

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 8672

461 SCOMM13: JOINT COMM. ON GAS PIPELINE IMPACT 1974-76

· PLEASE NOTE: THE PRECEDING PAGES WERE TREATED
· AS A UNIT IN THE ORIGINAL DOCUMENT.



Alaska State Legislature
JOINT GAS PIPELINE IMPACT COMMITTEE

REVISED AGENDA--PUBLIC HEARINGS--DEC. 11

10:00 am

Department of Revenue, Petroleum Revenue Division

Presentation of state revenue from natural gas.

10:45 Dr. Arlun Tussing

Wellhead price projections of North Slope gas.

11:00am Department of Natural Resources, Div. of Geological
and Geophysical Survey.

Testimony regarding current and projected natural
gas consumption in Alaska

1:00pm Department of Natural Resources, Division of Oil and Gas

State presentation of Prudhoe Bay Reservoir projections.

1:45pm Royalty Board

Discussion on Royalty Board actions.

2:30pm El Paso

Latest developments of El Paso proposal

3:00pm Arctic Gas

Latest developments of Arctic gas proposal

3:30pm ISEGR, Vic Fisher

State options.

4:00pm Committee work.



Alaska State Legislature

JOINT GAS PIPELINE IMPACT COMMITTEE

AGENDA FOR PUBLIC HEARINGS DECEMBER 10-11

COURTROOM K--ALASKA COURT BUILDING

December 11

- 10:00 a.m. Department of Revenue
Petroleum Revenue Division
- Presentation on State revenue from
natural gas
- 11:00 a.m. Department of Natural Resources
Division of Geological & Geophysical
Survey
- Testimony regarding current and pro-
jected natural gas consumption in
Alaska.
- 1:30 p.m. Department of Natural Resources
Division of Oil and Gas
- State presentation of Prudhoe Bay
Reservoir projections
- 2:30 p.m. Royalty Board
- Discussion on Royalty Board actions.
They are meeting in Juneau Dec. 9-10
- 4:00 p.m. Discussion on future Committee work.

The Agenda may be changed at the discretion of the
Chairman or Committee.



Alaska State Legislature
JOINT GAS PIPELINE IMPACT COMMITTEE

AGENDA FOR PUBLIC HEARINGS
DECEMBER 10-11

COURTROOM K--ALASKA COURT BUILDING

Testimony regarding natural gas supply from the
Prudhoe Bay Reservoir:

December 10

- 10:00 a.m. H.J. Gruy and Associates
- 1:30 p.m. BP Alaska
- 2:15 p.m. Exxon Corporation
- 3:00 p.m. ARCO Regional Council

There will be opportunity in the afternoon for H.J. Gruy and Associates and the Oil Companies to participate in a "round table" discussion of the major issues.

STATEMENT BY HOWARD A. SLACK,
VICE PRESIDENT AND RESIDENT MANAGER,
ATLANTIC RICHFIELD COMPANY,
TO THE JOINT GAS PIPELINE IMPACT COMMITTEE
ANCHORAGE, ALASKA

DECEMBER 10, 1975

Mr. Chairman and members of the Committee. We have previously submitted for your consideration answers to the questions posed in your letter of November 19 concerning the Prudhoe Bay natural gas reservoir and related materials. While these answers speak for themselves, I think it is appropriate to note that we are not certain that we fully appreciated the thrust or utility of some of the questions. Further, some of the questions involved so many variables that it was difficult, if not impossible, to provide answers which satisfy all of the variables involved. Thus, some further elaboration or clarification may become appropriate incident to your further consideration of this matter.

Now I would like to briefly summarize the thrust of our answers.

1. Atlantic Richfield Company supports the early sale of Prudhoe Bay natural gas and believes it can be produced and marketed at a competitive price and generate a reasonable return to the producers, the pipeline owners and the State of Alaska. We are firmly convinced that Prudhoe Bay gas can make a substantial contribution to the Nation, both in terms of net economic benefit and in terms of achieving positive steps toward energy independence. Further, early gas sales will allow condensate and natural gas liquids to be recovered when their yields are the highest. In addition, we would expect early gas sales to achieve a greater gas recovery than prolonged reinjection.

2. The Committee's letter of October 23, 1975 requested comments on the Aerospace Study's reported loss of 400 million barrels of oil resulting from early gas sales. The Aerospace Report indicates that 400 million barrels less oil will be recovered by the gas sales program as compared with the reinjection program, but states on page 3-34 that "It is reasonable to suppose that the small percentage reduction in oil recovery forecast between the two cases would be reduced even further through practical experience gained in operating the

field". We are certainly in agreement with this conclusion. In our opinion, this so-called "loss" of 400 million barrels is in reality nothing more than the difference in estimates of recovery through the year 2000 for two different and theoretical reservoir management programs. Further, the "loss" only commences to occur after 1992 and it is probable that experience gained in the field prior to that time would allow variations in well completion intervals, production volumes, water interjection locations, etc. to reduce this theoretical difference in oil recovery.

Thank you very much for your interest and attention.

#13:4

SCOMM

See pages

STATEMENT OF
DON S. SMITH, VICE CHAIRMAN
FEDERAL POWER COMMISSION



HEARINGS BEFORE
THE SUBCOMMITTEE ON PUBLIC LANDS
OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
U. S. HOUSE OF REPRESENTATIVES

OCTOBER 9, 1975

Mr. Chairman and Members of the Committee, this statement is presented in response to your request of September 9, 1975, for information relating to the progress being made on various proposals currently pending action by the Federal Power Commission to transport natural gas from Alaska to the lower 48 States.

Present Natural Gas Supply Posture

As you are well aware, the Nation is faced with a pervasive and deepening natural gas shortage. This crisis in natural gas supply has been manifested by shrinking proved reserve inventories, declining production levels, and increasing curtailments of deliveries of firm natural gas deliveries to consumers by interstate pipeline companies.

During 1974, our proved reserve inventory continued to decline at an alarming rate and the Nation experienced its first significant decline in natural gas production in the

modern history of the gas industry. Proved reserves in the lower 48 States have now declined 29 percent from the peak year of 1967, from 289 trillion cubic feet to 205 trillion cubic feet at the end of 1974.

Gas supply for the interstate pipelines is deteriorating at an even faster pace, largely because interstate pipelines are being outbid by intrastate buyers in competition for new gas supplies. Interstate reserves have dropped 39.2 percent from their peak to year-end 1974, and interstate production has declined by more than 9 percent since 1972. Since neither imports nor substantive forms of synthetic gas are available to plug the supply gap, the natural gas shortfall increases month by month as domestic production continues to decline. The result is a widespread denial of gas service to prospective new customers, increasing curtailments of firm and interruptible service to existing customers, and the imminent threat of dislocations in our economy.

Tables 1, 2, and 3 set forth the salient facts relative to the United States natural gas supply in the lower 48 States and in Alaska. As can be seen on Table 1, proved gas reserves in the lower 48 States, reported by the American Gas Association, have declined by 84 trillion cubic feet since 1967, and the

Table 1
UNITED STATES NATURAL GAS SUPPLY EXCLUDING ALASKA*
1946-1974

(All Volumes in Trillions of Cubic Feet @ 14.73 Psia and 60°F_c)

Year	Production	Reserve Additions	Proved Reserves	R/P Ratio (4) — (2)** (5)	F/P Ratio (3) — (2)** (6)
(1)	(2)	(3)	(4)	(5)	(6)
1946	4.9	17.6	159.7	32.5	3.6
1947	5.6	10.9	165.0	29.5	1.9
1948	6.0	13.8	172.9	28.9	2.3
1949	6.2	12.6	179.4	28.9	2.0
1950	6.9	12.0	186.6	26.9	1.7
1951	7.9	16.0	192.8	24.3	2.0
1952	8.6	14.3	198.6	23.1	1.7
1953	9.2	20.3	210.3	22.9	2.2
1954	9.4	9.6	210.6	22.5	1.0
1955	10.1	21.9	222.5	22.1	2.2
1956	10.9	24.7	236.5	21.8	2.3
1957	11.4	20.0	245.2	21.4	1.7
1958	11.4	18.9	252.8	22.1	1.7
1959	12.4	20.6	261.2	21.1	1.7
1960	13.0	13.8	262.2	20.1	1.1
1961	13.4	16.4	265.4	19.8	1.2
1962	13.6	18.8	270.6	19.9	1.4
1963	14.5	18.1	274.5	18.9	1.2
1964	15.3	20.1	279.4	18.2	1.3
1965	16.2	21.2	284.5	17.5	1.3
1966	17.5	19.2	286.4	16.4	1.1
1967	18.4	21.1	289.3	15.7	1.1
1968	19.3	12.0	282.1	14.6	0.6
1969	20.6	8.3	269.9	13.1	0.4
1970	21.8	11.1	259.6	11.9	0.5
1971	21.9	9.4	247.4	11.3	0.4
1972	22.4	9.4	234.6	10.5	0.4
1973	22.5	6.5	218.3	9.7	0.3
1974	21.2	8.3	205.3	9.7	0.4

*Data represents total U.S. natural gas supply prior to 1960.

Alaska's natural gas supply was not reported until 1960. Includes gas in underground storage.

**Computed prior to rounding.

Source: A.G.A.

Table 2
ALASKA NATURAL GAS SUPPLY
1960-1974

(All Volumes in Trillions of Cubic Feet @ 14.73 Psia and 60°F.)

<u>Year</u> (1)	<u>Production</u> (2)	<u>Reserve Additions</u> (3)	<u>Year-End Reserves</u> (4)	<u>R/P Ratio</u> $\frac{(4) - (2)}{(5)}$ (5)	<u>F/P Ratio</u> $\frac{(3) - (2)}{(6)}$ (6)
1960	0.0003	0.050	0.107	356.7	166.7
1961	0.0016	0.816	0.922	576.2	510.0
1962	0.0036	0.716	1.634	453.9	198.9
1963	0.0045	0.061	1.691	375.8	13.6
1964	0.0064	0.147	1.831	286.1	23.0
1965	0.0076	0.162	1.985	261.1	21.3
1966	0.013	0.974	2.947	226.7	74.9
1967	0.023	0.711	3.635	160.8	30.9
1968	0.042	1.659	5.252	125.0	39.5
1969	0.087	0.037	5.202	59.8	0.4
1970	0.145	26.074	31.130	214.7	179.8
1971	0.154	0.388	31.365	203.7	2.5
1972	0.147	0.237	31.455	214.0	1.6
1973	0.131	0.318	31.643	241.9	2.4
1974	0.144	0.368	31.867	221.4	2.6

*No data available prior to 1960.

Source: A.G.A.

Table 3
UNITED STATES NATURAL GAS SUPPLY *
1946-1974

(All Volumes in Trillions of Cubic Feet @ 14.73 Psia and 60°F.)

Year	Production	Reserve Additions	Proved Reserves	R/P Ratio (4) $\div$ (2)**	F/P Ratio (3) $\div$ (2)**
(1)	(2)	(3)	(4)	(5)	(6)
1946	4.9	17.6	159.7	32.5	3.6
1947	5.6	10.9	165.0	29.5	1.9
1948	6.0	13.8	172.9	28.9	2.3
1949	6.2	12.6	179.4	28.9	2.0
1950	6.9	12.0	184.6	26.9	1.7
1951	7.9	16.0	192.8	24.3	2.0
1952	8.6	14.3	198.6	23.1	1.7
1953	9.2	20.3	210.3	22.9	2.2
1954	9.4	9.6	210.6	22.5	1.0
1955	10.1	21.9	222.5	22.1	2.2
1956	10.9	24.7	236.5	21.8	2.3
1957	11.4	20.0	245.2	21.4	1.7
1958	11.4	18.9	252.8	22.1	1.7
1959	12.4	20.6	261.2	21.1	1.7
1960	13.0	13.9	262.3	20.1	1.1
1961	13.5	17.2	266.3	19.9	1.3
1962	13.6	19.5	272.3	20.0	1.4
1963	14.5	18.2	276.2	19.0	1.3
1964	15.3	20.3	281.3	18.3	1.3
1965	16.3	21.3	286.5	17.6	1.3
1966	17.5	20.2	289.3	16.5	1.2
1967	18.4	21.8	292.9	15.9	1.2
1968	19.4	13.7	287.4	14.8	0.7
1969	20.7	8.4	275.1	13.3	0.4
1970	22.0	37.2	290.7	13.2	1.7
1971	22.1	9.8	278.8	12.6	0.4
1972	22.5	9.6	266.1	11.8	0.4
1973	22.6	6.8	250.0	11.1	0.3
1974	21.3	8.7	237.1	11.1	0.4

*Includes gas in underground storage.

**Computed prior to rounding.

Source A.G.A.

finding to production ratio has averaged 0.4 during the past five years. In other words, we have used almost two and one-half times as much gas as we found during that period. If we include the Alaskan reserves (Table 3), proved reserves declined from a high of 292.9 Tcf in 1967 to 237.1 in 1974, or an overall decline of 55.8 Tcf.

One of the most important facts to be derived from the 1974 data is that, as shown in Table 1, total natural gas production declined significantly for the first time in the history of the data series. Total production, which was 22.5 Tcf in 1973 declined to 21.2 Tcf in 1974, a decrease of almost 6 percent. This production decline of 1.3 Tcf is equivalent to about 231 million barrels of crude oil. Reserve additions, which failed to equal or exceed production for the seventh straight year, were the lowest recorded in the history of the A.G.A. data series except for 1969 and 1973. This low level of reserve additions (8.3 Tcf) resulted in the continued decline in the lower 48 States' gas reserve inventory to 205.3 Tcf at the end of 1974, the lowest level since 1952.

As shown in Table 2, there was little change in the Alaskan gas supply situation during 1974. Production, which amounted to slightly more than one-half of one percent of

total U.S. production since 1970, will probably not increase significantly until a transportation system is developed to move the gas from the North Slope to markets in the lower 48 States. Reserve additions in 1974 were similar in magnitude to those reported in the three previous years.

Jurisdictional pipelines transport about three-fifths of all natural gas produced in the United States to various distribution utilities, industries, and other consumers. A comparison of reserve additions as reported by jurisdictional pipeline companies on FPC Form 15 with A.G.A. reserve additions is set forth in Table 4. The trend of declining reserves is closely parallel to the A.G.A. reported reserves. For instance, reported reserves declined from a high of 198.1 Tcf in 1967, to a low of 120.4 Tcf in 1974, a decline of 77.7 Tcf.

Over the years, the Federal Power Commission and its Staff have carefully monitored the gas supply posture of the Nation and have issued a number of significant analyses and reports relating to gas supply. In September 1969, Staff issued A Staff Report on National Gas Supply and Demand. This report was important in two major respects: it represented one of the earliest detailed documentations of the developing natural gas supply and demand imbalance; and, it set out a number of specific findings and projections which later served

TABLE 4

Comparison of AGA and
Form 15 Data (Lower 48 States)
(Volumes in Trillions of Cubic Feet)

	End of Year Reserves		Net Production		Reserve to Production Ratio		Reserve Additions		Finding to Production Ratio	
	AGA	Form 15	AGA	Form 15	AGA	Form 15	AGA	Form 15	AGA	Form 15
1963	274.5	188.5	14.5	9.4	18.9	20.2	18.1	NA	1.2	NA
1964	279.4	189.2	15.3	10.0	18.2	18.9	20.1	10.6	1.3	1.1
1965	284.5	192.1	16.2	10.4	17.5	18.5	21.2	13.3	1.3	1.3
1966	286.4	195.1	17.5	11.1	16.4	17.5	19.2	14.2	1.1	1.3
1967	289.3	198.1	18.4	11.8	15.7	16.8	21.1	14.8	1.1	1.2
1968	282.1	195.0	19.3	12.6	14.6	15.5	12.0	9.5	0.6	0.8
1969	269.9	187.6	20.6	13.4	13.1	14.0	8.3	6.1	0.4	0.5
1970	259.6	173.6	21.8	14.1	11.9	12.3	11.1	0.0	0.5	0.0
1971	247.4	161.3	21.9	14.2	11.3	11.5	9.4	1.7	0.4	0.1
1972	234.6	146.9	22.4	14.2	10.5	10.3	9.4	(0.2)	0.4	(0.0)
1973	218.3	134.3	22.5	13.7	9.7	9.8	6.5	1.1	0.3	0.1
1974*	205.3	120.4	21.2	12.9	9.7	9.3	8.3	(1.0)	0.4	(0.1)

* Preliminary Data.

as key indicators for responsive regulatory policy to cope with the emerging crisis. For instance, this report focused upon and anticipated the critical nature of the five-year period from 1969 through 1973, and projected that the national reserve to production (R/P) ratio (excluding Alaska) would drop from the year-end 1968 level of 14.6 to 10.2 by year-end 1973. (Data for calendar 1973 show that the R/P ratio for the lower 48 States stood at 9.7 at year-end.)

A second major Staff report was entitled, National Gas Supply and Demand, 1971-1990, Staff Report No. 2 and was published in February of 1972. Insofar as it provided an analysis of all supply and demand data available at that time, it was similar in character to the 1969 report. However, as indicated by the title, it was a more far-ranging report and contemplated the period extending from 1971 to 1990. Its major findings included the projection of a continuing and increasing disparity between the theoretical demand for gas and available supply; a projection that domestic production would peak in 1973 or 1974; the expectation of a continued heavy reliance on imports and other supplemental gas supplies to 1990; and, projection of a continued decline in the reserve inventory of the contiguous 48 States to 1990. Because of the time frame embraced by this report, history must ultimately be the judge as to the accuracy of these prognostications.

Current activity with regard to this type of gas supply analyses is centered in the Commission's recently completed National Gas Survey. The Survey, however, provides an even broader and more complete overview of the natural gas industry.

One of the most recent Staff analyses of gas supply is contained in A Realistic View of U.S. Natural Gas Supply, released in January, 1975.

In this report, Staff estimates of national gas availability were made to the year 1985, assuming that historical reserve addition trends of recent years would continue. Two levels of annual additions to reserves were considered: a continuation of the average experienced from 1960 through 1973 (14.7 Tcf per year); and, a projection of the average experienced since 1968 (9.5 Tcf per year). Estimated 1985 production under the higher of these two average levels of resource development was 17.4 Tcf. Production in 1985 at the lower rate of additions to reserves was estimated at 13.8 Tcf. Thus, a projection of even an optimistic average rate of historical additions to reserves indicates that anticipated 1985 production from conventional sources in the lower 48 States will fall far short of present rates of production.

In their report, the Staff also estimated that, on a national basis, average annual additions to reserves would have to rise to 22-24 Tcf per year in order to maintain production at the 1973 level of 22.5 Tcf. Actual reserves added during the period 1968 through 1973 averaged 9.5 Tcf per year. The addition of 8.3 Tcf in 1974 reduces this average to just over 9.3 Tcf per year. The deficiency in annual reserve additions to stay even is 14 Tcf. Maintenance of our approximate 1973 level of production requires that we develop about 253 Tcf of new gas supplies between now and the end of 1985. If present rates of reserves development continue, we will only have added a cumulative 102 Tcf through 1985 for a shortfall of about 151 Tcf and an attendant reduction in productive capacity to less than 14 Tcf annually. Through 1985, this cumulative shortfall of 151 Tcf would be equivalent to about 26.9 billion barrels of crude oil. On a daily basis, the oil equivalency of this shortfall would range from a 1974 level of about 0.6 million barrels per day to a 1985 level of about 4.1 million barrels per day.

The curtailment of firm service requirements to many consumers is a direct manifestation of our present gas supply difficulties. Total net curtailments of firm service on the interstate gas system were 286 billion cubic feet in calendar

year 1971, and by calendar year 1974 had risen almost 500 percent to nearly 1.7 trillion cubic feet. The rate of curtailments is continuing to accelerate with the net firm supply deficiencies of the major interstate pipeline companies projected to reach 2.9 Tcf for the year April 1975 through March 1976. This represents an annual projected gas supply deficiency equivalent to 516 million barrels of crude oil annually, or approximately 1.4 million barrels of oil per day. These firm curtailments do not fully measure the national gas supply shortfall, since there also has been a shrinkage of interruptible sales projected to amount to 283 billion cubic feet during the year April 1975 to March 1976, and undoubtedly there also have been some curtailments of service in the intrastate gas market for which we do not have data. These curtailments also do not measure the demand referred to other fuels by prospective customers, including many potential residential users. It is important to point out that unfilled demand for natural gas is largely referred to high priced imported oil, thus increasing consumer costs and our vulnerability to cutoffs by foreign exporters. Five-hundred sixteen million barrels of oil would constitute more than 20 percent of the U.S. imports of oil and oil products at 1974 levels.

At \$12.00 per barrel, 516,000,000 barrels equate to \$6.2 billion, or roughly double the total revenues of \$3.1 billion to domestic producers for sales to interstate pipelines for the 12 months ended in March 1975.

I would like to be able to report to you today that I could see an improvement in our Nation's gas supply position just ahead -- unfortunately, I cannot. This means that we must aggressively pursue those policies necessary to effect an improvement in the prospects for continued levels of adequate service to America's gas consumers. Improved domestic gas supply is essential to the maintenance of our economic well-being and to the achievement of increased U.S. energy self-sufficiency. However, increased production in the lower 48 States cannot be achieved to an appreciable extent by drawing upon presently proved natural gas reserves because these resources are currently being produced at rates very near to present capacity. Increased supply must come from as yet untapped or undiscovered conventional sources and from commercial scale production of synthetic gas. An important element of our drive toward increased domestic energy self-sufficiency must be the timely development of our Alaskan resources in a manner consonant with our responsibilities for

environmental stewardship. The development of Alaska's natural gas resources requires the placement of expensive and complex transportation systems for both oil and gas and it is in this area that formidable engineering, environmental, financial and political problems are faced. A high national priority must be placed on the early resolution of these problems if we are to receive the timely benefit of our Alaskan resources.

The Commission has taken a number of steps to insure timely development of the Alaskan natural gas resource. In December, 1973, in an effort to accelerate the exploration for and development of Alaskan gas reserves, capital advances to Alaskan producers were incorporated into the basic advance payments program. Under this program, pipelines subject to FPC jurisdiction loan monies to producers for natural gas exploration and development. During the time period in which the loan is outstanding, the pipelines are permitted to include the amounts loaned in their rate bases, thereby collecting from ratepayers a return on the funds advanced as well as taxes associated with the return. The funds advanced must be repaid either in cash or, preferably, in gas.

The advance payments program is now being investigated in light of the D.C. Circuit's opinion in Public Service Commission of the State of New York v. Federal Power Commission,

511 F.2d 338 (1975). In conjunction with that investigation, we have scheduled oral argument for October 23, 1975, to hear discussion on all issues raised by the program. Among other things, we have requested a discussion of the relative merits of various proposals for funding exploration and development of Alaskan gas reserves. In this regard, the Commission has, in several recent proceedings, denied pipelines rate treatment of interest payments to Alaskan producers because, in our opinion, interest payments arrangements do not further the basic objectives underlying our advance payments program. In those situations involving interest payments, the producer has demonstrated his ability to attract capital funds and would no longer have need for the monies which would be generated through the pipeline loan form of advance. However, the California Public Utilities Commission has adopted another policy and permitted rate treatment of similar interest payments. It has urged the FPC to reconsider its position on this issue, along with the question whether advance payments to Alaskan producers should be continued. 1/ Accordingly, all issues related to Alaskan advance payments and interest payments shall be addressed at the oral argument. We have specifically asked for discussion

1/ Order on Petition for Rehearing and Granting Intervention, Panhandle Eastern Pipeline Co., Docket Nos. RP73-108, et al. FPC (October 8, 1975).

on the issue of whether we should suspend approval of rate base treatment for future Alaskan advances pending conclusion of the advance payment investigation.

The Alaskan Resource

The first commercial oil well was drilled near the southern coast of Alaska in 1902. This well discovered the Katalla Field which produced only about 154,000 barrels of oil over the next 30 years. No major oil or gas discoveries were made in Alaska until 1957, when gas and oil were found in the Kenai Peninsula's Swanson River area. This discovery eventually led to exploration and the development of fields in the adjacent Cook Inlet area and by the late sixties the combined Cook Inlet - Kenai Peninsula area was estimated by the American Gas Association to contain proved oil and gas reserves of 432 million barrels of oil and 5.2 trillion cubic feet of gas, respectively. (See Table 2 for gas reserve data.)

With the exception of the drilling conducted by the U.S. Navy during World War II in U.S. Naval Petroleum Reserve No. 4 on the North Slope which resulted in several small oil and gas fields, all drilling activity in Alaska had been confined to the southern area until 1968. In that year, the discovery of the giant Prudhoe Bay oil field was announced. Although primarily considered an oil field, Prudhoe Bay also contains an estimated 26 trillion cubic feet of associated-dissolved gas reserves. This places the Prudhoe Bay field among the 15

largest gas fields in the world; and in the U.S. is second only to the Panhandle-Hugoton gas area of Kansas, Oklahoma and Texas which was discovered in 1918 (Table 5). Prior to the discovery of the Prudhoe Bay field, Alaska contained less than 2 percent of the proved domestic gas supply. By the end of 1974, Alaska's portion of the total proved domestic gas reserves had increased to over 13 percent. The impact of the inclusion of the Prudhoe Bay gas reserves in the AGA data series can be noted on Tables 1 and 3. Alaska's gas production (Table 2), however, which has never accounted for more than a fraction of one percent of the total domestic gas production, will probably not increase significantly until a transportation system is developed to move the gas from the North Slope to markets in the lower 48 States.

In addition to these proved reserves it is estimated that Alaska contains additional quantities of probable, or inferred, reserves (undeveloped reserves estimated to be associated with existing fields) and undiscovered resources. The magnitude of these two categories, which combined make up the potential gas supply, cannot be estimated with a great degree of certainty but both the Potential Gas Committee (PGC), an industry group, and the United States Geological Survey (USGS) have periodically

Table 5
Major Gas Fields of the World
January 1, 1975
(Trillion Cubic Feet)

<u>Field</u>	<u>Country</u>	<u>Discovery Year</u>	<u>Original Reserves</u>	<u>Cumulative Production</u>	<u>Remaining Reserves</u>
(1) Urengoiskoye	U.S.S.R.	1966	176.5	0	176.5
(2) Panhandle-Hugoton	United States	1918	72.0	31.4	40.6
(3) Yamburg	U.S.S.R.	1969	70.6	0	70.6
(4) Medvezhye	U.S.S.R.	1967	60.0	1.0	59.0
(5) Orenburgskoye	U.S.S.R.	1967	58.6	.5	58.1
(6) Groningen	Netherlands	1959	58.2	9.4	48.8
(7) Zapolyarnoye	U.S.S.R.	1965	57.2	0	57.2
(8) Hassi R'Mel	Algeria	1956	54.0	1.1	52.9
(9) Shatlyk	U.S.S.R.	1968	53.0	0.2	52.8
(10) Pazanan	Iran	1969	50.0	0	50.0
(11) Kharasavei	U.S.S.R.	NA	35.0	0	35.0
(12) Rhourde Nuss	Algeria	1962	30.0	1/	30.0
(13) Yubileinoye	U.S.S.R.	1969	28.2	0	28.2
(14) Prudhoe Bay	United States	1968	26.0	2/	26.0
(15) Shebelinka	U.S.S.R.	1950	18.7	13.3	5.4

1/ Included with Hassi R'Mel cumulative production.

2/ Negligible.

Source: International Petroleum Encyclopedia, 1975, pp. 226-228 except for Prudhoe Bay which is based on AGA data.

prepared estimates of Alaska's potential gas supply. The PGC's latest estimate was published in November 1973, as of the end of 1972 and in June 1975, the USGS published its latest estimates of Alaska's potential gas supply in Geological Survey Circular 725.

The latest USGS estimates are considerably lower than previous USGS estimates and are reported as a range of values at 95 and 5 percent probabilities. The USGS estimates that there is a 95 percent probability of finding the lower value of their estimated range and only a 5 percent probability of finding the higher value. The following table compares these latest PGC and USGS estimates of Alaska's potential supply:

Alaska Potential Gas Supply (Trillion Cubic Feet)		
Potential Supply	<u>PGC</u> 366.0	<u>USGS</u> 43.8 - 146.8
(a) Inferred or probable reserves	54.0	14.8
(b) Undiscovered resources	312.0	29.0 - 132.0

It may be noted that the latest PGC estimate of potential supply is substantially higher than the USGS estimate. Additionally, PGC's potential estimate for Alaska constitutes about 32 percent of their estimate for the total U.S. compared

to a range of 8 to 17 percent for the USGS estimates. This serves to emphasize the widely disparate opinions of what the potential gas supply of an undeveloped area such as Alaska might be.

The PGC does not detail its total Alaskan potential estimate by productive or potentially productive area. The USGS, however, does subdivide its estimate by geological province for both the onshore and the offshore areas. This detail is shown in the following table:

Alaska Potential Gas Supply by Area (Trillion Cubic Feet)			
	<u>Inferred Reserves</u>	<u>Undiscovered Resources</u>	<u>Total</u>
Onshore	14.7	16-57	30.7-71.7
Northern (North Slope)	NA	14-49	14-49
Central	NA	0-5	0-5
Southern	NA	1-5	1-5
Offshore	0.1	8-80	8.1-80.1
Gulf of Alaska	0.1 (Cook Inlet)	2-17	2.1-17.1
Bering Sea	--	2-10	2-10
Beaufort-Chukchi Sea	--	5-50	5-50
Total	14.8	29-132	43.8-146.8

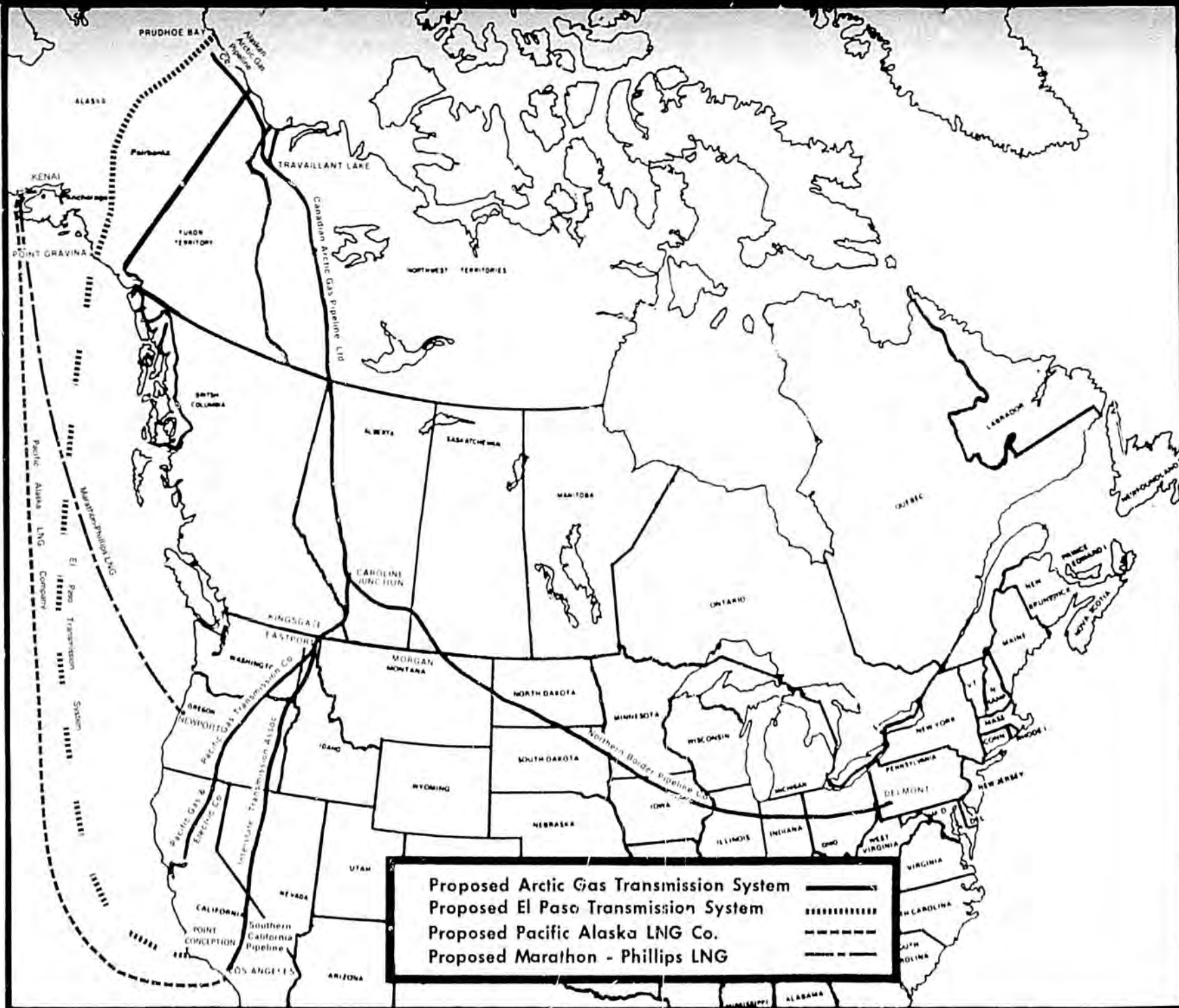
This brief discussion of Alaska's presently proved and yet-to-be developed natural gas resources illustrates the relative importance of this area's potential contribution to the nation's total gas supply. Presently proved reserves appear to be

capable of contributing an important and critically needed increment of gas supply in excess of one trillion cubic feet per year. While estimates of Alaska's undiscovered and undeveloped natural gas resources cannot be made with the same level of confidence, it would appear that the area also holds a major fraction of America's undeveloped natural gas resources.

Pending Applications for Delivery of Alaskan Gas

North Slope Projects

Two competing proposals for the delivery of natural gas produced from Alaska's North Slope to the lower 48 States are currently before the Commission. (See Map, page 23) One proposal, referred to as the Arctic Gas Project, involves a plan developed by a consortium of U.S. and Canadian companies for the construction of a pipeline through Canada along the Mackenzie River. This pipeline would terminate at two points on the U.S.-Canadian border and connect with two proposed and one existing pipeline for the transportation of the natural gas to U.S. markets. The developers of the project also envision its utilization for the transportation of natural gas produced in the Mackenzie Delta-Beaufort Sea area of Canada to Canadian and possibly U.S. markets. Of the three proposed connecting U.S. pipelines, two would transport natural gas into California



and the Pacific Northwest while the third would connect with pipeline systems presently serving the midwestern and north-eastern portions of this country.

A competitive proposal, submitted by El Paso Alaska Company, involves the construction of a natural gas pipeline routed for the most part within the utilities corridor being used to construct the Alyeska oil pipeline; the construction of liquefaction facilities on the southern coast of Alaska; liquefaction of the gas; the further transportation of the liquefied natural gas (LNG) by ship to facilities at Point Conception, California, and the utilization of the facilities of the California utilities and El Paso Natural Gas Company for the redelivery of the natural gas either directly or through displacement to the Midwest and Northeast regions of the lower 48 States.

It should be noted that although both of these projects are dependent upon the same Prudhoe Bay reserves, estimated at approximately 26 trillion cubic feet of natural gas, neither pipeline will directly purchase the gas but if FPC approval is forthcoming will instead act as contract carriers for the pipeline companies and distributors in the lower 48 States who will contract directly with the producers. Although negotiations are currently under way, and with the exception of the royalty

interest, the majority of the North Slope gas has been covered by agreements of intent, no contracts have been finalized. Precedent to the finalization of contracts is the submittal by the producers of a unitization agreement and its acceptance by the State of Alaska. None of the producers have as yet filed applications with the Commission for authorizations to make gas sales, nor have the parties indicated the price at which they intend to sell such gas. The Commission must ultimately determine the price of the gas to be transported to the lower 48 States. Lacking producer applications for such sales, there is no proceeding to determine this price currently before the Commission.

Although the applications as filed present unit cost figures for the transportation of the gas over various segments of the system, such pro forma costs are predicated, among other things, upon the optimum utilization of the facilities proposed for each segment and not upon the aggregated cost of delivery of a specific volume over an integrated system. Each segment of the system was designed to meet the particular needs and expectations of the applicant and not upon the actual volumes which may reasonably be expected to be available to the project as a whole. It is therefore not accurate at this

juncture to merely add the estimated unit costs to determine what the cost might be to a specific market area. The costs cited in the applications before us were based upon design volumes and not upon the actual volumes available for transport by each participant. Presently cited costs may thus be considerably altered by changes in design and capacity when the reserves involved have been finally contracted for.

At the time of filing, the cost of the Arctic Gas Project was estimated to be in excess of \$9.0 billion. Under the El Paso proposal, the capital cost of the facilities required for the delivery of the LNG to California was in excess of \$5.5 billion including the pipeline, liquefaction facilities and ships, but not the facilities in California. On the basis of the assumptions indicated in each application, and notwithstanding the present inaccuracy of the figures, the indicated cost of transportation from Prudhoe Bay to delivery points at the Canadian border at Idaho and Montana ranges from \$1.25 to \$1.35 per Mcf, exclusive of the wellhead price of gas in Alaska. The El Paso proposal likewise is based upon an estimate of the cost of transportation from Prudhoe Bay to Southern California of \$1.17 per Mcf. Additional transportation costs would be incurred to further transport the gas to market areas

in the lower 48, as indicated in Table 6. In the event of substantial additional discoveries of gas supplies in the North Slope area or proximate to the final route of the respective pipelines, the facilities are designed for expansion which would result in significant decrease in unit transportation costs.

Of special interest to this Subcommittee is the comparative amount of public lands (Federal and State) involved in these two proposals. The Gas Arctic pipeline would traverse approximately 1,000 miles of public lands in the U.S., which means 25 percent of its right-of-way would be in the public domain. The El Paso project, including proposed facilities in California, would cross about 785 miles of public land which account for 82 percent of the total 950 miles of land based facilities.

Arctic Gas Project

Alaskan Arctic Gas Pipeline Company (Docket No. CP74-239).

This is a proposal to construct 195 miles of 48-inch diameter pipeline from Prudhoe Bay eastward to the Canadian Border at an estimated cost of \$575 million. The proposed facilities are designed for an initial volume of 2,275,000 Mcf per day,

refrigerated to 32° F. With additional compression, the pipeline is designed to transport up to 4,500,000 Mcf per day. The gas is to be delivered to Canadian Arctic at the international border for transportation to the lower 48 states.

Canadian Arctic Gas Pipeline Limited (before the National Energy Board of Canada and the Canadian Department of Indian Affairs and Northern Development). This proposal involves the construction of approximately 2,435 miles of pipeline within Canada for the delivery of gas produced in Alaska and the Canadian Arctic to U. S. and Canadian markets. A 48-inch diameter pipeline will be constructed from a point of interconnection with Alaskan Arctic at the Alaska-Yukon border to a point near Caroline, Alberta, a distance of approximately 1,400 miles. A 150 mile, 48-inch diameter pipeline will connect with the Canadian Arctic gas producing area at Richards Island, Northwest Territories.

A 42-inch diameter pipeline will be constructed from Caroline, Alberta to the Idaho-Canadian border near Kingsgate, British Columbia. This line will also interconnect with facilities of Alberta Natural Gas Company Ltd. Gas will be delivered at Kingsgate to Interstate Transmission Associates and, through the facilities of Alberta Natural, to Pacific Gas Transmission Company.

A second 42-inch diameter pipeline will be constructed from Caroline, Alberta to the Montana-Canadian border near Monchy, Saskatchewan for delivery to Northern Border Pipeline Company with interconnection with the facilities of Trans-Canada Pipe Lines Limited.

The estimated cost of the Canadian Arctic project ranges from \$5 billion on a no-expansion, non-escalation basis to \$7 billion with expansion and escalated costs.

Pacific Gas Transmission Company (Docket No. CP74-241).

A proposal to construct 618 miles of 42-inch diameter pipeline parallel to its existing mainline from the Idaho border near Kingsgate, British Columbia to the interconnection with the facilities of Pacific Gas and Electric Company at the Oregon-California border. The facilities will be designed to transport 1,000,000 Mcf per day of Arctic Gas and 200,000 Mcf per day from Alberta and will cost an estimated \$463 million.

Interstate Transmission Associates (Docket No. CP74-292).

Interstate is a joint venture of affiliates of Northwest Pipeline Corp. and Southern California Gas Company. The proposal involves the construction of 373 miles of 42-inch diameter pipeline from the International Boundary near Kingsgate, British Columbia to a point of interconnection with Northwest's

facilities at Rye Valley, Oregon, and 504 miles of 36-inch pipeline from the Rye Valley intertie to the California-Nevada border near Oasis, California, to connect with facilities of Southern California Gas Company at an estimated cost of \$675 million. The initial capacity will be 558,000 Mcf per day with an ultimate design capacity of 1,900,000 Mcf per day with additional compression. Northwest will receive approximately 20 percent of such volumes with the remaining volumes delivered to SoCal.

Northern Border Pipeline Company (Docket No. CP74-290).

Involves a partnership of affiliates of Columbia Gas Transmission Corporation, Michigan Wisconsin Pipe Line Company, Natural Gas Pipeline Company of America, Northern Natural Gas Company, Panhandle Eastern Pipe Line Company, Texas Eastern Transmission Corporation and Transwestern Pipeline Company. This project involves a five phase construction program of a total of 1,619 miles of 48-inch, 42-inch, 36-inch and 26-inch diameter pipeline from the Canadian-Montana border near Monchy, Saskatchewan to Delmont, Pennsylvania (near Pittsburgh). The initial phase design will be for 1,197,000 Mcf per day of Canadian gas with an ultimate capacity of 3,500,000 Mcf per day of Canadian and Arctic gas and is projected to cost approximately \$1.8 billion.

El Paso Alaska Project

El Paso Alaska Company (Docket No. CP75-96).

Proposes to construct 809 miles of 42-inch pipeline from Prudhoe Bay to Gravina Point on the southern coast of Alaska, about 40 miles south of Valdez. This pipeline generally will follow the Trans-Alaska Oil Pipeline corridor. Liquefaction and port facilities will be constructed at Gravina Point and the purchase and use of eleven LNG tankers as envisioned. The total cost of the pipeline, liquefaction facilities, and ships is estimated at more than \$5.5 billion. The facilities are designed for the delivery of approximately 3 billion cubic feet of natural gas per day to California.

It is proposed that the California receiving and gasification facilities will be constructed and operated by Western LNG Terminal Company. The interconnecting pipelines and their degree of participation has not as yet been determined. El Paso has submitted a study showing various concepts whereby present and projected unused capacity in existing pipelines throughout the country can be utilized.

Table 6, which follows, sets out the estimated capital costs of the various segments of these two proposals to transport North Slope gas to lower 48 State markets. It should be

TABLE 6

Estimated Capital Cost of Alaska Gas Proposals
and Indicated Transportation Cost

<u>Segment</u>	<u>Estimated Cost</u>	<u>Approximate Unit Cost of Transportation/Mcf</u>
<u>Alaskan Arctic Project</u>		
Prudhoe Bay to Alaska-Yukon Border	\$575 million	\$0.20
Alaska-Yukon Border to U. S.-Canadian Border	\$5.5 billion	\$1.05 - \$1.15
U. S.-Canadian Border near Kingsgate, B. C. to California- Oregon Border near Malin, Oregon	\$463 million	Not stated
U. S.-Canadian Border near Kingsgate, B. C. to California- Nevada Border near Oasis, California	\$675 million	\$0.25
U. S. Canadian Border near Monchy, Saskatchewan to Delmont, Pennsylvania	\$1.8 billion	\$0.40
<u>El Paso Alaska Project</u>		
Prudhoe Bay to Gravina Point	\$1.9 billion	<u>1/</u>
Gravina Point Facilities	\$1.6 billion	<u>1/</u>
Eleven LNG Tankers	\$2.0 billion	<u>1/</u>

1/ El Paso estimates the cost of delivery to California-Arizona border at \$1.17 per Mcf not including charge for transportation through existing facilities of California companies or El Paso Natural Gas Company.

emphasized again that the sum of the approximate costs by segment is not a satisfactory estimate of the overall cost of transportation.

Status of the Consolidated Gas Arctic-El Paso Arctic Hearings

The National Energy Board is scheduled to begin hearing on the Canadian Proposals on October 27, 1975. Commissioner Berger is presently conducting a Mackenzie Valley Pipeline Inquiry in Yellowknife, Northwest Territories, pursuant to direction of the Canadian Government.

At the FPC, the direct case of Gas Arctic has been completed and El Paso Arctic's direct case reopened on September 30, 1975. Section 3 (Import) hearings will commence after the El Paso Arctic hearing followed by answering and rebuttal cases. Hearings on the environmental impact should conclude the hearing phase.

The staff's final environmental impact statement is scheduled for completion in February of next year. Until such time as the North Slope producers enter into sales contracts for their reserves and seek appropriate authorizations for these sales, however, neither the Gas Arctic group nor El Paso can perfect their respective applications as to final design, cost, and economics of delivery of the Arctic gas supplies to lower 48 customers. Absent such information, the proceeding

cannot be concluded. Should the producers be able to act expeditiously on these matters and the applicants supplement their evidence accordingly, the hearings could be concluded subsequent to answering and rebuttal testimony to the Staff's final environmental evidence. Absent extended controversy on the redelivery and marketing of the gas in the lower 48, the matter could then proceed to briefing, action on the part of the Administrative Law Judge and the Commission's decision by mid-1976. Should the producers be unable to act expeditiously and the applicants be delayed in the perfection of their applications, the scheduling would be put back accordingly.

Other Alaskan Gas Proposals

In addition to the proposals to bring gas down from the North Slope, the Commission also has before it two additional proposals to transport gas from the southern portion of Alaska to lower 48 West Coast receiving points.

Pacific Alaska LNG Company (Docket No. CP75-140).

Pacific Alaska proposes to purchase 400,000,000 cubic feet of natural gas per day from the Cook Inlet area and construct pipelines to gather and transport this gas to a location near Kenai, Alaska where proposed liquefaction, storage and marine terminal facilities are to be constructed. Liquefied natural

gas (LNG) would then be transported by ship to terminal facilities in the Los Angeles Harbor to be constructed by Western LNG Terminal Company, where the LNG will be regasified and sold to Southern California Gas Company. Construction of the facilities is scheduled to commence in the last quarter of 1977 with completion and start-up estimated to be by July 1979.

The pipeline system in Alaska would extend from producing fields on the Northern side of Cook Inlet, south across the inlet to the proposed facilities near Kenai. The system would be approximately 90 miles in length with the pipeline size varying from 6 inches to 24 inches in diameter. Gas supply would be from the Beaver Creek and Beluga River fields and other productive fields in the Cook Inlet area.

Facilities in Alaska would consist of approximately 90 miles of pipeline, a liquefaction plant and marine terminal. These facilities would be designed to process and transport 400,000,000 cubic feet of natural gas per day. A marine terminal, storage and vaporization facilities also designed to handle 400,000,000 cubic feet per day would be located on Terminal Island in the Los Angeles Harbor, and a 3.4 mile 48 inch pipeline would transport vaporized LNG from this terminal to Southern California Gas Company's distribution system.

The project contemplates an initial operating level of 200,000,000 cubic feet per day with final completion within several years.

Capital requirements for the overall project are estimated to be as follows:

Alaskan Facilities	\$ 666,270,000
LNG Ships	379,500,000
Los Angeles Harbor Facilities	<u>164,624,000</u>
Total	\$1,210,394,000

The estimated unit cost of the vaporized natural gas delivered into the SoCal distribution system will be approximately \$2.43 per Mcf or \$2.40 per million Btu. Although Pacific Alaska, through an affiliate company, is actively engaged in funding arrangements to promote exploratory drilling on existing leases in the Cook Inlet Basin it has not as yet contracted for all the required gas supplies to implement this project. As of the date of its application, it had entered into gas purchase contracts with four producers in the Cook Inlet area with estimated recoverable reserves of approximately 652 billion cubic feet of natural gas, sufficient to provide daily deliveries of about one half of the initial operations.

This project is currently undergoing staff evaluation and staff is presently awaiting additional information from the applicant.

Marathon-Phillips LNG Sale to Northwest Natural Gas Company (Docket Nos. CI74-537 and CI74-538). In March of 1974, Marathon Oil Company and Phillips Petroleum Company applied for authorization to sell up to 50,000 Mcf per day from their jointly owned LNG plant at Nikiski, Alaska, to Northwest Natural Gas Company, a distributor operating entirely within the State of Oregon. The gas would have been produced from the applicant's own production in the Kenai and Cook Inlet Fields in the Kenai Peninsula of Alaska from which they have been producing and liquefying natural gas for export to Japan since 1969. The pipelines connecting the fields to the LNG plant are presently in place and no new construction was contemplated, except as new wells are completed. Northwest, being a company not subject to the jurisdiction of the Federal Power Commission indicated that it would arrange for construction and operation of an LNG storage and regasification plant at Newport, Oregon. The LNG sales agreement between Marathon-Phillips and Northwest specified an initial price of 80 cents per million Btu.

These applications raised unique issues as to the jurisdictional status of the transaction as well as the facilities that would be utilized both in Alaska and Oregon. The Commission, at the request of the applicants, established a procedure whereby the hearings on this matter would be phased into two parts, the first phase of which was to address the jurisdictional questions presented.

After formal hearing on the jurisdictional matters, a decision was issued on January 15, 1975, by the Presiding Administrative Law Judge. In Opinion No. 735, issued June 23, 1975, the Commission affirmed in part and reversed in part the initial decision involving Phase I, finding that the transportation, liquefaction, and sale of the gas in Alaska by Phillips and Marathon and the facilities related thereto would be subject to the Commission's jurisdiction. Marathon and Phillips, subsequently joined by Brooklyn Union Gas Company, Northwest and Union Oil Company of California, requested that the Commission grant a rehearing in these dockets. On August 19, 1975, the Commission issued Opinion No. 735-A denying rehearing.

Although formal hearing for Phase II, dealing with the evidentiary presentation on questions involving the public convenience was scheduled to convene on October 28, 1975, Marathon, on September 29, and Phillips on September 30, filed Notice of Withdrawal of their respective applications for this project. Marathon stated, in its withdrawal, that the jurisdictional issues were decided adversely to its position and interests, and imposed regulatory burdens which could not be met. Phillips cited similar reasons, and said the Commission ruling so materially affected its plans that it would terminate its LNG Sales Agreement with Northwest Natural Gas Company.

Environmental Activities

The Commission Staff is carrying out the Agency's NEPA responsibilities through task forces that have been organized to prepare the environmental impact statements on the pending applications previously described. These task forces contain the various biological, physical science, and socio-economic expertise needed to assess the impacts on the environment and to examine appropriate alternatives and mitigative measures. Staff members have conducted numerous field evaluations in both Alaska and the lower 48 States as part of their independent analysis of these proposed projects. Supplemental data of a specialized nature is being gathered through several contractors.

The Federal Power Commission solicits the cooperation and assistance of other Federal, State, and Local agencies during EIS preparation. The Department of Interior and FPC established an interagency task force which cooperated in the environmental assessment of the competing proposals of Gas Arctic and El Paso, with the goal of preparing a single environmental impact statement. A memorandum of understanding joined our two agencies in this effort as a means of saving time, funds, and manpower by eliminating duplication of effort and, hopefully, to assure that the American consumer would have the benefit of the best informed and balanced decisionmaking that

the regulatory process could offer. 2/ This agreement recognized the responsibilities of FPC for evaluation of and jurisdiction for certification of the proposed natural gas facilities, and the specific responsibilities of interior for pipelines crossing public lands.

Although Interior reluctantly withdrew from this formal agreement in February of this year, for legal and administrative reasons, the association reaped mutual benefits for the agencies and the public. FPC and DOI staff worked side by side in Washington and throughout Alaska and the lower 48 States. Information was freely exchanged and discussed. The staff participated in public information hearings set in twelve cities to permit the American public to voice its views on the competing projects.3/ The spirit of interagency cooperation continues. Interior has agreed to supply appropriate witnesses for FPC's evidentiary hearings, as well as any information in its possession covering Alaska or other relevant areas.

2/ Memorandum of Understanding for Preparation of Alaskan Natural Gas Transportation Systems Environmental Impact Statement, May 20, 1974.

3/ Anchorage, Fairbanks, Juneau, Alaska; Sacramento, California; Denver, Colorado; Chicago, Illinois; Billings, Montana; Reno, Nevada; Bismarck, North Dakota; Portland, Oregon; Spokane, Washington; and, Washington, D.C.

Our Staff has prepared comments on the Draft EIS circulated this July by Interior on the Gas Arctic project to assist Interior in finalizing its statement.

The Staff plans to circulate the Draft Environmental Impact Statement on Alaskan North Slope gas systems on November 15, 1975. A recent Court opinion in Alice Henry v. FPC permits one Federal agency to rely on the EIS prepared by another agency rather than having to prepare a full duplicate EIS of its own.^{4/} Staff has elected to use this new option to produce a Draft EIS which will consist of FPC's own analysis of the El Paso Alaska and Western LNG Terminal proposals, Interior's draft statement on the Gas Arctic system, and a separate comparative analysis of the two competing proposals. Following the comment period, the Staff will use this extensive base of environmental data and analyses to prepare the FPC Staff Final Environmental Impact Statement. This Final Statement, expected to be completed in February, 1976, will be presented as evidence by our Staff in the second phase of the Alaska North Slope hearings. Use of this procedure and schedule will permit public commenting and environmental review of the EIS

^{4/} Henry v. F.P.C., 513 F.2d 395, 406 (C.A.D.C. 1975).

to move forward simultaneously with the ongoing adversary processes in the most expeditious way consistent with the requirement to develop a complete record of all relevant concerns and issues upon which the Commission must base its ultimate decision.

An evaluation of the Supreme Court decision in Aberdeen and Rockfish Railroad Company, et al. v. Students Challenging Regulatory Agency Procedures, 43 U.S.L.W. 4844 (June 24, 1975) (S.C.R.A.P. II), is ongoing to determine the impact it might have on the timing of Staff's presentation of environmental evidence in the current hearings. A motion by the parties on this issue is expected very shortly.

The environmental assessment is under way on the Pacific Alaska Company proposal, and Staff anticipates release of its impact statement during the early part of January, 1976.

Pursuit of Cooperative Efforts with Canada

The North Slope gas projects outlined above raise the question of our current relationship with Canada in regard to cooperative efforts in developing transport systems to the lower 48 States and Eastern Canada. The Federal Power Commission has stressed in the past that Canada and the United States have equally important vested interests in the

economics, safety, and timeliness of North Slope Alaskan and Canadian frontier energy resource development. This mutual interest and our tradition of U.S.-Canadian cooperation should foster energy policies compatible with the best interests of both Nations.

Regulatory agencies in both countries currently have competing applications before them which will require that a choice be made between an international project and a wholly domestic project. In the case of the U.S., the Arctic Gas Project would require extensive facilities within Canada which must be approved by the Canadian Government. The El Paso Alaskan proposal would of course not require Canadian approval. In Canada, the Arctic Gas project is before the National Energy Board together with the competitive all Canadian Maple Leaf project which proposes to connect Beaufort Basin gas reserves to existing Canadian transmission facilities entirely independent of U. S. Alaskan gas. The Arctic Gas Project is predicated upon both Alaskan gas and Beaufort Basin gas and thus would not be viable, from a Canadian point of view, absent U. S. approval. The recognition by all parties that both countries have in effect initial veto power over the trans-Canada international project, and the subsequent vulnerability of the project if it is built, gave rise to early discussions of a treaty agreement covering such energy transportation situations in general.

The Department of State has indicated to the Commission that negotiations are being conducted with the Canadian Government to effectuate a treaty covering the transit of one country's hydrocarbons across another country's territory. Shortly after the Arctic Gas project was filed, the Commission routinely requested that the Department of State express its views on the Trans-Canada project. To date, we have not received the comments of the State Department.

The Commission supports the concept of such negotiations with our Canadian neighbors because mechanisms of this type have a substantial potential for alleviating the complex problems associated with major international energy transportation projects, would reduce delays inherent in judicial processes, and would commit the public policies of both Nations to a project affecting the national interests of each.

Legislative Needs and Considerations

The complexity and multiplicity of issues involved in the competing applications make the task before the Commission a formidable assignment. The Commission will carefully evaluate not only the economic feasibility of the project but also the environmental effects of the proposals, the safety of the proposed transportation system, the impact on consumers and

markets and any alternatives which might be available. Of necessity, therefore, the environmental review and adversary processes must be allowed to develop a complete record of all relevant concerns and issues to guide us in arriving at a decision, and the Federal Power Commission has given highest priority to these tasks. The Commission and its Staff are well aware of the necessity of deciding this case in a timely fashion so that the facilities for transporting the natural gas from the North Slope to the lower 48 States can be constructed and not delay the delivery of this needed gas to consumers. The phrase "in a timely fashion" allows therein a reasonable time for judicial review, but this is an unpredictable process. There is, unfortunately, no assurance when judicial review will, in fact, be completed. An unsuccessful applicant or any of the more than 100 intervenors in the case could, by recourse to court appeals, delay a final decision for many years. This is a problem which should be recognized now and which should be dealt with now.

The foregoing is not to suggest that judicial review of the Commission's decision be eliminated entirely. Such extreme action would not only be contrary to the spirit of the laws under which our administrative agencies operate, but also would be unnecessary. There is enough time for judicial review

of our decision, if the courts proceed at a reasonable pace. Every party in interest should, quite properly, have his day in court. Our problem arises when they want their year in court. (Environmental litigation delayed the construction of the Trans-Alaskan Oil Pipeline by at least four years.)

What should be kept in mind is that among the interested parties are those who, while they may differ among themselves as to the nature of the ultimate decision to be rendered here, do believe that a decision should be rendered. There are also those who want no decision at all and who want this project delayed indefinitely. If the Congress concludes that it is indeed in the national interest that the natural gas with which we are here concerned should be transported to the lower 48 states when it becomes available, it may want to give serious consideration to legislation which would, while providing for proper review and consideration of all substantive issues, allow for summary disposition of frivolous contentions.

In considering the possible scope of judicial intervention, we should keep in mind that it could take two forms. First of all, there is the usual review of the decision of our agency. (Under Sec. 19(b) of the Natural Gas Act, 15 U.S.C. §717q, any party to a proceeding under the Natural Gas Act may obtain a review of such order in a United States Court of Appeals.)

Second, there is the relatively new role of the courts in the enforcement of the National Environmental Policy Act, 42 U.S.C. 4321, et seq. So as to make it possible for us to avoid undue delay, and because of the critical importance of Alaskan natural gas to the economy and welfare of the United States, the Congress should consider legislation which would accomplish the following:

1. Clearly define the issues which would be subject to judicial review;
2. Provide for the advance of any case involving this matter on the calendar of the reviewing court and for expedited consideration of the case by the court; and,
3. Shorten the normal period for the filing of appeals.5/

5/ To insure that the Trans-Alaskan Oil Pipeline be constructed promptly without further administrative or judicial delay or impediment, Congress found it necessary to exercise its constitutional powers to limit judicial review of the actions taken pursuant to the Trans-Alaska Pipeline Act (43 U.S.C. 1652(d)). The provisions of that Act confine the permissible grounds for judicial review to constitutional questions and questions of federal actions beyond the scope of authority conferred by the Act and prescribe procedures which are designed to assure the most prompt possible resolution of any case and which assure that the issuance of rights-of-way, permits, leases, or other authorizations cannot be enjoined except pursuant to a final judgment.

See Tapes

STATEMENT OF JACK W. CARLSON
ASSISTANT SECRETARY - ENERGY AND MINERALS
DEPARTMENT OF THE INTERIOR
BEFORE THE
SUBCOMMITTEE ON PUBLIC LANDS
HOUSE INTERIOR AND INSULAR AFFAIRS COMMITTEE
October 9, 1975

Mr. Chairman, Ladies and Gentlemen, I am very pleased to be able to testify today on an important energy initiative before the Federal Government. Providing a transportation system for Alaskan natural gas is one of the most significant efforts that the Nation can undertake to increase the domestic supply of energy to the lower 48 States. I am particular pleased to testify before this Committee because of its expertise developed when this Committee fostered the legislation for the oil transportation system. A gas pipeline requires similar expertise.

In 1968, oil and natural gas was discovered at Prudhoe Bay on the North Slope of Alaska. This is the largest single discovery of hydrocarbons ever made on the North American continent. The field is estimated to contain some 26 trillion cubic feet of recoverable natural gas or an amount greater than 10% of total U.S. reserves. Additional reserves are likely to be confirmed in the future. Total potential recoverable resources in Alaska are estimated to be 72 to 185 Tcf.

At about the same time, reserves of gas were also discovered in the Mackenzie Delta region in the Canadian Arctic. Reserves in this area are now estimated to 4 trillion cubic feet. A number of gas and oil companies joined together in various study groups to develop transportation systems for this gas. Out of this coalition, three applications have been made to the U.S. and Canadian governments. The Arctic Gas Study Group of some 14 American and Canadian companies has proposed an all-pipeline system to carry both Prudhoe Bay and Mackenzie Delta gas to markets. This system would consist of a pipeline from Prudhoe Bay across the North Slope of

Alaska connecting with a spur to the Mackenzie Delta region of Canada and then south through Canada to a point near Calgary. Here the pipeline would split with one line going through the Midwest to the east coast and one or possibly two lines going to the west coast. Mackenzie Delta gas would be fed into existing pipeline systems in southern Canada for distribution to Canadian markets.

The El Paso Natural Gas Company has proposed a system that would carry only Prudhoe Bay gas. This system would consist of a pipeline south across Alaska and then liquified natural gas tankers to the Pacific Coast. Consumers of Alaskan natural gas in other parts of the country, according to El Paso, would receive additional supplies by displacement. El Paso contends that gas that would normally flow to California could be diverted and sent instead to the Midwest, the east coast, or other regions. The Department is studying the full potential for displacement.

In the event that the trans-Canada system is not constructed, an all-Canadian pipeline system called the Foothills Pipeline or Maple Leaf project has been proposed by Alberta Natural Gas Trunk Line Ltd. and the Westcoast Transmission Company of British Columbia. To the extent possible, it would use existing pipelines in Alberta, and would only carry Mackenzie Delta gas to Canadian markets. Expansion would occur as needed and not require all construction to be accomplished initially.

The Federal Power Commission has begun hearings on the applications by Arctic Gas and El Paso. Arctic Gas, but not El Paso, has applied for a right-of-way permit across Federal lands with the Department of the Interior. Foothills and Arctic Gas have applied to the National Energy Board of Canada and formal hearings are expected to begin at the end of October. Also in Canada, Justice Thomas Berger of the British Columbia Supreme Court heads a Commission that will hold hearings on the economic, social and environmental impacts of the Arctic Gas and Foothills systems and will report its findings to the Canadian Ministry of Indian and Northern Affairs.

For at least 2 years, the Department of the Interior has been involved in various studies dealing with transportation systems for Alaskan natural gas. In October of last year, the Department sent to Congress a study on transportation and utility corridor systems in Alaska as required by the Alaska Native Claims Settlement Act. This study develops a rational plan for the movement of high-value energy resources from remote areas of Alaska. In response to an application by Arctic Gas for a right-of-way across Federal lands, Interior has prepared a draft environmental impact statement which also analyzes, as a major alternative, a system similar to that proposed by El Paso. (See attached summary of Arctic Gas Transmission System draft environmental impact statement for the record.)

Title III of the Trans-Alaska Pipeline Authorization Act directs the Secretary of the Interior to investigate the feasibility of one or

more oil and gas pipelines from the North Slope of Alaska connecting with a pipeline through Canada delivering oil and gas to lower 48 markets. In order to assess fully the feasibility of an Alaska-Canada pipeline system, Interior is also studying a system similar to that proposed by El Paso. The report is due on November 16th. As the first step in preparing this report, the Aerospace Corporation of Los Angeles contracted to manage and coordinate an economic and risk analysis of alternative transportation systems. The Aerospace Corporation is a non-profit firm, only does work for Federal, State and local governments, and is a Federal Contract Research Center for the Department of Defense. Aerospace was employed to help insure objectivity and impartiality. So as to bring the best available expertise in industry to bear on the subject, Aerospace subcontracted seven consulting and engineering firms to carry out selected portions of the study. A preliminary draft version of the Aerospace study was sent to the House and Senate Interior Committees on August 15. The Department of the Interior has also contracted for an analysis of the ability of the capital markets to finance the projects. This study will be distributed shortly.

In addition to the Department of the Interior, a number of other Government agencies have been involved with the question of an Alaskan natural gas transportation system. Title III of the Trans-Alaska Pipeline Act requests the President to begin negotiations with Canada to determine the need for an agreement that will help to protect both countries when they transport oil and gas across the territory of the other. For some time now, the Department of State has had negotiations

underway with Canada on the terms of a pipeline agreement. These negotiations have resulted in a "draft" treaty which should be completed in the near future. The major provision requires uninterrupted throughput and reasonable taxation of pipelines. A protocol dealing with the specific implications of the construction of a trans-Canada system would have to be negotiated in the future.

Though all our studies are not yet complete, I can give you some of the preliminary results. The choice between the two primary transportation systems for Prudhoe Bay gas, the Arctic Gas and the El Paso proposals, is complicated and involves many issues some of which have not yet been fully assessed.

Even after they are assessed, the choice of routes will require judgment as to which factors are most important. The Economic and Risk Analysis prepared by Aerospace does indicate that the economic benefits of bringing Alaskan natural gas to market by either system will exceed the economic costs to the Nation of producing and transporting the gas. Under one set of reasonable assumption, the benefits exceed the cost by more than \$5 billion. The additional gas would mean an 8 to 10% increase of natural gas interstate delivery. This could offset natural gas curtailment observed to date. This favorable conclusion would be modified if there were a large drop in the price of imported oil, a very large increase in the actual cost of building these systems or long delays in constructing a system.

As to the question of which proposed system may be economically best for the country, the Aerospace study was a feasibility study and a comparative analysis of the benefits and costs to the entire Nation of the two systems. Like all such analyses, the conclusion depends crucially on the assumptions that have been made. In this analysis, if one accepts the assumptions regarding discount rates, value of gas to consumers, value of energy independence, etc., then the economic benefits and costs of the two systems are quite similar. Hence, the Aerospace study did not indicate a significant advantage to one proposed route over the other. While the American share of the costs of constructing a joint U.S.-Canadian system would be less than the costs of the trans-Alaska system, this apparent advantage could be offset by the payment of taxes to the Canadian government.

It must be pointed out, however, that the two systems studied by Aerospace are not exactly the same as that proposed by El Paso and Arctic Gas. Both systems were scaled down in size to carry flows of gas that were more reasonable considering the proved reserves of gas in both Prudhoe Bay and the Mackenzie Delta. The flow from Prudhoe used in the study is 2.5 billion cubic feet per day and is fully supported by the 26 Tcf reserves. The flow from the Mackenzie Delta

was assumed to be one billion cubic feet even though the current reserves of 4 Tcf justified only about one-half of that flow rate. No Canadian gas is assumed to be sold in the United States. Also, the Alaska-Canada system studied does not include pipelines to the west coast or beyond Chicago to Pittsburgh as are included in the application by Arctic Gas. The study assumes that by using displacement of existing lower 48 gas flows, Alaskan gas could be distributed to any region of the country without the need for building additional pipelines. When the displacement study is complete next month, we will share with the Committee potential limitations to displacement across the country.

As pointed out earlier in this testimony, the Aerospace study considered alternative hypothetical systems similar but not identical to those proposed by El Paso and Gas Arctic. The capital costs in 1975 prices of the Alaska-LNG system studied by Aerospace is estimated at \$5.6 billion. This compares with the costs of a larger system proposed by El Paso which Aerospace has estimated at \$6.6 billion. The trans-Canada system studied by Aerospace was estimated to cost \$6.2 billion. Aerospace estimated that the cost of the actual Gas Arctic proposal would be \$8.1 billion. The American share of a trans-Canada system would be about 75% of the total cost, if 1 Bcf flow can be sustained with additional reserves. If displacement of gas using existing pipelines is assumed for the Gas Arctic system, it could reduce the cost by approximately \$1.4 billion.

The time from a clear go-ahead to completion is estimated by Aerospace to be between five and six years for both transportation systems. For example, a potential delay in

the Alaska-LNG system is the lead time necessary to order and manufacture critical components of the liquefaction system. A delay in the construction of an Alaska-Canada all-pipeline system could occur because of difficulties encountered with logistics and productivity in the extreme Arctic environment and timely delivery of 48" pipe.

Some of the gas from Prudhoe and other sources of energy will be needed to power the two transportation systems. In an Alaska-Canada system, approximately 7-1/2% of the energy in the Prudhoe Bay gas will be needed to power the compressor stations along the route. For an Alaska-LNG system, approximately 11% of the input gas energy will be used to power compressor stations, the liquefaction system, the tankers, and the regasification facility. In addition, the Alaska-LNG system will need some bunker fuel for the tankers and will use some electricity at the regasification facility.

For the two systems as considered in the study, the estimated unit or average cost of transportation is \$1.31 per thousand cubic feet for the Alaska-Canada system and \$1.26 for an Alaska-LNG system. If the wellhead price is 50¢^{*} then the price to the United States is \$1.81 for Alaska-Canada and \$1.76 for Alaska-LNG. If U.S. property and corporate taxes are added then the price to the U.S. consumer would be \$1.94 for Alaska-Canada and \$2.27 for Alaska-LNG. Approximately one-third of the transportation cost of an Alaska-LNG system is taxes paid to American Federal, State, and local governments while only 10% of the transportation

* The wellhead price would have to be at least 47¢ to justify the additional development costs and withdrawal from pressurization for oil.

costs of an Alaska-Canada system will go directly to the American Government. United States tax revenues will be used either to reduce other taxes or to defray the costs of a variety of government services such as schools, police protection, roads, etc. Some of these services may be required because the transportation system is built.

The estimated value of natural gas to American consumers or, in other words, the price that consumers would be willing to pay for natural gas is at least \$2.50 per thousand cubic feet at the city gate which is more than the cost of either system. Therefore U.S. consumers would be willing to buy Alaskan gas rather than turn to some other energy source such as \$12 oil. The recent arbitrary 10% increase in the price of oil by OPEC would increase the relative value of natural gas by the same percentage.

In the two hypothetical systems studied by Aerospace, it was assumed that Alaska natural gas would be brought only as far as the first major gas consuming region. This would be California for the Alaska-LNG system and Chicago for the Alaska-Canada system. Beyond these two points, Alaskan gas would be distributed around the country by displacement of other supplies of natural gas (See Attachment). In an Alaska-LNG system, gas that would normally go to California would be diverted and sent instead to the Midwest or the east coast. In an Alaska-Canada system, gas that would normally go to the Midwest would instead be sent to the west coast or the east coast. These displacements or "exchanges" are fairly common in the natural gas industry, although the magnitude would be larger.

Though displacement avoids the cost of building new pipelines, we are unclear as to whether there will be additional costs. Whenever

you begin to change the pattern of natural gas distribution, it may entail expanding some existing systems, building connecting pipelines that were not previously needed, and modifying regulation procedures. In the Aerospace study, no capital costs for the displacement are included for either transportation system. It is difficult to estimate what these costs will be. To do so requires, first of all, knowing where the purchasers of Alaskan natural gas will be located, and secondly, an estimate of the excess capacity that will be available in existing lower 48 pipeline systems. Interior does have a study to estimate some potential cost increases or decreases from displacement. Our tentative conclusion is that the additional cost of displacement is likely to be small for either system and that any differences in cost are likely to be even smaller. Consequently, excluding displacement costs do not significantly bias the results of the Aerospace study in favor of either system.

I believe that, for the most part, the cost estimates by the applicants and by Aerospace do reflect what we have learned from the trans-Alaska oil pipeline experience and that these cost estimates are much closer to reality than the initial cost estimates for TAPS. However, unanticipated problems can arise.

In the case of the trans-Canada proposal, a cooperative effort between two nations can bring difficulties in timing, coordination, cost sharing, and tax limitation. However, it can continue our joint efforts to develop and transport energy from all areas of the Arctic

and can affect energy supply levels even in the short run. If Prudhoe Bay and Mackenzie Delta gas are not carried together, the reserves of gas at the Mackenzie Delta especially if additional reserves are found will likely justify the construction of a pipeline to carry only this gas to Canadian markets.

Before the United States makes a commitment to a joint system, the issue of the level of future Canadian taxation -- especially provincial tax levels as well as stability of U.S. State taxes on Canadian lines needs to be resolved, as well as the share of costs that will be borne by each Nation and the conditions for possible future expansion. We are hopeful that U.S.-Canadian protocol can fully satisfy these issues.

Before deciding among the alternatives for transporting Alaska gas to the lower United States, the decisionmakers will have to take a hard look at environmental impacts. On July 28, 1975, Interior issued a draft environmental impact statement covering the Arctic Gas proposal. The final EIS is scheduled for issue early in 1976. The Federal Power Commission plans to adopt a revised version of Interior's draft EIS for the Arctic Gas proposal, and they are currently working on their own EIS in connection with the Alaska-LNG alternative proposed by the El Paso Alaska Company. Since all of the EIS work for these proposals is currently in the draft stage, we are not in a position to draw any conclusions on the relative merits of either system or alternative.

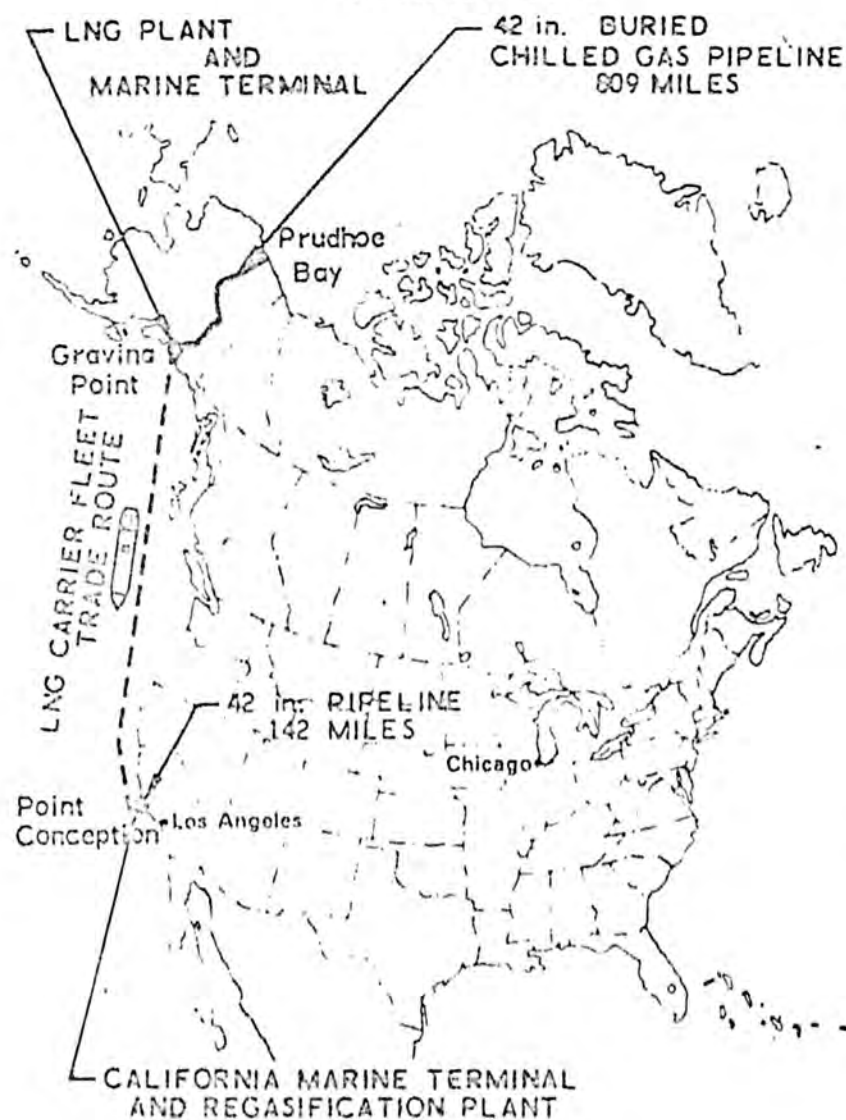
The final issue I would like to discuss here today is the question of the feasibility of private financing for either of these two systems. The capital costs of both of these systems is likely to equal or exceed the cost of the trans-Alaska oil pipeline. The magnitude of the sums of money involved, as well as the rather special characteristics of these systems that make them different from conventional gas pipelines in the lower 48 States, will challenge private financial institutions - a challenge I think they may be able to meet. However, one of the proposals is based upon a contingent liability borne by the Federal Government. The trans-Canada proponents have asked for government guarantees against cost overruns in excess of 125 percent of projected costs and for long-term flow interruptions. Both systems may require an "all events tariff" which would shift cost overrun and flow interruption guarantees to the ultimate consumer. The potential consumer would stand ready to pay for the company's cost of service regardless of circumstances after a limited number of days of interruption. However, this issue is of fundamental importance requiring additional evaluation as to feasibility and legality. If possible, neither system may need public financing assistance. As a general rule, I, for one, have discouraged consideration of government assistance. Moreover, I am not convinced consideration has been given to all ways to mobilize the private sector for this kind of investment.

The trans-Alaska proposal assumes use of the existing Federal Maritime Administration loan guarantee program. Under this program the mortgage covering the tanker construction costs could be guaranteed up to 85% (\$1-1/3 billion).

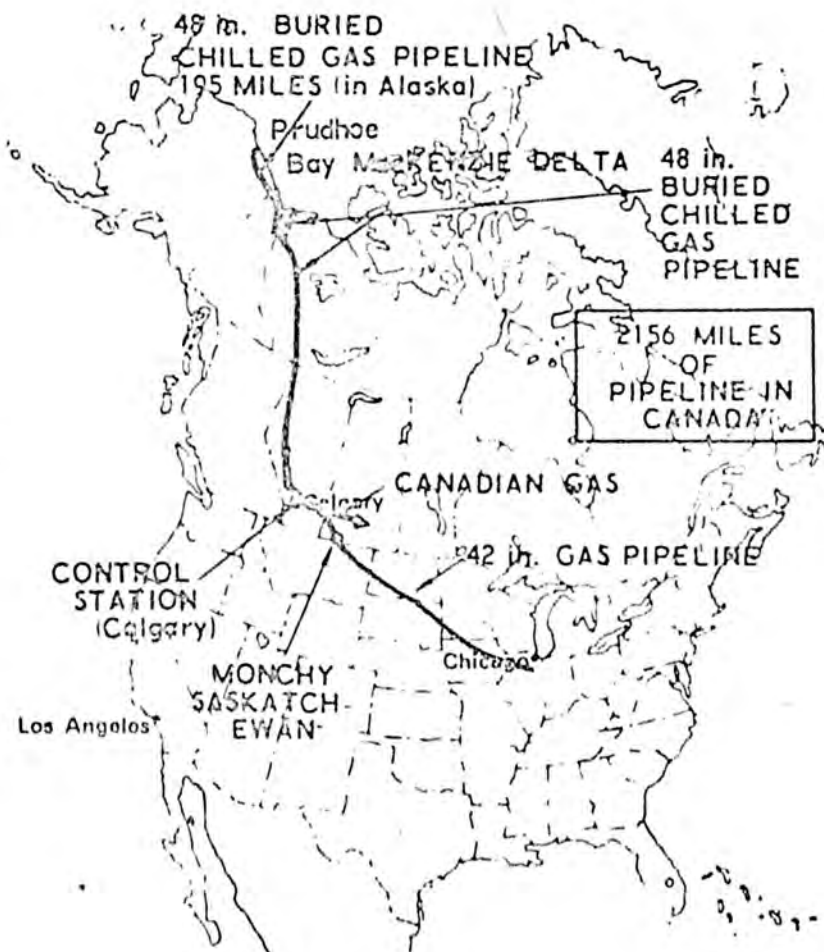
This concludes my initial assessment. We are pleased to answer your questions now and in the future. We join with you in appreciating the need to supply the Nation with additional natural gas, and as expeditiously as possible.

Alternative Natural Gas Transportation Systems

ALASKA - LNG



ALASKA - CANADA





APPROXIMATE POSITION OF TRANSMISSION SYSTEMS

EXISTING TRANSMISSION SYSTEMS

PROPOSED TRANSMISSION SYSTEMS

A.G.T.L. & WESTCOAST TRANSMISSION EXISTING SYSTEMS

A.G.T.L. & WESTCOAST TRANSMISSION CONNECTING SYSTEMS

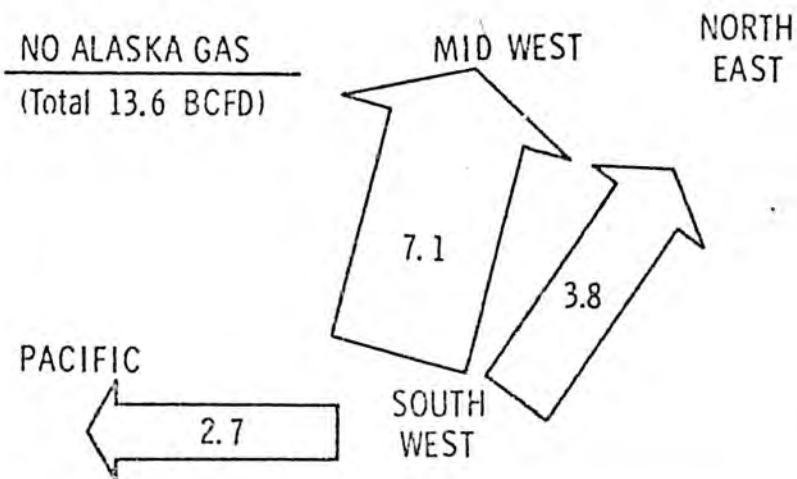
PROPOSED FOOTHILLS ROUTE

Displacement Concept

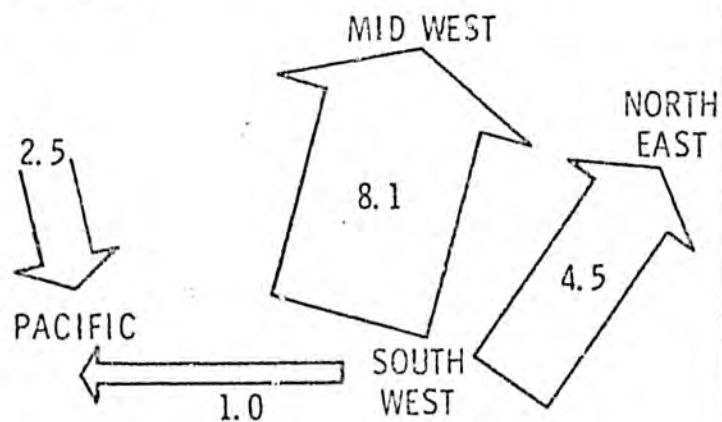
HYPOTHETICAL EXAMPLES

REGION	SUPPLY BCF/day		
	LOWER 48	ALASKA	TOTAL
PACIFIC	2.7	0.8	3.5
MID WEST	7.1	1.0	8.1
NORTH EAST	3.8	0.7	4.5

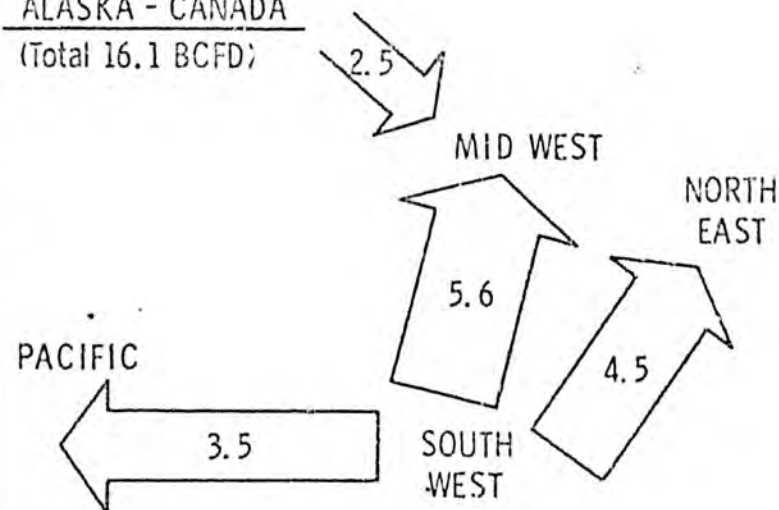
NO ALASKA GAS
(Total 13.6 BCFD)



ALASKA - LNG
(Total 16.1 BCFD)



ALASKA - CANADA
(Total 16.1 BCFD)



file folder
See pages

STATEMENT BY JULIUS L. KATZ
DEPUTY ASSISTANT SECRETARY OF STATE FOR ECONOMIC
AND BUSINESS AFFAIRS
BEFORE THE SUBCOMMITTEE ON PUBLIC LANDS
OF THE HOUSE COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS
OCTOBER 9, 1975

U.S. House
SUBCOMMITTEE
on Interior & Insular
Affairs

Mr. Chairman:

I welcome this opportunity to appear before your committee to discuss the status of proposals for transporting natural gas from Alaska's North Slope to markets in the lower 48 states and to review the status of current negotiations with the Canadian Government on a transit pipeline treaty.

Following the discovery of substantial oil and gas resources in the Alaskan Prudhoe Bay area in the late 1960s, United States officials had a number of discussions with the Canadian Government regarding the possibility of constructing oil and gas pipelines from Alaska through Canada to the United States. We recognized the essential need to ensure that these new sources of energy supply were made available to American consumers as rapidly and economically as possible.

In late 1970, we made specific suggestions concerning the construction of pipelines to carry Alaskan oil and gas through Canada, including the formation of

a bilateral consortium of companies for this purpose. We also proposed negotiation of an agreement between the U.S. and Canada to govern the operations of such pipelines. Canadian officials replied that they saw no need for an inter-governmental agreement. They indicated that the terms and conditions governing such pipelines were set out in preliminary guidelines issued in August 1970 for construction of pipelines in northern territories. These guidelines were expanded in June 1972. In subsequent meetings, during the period when the Congress considered legislation to authorize construction of an oil pipeline across Alaska, Canadian officials maintained that there was no need for an inter-governmental agreement and that the "Guidelines for Northern Pipelines" provided sufficient guidance to commercial firms desiring to build such pipelines.

Canada's position that a bilateral accord to govern the operations of pipelines transiting Canada was unnecessary and the uncertainty about the timing and outcome of Canadian consideration of an application to construct an oil pipeline across Canada were significant factors in the U.S. decision in 1973 to move forward with approval of the Aleyeska pipeline. At the same time, it was clear that pipelines

across Canada could provide a viable alternative route for transporting natural gas supplies to southern markets. Thus, in the Trans-Alaska Pipeline Authorization Act of 1973 (P.L. 95-153, November 16, 1973), the Congress authorized and requested the President "to enter into negotiations with the Government of Canada to determine....:

(a) the willingness of the Government of Canada to permit the construction of pipelines or other transportation systems across Canadian territory for the transport of natural gas and oil from Alaska's North Slope to markets in the United States,...

(b) the need for intergovernmental understandings, agreements, or treaties to protect the interests of the Governments of Canada and the United States and any party or parties involved with the construction, operation, and maintenance of pipelines or other transportation systems for the transport of such natural gas or oil;

(c) the terms and conditions under which pipelines or other transportation systems could be constructed across Canadian territory;

(e) the quantity of such oil and natural gas from the North Slope of Alaska for which the Government of Canada would guarantee transit..."

The oil embargo in 1973 and the evident deterioration of Canada's oil and gas reserve position led the Canadian Government to decide to unify the Canadian oil market through construction of a pipeline that would permit oil produced in western Canada to be transported to eastern Canadian consumers. Canada also recognized the necessity to develop the substantial new reserves of oil and gas believed to exist in northern Arctic areas. In a statement to the Canadian Parliament on December 6, 1973, Prime Minister Trudeau said:

"Canadian natural gas is already supplying a substantial portion of our energy needs and some of those of the U.S.A. Enormous quantities of gas are available to be transported from the far north. A major development is the proposed gas pipeline up the Mackenzie Valley to move Alaskan gas to U.S.A. markets and at the same time, to make it possible to move Canadian northern gas to Canadian markets. While this project must, of course, be submitted to the usual regulatory proceedings and can not go ahead until it has been approved by responsible Canadian authorities, the government believes that it would be in the public interest to facilitate early construction by any means which do not require the lowering of environmental standards or the neglect of Indian rights and interests.

At this point, I might just say that I can see no reason why Canada could not give suitable undertakings as to the movement, without any discriminatory impediment, of

"Alaskan gas through a pipeline across Canada to United States markets provided all public interest and regulatory conditions are met in the building and operation of the pipeline. An undertaking of this sort would of course be reciprocal, with the same assurance being given to Canada regarding our oil and gas shipments through the United States."

Shortly afterward, during a meeting of senior Canadian and U.S. energy officials, we renewed past proposals for the negotiation of a pipeline agreement. Subsequent discussions confirmed Canadian interest in beginning negotiations and in the spring of 1974 the US proposed the opening of negotiations on a pipeline agreement. Because of the Canadian elections in the middle of the year, the negotiations were not initiated until November 1, 1974.

In our initial meeting in Ottawa it was apparent that neither the Canadian nor the U.S. Government was prepared at that time to take a position on alternative proposals for a natural gas pipeline from the Arctic. Thus, it was agreed that we should discuss a general,

reciprocal agreement covering all existing and future pipelines transiting Canada and the United States designed to provide a framework of reciprocal assurances with respect to security of throughput and non-discriminatory treatment.

In the negotiations thus far, we have reached agreement that the treaty should contain the following basic elements:

- reciprocity or symmetrical application to both parties;
- guarantee of throughput, by which public authorities in both countries would be prohibited from interfering with or impeding hydrocarbons moving in transit pipelines;
- non-discriminatory treatment, which would ensure that public authorities in both countries would be prevented from discriminating against transit pipelines with regard to taxes and other monetary charges;
- "in bond" treatment for hydrocarbons moving in transit pipelines;

- provisions for equitable sharing of pipeline capacity in the event of emergencies on a pre-determined basis; and
- provisions for protocols on specific pipeline projects..

In short, the basic purpose of the treaty would be to provide government-to-government assurances on unimpeded transmission of hydrocarbons and non-discriminatory treatment. However, Canada's constitutional framework differs in certain respects from our own. This difference in constitutional structure and practice, principally with respect to the taxing authority of the provinces, poses a potential problem regarding taxes which might be imposed on transit pipelines through Canada. As a practical matter, however, since we do not intend to limit the taxing authority of our state governments where Canada cannot limit the authority of its provinces, we do not expect this difference in constitutional practice to be a problem in fact. We believe the specific impact of state and provincial taxes on an Arctic pipeline can most effectively be addressed in the context of a specific protocol dealing with this particular pipeline. Necessarily, a general treaty would be limited to providing the full guarantee available to the federal governments of the two countries.

We expect to reach an referendum agreement with the Government of Canada on this pipeline treaty shortly. We would then propose to hold consultations on the text with the Congress and with interested parties before the treaty is formally signed.

Obviously, the major motivation behind the current negotiations, on both sides, is the need for both countries to move rapidly to a decision on the best route for moving natural gas from the Arctic to southern markets. The increasing shortage of natural gas in the U.S. and evidence that Canada's own natural gas supply situation is deteriorating make a prompt decision on a delivery system for this gas imperative.

One of the proposed delivery systems under consideration by regulatory bodies in both the United States and Canada involves a pipeline which would bring gas from the North Slope of Alaska down the Mackenzie River valley in Canada to the United States. This pipeline would also carry Canadian gas from the Arctic to southern markets. However, both Canada and the US have competing applications before their regulatory bodies and neither government has yet committed itself to either of the options open to it.

I wish to emphasize that the transit pipeline treaty we have been negotiating does not provide a complete answer for a specific pipeline project. However, it establishes the foundation of reciprocal assurances

regarding transit pipelines from which a more specific agreement can be negotiated. Obviously there is a close linkage between this general pipeline treaty and the type of agreement with Canada which would be required for a specific future pipeline project. We feel that the transit pipeline treaty is an important first step. By itself it provides significant government-to-government guarantees. Moreover, it sets the stage and provides a framework for future discussions with Canada when both countries have moved closer to a decision on the most appropriate route for transporting the substantial new energy resources in Arctic areas to consumers.

SCOMM

#13:5

BAKER & BOTTS

1701 PENNSYLVANIA AVE., N.W.
WASHINGTON, D. C. 20006

ONE SHELL PLAZA
HOUSTON, TEXAS 77002
TELEPHONE (713) 229-1234
CABLE BOTERLOVE-TELEX 76-2779

TELEPHONE (202) 337-4000

ASSOCIATED OFFICES

PASEO DE LA REFORMA 75
MEXICO 6, D.F. MEXICO

21 AVENUE GEORGE - 1^{er} ETAGE
PARIS 9, FRANCE

January 14, 1976

Senator John Rader, Chairman
Joint Gas Pipeline Impact Committee
The Legislature of the State of Alaska
Juneau, Alaska 99801

Dear Senator Rader:

Your Committee has asked me to address certain issues relative to the transportation of Alaska natural gas, assuming for the purpose of my analysis that there will be gas available for sale from the North Slope. 1/

I propose to set forth in this letter the conclusions that I have reached as a result of my research and my knowledge of the Federal Power Commission, together with certain alternatives which the State might wish to consider. To this letter I will append the legal analysis which leads to the conclusions expressed herein.

1/ You are aware of the possibility that natural gas production for sale may have a detrimental effect on the recovery of oil. Studies conducted by the Department of the Interior and by H.K. Van Poolen and Associates raise questions in this regard which are now being examined by the Committee. This issue is, I agree, of critical importance to State consideration of natural gas transportation issues, inasmuch as the State may find it necessary, for reasons of conservation, to limit natural gas production or require reinjection of associated natural gas for maintenance of reservoir pressure. Such conservation actions are, in my opinion, legally permissible if necessary to prevent waste, see pp. 85-94 of attached analysis, but might result in an indefinite postponement of a natural gas transportation system.

From the outset, I need to make clear my recognition, that State policy relative to natural gas will develop, as it should, through processes of government, and that these policy decisions will involve consideration of far more than questions of law and Federal policy. What I offer can be only a part of the whole which the State will consider as the State moves forward to a sound and productive policy of resource management. 2/

As a substantive starting point in my report to you, it is my judgment that the State should, from the standpoint of legal consequences, decide as quickly as possible the ultimate goals of State natural gas policy. If the State has a strong concern for a retention of a portion of Alaska gas for future Alaska needs, affirmative and aggressive State action will be necessary. Non-action by the State with respect to disposition and transportation of North Slope natural gas threatens permanent loss of the gas resources insofar as Alaska consumers are concerned; non-action creates a risk that natural gas produced in Alaska will not be available to fulfill future Alaska residential or industrial needs.

Let us assume that the El Paso, Trans-Alaska transportation route is authorized. Non-action by the State will result, sooner or later, in producer sales of eight-eighths of the natural gas stream in interstate commerce, either to an interstate pipeline, to distributors in the lower 48 states, or to direct users in the lower 48 states; and non-action by the state will result in the construction and operation of an interstate transportation system designed for, and financed on, the expectation of the flow of eight-eighths of the deliverable natural gas from the North Slope. If the State permits, by non-action, these developments, then certain legal consequences may be expected.

2/ I would ask it to be understood that my opinions do not reflect considerations outside my area of knowledge and training; I have no basis, for example, for advice on environmental or economic factors; nor can I gauge the will of the citizens of Alaska concerning economic growth and industrial development; nor can I estimate how strong will be the demand for revenue because of programs which the State may determine are necessary.

The issues which I address are, therefore, approached only from the relatively narrow standpoint of law and Federal regulation. I do not presume to prescribe what is "right" or "good" for the State. These determinations are peculiarly within the province of this Legislature, which will, I am sure, look to a much broader range of considerations, information, and analysis than are within my capabilities.

1. If producers market Alaska natural gas in interstate commerce, paying the State a one-eighth royalty in cash, the Federal Power Commission can assert jurisdiction over eight-eighths of Alaska production, and thereby attempt to prevent any later efforts by the producers, or by the State, to withdraw the State's one-eighth royalty share for an in-kind taking by the State for use in the State. (PP. 64-73)³

2. In the event of such a sale by producers to an interstate pipeline, and in the event of FPC denial of a request to withdraw State royalty gas, the only means for securing gas service in Alaska would be through a future demand by Alaska municipalities or distributors for service by the pipeline; such a request may be treated by the FPC, and lower 48 pipeline or distributor customers, as a request for new service which cannot lawfully be authorized. If the pipeline, at the time of the demand, is unable to render adequate service to its non-Alaska customers, or if grant of the Alaska demand would require to enlargement of pipeline transportation facilities, the Commission may be required, by law, to refuse demands for Alaska service -- even for residential and public service needs.

3. If Alaska can successfully claim -- contrary to the hypothesis in Paragraph 2 -- status as an existing customer, pipeline natural gas supplies would be shared by Alaska and non-Alaska customers on the basis of FPC curtailment priorities and allocation orders.

4. In the event of direct sale by producers to end users in the lower 48 states, or sale to distribution companies in the lower 48 states, there is no clear legal mechanism available to the State of Alaska to secure any portion of the natural gas produced in Alaska for future Alaska needs as they may develop.

Non-action by the State, in my judgment, creates serious risk that Alaska natural gas will not be available for future Alaska needs, even if the El Paso transportation proposal prevails. It is not just the

3/ Page references here and later in this letter are to the attached legal analysis.

potential industrial gas demand (which may or may not be a matter of State concern, dependent on the will of the citizenry with respect to industrial development) that is at risk. The needs of Fairbanks, and other communities, for residential service and service to schools, hospitals, and the like is also threatened.

The risk can be lessened by appropriate state action, as hereinafter discussed, if a trans-Alaska routing is authorized. If a trans-Canada routing is selected, whereby North Slope natural gas leaves Alaska north of the Arctic Circle, the State has no means of protecting its future gas needs. The routing question is, therefore, critical to the State -- at least in the context of future availability of Alaska gas for future Alaska needs. 4/

I am of the firm opinion that neither of the present proposals for transportation of North Slope natural gas offers a substantial guarantee that Alaska natural gas needs will be met. If either the El Paso or the Arctic Gas proposal is approved as presently submitted, the State could well find itself unable to draw upon its own gas resources to meet the future needs of the State.

The problems here are inherent in the nature of the applications and the Natural Gas Act: if the Arctic gas proposal prevails, there is no physical means to move gas from North Slope areas to the State's population centers; the Arctic gas routing will simply preclude gas movement within the State since the gas will leave the State north of the Arctic Circle. If, on the other hand, the El Paso proposal prevails on the basis of present filings with the FPC, the full natural gas stream will begin movement in interstate commerce, and even though it may be physically possible to withdraw gas where and when needed in Alaska, it may be legally impermissible to do so.

4/ Whatever the transportation route, natural gas production and transportation may reasonably be expected to contribute significant revenues and economic activity to the State. Accordingly, even if the transportation system which is Federally authorized does not lend itself to serving state natural gas needs, benefits to the State still might result from natural gas production, and transportation. A decision in this regard involves a balancing of economic, environmental, and political considerations which are beyond the scope of the requested analysis, and outside the scope of my knowledge and experience.

The State's present danger stems from the fact that certificates may issue, and interstate service may commence, without formal recognition of the State's needs. Interstate service unconditioned to Alaska's rights, creates grave problems concerning later attempts by the State to withdraw gas from the system -- problems which arise under Granite City Steel Co., v. FPC, 320 F2d 711 (C. A. D. C.. 1963) which suggests that gas customers in Alaska may not be added as pipeline customers if the pipeline is, at the time service to new customers is sought, then unable to meet the needs of existing customers; under Sec. 7(b) of the Natural Gas Act as interpreted by the Commission, which suggests that a partial diversion of the interstate natural gas stream will not be permitted without prior Commission authorization; and under Louisiana Public Service Commission v. FPC, 359 F2 524 (C. A. 5, 1966) cert. den'd. 385 U.S. 833, which holds that commingling of non-jurisdictional natural gas with jurisdictional natural gas results in a single gas stream which is wholly jurisdictional.

It does not follow, however, that Alaska is powerless to influence the movement of North Slope gas in a manner more nearly suited to the State's future gas needs than the proposals now pending. To the contrary, I believe there are reasonable courses of action which the State can pursue.

The State may exercise the option set forth in its oil and gas leases to take royalty gas in kind, and market this production separately from working interest gas; the State need not seek FPC authorization for royalty sales, and should limit the term thereof to the extent possible.

I believe that it would be most unwise, under present circumstances, to permit the producing companies which hold leases on State lands to market the State's royalty share of gas production. If marketing occurs, with the gas moving in interstate commerce, the problems summarized above -- and particularly the Sec. 7(b) abandonment problem -- stand as very real threats to later withdrawal of State royalty gas from the marketing arrangements made by the producers. Most simply put, if 8/8ths of the gas stream is committed to interstate commerce by delivery under an unconditional producer certificate of public convenience and necessity, withdrawal of the royalty 1/8th at a later date may require

FPC approval -- which may, or may not, be forthcoming. This is the lesson of FPC Docket N. C171-879, Superior Oil Company, Letter Order issued June 13, 1975. (pp 64-73).

This particular problem can be mitigated if the State exercises its option, prior to the delivery of any gas, to take its royalty share in kind, with appropriate notice to producer, purchaser, and FPC that the producer is without authority to market the State's natural gas.

The State should, therefore, negotiate for separate sale of its royalty gas on the best terms available, giving due consideration to a relatively short-term sale. The State should take the position that it is not subject to the Natural Gas Act, nor to the jurisdiction of the FPC, and that the State is therefore free to make sales for resale in interstate commerce (or in any other market), without certificate authority, and without restriction as to rates or terms of service. This position, though clouded by the Court decision in FPC v. Corp. Comm. of Oklahoma, 362 F. Supp. 522 (W.D. Okla., 1973) aff'd 415 U.S. 961 (1974) is, I believe, legally sound and legally sustainable.

State marketing of its royalty gas is not a complete answer to the basic problem. That gas must be transported, and the only available means of transport will be through the facilities of an interstate pipeline. The FPC can, therefore, exercise indirect control of royalty gas through its certification powers under Section 7 of the Natural Gas Act, even to the extent of denying the right of transportation if it is opposed to the end-use to which the gas will be put, or the price paid for the gas. See FPC v. Transcontinental Gas Pipeline Corp., 365 U.S. 1 (1961), and pp.3-9 of the attached analysis. Thus, it will still be necessary for the State to involve itself in transportation negotiations and see that FPC approval of transportation arrangements is obtained, even if the State markets its own gas by sale at the wellhead or sale downstream. The protection which the State must have is advance FPC approval of State withdrawal of its gas from interstate commerce, but this approval should be sought and obtained by the transporter in connection with its certificate applications and related tariff findings.

In suggesting these actions, I hold to the view that the State's power to call upon the gas resource when needed in the future can, in reasonable probability, be exercised if the State's rights and obligations are fully spelled out, fully presented to the FPC, and accepted by the FPC as an integral part of the transportation system which is certified by the FPC.

While all problems relating to future in-State use of State-owned gas may not be wholly solved by advance agreement, and advance FPC clearance, of specific production, transportation, and sales arrangements, it is my judgment that the problems are reduced to the levels of acceptable risk-taking if the FPC, prior to construction and operation of a transportation system, expressly conditions all necessary certificates of public convenience and necessity and pipeline tariffs to permit and approve such arrangements as are negotiated by the State with respect to its royalty gas.

The State may consider the enactment of legislation to hold State owned resources within the State unless such are surplus to the needs of the state.

Discussed in some detail in the appended legal analysis is a recent Texas statute which is designed to secure for the benefit of the State the resources which are publicly owned. The statute is prospective in operation, and simply requires that all State-issued oil and gas leases shall contain appropriate provisions to prohibit sale of natural gas produced from State-owned lands outside the State unless it is found that such gas is surplus to the needs of the State. (pp.79-85).

While the State clearly may not "embargo" natural gas through exercise of its regulatory powers, (pp.43-45) it may be argued that the State's powers incident to ownership of public lands are different from, and greater than, mere regulatory powers. Cannot the State decide to withhold its lands from development? if so, (and about this I can see little argument), does not this right include the lesser right to permit development only upon terms acceptable to the State as a property owner? (pp.15-17).

I do not offer an unqualified opinion that such legislation would withstand court challenge; I acknowledge that a challenge would probably be forthcoming, and that the legislation might fall as an undue burden on interstate commerce. Nonetheless, there is some chance of upholding protective legislation, and enactment could serve as a clear Legislative expression of Alaska's determination to retain a fair share of Alaska's resources. (pp.79-85).

The State may consider various means of encouraging conversion of natural gas to methanol, or encouraging extraction of all natural gas liquids, prior to movement of natural gas in interstate commerce.

If North Slope gas is converted to methanol before becoming committed to interstate commerce, the conversion facilities, the methanol itself, and the transportation of methanol would not be subject to FPC control. Since the natural gas would be produced and "consumed" (i.e., converted to something other than natural gas) within the State, the natural gas would never become subject to FPC jurisdiction.

Similarly, if ethane, propane, butane, and other liquids are removed from the natural gas stream prior to transportation or sale in interstate commerce, the extraction facilities, the liquids themselves, and the transportation of the liquids should not be subject to FPC control.

It is beyond the scope of my knowledge to explore the economic feasibility of these alternatives; nor can I judge whether the oil pipeline now under construction can, from an engineering standpoint, serve as a conduit for methanol or other liquids. I believe, however, that the State should be aware that a natural gas stream has enormous potential value other than its obvious value as a heat source. It would be imprudent not to explore all potential uses of the gas stream; particularly where conversion within the State, or liquids extraction within the State, diminishes the range of FPC controls, and where, as here, the use of liquids for generation of heat represents a waste of valuable raw material.

Encouragement of conversion or extraction may be given through legitimate State tax incentives or through dedication, on favorable terms, of State-owned gas to a conversion or extraction project. The most effective means of encouragement should be determined at the time full exploration is made of economic and engineering feasibility.

Legislative action may be considered with respect to extraction operations, but probably may not be considered with respect to a conversion project. The latter situation would almost surely require an impermissible degree of interference with interstate commerce, since any statute directing the flow of natural gas to a con-

version plant would, in actual operation, preclude movement of gas in interstate commerce. Such a restriction would not, in my judgment, withstand Court challenge.

Legislative direction that liquids extraction occur prior to movement of the residue gas in interstate commerce may, on the other hand, be a valid exercise of State regulatory powers to prevent waste. This issue is discussed in some detail in the attached legal analysis (24-100), and I conclude that mandatory extraction, if based on appropriate finding that extraction is necessary to prevent waste of a natural resource, and if properly applied to preclude the possibility of an unconstitutional confiscation, has a reasonable basis and can, therefore, be defended.

In addition to the foregoing alternatives relating to possible State action to retain a portion of the State's gas resources for State use, other, and different, alternatives exist.

What Actions Can the State Pursue to Achieve Benefit from the State's Gas Resources?

Until this point, we have focused on natural gas transportation issues; I suggest that there are other matters which deserve consideration as the State of Alaska moves toward resolution of its basic energy policies. These other matters are not strictly within the request made of me for legal analysis, and indeed some require far more exhaustive consideration before a firm recommendation can be made; I touch upon each briefly because they are germane to the general issues under discussion, and because some, or all, may emerge as part of an overall State strategy of resource management.

1. State leasing policies should be re-examined.

(a) The State is presently leasing on the basis of a one-eighth royalty. Other producing states, notably Texas and Louisiana, now demand, and receive, a one-fifth or one sixth royalty. Alaska should re-assess its bargaining position, its revenue needs, and whether the greater degree of control which in-kind royalty permits, justify leasing on terms other than those presently employed.

(b) Consideration should be given to the possibility that the leasing of State lands, or the withholding of state lands from leasing, is a valid instrument of State policy which can be used to assist in holding State resources for State needs; for example, can