SUBCOMMITTEE ON NATURAL GAS

March 9, 1983

The minutes of the Subcommittee meeting on March 8 were approved.

Senator Angell introduced Carol Zarley, Kansas Geological Survey, and said she had done some research for him concerning elasticity of demand relating to natural gas usage which he would like her to explain to the Subcommittee. She summarized the information provided to the Subcommittee (attached hereto). She explained elasticity is a unit list ratio which finds out the sensitivity when prices increase. Demand slopes downward as the price goes up. The information is from a series of models constructed by the Department of Energy. Ms. Zarley said the model trys to take into account inflation, economic conditions and efficiency of the equipment. The tables showed that indus- trial users of natural gas have much more usage latitude than residential or commercial users.

Senator Angell asked representatives of Kansas Power and Light Company to provide information comparing the price of gas and electrical BTU's.

Ed Peterson of the Kansas Corporation Commission said he would address the legal implications raised by some of the bills being considered. He said, in general, there are two types of regulation -- price and quality of service. Prices are fairly well established by the Natural Gas Policy Act (NGPA). He said the basic authority of the state is limited to seeing that the cost pass-through does not exceed the price established at the wellhead, with the exception that the state does have the right to set prices for intrastate sales at the wellhead below the ceiling price of the NGPA. The Commission cannot set prices at the wellhead for any gas consumed outside the state of Kansas. Mr. Peterson said usually the pattern is that there is a sale at the wellhead to a pipeline, then the gas is sold to a distribution company, which in turn sells it to the end consumer.

S.B. 209 would represent a broader use of the Commission's jurisdiction than the pricing bill passed in 1979. Rather than allowing indefinite escalator clauses to go up to the 109(b) ceiling set by the NGPA, S.B. 209 would set a price below the ceiling price established by the NGPA. It affects intrastate gas. It causes a one year freeze. Mr. Peterson said the Commission feels that S.B. 209 is within the authority of the state as prescribed by the NGPA. He noted that this bill only addresses existing contracts. Mr. Peterson said not only does

S.B. 209 apply to all gas under old contracts that were subject to the Price Protection Act, but it also extends the price freeze to contracts entered into in the period between the passage of the Price Protection Act and the introduction of S.B. 209. He said, right now, the KCC feels the most important thing is price protection for consumers. S.B. 209 should be considered as a short-term measure. Senator Angell requested copies of studies concerning projected increased market demand that Mr. Peterson referred to.

Mr. Peterson said S.B. 162 and 167 address (1) the problem of price, and (2) once the price is set, the problem of assuring accessibility. Mr. Peterson said the Commission can exercise jurisdiction over completely intrastate sales involving land that is burdened by actual production as long as the transaction is taking place at the wellhead. He said if the wells are interstate and the gas is completely dedicated, this would come under the jurisdiction of the Federal Energy Regulatory Commission. Chairman Kerr requested Mr. Peterson to provide the Subcommittee any written suggestions he would have for amending S.B. 167.

Mr. Peterson said the same theory on S.B. 167 applies to S.B. 161.

Mr. Peterson said it would be his opinion that Section 3 of S.B. 162 could make the price prescribed effective from 1978 forward and could make people selling such gas liable to pay a refund. He agreed to provide a suggested amendment in this regard.

Mr. Peterson said S.B. 23 would regulate the quality of service and would apply to both interstate and intrastate pipelines. He said the Commission may already have the authority to exercise this jurisdiction in intrastate transactions. There are good arguments both ways on whether the state can exercise authority over interstate pipelines. He suggested the Subcommittee should consider the definition of the operation of the pipelines to be utilized so as to fully protect against interference with interstate commerce. Mr. Peterson agreed to try to provide information requested by Senator Angell on capacity used by pipelines during the last two years. He said he would suggest that the bill apply to the high point of capacity so that there is no interference with interstate transactions. Mr. Peterson said he feels something like this bill will be needed to make deregulation really effective.

The next meeting of the Subcommittee will be at 8:00 a.m. on Thursday, March 10, 1983.

$$\text{Elasticity Coefficient} \quad Ed = \frac{\text{percent that Q has risen}}{\text{percent cut in P}}$$

Elasticity of Demand

Elasticity of demand is important primarily as an indicator of how total revenue changes when a fall in P (price) induces a rise in Q (quantity) along the demand curve.

Elasticity of demand indicates the degree of responsiveness of Q demanded to changes in market P. It depends primarily upon percentage changes and is independent of the units used to measure Q and P. It ends up in 1 of 3 categories:

1. When a cut in P raises Q so much as to increase total revenue P x Q, we speak of elastic demand (or of elasticity greater than unity). $Ed > 1$

2. When a percentage cut in P results in an exactly compensating percentage rise in Q so as to leave total revenue P x Q exactly unchanged, we speak of unitary elasticity of demand, or of demand numerically equal to unity. $Ed = 1$

3. When a percentage cut in P makes so small a percentage increase in Q as to make total revenue P x Q fall, we speak of inelastic demand (or of elasticity less than unity, but not less than zero). $Ed < 1$.

NATURAL GAS PRICE ELASTICITIES

DOE No. 7 (Kansas, Missouri, Nebraska and Iowa)

|		
Residential natural gas	0.27	(inelastic)
Commercial natural gas	0.34	(inelastic)
Industrial natural gas	1.47	(very elastic)
Industrial boiler fuel natural gas	1.20	(elastic)

Long Run Elasticities:

	1985	1990	1995	
Residential natural gas	0.26	0.32	0.36	(inelastic)
Commercial natural gas	0.35	0.34	0.35	(inelastic)
Industrial natural gas	1.59	1.73	1.62	(very elastic)
Natural gas totals	0.32	0.36	0.38	(inelastic)

Elasticity of Demand

(Ed) Elasticity Coefficient = $\dfrac{\text{percent that Q has risen}}{\text{percent cut in P}}$

Ed>1 = (elastic demand) quantity demanded changes in response to a change in price

Ed=1 = (unitary elasticity) changes in price exactly compensate the change in quantity, so as to leave total revenue unchanged.

Ed4 = (inelastic demand) quantity demanded is not responsive to changes in price.

	Benchmark price table in 79 $ per mill BTU for:	Initial prices in 79 $ per million BTU's for:		
DOE #7	1979	1985	1990	1995
Residential	2.47	4.21	6.22	7.06
Commercial	2.22	3.99	6.17	6.83
Industrial	1.71	3.45	5.25	6.30
U.S.				
Residential	2.79	4.85	6.59	7.69
Commercial	2.56	4.66	6.43	7.54
Industrial	1.83	3.88	5.61	6.64

	Benchmark quantity table in trillions of BTU for:	Final version of demand report -including all shifts- in trillions of BTU for:		
DOE #7	1979	1985	1990	1995
Residential	420.50	376.50	359.30	361.10
Commercial	260.73	243.00	234.75	244.37
Industrial	345.10	427.10	384.18	363.63
Total Nat. Gas	1091.73	1118.68	1056.57	1054.15
U.S.				
Residential	5054.70	4450.49	4284.59	4318.99
Commercial	2829.22	2829.22	2874.71	3077.71
Industrial	5513.59	6083.14	6073.63	6351.06
Total Nat. Gas	14054.00	14087.29	14087.29	14601.43

Natural gas
525 trillion Btu

Commercial
10%

Industrial
35%

Residential
19%

Power generation
25%

Trans-
portation
11%
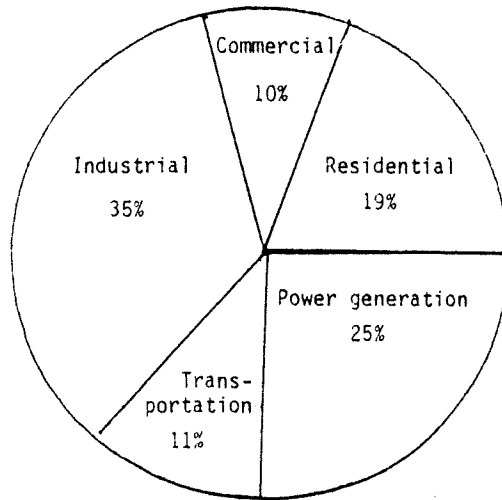
Petroleum
411.3 trillion Btu

Industrial
27%

3% Commercial

Residential
6%

Misc.   5%

Transportation
52%

Power
generation
7%

Coal
107.8 trillion Btu

Power generation   96%

Industrial
4%
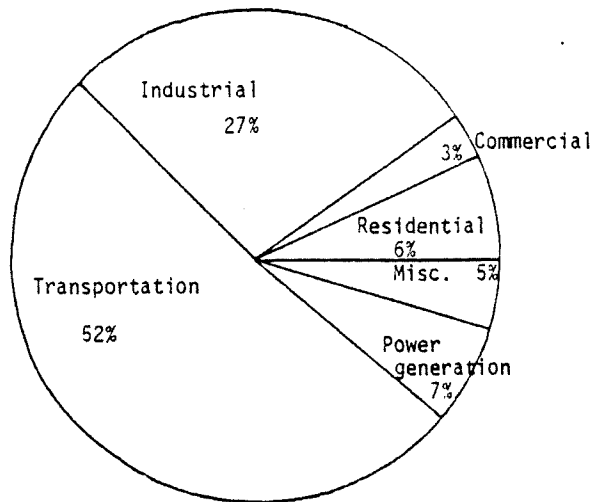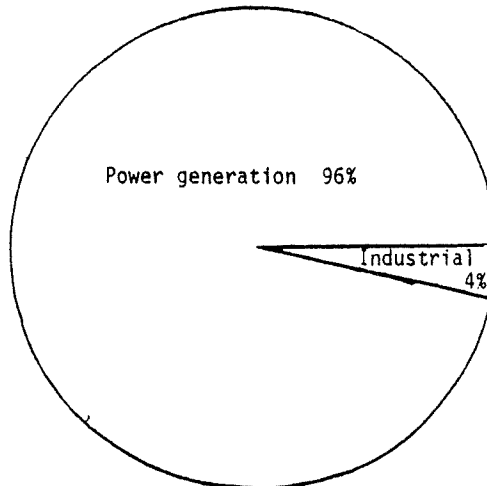
Source: FEDS (Federal Energy Data System) Data Base.

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