an energy conservation item, you must:

- install the item in your principal residence which was substantially completed before April 20, 1977,
- be the first one to use the item, and
- expect it to last at least 3 years.

The maximum credit for energy conservation items cannot be more than $300 ($2,000 × 15%) for each principal residence.

Renewable energy source items include solar, wind, and geothermal energy items that heat or cool your principal residence or provide hot water or electricity for it.

Examples of solar energy items that may qualify include:

- collectors,
- rockbeds,
- heat exchangers, and
- solar panels installed on roofs (including those installed as a roof or part of a roof).

An example of an item that uses wind energy is a windmill that produces energy in any form (usually electricity) for your residence.

To take the credit for a renewable energy source item, you must:

- be the first one to use the item, and
- expect it to last at least 5 years.

The maximum credit for renewable energy source items cannot be more than $4,000 ($10,000 × 40%) for each principal residence.

What items are NOT eligible for the energy credit?—Do not take credit for:

- carpeting;
- drapes;
- wood paneling;
- wood or peat-burning stoves;
- hydrogen fueled residential equipment;
- siding for the outside of your residence;
- heat pumps (both air and water);
- fluorescent replacement lighting systems;
- replacement boilers and furnaces; and
- swimming pools used to store energy.

Federal, State, or local government nontaxable grants and subsidized financing.—Qualified expenditures financed with nontaxable Federal, State, or local government grants cannot be used to figure the energy credit. Also, if Federal, State, or local government programs provide subsidized financing for any part of qualified expenditures, that part cannot be used to figure the energy credit. You must reduce the expenditure limits on energy conservation and renewable energy source property for a dwelling by the part of expenditures financed by Federal, State, or local government subsidized energy financing, as well as by the amount of nontaxable Federal, State, or local government grants used to purchase conservation or renewable energy source property.

Figuring the credit for more than one principal residence.—You can take the maximum credit for each principal residence you live in. If you use all of your credit for one residence and then move, you may take the maximum credit amount on your next residence.

To figure your 1982 energy credit for more than one principal residence:

(1) Fill out Part I or II on a separate Form 5695 for each principal residence.

(2) Enter the total of all parts on line 23 of one of the forms.

(3) In the space above line 23, write "More than one principal residence."

(4) Attach all forms to your return.

Caution: *You should keep a copy of each Form 5695 that you file for your records. For example, if you sell your principal residence, you will need to know the amount of the credit claimed in prior tax years. If the items for which you took the credit increased the basis of your principal residence, you must reduce the basis by the credit you took.*

If the credit is more than your tax.—If your energy credit for this year is more than your tax minus certain other credits, you can carry over the excess energy credit to the following tax year.

Specific Instructions

Part I, lines 2a through 2h.—Enter your energy conservation costs (including expenditures made with nontaxable government grants and subsidized financing) only for this tax year. Count the cost of the item and its installation in or on your principal residence. Do not include the cost of repairs or maintenance for energy conservation items.

Part I, line 4.—Enter the amount of nontaxable government grants and subsidized financing used to purchase the energy items. If you do not know the amount, check with the government agency that gave you the grant or subsidized financing.

Part I, line 7.—Enter your total energy conservation costs from 1978, 1979, 1980, and 1981 for this principal residence. If you had energy conservation costs in the previous tax year but could not take a credit because it was less than $10, enter zero.

Part I, line 9.—Enter the part of nontaxable government grants and subsidized financing received under Federal, State, or local programs to purchase energy items. You must use the amounts received under these programs to reduce the maximum amount of cost used to figure the credit. If you do not know the amount of the nontaxable grant, check with the government agency which gave you the grant or subsidized financing.

Part II, lines 13a through 13d.—Enter your renewable energy source costs (including expenditures made with nontaxable government grants and subsidized financing) only for this tax year. Do not include the cost of repairs or maintenance for renewable energy source items.

Part II, line 14.—See Part I, line 4 for explanation.

Part II, line 17.—Enter your total renewable energy source costs from 1978, 1979, 1980, and 1981 for this principal residence. If you had renewable energy source costs in the previous tax year but could not take a credit because it was less than $10, enter zero.

Part II, line 19.—See Part I, line 9 for explanation.

Part III, line 24.—Generally, your energy credit carryover will be computed on your prior year Form 5695, Part IV. Exception—If the alternative minimum tax applied, see **Publication 909,** Minimum Tax and Alternative Minimum Tax.

Part IV.—Complete this part only if line 29 is less than line 25. You can carry over the amount entered on line 32 to your next tax year. Exception—If the alternative minimum tax applies, see **Publication 909.**

☆ U.S. GOVERNMENT PRINTING OFFICE : 1982—O-363-221 E.I. 43-1110209

Form **5695**
Department of the Treasury
Internal Revenue Service (0)

Residential Energy Credit

▶ Attach to Form 1040. ▶ See Instructions on back.
For Paperwork Reduction Act Notice, see instructions on back.

OMB No. 1545-0214
1982
33

Name(s) as shown on Form 1040 | Your social security number

Enter in the space below the address of your principal residence on which the credit is claimed if it is different from the address shown on Form 1040.

If you have an energy credit carryover from a previous tax year and no energy savings costs this year, skip to Part III, line 24.

Part I Fill in your energy conservation costs (but do not include repair or maintenance costs).

1 Was your principal residence substantially completed before April 20, 1977? . . . . . ▶ ☐ Yes ☐ No

Note: You MUST answer this question. Failure to do so will delay the processing of your return. If you checked the "No" box, you CANNOT claim an energy credit under Part I and you should not fill in lines 2 through 12 of this form.

2 a Insulation	2a		
b Storm (or thermal) windows or doors	2b		
c Caulking or weatherstripping	2c		
d A replacement burner for your existing furnace that reduces fuel use	2d		
e A device for modifying flue openings to make a heating system more efficient	2e		
f An electrical or mechanical furnace ignition system that replaces a gas pilot light	2f		
g A thermostat with an automatic setback	2g		
h A meter that shows the cost of energy used	2h		
3 Total (add lines 2a through 2h)	3		
4 Enter the part of expenditures made from nontaxable government grants and subsidized financing	4		
5 Subtract line 4 from line 3	5		
6 Maximum amount of cost on which credit can be figured	6	$2,000	00
7 Enter the total energy conservation costs for this residence. Add line 2 of your 1978, 1979, and 1980 Forms 5695 and line 3 of your 1981 Form 5695	7		
8 Subtract line 7 from line 6	8		
9 Enter the total nontaxable grants and subsidized financing used to purchase qualified energy items for this residence. Add the amount on line 4 of this form and the amount on line 4 of your 1981 Form 5695	9		
10 Subtract line 9 from line 8. If zero or less, do not complete the rest of this part	10		
11 Enter the amount on line 5 or line 10, whichever is less	11		
12 Enter 15% of line 11 here and include in amount on line 23 below	12		

Part II Fill in your renewable energy source costs (but do not include repair or maintenance costs).

13 a Solar ____ 13 b Geothermal ____ 13 c Wind ____ Total ▶	13d		
14 Enter the part of expenditures made from nontaxable government grants and subsidized financing	14		
15 Subtract line 14 from line 13	15		
16 Maximum amount of cost on which the credit can be figured	16	$10,000	00
17 Enter the total renewable energy source costs for this residence. Add line 5 of your 1978 Form 5695, line 9 of your 1979 and 1980 Forms 5695, and line 13d of your 1981 Form 5695	17		
18 Subtract line 17 from line 16	18		
19 Enter the total nontaxable grants and subsidized financing used to purchase qualified energy items for this residence. Add the amount on line 14 of this form and the amount on line 14 of your 1981 Form 5695	19		
20 Subtract line 19 from line 18. If zero or less, do not complete the rest of this part	20		
21 Enter the amount on line 15 or line 20, whichever is less	21		
22 Enter 40% of line 21 here and include in amount on line 23 below	22		

Part III Fill in this part to figure the limitation.

23 Add lines 12 and 22. *If less than $10, enter zero*	23		
24 *Enter your energy credit carryover from a previous tax year.* **Caution**—Do not make an entry on this line if your 1981 Form 1040, line 47, showed an amount of more than zero	24		
25 Add lines 23 and 24	25		
26 Enter the amount of tax shown on Form 1040, line 40	26		
27 Add lines 41 through 46 from Form 1040 and enter the total	27		
28 Subtract line 27 from line 26. If zero or less, enter zero	28		
29 Residential energy credit. Enter the amount on line 25 or line 28, whichever is less. Also, enter this amount on Form 1040, line 47. Complete Part IV below if this line is less than line 25	29		

Part IV Fill in this part to figure your carryover to 1983 (Complete only if line 29 is less than line 25).

30 Enter amount from Part III, line 25	30		
31 Enter amount from Part III, line 29	31		
32 Credit carryover to 1983 (subtract line 31 from line 30)	32		

Efficient natural gas heating systems can save you money on heating bills.

High efficiency natural gas heating systems are available now.

Much more efficient than conventional natural gas systems, these new systems can reduce energy use.

With conventional systems some of the heat you pay for goes up the chimney. New recuperative furnaces extract more of the heat and use it to warm your home. Several of these new systems can be vented through the wall like a clothes dryer or into an existing chimney.

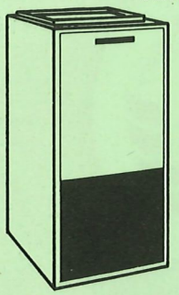
Induced draft furnaces burn more efficiently than conventional furnaces by mechanically controlling the air flow to provide the exact amount of air needed for combustion.

Other new systems can heat your water as well as your home. These *"double duty"* natural gas systems can save both heating and water heating energy.

There are many brands, models and sizes of efficient gas heating systems available. Take a look at the systems shown here. Then contact your heating dealer for more information on the right choice for your home.

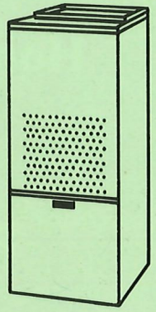
It won't cost you a thing. But it might save you a bundle.

AMANA ENERGY COMMAND



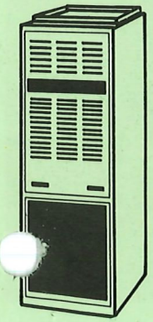
- AFUE* — 94.5%-95%
- Needs no chimney
- Electronic ignition
- 5 year warranty on Heat Transfer Module
- Accepts add-on water heating
- Accepts add-on air conditioning
- Sizes: 80,000 and 100,000 BTU input
- Retails for about $1,500 plus installation for 100,000 BTU input

ARKLA RECUPERATIVE



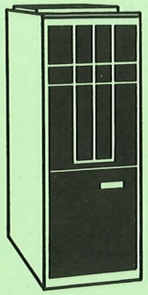
- AFUE* — 85.5%-87%
- 3" flue with 150°-200° exhaust temperature permits side wall venting
- Electronic ignition
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes from 40,000 to 120,000 BTU input
- Retails for about $900 plus installation for 100,000 BTU input. Special flue material adds about $100 to installation cost

BRYANT FORMULA 1000



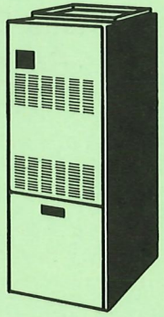
- AFUE* — 83%
- Induced draft — uses existing chimney
- Electronic ignition
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes from 48,000 to 168,000 BTU input
- Retails for about $800 plus installation for 100,000 BTU input

CARRIER SUPER FURNACE



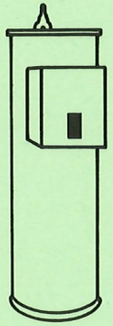
- AFUE* — 83%
- Induced draft — uses existing chimney
- Electronic ignition
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes from 48,000 to 168,000 BTU input
- Retails for about $800 plus installation for 100,000 BTU input

HEIL ENERGY MARSHAL



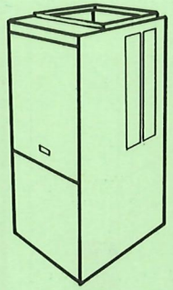
- AFUE* — 80%
- Induced draft furnace — permits side wall venting
- Electronic ignition
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes from 60,000 to 125,000 BTU input
- Retails for about $800 plus installation for 105,000 BTU input

HYDROTHERM HYDRO PULSE



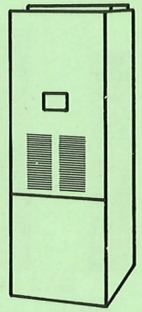
- AFUE* — 90.4%-90.7%
- Pulse combustion boiler for hot water heat
- Can be used with optional domestic water heating unit
- No pilot light, burners, flue or chimney — sealed combustion system fired by a spark plug
- 20 year prorated heat exchanger warranty
- Sizes: 50,000 and 100,000 BTU input
- Retails for about $2,600 plus installation for 100,000 BTU input

LENNOX PULSE FURNACE



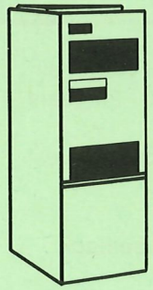
- AFUE* — 91%-96%
- Pulse combustion condensing furnace
- No pilot light, burners, flue or chimney — system fired by spark plug
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes from 40,000 to 80,000 BTU input — 100,000 and 130,000 BTU to be available in 1983
- Retails for about $1,400 plus installation for 80,000 BTU input

MAGIC CHEF ULTRA



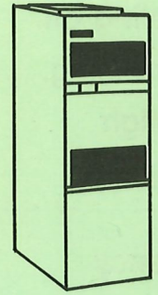
- AFUE* — 86%-87.3%
- Recuperative condensing furnace
- Needs no chimney
- Electronic ignition
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes: 60,000 and 87,500 BTU input
- Retails for about $900 plus installation for 87,500 BTU input

RHEEM IMPERIAL HIGH EFFICIENCY



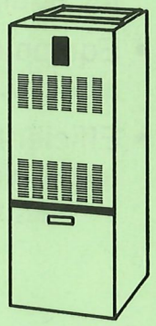
- AFUE* — 80%-81.6%
- Induced draft — flue can be vented into chimney with other appliances
- Electronic ignition
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes from 60,000 to 140,000 BTU input
- Retails for about $850 plus installation for 100,000 BTU input

RUUD DELUXE HIGH EFFICIENCY



- AFUE* — 80%-81.6%
- Induced draft — flue can be vented into chimney with other appliances
- Electronic ignition
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes from 60,000 to 140,000 BTU input
- Retails for about $850 plus installation for 100,000 BTU input

WHIRLPOOL TIGHTFIST



- AFUE* — 80%
- Induced draft furnace — permits side wall venting
- Electronic ignition
- 20 year limited heat exchanger warranty
- Accepts add-on air conditioning
- Sizes from 60,000 and 125,000 BTU input
- Retails for about $800 plus installation for 105,000 BTU input

GENERAL ELECTRIC will introduce a high efficiency gas furnace early in 1983.

Prices Quoted — Fall, 1982, Metro Omaha.

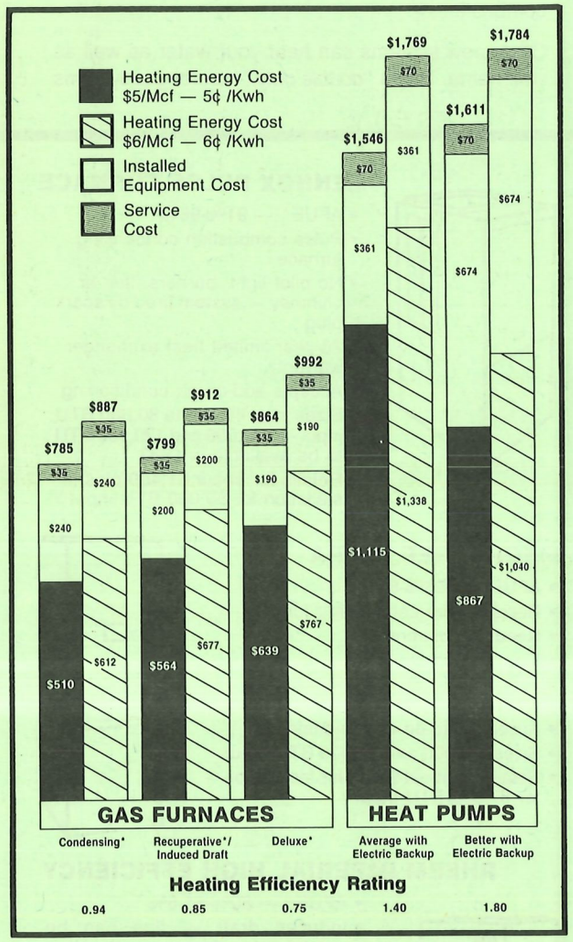
** AFUE stands for annual fuel utilization efficiency or seasonal efficiency — that is the average efficiency of the heating unit for the entire heating season including the time the unit is not running as well as when it is.*

Reasons You Should Use Efficient Natural Gas to Heat Your Home

- Gas equipment is dependable.
- Gas equipment is efficient.
- Gas rates will be leveling off.
- Electric rates are increasing.
- Gas furnace retains high efficiency for life.
- 20 year warranty.
- Choice of service agency for equipment.
- Equipment service costs are low.
- Efficient gas equipment is available today — and costs less too!

Comparing total annual heating costs.

Gas is less.



Equipment Life: Heat pumps — 8 years, air conditioner — 10 years, furnace — 20 years

Equipment and Service Costs: From Midwest Metropolitan Dealers

*10% credit on heating costs for setback capability

Other Right Choices

- ☑ Gas Convection Range
- ☑ Gas "Conservation" Water Heater
- ☑ Gas Low Energy Clothes Dryer
- ☑ Gas Space Heater (Vented thru the wall)
- ☑ Gas Space Heater (Unvented with oxygen depletion sensor)

Peoples Natural Gas Company

154-1A-7 (12/82)

NATURAL GAS

The Right Choice

GAS: THE MARK OF EFFICIENCY

for Home Heating

New Products 1983

Peoples Natural Gas Company
Marketing Operations

STATEMENT OF JAMES W. INGRAM
RE: HOUSE BILL #2065

My name is James W. Ingram. I reside at 10514 King, Overland Park, Kansas. I am also Vice President of Marketing for The Gas Service Company, and our Company serves approximately 400,000 natural gas customers in the State of Kansas.

We appreciate the opportunity to speak to you today and express our opposition to the tax incentive which is being considered for the electric heat pump.

We oppose this tax incentive for several reasons -- and will keep our comments general and more philosophical in nature rather than making reference to existing State and Federal laws which might apply to tax credits.

The electric industry has been trying to promote the electric heat pump for forty to fifty years, and we consider House Bill No. 2065 an attempt on their part to legislatively make the electric heat pump a more economically attractive piece of equipment to heat your home or business. Listed below are several reasons why we feel that a tax incentive for heat pump would not in fact serve the best interests of the citizens of the State of Kansas.

1. The electric heat pump, the associated extra wiring, additional duct system, additional insulation, and other items could cost up to $1,000 more than a conventional gas furnace and electric air conditioner.

2. The annual maintenance cost of an electric heat pump is typically more than maintenance on a conventional furnace and electric air conditioner. Due to the complexity of the wiring and control system on the heat pump, it often requires more highly trained service technicians.

3. At lower outdoor temperatures the heat pump must have an auxiliary heat source to provide a comfortable room temperature.

4. Typically, the life of the heat pump is in the range of seven to ten years, as compared to the average life of seventeen years for a gas furnace.

Regardless of how we feel about the electric heat pump as a means of supplying heat, we are opposed to House Bill No. 2065 on the basis that heat pumps do not utilize a renewable resource.

We are of the opinion that energy related tax credits are intended to provide incentives for the use of renewable energy sources. The inclusion of heat pumps within the scope of energy tax credits would provide for the legislative expansion of a market which does not take advantage of renewable energy sources. Furthermore, one must consider the energy inefficiency of electric power production and distribution. The heat pump's high efficiency end use of electricity produced at power plants with efficiency levels between 25% and 35% ultimately provides seasonal system efficiencies no greater than 60 - 70%. Many other modern heating systems including some natural gas systems provide better energy use efficiencies and remain excluded from energy tax credits. We see no reason to provide energy tax credit incentives for electric heat pump systems which could lead to fossil fuel depletion in excess of that currently experienced with other heating systems not afforded the luxury of tax incentives.

Proposed amendment to HB 2141

In line 19, by striking all after "any"; in line 20, by striking all before "~~because~~" "become" and inserting "severed mineral interest";

Energy Reserves Group, Inc.
P.O. Box 1201, Zip 67201
217 North Water Street
Wichita, Kansas
Phone 316 265 7721

Energy Reserves Group

February 4, 1983

Don Schnacke
Room 718
Merchants National Bank Bldg.
Topeka, Kansas 66612

RE: House Bill #2141

Dear Don,

Comments on Bill:

1.) Intent and body content don't read same. Intent is providing notice to landowner for delinquent taxes on mineral interests. Body of bill specifically discusses oil and gas leasehold or well taxes.

2.) Intent should be directed at consolidating fee title and mineral interest. (Taxes on mineral interests have been a problem for Counties for years.)

3.) I would suggest following language:

Whenever property taxes levied against any mineral interest become delinquent the County Treasurer, of the County in which such property is located, shall provide to the landowner of the land notification of said delinquency. The landowner may redeem these delinquent taxes and upon redemption shall be given a tax title for this mineral interest.

4.) I feel that Representative Shelor has his heart in the right place and that this bill could serve quite a need in the State.

Sincerely,

Barney

Barney E. Sullivan

BES/jjs

ATTACHMENT IX (2-8-83)

Kansas Association of Counties

Serving Kansas Counties

Suite D, 112 West Seventh Street, Topeka, Kansas 66603 Phone 913 233-2271

February 8, 1983

To: House Assessment and Taxation Committee

From: The Kansas Association of Counties

Re: HB 2141 Notice of Delinquent Taxes

We wish to oppose this bill in its present form but understand that Representative Shelor wishes to make changes in the bill that will make it acceptable to us.

On being advised of these changes in their final form we would advise the committee of our views.

Thank you.