Approved: March 1, 2001 Carl Dean Holmes
Date

MINUTES OF THE HOUSE COMMITTEE ON UTILITIES.

The meeting was called to order by Chairman Carl D. Holmes at 9:00 a.m. on February 5 , 2001 in Room 526-S of the Capitol.

All members were present.

Committee staff present: Lynne Holt, Legislative Research
Mary Torrence, Revisor of Statutes
Jo Cook, Committee Secretary

Conferees appearing before the committee: Larry Holloway, Kansas Corporation Commission
Jim Ploger, Kansas Corporation Commission

Others attending: See Attached List

HB 2034 - Enhanced emergency ("911") telephone service

The debate continued on **HB 2034** with Rep. Dillmore offering two amendments. Rep. Dillmore moved to amend Section 4(b)(3) to add, following 'enhancements to' "including costs directly related to construction" and, following 'telephone system' "made by local units of government." Rep. Long seconded the motion, motion failed. Rep. Dillmore then moved to amend Section 4(b)(5) to read "engineering, architectural and construction cost *directly related to the delivery of* the emergency *911* telephone system *by local units of governments*;." Rep. Long seconded the motion, motion failed. Rep. Loyd moved to amend page 2 line 31 through 33, where a sentence had previously been deleted, to add the words "any tax pursuant to this section shall be applied equally on any exchange telephone service, wireless service, and cable telephony service subject thereto." Rep. Dreher seconded the motion, motion failed.

Rep. Alldritt moved to recommend **HB 2034**, as amended, favorable for passage. Rep. O'Brien seconded the motion. The motion carried. Rep. Sloan will carry the bill.

Larry Holloway, Chief of Energy Operations for the Utilities Division of the Kansas Corporation Commission, addressed the committee on topics and questions raised during the sub-committee meetings (Attachment 1). Mr. Holloway provided information on Independent Power Producers and Facilities, Merchant Power Plants, state and federal rules and regulations regarding merchant power plants, wholesale power sales, construction work in progress, and building new base load in the state.

Mr. Jim Ploger, Manager of the Energy Programs section of the Kansas Corporation Commission, spoke to the committee on life cycle cost analysis (Attachment 2). Mr. Ploger stated that life-cycle cost analysis is an economic method of project evaluation whereby all costs arising from owning, operating, maintaining, and ultimately disposing of a project are considered to be potentially important to that decision. He said that his office works closely with the Division of Architectural Services and they have expressed their support for the use of life cycle costs analysis. Mr. Ploger responded to questions from the committee.

The 2001 Report to the Legislature, submitted by the Kansas Corporation Commission, was distributed to committee members (copy available from the Kansas Legislative Research Department).

Meeting adjourned at 10:28 a.m.

Next meeting is Tuesday, February 6, 2001.

HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: February 5, 2001

NAME	REPRESENTING
Jon K Miles	KEC
Kelly Kultala	City of Overland Park
Judy Moler	KAC
Michael D. Pepoon	Sedgwick County
KEITH FADDIS	OVERLAND PARK POLICE
WALTER WAY	JOHNSON COUNTY SHERIFF
JANET BUCHANAN	KCC
BRUCE GRAHAM	KEPCo
Larry Holloway	KCC
Pat Lehman	KFSA
Mike Reecht	AT&T
Mike Murray	SPRINT
Tom Gleason	~~[illegible]~~ Independent Telecom Group
Julie Hein	Hein & Weir
Ashley Sherard	Johnson County
Doug Smith	Pinegar-Smith Company
Bill Caswell	BOEING
[illegible]	WR.
Emily [illegible]	[illegible] Mills & Power Co.
TOM DAY	KCC

HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: February 5, 2001

NAME	REPRESENTING
Susan Cunningham	KCC
Mike Stadler	Western Resources
Dave Schneweis	" "
Chris Wilson	KS Governmental Consulting
Jim Ploger	KCC
Robert E Krehbiel	KIOGA
John D. Pinegar	State Independent Telephone Assn
Denny Koch	SW Bell
Lewis Kimsey	SRS
Sandy Braden	Cingular Wireless
J.C. Long	UtiliCorp United Inc.
Andy Shaw	Kearney Law Office
Cynthia Smith	KCPL

BEFORE THE HOUSE UTILITIES COMMITTEE

Larry Holloway of the Kansas Corporation Commission Staff
February 5, 2001

In Response to Questions and Topics Raised by Subcommittees

Independent Power Producers and Merchant Power Plants

Independent Power Producer (IPP)

This is a term that has been around for over twenty years and generally refers to a power plant that is not owned or operated by a public utility. Since the late 1970s certain small generators that were either cogeneration facilities or used renewable energy could qualify under the PURPA statutes. A qualifying facility (QF) under PURPA could request, and obtain, the avoided cost of generation for any electricity sold to a public utility. All QFs were, and still are, IPPs, almost by definition, since a utility owned or operated plant would normally be included in the utility's normal retail electric rates.

In the 1995 Edison Electric Institute "Glossary of Electric Terms" the following definitions were provided:

Independent Power Producer (IPP) Any person or entity that owns or operates, in whole or in part, one or more new independent power facilities.

Independent Power Facility A facility, or portion thereof, that is not in a utility's rate base and sells only to electric utilities for resale to ultimate customers.

In the late 1980s and throughout the 1990s IPPs were traditionally financed by first procuring a long term purchase power agreement (PPA) with a public utility. Not only was this the tradition in the United States, but increasingly this type of financial arrangement has been used to develop IPPs throughout the world. Generally, the IPP obtains a long term contract, often 20 years or longer in length, for a specific capacity payment and terms for energy produced. For example, the PPA might state that a 100 megawatt IPP would receive $100/year for each kilowatt of capacity, or $100,000/year per megawatt, for a total of $10,000,000 a year for 20 years, for the capacity. In addition the PPA would state a specific energy charge for generation produced, say 2 cents a kilowatthour plus some type of inflation clause. Typically, the PPA would state certain availability and operating requirements and contain penalty provisions if the IPP did not perform. The IPP would then take the PPA to the financial community and borrow the necessary funds to construct the plant, normally based upon the revenue guaranteed by the PPA. Not only did the PPA represent a guarantee of income, it also addressed the concern that the IPP had the necessary electric transmission access to deliver its electricity to the purchasing utility. The utility would then order the IPP to dispatch generation when needed, and compensate the IPP as described by the terms of the PPA. The utility would pass through the costs associated with purchasing power from the IPP in its retail rates.

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ATTACHMENT 1

Merchant Power Plant

This is a term that has only recently been used in the industry. In fact, the same 1995 Edison Electric Institute "Glossary of Electric Terms" does not even mention the term merchant power plant. Generally, as usage has developed in the industry the term merchant power plant has been used to describe an IPP that is built either entirely or partially without the benefit of a long term PPA. For example a 200 megawatt plant might be constructed with only 100 megawatts sold under a long term PPA. The remaining 100 megawatts is intended for sale on the short term wholesale market.

Until recently a proposed merchant plant would have had difficulty obtaining the necessary financing. However the recent development of electric futures and options trading markets have provided merchant power plant developers with needed financial tools. Additionally, as the Federal Energy Regulatory Commission (FERC) has opened up transmission access giving merchant power plants some assurance that they will have access to potential wholesale power purchasers throughout a large region. Both of these developments have prompted the financial confidence necessary to encourage the increasing development of merchant power plants.

Another term often used in conjunction with IPPs is exempt wholesale generators (EWGs). This term was described legally by section 711 of the 1992 Energy Policy Act (EPACT). The 1995 Edison Electric Institute "Glossary of Electric Terms" provides the following definition:

Exempt Wholesale Generator (EWG) A wholesale power generator that is exempt from the provisions of the Public Utility Holding Company Act (PUHCA). This legal class of companies was created by the Energy Policy Act of 1992 in order to allow registered public utility holding companies, other corporate entities and individuals to won wholesale generating assets that are leased or sell power to non-affiliates without subjecting the owners to the regulations under PUHCA.

State and Federal Rules and Regulations Regarding Merchant Power Plants.

Obviously, like any industrial facility, there are certain safety and environmental federal and state regulations that would apply to merchant power plants. This discussion is limited to regulatory requirements of merchant power plants as electric generating facilities operating to sell power into wholesale electric markets.

Federal

KCC Staff is aware of only two federal requirements for most merchant power plants, both by the FERC. First if a merchant power plant is an EWG it would need to obtain an exemption from the FERC. Second, the merchant plant would need to obtain FERC approval to make wholesale power sales. Many merchant plants satisfy this requirement by selling power through a power marketer. These power marketers are licensed through the FERC to make sales into the wholesale market. While technically the FERC has to approve power sales, most marketers receive an approval to make sales at market based rates or belong to an industry group that has a large group of pro-forma contracts already approved by the FERC. Sales under either these pre-approved contracts or market based rates are reported quarterly by power marketers to the FERC. While not a requirement of the power marketer, the FERC also approves the terms, conditions and rates that transmission providers charge to interconnect merchant power plants to the electric transmission system, or to deliver power across the system.

State

Under the definition of K.S.A. 66-104 merchant plants would be considered public utilities in Kansas. This essentially has 3 effects. First, the merchant plant would be taxed at the higher assessment rate for public utilities. Second, the merchant plant would have the opportunity to use the same powers of eminent domain granted utilities. Third, the merchant plant would need to receive a certificate per the requirements of K.S.A. 66-131, which requires all public utilities as defined by K.S.A. 66-104 to obtain a certificate. While this is a regulatory requirement, because the merchant plant would have no obligation to serve, and no retail customers, it would appear to be a minor inconvenience.

Encouraging Merchant Power Plants to Locate and Stay in Kansas

Encouraging merchant power plants to stay in Kansas, once they are built here, is probably not an issue. Like building a home, a generating facility typically requires a substantial amount of site preparation and construction and is not easy to relocate. While the operator may choose to sell to another entity, seldom would it make economic sense to move or dismantle the facility. The more problematic issue is creating the incentive for merchant plant construction in Kansas.

Merchant power plants, like any other generating or production facility are going to locate where the economics make the most sense. Capital costs and operating expenses are primary considerations, as well as available markets, or load centers, for whatever power is generated. Obviously the ability to sell its power motivates merchant plants to locate either close to load centers, or close to a robust transmission system with interconnections to many load centers. While wholesale power prices in Kansas have been moderate relative to much of the country, regionally wholesale prices are likely adequate to encourage merchant plant construction. However, while Kansas has an increasing need for generating capacity in the near future, it does not have the concentration of load centers seen on the east or west coasts. Nonetheless, future regional power demand is likely adequate to support development of merchant plants in Kansas if there is adequate transmission capacity to deliver the power produced to other load centers in the region. But most of the transmission system constructed in our region was designed and built to connect generating plants to load, not to provide a great deal of capacity for moving generation from any location to any load. Efforts to organize and operate transmission on a more regional basis will undoubtable increase the efficiency of using the transmission system we have, but increased regional transmission capacity and interconnects will be important to encourage merchant plant development in Kansas.

Capital costs and operating expenses will also be key elements in merchant plant development in the state. The ability of new merchant plants to obtain good site locations, as well as the necessary access to fuel and cooling water would likely be concerns. Adequate capacity on natural gas transportation pipelines in Kansas would likely be a positive consideration for gas-fired merchant plants. However rail access and railroad performance will be vital for the development of merchant coal plants. Kansas construction costs are moderate compared to many regions of the country and should therefore lower the capital costs of building a new power plant.

Operating expenses would include such items as property taxes, fuel costs and labor. Assuming Kansas would be competitive with other areas on labor costs, the remaining considerations would be fuel costs and property taxes. It is Staff's understanding that Kansas property taxes are higher than other states in the region and this could influence merchant plants to develop elsewhere. Fuel costs in Kansas may actually be favorable. Coal costs are fairly low in the region, if adequate rail transportation exists, and Kansas may have a slight advantage in natural gas transportation costs. Most natural gas pipelines through Kansas appear to have adequate capacity to support new gas fired units.

In summation, to encourage merchant plant development in Kansas it will likely be necessary to encourage expansion and regional operation of the electric transmission system and to address property tax treatment of merchant power facilities.

Wholesale Power Sales

Electricity in wholesale markets is sold either long term or short term and either firm or nonfirm. While wholesale electric sales can take place under numerous terms and conditions, a few of the more common traditional and more recent methods will be discussed here.

Traditional Power Sales

Traditionally, wholesale power has been sold through long term agreements. Until the last few years almost all power sales could be classified as either capacity sales or energy sales. Traditionally, capacity sales represented a firm obligation for a utility or power plant to sell a given amount of megawatts each hour as requested by the wholesale customer. Normally the contract required the seller to deliver the power to a specified transmission substation, or to several transmission substations. Pricing for capacity was based upon the capital costs of the generating plants involved in the capacity sale, while the energy produced was generally priced at the cost of producing it plus some small profit. Energy sales were either wholesale interruptible power sales at a predetermined amount, or based upon some pooling arrangement whereby a neighboring utility pays the selling utility to generate on an hourly basis an amount slightly more than the seller's generating costs to avoid dispatching a more expensive unit on the buyer's system.

Capacity sales in this environment actually allowed utilities to sell excess generating capacity until such time as the utility needed that capacity for its own customers. This was particularly important when the utility had constructed large baseload units and needed to secure some wholesale revenue to offset costs that would be passed on to retail customers. For example a typical baseload plant may take 5 to 7 years to plan, develop, construct and startup. This requires a utility to attempt to forecast electric load many years into the future, and because of the economies of scale, construct a plant that may be larger than needed at the time it goes into operation. If the utility was off in its forecast, or if economic conditions change and demand growth is less than assumed, the utility may find that it has overbuilt generation capacity. While the utility may project that it will need the additional generating capacity in 5 to 10 years, it finds it does not need the capacity when the plant is first operational. The utility may then enter into wholesale power contracts selling its excess capacity into the future until such time that it needs the capacity to serve its own customers.

Energy sales in the past served a somewhat different need. A utility that constructs generating plants to serve the needs of its retail customers must build adequate generation capacity to provide power to meet its retail customers peak demand. During periods of time that all of the available utilities generation is not needed, the utility may better utilize its resources by selling excess generation on the wholesale market. When the utility needs that generation, if it is an interruptible wholesale agreement, the utility merely stops providing generation for the wholesale customer and uses the generation to supply power to its firm retail and wholesale customers. This can benefit everyone involved in the wholesale transaction. For example, suppose an electric utility needs to operate a large generation unit at 50% load to supply its own needs. At this level the plant is operating at a reduced efficiency. If the utility can operate at the unit at 100% it may only use only one and one half times as much fuel and yet produce twice the power. If it can sell the excess power at wholesale above its costs, not only does it increase its efficiency, it can receive revenue to offset its costs for its retail customers. Similarly if the utility can purchase power for less than it can operate the unit, it may shut the unit down and save its customers money.

Power Sales in the New Wholesale Market

The wholesale power market has changed dramatically in the last few years. Initiatives by the FERC to promote open access to the transmission system and allow market based power transactions have dramatically changed the way power is sold and delivered. Today a utility may make either firm or nonfirm (interruptible) generation sales to numerous utilities or marketers on terms ranging from one hour to one year. Even more important, often power sales are made without the utility actually knowing the final destination. Suppose a utility agrees to sell one power marketer 50 megawatts of power for the next hour. The utility's only responsibility may be to generate the additional 50 megawatts of power the next hour. The marketer must obtain all of the necessary transmission capacity and figure out where the power will go. Suppose a utility bought 50 megawatts of power for the same hour. The utility would simply not generate any more or less than it would without the 50 megawatt sale and purchase.

Wholesale hourly markets are very volatile and prices may change greatly over a short period of time. The utility that owns its own generation may benefit by selling excess power into these markets and these revenues may be used to offset the costs of serving its own retail customers. The utility that does not own or purchase firm long term generation capacity may need to purchase power in these volatile wholesale markets and may end up needing to raise the rates it

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charges its retail customers, if wholesale prices are very high.

Construction Work in Progress (CWIP)

1995 Edison Electric Institute "Glossary of Electric Terms" provides the following definition:

Construction Work in Progress (CWIP) A subaccount in the utility plant section of the balance sheet representing the sum of the balances of work orders for utility plant in process of construction but not yet placed in service.

CWIP is the term used to represent the cost of utility improvements that are under construction but have not yet been placed in service. Often the term for placing utility assets in service is "used and useful". In other words a utility asset is not considered used and useful until it can be placed in service to provide benefits for the utility's customers.

Until the late 1970s many utility commissions allowed utility assets such as generating plants into the ratebase before they were operational. For example, suppose a utility had applied to a regulatory commission for an increase in electric rates because it was building a large power plant, but had only completed and spent about 50% of the amount necessary to place the unit in service. The commission might consider two alternatives. One alternative might be to go ahead and place the completed portion of the plant in the utility's ratebase and adjust rates accordingly. Another alternative might be to disallow inclusion of the generating unit in the ratebase until it was operational. Each alternative has its advantages and disadvantages. If the commission decided to wait until the unit was operational, the utility would incur carrying charges on the amount of money it had already spent, and these charges would be accumulated to increase the overall cost of the project when it was placed in service. On the other hand, it the commission allowed the inclusions of a partially completed unit into the ratebase and the unit was not finished within the predicted cost or timeframe, or did not operate properly, not only would it be difficult to adjust it out of the utility's rates in the future, but ratepayers would have paid for a poor investment in the interim. Regardless of the advantages or disadvantages of either method, waiting until a large generating project is complete to recover any of the capital costs can place a strain on the utility's ability to borrow or raise money to finance other improvements or day to day operation.

In Kansas, K.S.A. 66-128 reads as follows

66-128. *Valuation of property for rate-making purposes by commission; construction work in progress.*

(a) The state corporation commission shall determine the reasonable value of all or whatever fraction or percentage of the property of any common carrier or public utility governed by the provisions of this act which property is used and required to be used in its services to the public within the state of Kansas, whenever the commission deems the ascertainment of such value necessary in order to enable the commission to fix fair and reasonable rates, joint rates, tolls and charges. In making such valuations the commission may avail itself of any reports, records

or other things available to the commission in the office of any national, state or municipal officer
or board.

(b) For the purposes of this act, property of any public utility which has not been completed and dedicated to commercial service shall not be deemed to be used and required to be used in the public utility's service to the public, except that, any property of a public utility may be deemed to be completed and dedicated to commercial service if: (1) Construction of the property will be commenced and completed in one year or less; (2) the property is an electric generation facility that has a capacity of 100 megawatts or less and converts wind, solar, biomass, landfill gas or any other renewable source of energy; or (3) construction of the property has been authorized by a siting permit issued under K.S.A. 66-1,158 et seq. or 66-1,177 et seq., and amendments thereto.

As shown in K.S.A. 66-128(b) the KCC is normally prohibited by law from including CWIP in the ratebase of an electric public utility. Only projects completed in one year or less, certain renewable energy projects, or generation plants sited by the KCC may be allowed in ratebase. In these circumstances the Commission is given the discretion and *may* allow CWIP. In all other circumstances the KCC is prohibited by statute from inclusion of CWIP in a utility's ratebase.

Building New Baseload Capacity in Kansas

Baseload generation is an important component of the generation mix of Kansas generating capacity. Recent generation projects announced and under construction by Kansas utilities can be categorized as either peaking or cycling units, also an important part of the generation mix. Most power plants are considered either baseload, cycling (sometimes referred to as "intemediate") or peaking units. A baseload unit is designed to operate close to full capacity most of the time, unless the unit is down for maintenance or repairs. A good example of a baseload unit would be a large coal or nuclear power plant. Cycling or intermediate units are designed to operate as load increases, and can also be used to follow load over the course of the day. Examples include small older coal units, gas-fired steam generating plants and gas-fired combined cycle units. Peaking units are generally gas-fired combustion turbines. Baseload units have the lowest operating costs (including fuel) but the highest capital costs, while peaking units have the highest operating costs and the lowest capital costs. Cycling units are somewhere in the middle. Generally, if a utility plans to operate additional generating capacity 60% of the time or more, economics would dictate constructing a baseload unit, 30% to 50% of the time, a cycling unit, and 10% or less of the time, a peaking unit. Generally, constructing a baseload unit may take from 5 to 7 years, a cycling unit from 3 to 4 years, and a peaking unit from 1 to 2 years.

Kansas utilities have not constructed a baseload unit since the early 1980s. While part of this is certainly a result of the reluctance of utilities to invest in a major long term project in the face of restructuring uncertainty, until recently Kansas has also had an excess of baseload generating. Even today, a conventional analysis might not determine that Kansas is short of baseload capacity, however many would argue that time for new baseload generation is quickly approaching and no new projects have been announced. Additionally, recent increases in the price of natural gas could affect traditional analysis of generation mix.

Baseload units have substantially different requirements than peaking or cycling units. While a gas-fired combustion turbine peaking unit or a gas-fired combined cycle intermediate unit have a small footprint and modest cooling water requirements, the same claim cannot generally be made for a large coal or nuclear plant. In particular coal units need access to a good water supply and reliable railroad service. Additionally, of course, any major generating unit must have access to electric transmission facilities adequate to transmit all power produced to retail and wholesale customers. In terms of the best site locations, given rail access and transmission facilities, most of the existing generation plants in Kansas likely represent the best locations for additional coal generation. Much of the expensive site development costs have already been incurred at these locations and adding new baseload units would be far less expensive than developing a greenfield site. On the positive side, many of these sites could accommodate additional generating units. However even these locations may require additional upgrades in electric transmission lines and facilities. Additionally, while Kansas utilities may own and operate these generation sites, they may not be the ones most anxious to develop them. Even at an existing site, with adequate space and facilities for an additional generating capacity, a substantial financial investment will be required to construct a new baseload plant.

Utilities Committee
Kansas House of Representatives
Written Testimony of the Kansas Corporation Commission Staff
February 5, 2001

Proposed Bill: Life Cycle Cost Analysis

Thank you. Chairman Holmes and members of the Committee, I am Jim Ploger, Manager of the Kansas Corporation Commission's Energy Programs Section.

I commend Chairman Holmes and the committee for the introduction of legislation to incorporate Life Cycle Cost Analysis methods in designing, building and renovation of state buildings. This is especially important in consideration of the current high energy cost now being experienced by all of us.

Life-cycle cost analysis (LCCA) is an economic method of project evaluation in which all costs arising from owning, operating, maintaining, and ultimately disposing of a project are considered to be potentially important to that decision. LCCA is particularly suitable for the evaluation of building design alternatives that satisfy a required level of building performance (including occupant comfort, safety, adherence to building codes and engineering standards, system reliability, and even aesthetic considerations), but that may have different initial investment costs; different operating, maintenance, and repair (OM&R) costs (including energy and water usage); and possibly different lives.

LCCA provides a significantly better assessment of the long-term cost effectiveness of a project than alternative economic methods that focus only on first-costs.

Energy conservation projects provide excellent example for the application of LCCA. There ar abundant opportunities for improving the thermal performance of building envelope components (e.g., walls, windows, roofs) in new and existing building to reduce heat loss in winter and heat gain in summer.

Similarly, there are many alternative heating, ventilating, and air conditioning (HVAC) system

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ATTACHMENT 2

which can maintain acceptable comfort conditions throughout the year, some of which are considerably more energy efficient (or use less expensive fuels) than others.

When energy conservation projects increase the initial capital cost of a new building or incur retrofit costs in an existing building, LCCA can determine whether or not these projects are economically justified from the investor's viewpoint, based on reduced energy costs and other cost implications over the project life or the investor's time horizon.

But the use of LCCA does not stop when a cost-effective energy conservation project has been identified. There are almost always a number of cost-effective design alternatives for any given building system. For example, thermal insulation can be installed over a wide range of thermal resistance values in walls and roofs. Window systems are available over a wide range of thermal conductance values and with a variety of sun-blocking films. Many of these alternatives may be cost effective, but usually one can be actually be used in a given application. In such cases, LCCA can be used to identify the most cost-effective alternative for that application. This is generally the alternative with the lowest life-cycle cost.

LCCA can also be used to priortize the allocation of funding to a number of independent capital investment projects within a facility or agency when insufficient funding is available to implement them all. This application involves the ranking of projects by their Savings-to-Investment (SIR) .

LCCA stand in direct contrast to the Payback method of economic analysis. The Payback method generally focuses on how quickly the initial investment can be recovered, and as such is not a measure of long-term economic performance or profitability. The Payback method typically ignores all costs and savings occurring after the point of in time in which payback is reached. It also does not differentiate between project alternatives having different lives, and it often uses an arbitrary payback threshold. Moveover, the Simple Payback method, which is commonly used, ignores the time-value of money when comparing the future stream of savings against the initial investment cost.

I have attached to these remarks a copy of the analysis (Attachement A) done at my request for the new Signature State Office Building when I encouraged building officials to consider a more economical heating system. The Building was initially designed and funded to be an all-electric building.

As the analysis shows, using the more efficient heating system could save $111,894 per year in cost – or over $2.2 million dollars over the 20 year lease of the building.

I was able to persuade the building officials to consider the more efficient heating system – a central steam/electric system – by "buying" down part of the incremental cost of the more efficient system. But as the analysis shows, even without the buy-down from Energy Funds, the simple payback was only 6.3 years. With the buy-down, the simple payback is 4.5 years. AND this is using estimated energy costs of 4.5 cents per kilowatt for electricity and $2.80 per MCF for gas – which as we all know today is extremely underestimated (this study was done almost two years ago).

My office works closely with the Division of Architectural Services on a number of concerns and Thaine Hoffman and Dale Worley both have expressed to me their support for the use of Life Cycle Cost Analysis system. They are familiar with the mechanisms of LCCA.

My office also works closely with K-State's Engineering Extension Service in Manhattan. Gene Meyer and his staff at K-State have conducted Life Cycle Cost Analysis seminars throughout the county. Gene is considered one of the country's experts in this field.

In addition, the U.S. Department of Energy, through its Federal Energy Management Program or FEMP, has a wealth of information and tools available to states to assist them in using LCCA methods (see Attachment B). So there is an abundance of expertise and assistance available to us here in Kansas.

Thank you. I would be happy to answer any questions.

Attachment A

July 3, 1999

Signature Building Energy Summary

Load	All Electric.	Electric/Gas	Central Steam/Elec.
Energy Units	1,435,039 KWH/Yr.	6,940 MCF	5,898 MCF
Assumed efficiency:	100%	65%	80% (1)
Heating Cost:	$ 64,576.00	$ 19,432.00	$ 16,514.00
Others Costs:	$260,925.00	$257,584.00	$256,289.00
Energy Cost:			
Elec @ $0.045 KWH	$325,501.00	$257,584.00	$256,289.00
Gas @ $2.80 MCF	----	$ 20,378.00	$ 17,318.00
Maintenance personnel 2 @ $30,000	$ 60,000.00	$ 60,000.00	------
	$385,501.00	$337,962.00	$273,607.00
Difference:		$47,539.00	$111,894.00
Added construction cost:		$540,400.00	$700,900.00 (2)
Simple Payback		11.4 years	6.3 years
Cost per SF Net (237,851)	$1.37yr/nsf	$1.17yr/nsf	$1.15yr/nsf
(3) Gross (264,896)	$1.23yr/gsf	$1.05yr/gsf	$1.03yr/gsf

Notes:

(1) The assumed efficiency for the central steam/electric includes the steam lines losses.

(2) The added construction cost does not include $81,500 to be provided by DFM for extra boiler capacity.

(3) These are for comparison only and do not include computers, office equipment, etc. the calculated cost per square feet does not include personnel cost.

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Attachment B

NIST Handbook 135
1995 Edition

LIFE-CYCLE COSTING MANUAL
for the Federal Energy Management Program

Sieglinde K. Fuller
Stephen R. Petersen

Building and Fire Research Laboratory
Office of Applied Economics
Gaithersburg, MD 20899

February 1996
Supersedes 1987 Revision

Prepared for:
U.S. Department of Energy
Office of the Assistant Secretary for
Conservation and Renewable Energy
Federal Energy Management Program
Washington, DC 20585

U.S. DEPARTMENT OF COMMERCE, Ronald H. Brown, *Secretary*
Technology Administration, Mary L. Good, *Under Secretary for Technology*
National Institute of Standards and Technology, Arati Prabhakar, Director