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COMMENTS OF ATLANTIC RICHFIELD COMPANY
TO THE
PRESIDENT OF THE UNITED STATES

Re: El Paso Alaska Company, *et al.*) Docket No. CP75-96, *et al.*
Federal Power Commission

June 17, 1977

AGO 913363

AtlanticRichfieldCompany 515 South Flower Street
Los Angeles, California 90071
Telephone 213 486 1736
T. F. Bradshaw
President

June 16, 1977

The President
The White House
Washington, D. C.

Dear Mr. President:

On May 2, 1977, the Federal Power Commission ("Commission") transmitted to you its recommendations concerning the Alaska Natural Gas Transportation System. Atlantic Richfield Company is the owner of substantial reserves of natural gas at Prudhoe Bay and elsewhere in Alaska and naturally has given careful study to the Commission's recommendations.

As set forth in the attached comments and the appendices thereto, Atlantic Richfield disagrees with many of the Commission's recommendations, particularly those relating to gas pricing. Moreover, the Commission's pricing recommendations are inconsistent with your announced Energy Plan.

Atlantic Richfield believes that the national interest in the early delivery of Alaskan gas to the lower 48 states can best be accomplished by affording Alaska and Alaskan producers fair and nondiscriminatory price treatment - no more and no less favorable than that afforded in the lower 48 states. Therefore, on March 31, 1977, Atlantic Richfield Company filed a petition with the Commission seeking a declaration of policy that natural gas produced in the State of Alaska will be entitled to the National Rate for jurisdictional gas sales applicable to "new" natural gas on the date gas first commences to flow in interstate commerce from any area of the State of Alaska to the lower 48 states. The application of the gas pricing policy established in your Energy Plan to Alaskan gas at the time it begins to flow in interstate commerce would accomplish essentially the same purpose.

The extension of uniform national pricing policies to all Alaskan gas, whether produced from the North Slope, Cook Inlet, the Gulf of Alaska or the interior areas, would grant to that state and its producers fair and equitable treatment and provide the necessary incentives for development of known reserves and exploration for additional reserves.

In sharp contrast, however, the Commission proposes a discriminatory formula applicable only to Prudhoe Bay gas which would (1) fix a so-called minimum "field price" attributing no value whatsoever to Prudhoe Bay gas at the wellhead (only the producers' incremental cost of gathering and conditioning the gas to meet pipeline transmission requirements would be allowed), and (2) determine a maximum "field price" by deducting from its artificially-depressed estimate of city gate "market value" the transportation costs of Alaskan gas. This formula, which would compel the wellhead price of Prudhoe Bay gas to absorb the entire risk and financial burden of potential overruns, whether avoidable or unavoidable, foreshadows zero wellhead revenue. Under such circumstances, it is unlikely that Prudhoe Bay gas reserves would be produced for sale, and it is virtually certain that there would be no further exploration of potential gas reserves in Alaska.

Atlantic Richfield believes that the Commission's proposal for pricing Prudhoe Bay gas is unlawful, discriminatory, and totally inconsistent with the even-handed treatment promised by your Energy Plan. Failure to afford the State of Alaska and Alaskan producers pricing equality can only hinder and delay the full and efficient development and delivery of known and potential Alaskan gas reserves to meet the needs of the nation. Attached are comments explaining more fully Atlantic Richfield's position.

Atlantic Richfield Company stands ready to render any assistance that may be desired concerning these matters.

Very truly yours,

T F Bradshaw

T. F. Bradshaw

COMMENTS OF ATLANTIC RICHFIELD COMPANY CONCERNING FEDERAL POWER COMMISSION RECOMMENDATION TO THE PRESIDENT

INTRODUCTION

Pursuant to Section 5(b)(1) of the Alaska Natural Gas Transportation Act of 1976, 15 U.S.C. § 719, et seq., the Federal Power Commission ("Commission") on May 2, 1977 submitted its "Recommendation to the President" concerning the most appropriate transportation system for the delivery of Alaskan gas to the lower 48 states. Atlantic Richfield Company ("Atlantic Richfield") takes no position upon the selection of a pipeline route other than to observe that the route which is capable of delivering Alaskan natural gas least expensively and most dependably is in everyone's interest. Atlantic Richfield's comments are directed principally to the pricing of Alaskan natural gas--a subject which bears vitally upon the dependability and economic viability of any system which is selected.

Atlantic Richfield believes that deregulation of natural gas would bring about the optimum industry response to the needs of gas consumers. In the absence of deregulation, the State of Alaska and Alaskan producers must be afforded regulatory equality. Throughout the hearings preceding the Commission's Recommendation, Atlantic Richfield urged the Commission to address meaningfully the issue of an Alaskan gas price. The lack of a pricing policy affording Alaskan producers fair and nondiscriminatory price treatment discourages exploratory efforts for additional gas reserves. Nevertheless, the Commission still has not established a coherent policy extending uniform national pricing standards to all Alaskan natural gas.

The concepts advanced on gas pricing in the Recommendation to the President are virtually worthless since they would unlawfully single out the State of Alaska and Prudhoe Bay producers for confiscatory and discriminatory treatment.

First, the Commission would establish a minimum "field price" for Prudhoe Bay gas no higher than the cost incurred by the producers for gathering and conditioning the gas to pipeline transmission requirements.1/ This "field price" is a misleading term which cannot be compared either with the "wellhead price" ceilings fixed by the Commission for all other interstate gas, or with the proposal for gas pricing embodied in the President's National Energy Plan, which also contemplates a "wellhead price" as its basis. In fact, the Commission's minimum "field price" would dictate a "wellhead price" of zero for Prudhoe Bay gas since it is designed to compensate the producers only for costs incurred by them beyond the wellhead for the benefit of the transmission project sponsors.2/

Second, the Commission would consider establishing a maximum "field price" equal to the difference between an artificially-depressed city gate "market value" and the total transportation costs. The resulting field price, if large cost overruns were incurred, would be reduced to the minimum "field price" described above producing a wellhead price of zero. Worse yet, this approach burdens the price of Prudhoe Bay gas with the additional costs associated with building a pipeline larger than necessary to transport Prudhoe Bay gas alone. This policy assuredly would inhibit exploratory efforts in other frontier areas whether they were in the Arctic or the oceans' depths because it would penalize those companies who first took the significant risks of frontier exploration by making them financially responsible for construction of the means to transport not only their gas but also that gas discovered subsequently by others.

1/ Gathering and conditioning the Alaskan gas will involve the following operations: gathering the gas from a 200 square mile area; compressing of the gas to pressures far above any utilized in any pipeline system in the lower 48 states; complying with extraordinary hydrocarbon and water dew point requirements imposed by the transportation system; reducing the native carbon dioxide to a level three times lower than that normally required; and chilling the gas to below freezing temperatures to enable its transportation in a permafrost environment. The costs of these operations are largely attributable to the transportation

(Footnote continued)

Third, it is impossible for the producers to guarantee the uninterrupted physical delivery of specific volumes of natural gas at all times from the Prudhoe Bay Field. Nevertheless, the Commission's recommendation proposes such a guarantee which if not met will require the producers to assume the debt service on the transportation system. Thus, the risk of service interruption for any reason--even state regulatory controls, natural disasters and force majeure--would be borne b[illegible] producers if the Commission's proposals were adopted.

Fourth, the Commission's proposed pricing policy relieves the pipeline sponsors of as many of the project risks as possible since all risks of cost overruns in the construction of the system would be borne first by the producers as direct deductions from the price of the gas. Thus, the project sponsors would appear to be absolved of primary financial responsibility for unanticipated cost overruns and indeed even for mismanagement and inefficiency. And, if consumer guarantees were necessary to finance the project, the producers' wellhead price would bear fully the negative impact of the credit which the Commission would give the consumer for making the guarantee. This policy does little to promote fiscal responsibility by the project sponsors.

The suggestion that producer participation in financing the pipeline would somehow enable the producers to prevent or control cost overruns is illogical. The possibility of massive overruns resulting from adverse weather conditions, inflation in labor and material costs, U.S. and Canadian environmental requirements and other force majeure causes would continue to exist regardless of participation

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(Footnote 1 continued)

of the gas (see attachment "A") and will be substantial. The Recommendation estimates these costs may be $0.50 per MMBtu in 1975 dollars.

2/ No substantive value can be placed on the Commission's remark that it might be "found appropriate" to allow recovery of "some joint oil/gas costs." Recommendation at XII-34,35.

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in project financing by producers. For these reasons the wellhead price for gas should not be linked to pipeline cost overruns.

I. ALASKAN NATURAL GAS PRICING POLICY SHOULD CONFORM TO NATIONAL STANDARDS

Atlantic Richfield does not propose in these comments to discuss the legality of the Commission's seriously flawed, inherently discriminatory and confiscatory pricing suggestions. Rather, it will emphasize those facets which are most irrational and misdirected, and highlight their inconsistency with this Administration's announced policy "that the price of energy should reflect its true replacement cost," and thereby "give gas producers an adequate incentive for exploration" for additional reserves.3/

In approaching the construction of an Alaska Natural Gas Transportation System and the pricing of Alaskan natural gas in the context of the present energy situation, Atlantic Richfield respectfully suggests that this Administration should seek to achieve at least two fundamental and immediate goals: (1) minimize the unit cost of transporting natural gas from Alaska to the lower 48 states; and (2) encourage full development of known reserves and further exploration for natural gas in Alaska so as to provide the additional gas that is needed to utilize the proposed capacity and insure the reliability of gas supplies for any transportation system.4/

In the face of these substantial goals, the Commission has suggested a pricing policy which would permit the costs of the Alaska Natural Gas Transportation System essentially to dictate the price of Alaskan natural gas, and indeed would

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3/ Address by the President of the United States Transmitting his Proposals for a Comprehensive Energy Plan, April 20, 1977.

4/ A corollary goal would be the establishment of policies in Alaska which will encourage exploration for natural gas in other frontier areas by fair treatment of those undertaking the huge risks involved in venturing into unknown and hostile environments.

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contemplate a reduction of the wellhead price of Prudhoe Bay gas to zero before the sponsors suffered a diminution of their profits. The result would be that the unit cost of transporting Alaskan gas would likely be maximized while the incentives to producers to produce proved reserves or locate new gas reserves in Alaska would be minimized or eliminated. Thus, far from furthering these objectives, the Commission's pricing scheme would systematically frustrate the accomplishment of each of them.

II. THERE IS AN URGENT NEED FOR DECLARATION OF A NONDISCRIMINATORY PRICING POLICY FOR ALASKAN NATURAL GAS

Atlantic Richfield submitted to the Federal Power Commission, prior to the issuance of the Recommendation to the President, a petition for a declaration of a pricing policy with respect to Alaskan natural gas. (Attachment B.) Atlantic Richfield urged specifically that, in the absence of deregulation, natural gas produced in Alaska and dedicated to the interstate market be entitled to the then highest national rate for jurisdictional sales applicable to "new" natural gas on the date gas first commences to flow in interstate commerce from any area of the State of Alaska to the lower 48 states. Implementation of such a policy would accord Alaskan gas the same price treatment as is given gas produced in the lower 48 states and would provide the regulatory stability essential for stimulating exploration and development of new Alaskan gas reserves. Atlantic Richfield believes that this petition balances all of the major goals involved in pricing Alaskan gas, and urges its serious consideration.

Alternatively, Atlantic Richfield suggests that should pending legislative proposals falling short of deregulation replace Commission jurisdiction over producer wellhead prices, the principles contained in the President's National Energy Plan, which recognize the need for gas price ceilings to reflect commodity value and replacement costs, must be applied to Alaskan gas. The "new gas" price ceiling which, under pending legislation, would be prescribed by the President at the time Alaskan gas first commenced to flow in interstate commerce would provide the State of Alaska and Alaskan producers equal opportunity and assurance of nondiscriminatory treatment

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vis-a-vis other states and producers therein and provide the economic certainty so essential to future frontier exploration.

Any suggestion that the Prudhoe Bay producers will realize excessive profits if their wellhead price is permitted to equal either the nationwide ceiling prescribed by the Commission or the ceiling price for new gas which may be specified in the President's National Energy Plan would be illfounded. First, as the Energy Plan clearly recognizes, the price of gas must reflect its commodity value and provide for its replacement as it is consumed. Income from a successful field is the only ultimate source of funds to pay for unsuccessful exploratory efforts and to replace the gas produced and consumed. Second, the averaging process involved in either cost-based national pricing or the ceiling prices contemplated by the President's Energy Plan is predicated upon a balancing of the results of successful and unsuccessful exploratory and developmental efforts. To single out successful fields for discriminatory price treatment under the guise of preventing "windfall profits" would invalidate the averaging process upon which industry-wide ceiling rates are based.

III. ENCOURAGING EXPLORATION TO LOCATE ADDITIONAL NATURAL GAS RESERVES IN FRONTIER AREAS

The United States is in the grip of a severe natural gas shortage. In every year since 1968 natural gas consumption has exceeded the addition of new reserves. In the face of persistently diminishing natural gas supplies, the development of the substantial potential reserves of natural gas located in remote frontier areas is necessary if the energy needs of the nation are to be satisfied in the foreseeable future.

The full development of known reserves and the exploration and development of additional Alaskan gas reserves are particularly essential in order to (1) reduce the unit costs of transporting gas to the lower 48 states, (2) insure the availability of a reliable supply of gas, and (3) facilitate the financing of the pipeline project. The pricing system proposed by the Commission frustrates each of these objectives by establishing a wellhead price for Prudhoe Bay gas that is absolutely certain to act as a disincentive for gas exploration and development in that area.

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Exploration for and development of natural gas reserves in remote frontier areas are extraordinarily expensive and risk-laden undertakings. Responsible corporate management simply does not permit the commitment of significant amounts of capital to natural gas exploratory or development efforts where the government pricing policy does not provide an economic justification for such investments. The pricing policy recommended by the Commission for Prudhoe Bay gas fails to provide wellhead price incentives that would justify producer efforts to develop proved reserves or to find potential reserves of natural gas in the Alaskan region and indeed constitutes a clear signal to all producers that further exploration in Alaska and other remote frontier areas should be avoided.

If the Commission's pricing formula is adopted, producers can expect to receive at best (assuming no cost overruns) a wellhead price far below prices currently permitted for new natural gas or natural gas from the 1975-1976 biennium which is produced from other areas of the United States.5/ The Commission's pricing approach thus results in a clear discrimination against the State of Alaska and Alaskan gas simply because it is produced from a frontier area and thus subject to higher than normal transportation costs. In these circumstances, no responsible corporate decision-maker could support the investment of additional funds in gas development and exploration in Alaska.

The present alternatives for the Alaskan Natural Gas Transportation System involve proposals for construction of large diameter pipelines with capacities for extremely high throughputs of natural gas. However, at present these systems can rely only on the natural gas reserves in the Prudhoe Bay field. These reserves and expected deliverabilities are large, but by themselves, they are not large enough for the most efficient utilization of any of the pipeline systems of the size being considered.

5/ In Opinion No. 770, the Commission determined that the cost of finding and developing new supplies of natural gas to be $1.63 Mcf at the wellhead. The costs of significant producer gathering and conditioning operations are additionally compensated for on an area basis. It is a virtual certainty that in the newest biennium proceeding the Commission must find that these exploration and development costs have risen significantly.

The building of an Alaska Natural Gas Transportation System designed for cheap expansibility is in the national interest because all available estimates indicate the existence of substantial potential gas reserves in Alaska.6/ If found and developed, these additional reserves will be sufficient to justify the construction of a pipeline with a high throughput potential and will serve to lower dramatically the unit costs of transporting gas through such a system. However, if additional exploration for and development of Alaskan gas reserves is not to be encouraged by an adequate wellhead price, as the Commission's policy plainly suggests, then a smaller capacity, lower cost pipeline system is definitely mandated.

Development of additional reserves of Alaskan natural gas will also enhance the financability of the proposed Alaska Natural Gas Transportation System. The financing of a pipeline must be based on the supplies of gas expected to be transported through the pipeline. The security for potential sponsors and investors in the pipeline and their assurance of a return on investment will be based upon the adequacy and reliability of the Alaskan reserves available for transportation through the system. To the extent that such potential sponsors and investors perceive the probability that sufficient additional reserves will be developed to insure utilization of the pipeline at its most efficient capacity for the entire period of its expected life, they will be attracted to invest in the project. The more questionable the availability of sufficient additional reserves, the greater the envisioned risk.

Given the importance of locating additional reserves of Alaskan gas to the viability and success of the Alaska Natural Gas Transportation System, one would expect the Commission to recommend a fair pricing policy, designed to stimulate the exploration needed to locate such additional reserves. Yet the Commission, while recommending the construction of a high capacity pipeline, proposed a pricing policy which would inevitably serve as an overwhelming disincentive for further gas exploration in Alaska. In addition to isolating the Prudhoe Bay producers for discriminatory treatment the Commission's pricing proposals cast doubt upon the economic viability of the Alaska Natural Gas

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6/ The United States Geological Survey found the "undiscovered recoverable resources" of the North Slope to be between 19 TCF - 99 TCF.

Transportation System. Given the critical nature of the natural gas supply situation in the United States, the Federal Power Commission's proposed policy is, to say the least, difficult to comprehend.

IV. MINIMIZING THE COST OF TRANSPORTING ALASKAN NATURAL GAS TO THE LOWER 48

Generally, the two factors which will directly influence the economics of transporting Alaskan natural gas to the lower 48 states are the cost of constructing and operating the pipeline system and the volume of gas transported daily through the system. The Commission's pricing recommendation for Alaskan natural gas impacts negatively upon both of these variables and virtually insures that the total cost of transporting Alaskan gas would be higher than necessary under any rational pricing approach.

In order to keep the costs of construction of this enormous and complex project within the parameters estimated by the sponsors, strict measures of accountability and cost control on the part of the builders and sponsors are necessary. Thus, it is absolutely essential that those parties engaged in the construction of the project operate under a set of financial incentives which reward efficiency and penalize inefficiency, mismanagement, and avoidable cost overruns.

Incredibly, however, the Commission's recommended pricing policy relieves the sponsors of primary financial responsibility for cost overruns and places this burden first upon the wellhead price of Alaskan natural gas. Under the Commission's proposal, as the costs of transporting Alaskan gas increases beyond 100 percent of the sponsor's estimates, the wellhead price decreases to zero and the "field price" is reduced to a minimum price floor based on the recovery of incremental costs only. Only thereafter does the sponsors' 18 percent (18%) rate of return decline with additional cost overruns to a minimum 11 percent (11%) after tax return. Thus the Commission's proposals give the builders of the pipeline a "free ride" until their overruns, even those perhaps resulting from inefficiency and mismanagement, reach such proportions that the wellhead price of the gas has been reduced to zero. Subsequent overruns would reduce the sponsors' rate of return, but never below the guaranteed 11 percent.

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Besides representing the epitome of irrational financial accountability, the Commission's proposal would be inequitable because it would force the State of Alaska and Alaskan producers, who have no control over the construction of the pipeline, and therefore no ability to avoid the cost overruns, to absorb the entire burden of the increased cost. Moreover, it is idle to suggest that post-expenditure audits of the overruns would solve the problem. At that point the expenditure would have to be shown clearly to have been imprudent--a showing which under the best of circumstances would be difficult. Here, in a wholly novel construction environment, who is to say that an additional expenditure was imprudent or totally unnecessary.

CONCLUSION

The Commission's proposed pricing policy clearly discriminates against the State of Alaska and the Prudhoe Bay producers. By unmistakable inference, it denies all Alaskan producers - indeed all who would probe for natural gas in remote frontier areas - an equal opportunity to achieve economic rewards. Moreover, although it says it is desirable to do so, the Commission does not propose to rely upon free market forces to determine a price for Alaskan gas. Instead, the Commission would employ an arbitrary and unrealistic city gate value which ignores the cost of almost every other competitive energy source. From that depressed city gate value the Commission would then deduct the highly unpredictable cost of transporting the gas to the lower 48 states to arrive at the ceiling price of gas in Alaska. Such a misguided policy can result only in the dramatic decrease in exploratory efforts to find additional reserves of natural gas.

Alaskan gas priced at the wellhead on the same nationwide basis as gas from other parts of the United States would be readily marketable and competitive with electricity and home heating oil at the city gate.7/ When Alaskan gas is compared with other supplemental supplies of natural gas such as those from synthetic natural gas plants or less dependable foreign

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7/ There is, as the Commission notes in its Recommendation to the President, no real issue as to the marketability in the lower

(Footnote continued)

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sources, its economic attractiveness is even more apparent. Moreover, the equal treatment and reasonable price allowed to Alaskan producers under such a nationwide system would permit additional exploration and development in Alaska and elsewhere. Overall such a policy would: (1) lead to the development of additional vitally needed supplies of natural gas, (2) permit the optimum development of known reserves of Alaskan gas for movement through the pipeline system, (3) reduce the unit cost of transporting Alaskan gas to the lower 48 states, (4) increase the reliability of Alaskan gas supplies for the pipeline, and (5) enhance the financibility of the project. If the pricing and cost overrun accountability proposals contained in the recommendations are adopted, these goals are sure to be frustrated.

Finally, Atlantic Richfield wishes to state emphatically that it does not seek a regulated support price for Alaskan gas. Atlantic Richfield is a strong advocate of natural gas deregulation. Permitting free market forces to determine the pricing of natural gas at the wellhead would create an economic atmosphere that would surely provide a fair price for Prudhoe Bay gas and call forth the investment necessary for optimum exploration and development of potential Alaskan gas reserves. However, Atlantic Richfield believes that under present circumstances its approach must be premised on the continuation of regulation and it is on this assumption that Atlantic Richfield requests that Alaskan gas receive the same pricing treatment afforded the rest of the nation's new gas supplies. The predictable result of such an equitable policy will be the fullest development of Alaskan gas supplies that can be achieved absent deregulation.

(Footnote 6 continued)

48 states of Alaskan gas reasonably priced at the wellhead. Attachment "C" hereto, a study of the marketability of Alaskan gas which was submitted to the Commission, updates evidence submitted by Atlantic Richfield to the Presiding Administrative Law Judge.

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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

EL Paso Alaska Company, et al.	Docket Nos. CP 75-96, et al.
Order Providing for Suspension of Procedures Pursuant to the Provisions of the Alaska Natural Gas Transportation Act of 1976	Docket No. RM 77-6

SUPPLEMENTAL SUBMISSION OF
ATLANTIC RICHFIELD COMPANY
CONCERNING CONDITIONING OF
PRUDHOE BAY GAS

During the course of the oral argument, the term "gas conditioning" or "conditioning" was frequently employed by both counsel and members of the Commission. In our view, the use of this shorthand expression should not be allowed to leave the Commission the wholly erroneous impression that, as applied to Prudhoe Bay gas, this term describes a function normally performed as a part of production operations.

The term "conditioning" as used in these proceedings has come to mean (1) compressing the gas to extremely high pipeline inlet pressures, (2) establishing its hydrocarbon and water dew points at unusually stringent levels, (3) chilling the gas to below freezing temperatures to prevent melting the permafrost, and (4) reducing its carbon dioxide content to a level more than 3 times lower than the level ordinarily acceptable for pipeline transmission. These pipeline pressure and quality requirements have (with some variations) been dictated by all three transportation system applicants solely in order to facilitate the transportation of the gas and reduce their costs.

For example, the pressure requirements of all three gas transmission systems are extremely high, ranging up to 1,680 psig. The natural wellhead pressure and Btu content of Prudhoe Bay gas would, under prevailing FPC regulations in the south 48 states, be sufficient to entitle such gas to receive the nationwide ceiling rate. The cost of compression above such natural wellhead pressure, if required to enable the gas to enter the pipeline against existing pipeline pressure, would be borne by the gas purchaser in accordance with current industry practice. The purpose of requiring such high inlet pressures at Prudhoe Bay is not to meet existing pipeline pressure but to provide initial compression for the transmission system. As a result, no inlet compression is required on any of the three proposed transmission systems.

Additionally, the applicants' specifications for Prudhoe Bay gas require a reduction of the carbon dioxide content to 1% or lower as opposed to the normal 3% carbon dioxide content allowed in the south 48 states. Likewise, the hydrocarbon dew point and water dew point requirements are unusually severe in comparison to normal south 48 requirements. The unique requirement of gas chilled to below freezing temperatures permits underground pipeline construction rather than the more expensive elevated pipeline construction.

In essence, therefore, the large majority of the estimated costs of "conditioning" the Prudhoe Bay gas must be attributed to the unique and stringent requirements established by the pipeline applicants, over which the producers have no control. These special requirements have the effect of transferring the costs of providing fuel gas and the facilities necessary to provide initial pipeline compression from the pipeline applicants to the "conditioning plant" owners, and of compelling such owners to provide "chilled" gas of super quality at the pipeline inlet.

For these reasons, Atlantic Richfield is of the view that the costs attributable to compression of Prudhoe Bay gas above its normal wellhead pressures and the chilling and conditioning of the gas to meet the super quality requirements of the pipeline applicants is not a production function but should be properly considered as a part of the cost of transporting the Prudhoe Bay gas. Hence, Atlantic Richfield has taken the position that Prudhoe Bay gas is merchantable and entitled to the applicable nationwide rate at the "wellhead" or the points of separation of oil and gas, and that the cost of the unique compression, chilling and conditioning facilities desired by the gas transporter should be borne by the gas transporter or the gas purchaser.

Respectfully submitted,

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Counsel for Atlantic Richfield

April 18, 1977

AFFIDAVIT

DISTRICT OF COLUMBIA:

EDWARD R. LEAHY, being duly sworn, deposes and says that he is an attorney for Atlantic Richfield Company; that he is authorized to verify and file this document; that he has examined the statements contained in the submittal and that all such statements are true and correct to the best of his knowledge, information and belief.

Edward R. Leahy
EDWARD R. LEAHY

Subscribed and sworn to before me this 18th day of April 1977.

[illegible]
NOTARY PUBLIC

[SEAL].

My Commission Expires: [illegible] 14, 198[illegible]

CERTIFICATE OF SERVICE

I, EDWARD R. LEAHY, hereby certify that I have this 18th day of April 1977, served the foregoing document upon all parties of record in this proceeding which are included on the Restricted Service List in accordance with the requirements of Section 1.17 of the Commission's Rules of Practice and Procedure.

Edward R. Leahy
EDWARD R. LEAHY

Attorney for
Atlantic Richfield Company

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

APPLICATION OF THE NATIONAL RATE TO NATURAL GAS FROM THE STATE OF ALASKA AS OF THE DATE ALASKAN GAS COMMENCES TO FLOW IN INTERSTATE COMMERCE	))))	Docket No.

PETITION OF ATLANTIC RICHFIELD COMPANY FOR DECLARATION OF A PRICING POLICY WITH RESPECT TO JURISDICTIONAL ALASKAN NATURAL GAS

COMES NOW, Atlantic Richfield Company ("Atlantic Richfield" or "Petitioner"), pursuant to Section 1.7 of the Rules of Practice and Procedure of the Federal Power Commission ("Commission"), to petition the Commission for a declaration of policy that natural gas produced in the State of Alaska and dedicated to the interstate market will be entitled to the then highest national rate for jurisdictional sales applicable to "new" natural gas on the date gas first commences to flow in interstate commerce from any area of the State of Alaska to the lower 48 states. This policy would apply such national rate to Alaskan gas at the wellhead irrespective of the date drilling of wells commenced or the date of the contract dedicating the gas to the interstate market. In support of its petition, Atlantic Richfield respectfully states:

1. Atlantic Richfield, a Pennsylvania corporation, with its principal place of business at Los Angeles, California, is a producer of natural gas. Atlantic Richfield holds interests in substantial acreage throughout the State of Alaska, and has established approximately 7.8 Tcf of proved reserves in that state.

2. The names and addresses of persons to whom communications with regard to this petition and subsequent proceedings are to be addressed are:

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I.

SUMMARY OF PETITION

This Commission has never announced a pricing policy with respect to Alaskan natural gas. Present proceedings to establish just and reasonable national rates for natural gas specifically exclude Alaskan natural gas from consideration.1/ There exists, therefore, no policy upon which potential producers of Alaskan natural gas can rely to predict what pricing system will be applicable to Alaskan natural gas when its delivery to the lower 48 states becomes possible.

Atlantic Richfield respectfully submits that there is an urgent need for this Commission to formulate the pricing policy that will be applicable to Alaskan natural gas when its delivery to the lower 48 states is initiated. Such a policy must provide the regulatory certainty essential for stimulating

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1/ See, e.g., the Commission's Order in Docket No. RM77-13, amending a prior order instituting a national rate proceeding for 1977-1978 biennium natural gas, which states:

> In the Notice of Proposed Rulemaking instituting the last biennial review which culminated in the issuance of Opinion Nos. 770 and 770-A, the Commission specifically excluded from consideration the question of the just and reasonable rate for Alaskan gas. A similar exclusion applies to the 1977-1978 biennial review. Order at 1.

exploration and development of new Alaskan gas reserves. Accordingly, Atlantic Richfield petitions this Commission to determine promptly that gas from the State of Alaska will be entitled to the highest national rate in effect for "new" natural gas on the date Alaskan gas first commences to flow in interstate commerce to the lower 48 states. Petitioner requests a declaration to the foregoing effect for the reasons set forth below. 2/

II.

THE PUBLIC INTEREST REQUIRES THAT THE COMMISSION ANNOUNCE A FIRM PRICING POLICY WITH RESPECT TO ALASKAN NATURAL GAS

The rapid development of Alaskan reserves and the discovery of new Alaskan reserves are in the interest of the nation as a whole. The lower 48 states have a vital need for Alaskan gas supplies to help alleviate the growing shortage of natural gas. The State of Alaska needs, and as a state has a legal right, to encourage orderly development of its natural gas reserves to enhance its economic growth and create increased opportunities for its citizens.

Despite this growing demand for Alaskan gas, the Commission has never enunciated a pricing policy applicable to Alaskan gas. 3/ Indeed, it has made no effort to establish the environment of regulatory certainty in Alaska which would encourage large scale exploration for and development of Alaskan potential gas reserves.

There is no reasonable basis for continuing to ignore the need to develop a firm pricing policy for Alaskan gas. The lack of such a policy disserves the public interest and discriminates against Alaskan producers and the State of Alaska, both of whom have legitimate interests in the establishment of pricing policies and the accompanying regulatory certainty which can serve as a stimulus for Alaskan gas development.

2/ Atlantic Richfield continues to advocate decontrol of the wellhead price of natural gas as the optimum response to the gas supply problem. It offers the proposal contained in this petition, however, as an appropriate method of meeting the need for a pricing policy under existing conditions.

3/ See, e.g., Opinion No. 699, 51 F.P.C. 2212, 2303 (1974).

Failure to correct this discriminatory policy can only delay the development of Alaskan potential gas reserves, discourage additional exploration for Alaskan gas, hamper the establishment of Alaskan gas transportation systems and inhibit the economic development of Alaska. Clearly the time has come to treat Alaskan gas reserves as the vital part of the nation's gas future that they are.

III.

THERE IS AN URGENT NEED TO ASSURE THE STATE OF ALASKA AND ALASKAN PRODUCERS THAT THE NATIONAL RATE WILL BE EXTENDED TO THAT FRONTIER AREA

A. The Need for Delivery of Alaskan Natural Gas to the Lower 48 and for Additional Alaskan Exploration to Discover More Reserves Has Never Been as Great

The United States is caught in the grip of a severe natural gas shortage. Since 1968, annual natural gas consumption has exceeded the addition of new reserves. In 1975 alone, domestic reserves committed to interstate pipeline systems declined by 12.1 Tcf. 4/ The result of this decline has been enormous curtailment. A Commission staff report issued on January 11, 1977 projected firm delivery curtailments of 1,522 Bcf during the 1976-77 winter--approximately 20 percent higher than curtailments of 1,269 Bcf during the previous winter. 5/ In the face of persistently diminishing conventional natural gas supplies, the Commission staff concluded, in a report

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4/ A study compiled by the staff of the Federal Power Commission, and released on May 20, 1976, stated that known reserves committed to the interstate market totaled 120.5 Tcf at the end of 1974, but had dropped to 108.4 Tcf by December 31, 1975. This marked the eighth consecutive year that gas reserves committed to the interstate market have declined from their peak of 198.1 Tcf at the end of 1967.

5/ The staff report stated that its projections were based upon normal weather conditions and supply-demand factors estimated as of September 1976. The weather during the recent heating season, however, was considerably colder than normal, with record low temperatures being set throughout the country. As a result, curtailments will be increased substantially above the Commission's projections.

issued in November 1976, that supplementary supplies of natural gas, including gas from Alaska, are vital if the natural gas needs of the nation are to be satisfied in the foreseeable future. 6/

B. The Development and Production of Alaskan Natural Gas Must Play a Key Role in Coping With the Deepening Shortage of This Vital Energy Source

In El Paso Alaska Co., et al., Docket Nos. CP75-96, et al., the applicants demonstrated the existence of at least 22.5 Tcf of proved gas reserves in the Prudhoe Bay Field. In the Initial Decision in that same proceeding, the Presiding Administrative Law Judge stated:

> While the conclusion has been reached that initial sales of 2.0 Bcf/d - 2.5 Bcf/d are likely from the Prudhoe Bay Field, the evidence of record suggests that sales appreciably above this level will be available from the North Slope region.
>
> Estimates of potential reserves on the North Slope, other than Prudhoe Bay, have varied considerably. The Division of Geological and Geophysical Surveys (DGGS) of the State of Alaska, in June 1974, stated that "speculative recoverable gas" for the onshore area of the North Slope totaled 41.8 Tcf, while offshore gas potential in the Beaufort and Chukchi Sea provinces equalled 46.5 Tcf. The Potential Gas Committee estimated, in 1973, that the "speculative potential gas supply" on the North Slope totaled 75 Tcf. The United States Geological Survey found, in 1975, the "undiscovered recoverable resources" to be between 19 Tcf - 99 Tcf. Finally, EP-231, again using a weighting methodology, estimates North Slope additions by 1985 at 8.4 Tcf, excluding the Wildlife Range, NPR #4, and the Prudhoe Bay Field.

6/ The Future of Natural Gas: Economic Myths, Regulatory Realities, Bureau of Natural Gas, Federal Power Commission, at 8-9. The study defined supplementary supplies as Alaskan gas, imported LNG, and gas from coal gasification projects.

> Initial Decision on Competing Applications for an Alaskan Natural Gas Transportation Project, El Paso Alaska Co., et al., Docket Nos. CP75-96, et al. (February 1, 1977) [hereinafter "Initial Decision"], at 33 (footnotes omitted).

Other studies indicate that even greater amounts of natural gas await further exploration on the North Slope of Alaska. 7/ For example, DeGolyer and MacNaughton termed "reasonable if not conservative" the estimate by the State of Alaska that 114.3 Tcf of potential reserves remain to be developed onshore and offshore from the North Slope. 8/

The foregoing represents only a partial picture. The June 1974 study by the Division of Geological and Geophysical Surveys of the State of Alaska, referred to by the Presiding Administrative Law Judge, concluded that total onshore and offshore areas of Alaska contained natural gas recoverable resources of 469.3 Tcf, including already discovered reserves. 9/

7/ See, e.g., Application of Northwest Alaska Company for Section 3 Authorization, Docket Nos. CP75-257, et al. (February 27, 1975), indicating that the onshore areas of the North Slope contain 67.8 Tcf of potential natural gas reserves.

8/ Third Supplement to Application of Alaskan Arctic Gas Pipeline Company, Docket Nos. CP75-96, et al., supra, Exhibit H at 3. Atlantic Richfield's own estimates differ from those of the State of Alaska. In its answers to Interrogatories in Docket Nos. CP75-96, et al., Atlantic Richfield estimated potential recoverable reserves in the North Slope area to the 300 foot water depth to be 135 Tcf of gas.

9/ U.S. Geological Survey, "Geological Estimates of Undiscovered Recoverable Oil and Gas Resources in the United States," Circular 725 at 4-5 (1975), concludes that undiscovered recoverable natural gas reserves in Alaska will range from 29 to 132 Tcf. The study assumes 1974 price-cost relationships and excludes offshore potential beyond 200 meters of water depth. The study recognizes that changes in these assumptions could lead to substantially larger estimates of undiscovered recoverable gas reserves.

The combination of the need for additional natural gas in the lower 48, and the potential for the development and production of trillions of cubic feet of gas in Alaska, underscores the necessity for (1) providing incentives to locate and develop new reserves in Alaska, and (2) assuring the prompt construction and optimum utilization of Alaskan gas transportation systems to bring this gas to markets in the lower 48. 10/

C. Assurance That the National Rate Will be Applied to Alaskan Gas is Necessary to Promote Further Development of Alaskan Reserves and to Optimize Utilization of Alaskan Gas Transportation Systems

The enunciation of a pricing policy that will apply the national rate to natural gas reserves in Alaska will provide a basis for economic planning and an incentive for those producers willing to undertake further exploration in Alaskan frontier areas.

Development of known reserves and exploration for new sources of natural gas in Alaska are extraordinarily expensive and risky undertakings, requiring huge financial commitments in an inhospitable environment. For Alaskan producers to continue committing significant amounts of exploratory capital, this Commission must determine a pricing policy which can serve as a basis for measuring the efficacy of such investments. Lack of an Alaskan gas regulatory policy precludes management from reliably forecasting the cash flow available from wellhead sales of existing Alaskan gas reserves, and from evaluating additional investments in exploratory gas prospects.

In addition, even though the route selection for an Alaskan gas pipeline is imminent and certification proceedings for an LNG project from south Alaska are underway, 11/

10/ The viability of all pipeline systems would be enhanced by the availability of additional new reserves. Such reserves are needed for expansion, as well as for optimum utilization of the facilities. Moreover, any decline in production from Prudhoe Bay could be absorbed if other reserves in northern Alaska were available.

11/ Pacific Alaska LNG Company, et al., Docket Nos. CP75-140, et al.

the receipt of revenues from interstate gas sales remains years away. Marketing additional discoveries will take even longer. In the absence of a supply-eliciting pricing policy for existing Alaskan gas it makes no sense to commit additional sums to gas exploration in any area of Alaska.

The size of the Prudhoe Bay gas reserves should not be permitted to obscure the absolute necessity of developing additional Alaskan reserves. The unit cost of transportation would be substantially lowered if additional North Slope gas reserves were discovered and developed prior to the completion of an Alaskan gas pipeline. If initial deliveries into the pipeline from the North Slope area could be at a level of 3.0 Bcfd or higher instead of the minimum 2.0 Bcfd presently available from Prudhoe Bay alone, the south 48 states would receive the dual benefits of increased gas supply and lower unit costs. See Initial Decision at 170-172. Prompt issuance of fundamental policy decisions by this Commission with respect to the pricing of Alaskan gas is essential if maximum utilization of Alaskan gas transportation facilities is to be achieved.

The present regulatory climate, which is exclusively within the control of this Commission, inhibits the gas industry from mounting a concerted program of exploring for and developing new Alaskan gas reserves. Although the extent to which future gas reserves in Alaska will be discovered and developed is dependent upon a number of variables, the principal consideration is the policies of this Commission which relate directly to the attractiveness of such activity, indeed to its very existence. As the Presiding Administrative Law Judge said in the Initial Decision, supra, when speaking of the development of the Mackenzie Delta reserves in Canada:

> The long-term energy policies implemented by Canadian authorities, especially with respect to provision of adequate producer price incentives, will ... unquestionably have substantial impact on drilling activity. While one cannot presume to advise what these policies should be, it hardly seems likely that if the Canadian government should approve the construction of a gas transportation system into the Mackenzie Delta on the basis of pending applications, it will fail to provide and maintain the regulatory climate conducive to optimum exploitation of that system. Initial Decision at 43 (emphasis supplied).

As the Presiding Administrative Law Judge also observed, the record in that proceeding demonstrated that recent natural gas price increases in Canada "resulted in a significant increase in exploratory activity." Initial Decision at 43.

Such policies must not be confined to Canada. They are needed in Alaska, and it is mandatory that they be developed by this Commission now. 12/

IV.

NECESSITY FOR A PRESENT BINDING FUTURE POLICY

Exploration for and development of new gas supplies in Alaska and particularly in its North Slope Area are currently inhibited by the Commission's failure to act with regard to pricing Alaskan gas and by the fact that the Commission's current policies with respect to vintaging of lower 48 state gas supply by well spud date would, if applied to Alaska, be grossly unfair and discriminatory to both the State of Alaska and the producers. Since no interstate gas pipeline outlet now exists in Alaska, producers have no current revenue from Alaskan interstate gas sales and hence no current incentive to find and develop additional gas reserves. Additionally, producers are faced with the possibility that the Commission might vintage new discoveries by well commencement date and thereby discriminate against gas produced from early exploratory efforts. It is readily apparent that current Commission vintaging policy would operate as a positive deterrent to exploratory and developmental drilling in Alaska prior to the availability of an interstate pipeline outlet.

12/ Appendix A to Order No. 558-D, issued March 17, 1977, in El Paso Alaska Co., et al., supra, insofar as it purports to deal with the "wellhead price" of Prudhoe Bay gas, is apparently nothing more than an eleventh-hour effort by the Commission to recognize the long-standing problem of the lack of an Alaskan gas price. Atlantic Richfield submits that a brief oral argument in a pipeline certificate proceeding scheduled after the record has closed is a pitifully inadequate forum for consideration of a question of such nationwide significance.

Since no Alaskan gas can be expected to flow in interstate commerce for many years, inclusion of Alaskan data and determination of a national rate for jurisdictional sales within the United States including Alaska in the current proceeding in Docket No. RM77-13 would be premature. It would, however, be most appropriate for this Commission forthwith to issue a declaration of policy as requested herein to determine a firm supply-eliciting pricing policy with respect to Alaskan gas. This would have the dual benefit of achieving regulatory certainty to the full extent possible prior to actual deliveries of Alaska gas and removing the existing apprehension that the penalties presently imposed by spud date vintaging on south 48 state production would be imposed upon Alaskan gas production.

V.

CONCLUSION

The Supreme Court has stated that "the principal purpose" of the Natural Gas Act is "to encourage the orderly development of plentiful supplies of ... natural gas at reasonable prices." National Association for the Advancement of Colored People v. Federal Power Commission, 425 U.S. 662, 669-670 (1976). In the context of the present natural gas shortage, this judicial reference to the development of plentiful supplies represents an unmistakable call to the Commission to pursue all responsible methods of generating additional supplies of natural gas for the interstate market. In order to carry out this responsibility and protect the public interest, the Commission must encourage exploration for new Alaskan gas reserves and facilitate the development and transportation to the lower 48 of present Alaskan reserves.

This petition requests the Commission to meet its obligations under the Natural Gas Act "to encourage the orderly development of plentiful supplies of ... natural gas at reasonable prices." By announcing a policy that initial deliveries of Alaskan natural gas will be accorded the then highest national rate for "new" natural gas when it commences to flow in interstate commerce, the Commission can hasten the development of Alaskan natural gas and its distribution to the United States and can encourage exploration to locate critically needed new Alaskan gas reserves. Petitioner Atlantic Richfield respectfully suggests that now is the time for the Commission to meet its statutory responsibility to alleviate projected shortages of natural gas in the United States.

WHEREFORE, Petitioner, Atlantic Richfield Company, respectfully requests that the Commission issue a declaration of policy that initial deliveries of jurisdictional natural gas produced in the State of Alaska will be priced at the highest national rate then in effect for "new" natural gas when Alaskan gas first commences to flow in interstate commerce to the lower 48 states, and that such rate shall be applicable to Alaskan gas, irrespective of the date the drilling of wells commenced or the date of the contract dedicating such gas to the interstate market.

Respectfully submitted,

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March 31, 1977

VERIFICATION

DISTRICT OF COLUMBIA)

GEORGE B. MICKUM, III, being duly sworn, deposes and says that he is an attorney for Atlantic Richfield Company; that he is authorized to verify and file this document; that he has examined the statements contained in the submittal and that all such statements are true and correct to the best of his knowledge, information and belief.

George B. Mickum III

George B. Mickum, III

Subscribed and sworn to before me this 31st day of March, 1977.

Notary Public

(SEAL) MY COMMISSION EXPIRES: 3/14/82

AGO 913394

Foster Associates, Inc.

Washington, D.C.

March 31, 1977

THE CURRENT MARKET VALUE OF PRUDHOE BAY GAS

FPC Order No. 558-D, issued March 17, 1977, sets oral argument over a four day period on exceptions to the Presiding Administrative Law Judge's Initial Decision in Docket Nos. CP75-96, et al., ("Initial Decision"), issued February 1, 1977. On April 6, 1977 oral argument concerns "Financing and Tariffs" and the Commission instructs parties to "address the issues set forth in Appendix A hereto."

Among other things Appendix A requests comments on a "wellhead price" of gas at Prudhoe Bay, "including conditioning",

> "set equal to the higher of
> (i) the difference between market value of the gas at city-gate in lower 48 states and the transportation charges from wellhead to city-gate and
> (ii) a minimum price set to allow recovery of the incremental costs associated with producing and delivering gas ready for shipment."

This study is addressed to the determination of the market value of Prudhoe Bay gas, and does not deal with the cost analysis.

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The Market Value Concept

At the outset it should be emphasized that the use of the phrase "wellhead price (including conditioning)" in Appendix A is incorrect because conditioning is a function beyond the wellhead. More precisely, Appendix A refers to a price at the Prudhoe Bay pipeline inlet including gathering as well as conditioning costs. Therefore, the phrase "inlet price" will be used in this study instead of "wellhead price."

The market value of gas at the pipeline inlet is equal to the market value of this gas at the "city-gate" minus the transportation cost from inlet to city-gate. The market value of gas at the city-gate should be measured by reference to the city-gate values of competitive energy forms, such as electricity and fuel oil. The value of competitive energy forms should take into account both price and premium considerations.

The market value of Prudhoe Bay gas should be determined by reference to energy competition in FPC Priority 1 and 2 categories of the market.[1/] This is because the Prudhoe Bay gas is not expected to reach the Lower 48 markets until 1982 at the earliest. In the meanwhile, gas supplies in the Lower 48 continue to decline relative to demand, and gas curtailments continue to increase as a percent of requirements. These curtailments have increasingly cut back the use of gas as a boiler fuel by industrial and electric utility plants.

1/ Priority 1 Category consists of residential and commercial less than 50 Mcf per day. Priority 2 Category consists of large commercial, firm industrial for plant protection, feedstock and process purposes and storage injection. FPC Order No. 467-B.

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Because of these trends, the Government is contemplating a more rapid phasing out, if not actual prohibition of gas as a boiler fuel in this country -- those markets represented by FPC Priorities 4-9. Thus, by 1982 most if not all interstate shipments of natural gas, including the Prudhoe Bay supply, will be consumed in the higher FPC Priority categories.[1/]

The residential and commercial sectors of the market are reasonably representative of FPC Priority Categories 1 and 2.[2/] In 1975 the consumption of energy by these sectors was as follows:

1975 National Consumption of Energy in the Residential and Commercial Sectors

	Trillion Btu	Percent
Gas	7,668	50.2
Electricity	3,412	22.4
Distillate Fuel Oil	3,148	20.6
LPG	669	4.4
Residual Fuel Oil	189	1.2
Coal	188	1.2
TOTAL	15,274	100.0

Source: Data published by U.S. Bureau of Mines, Gas Requirements Committee and Edison Electric Institute.

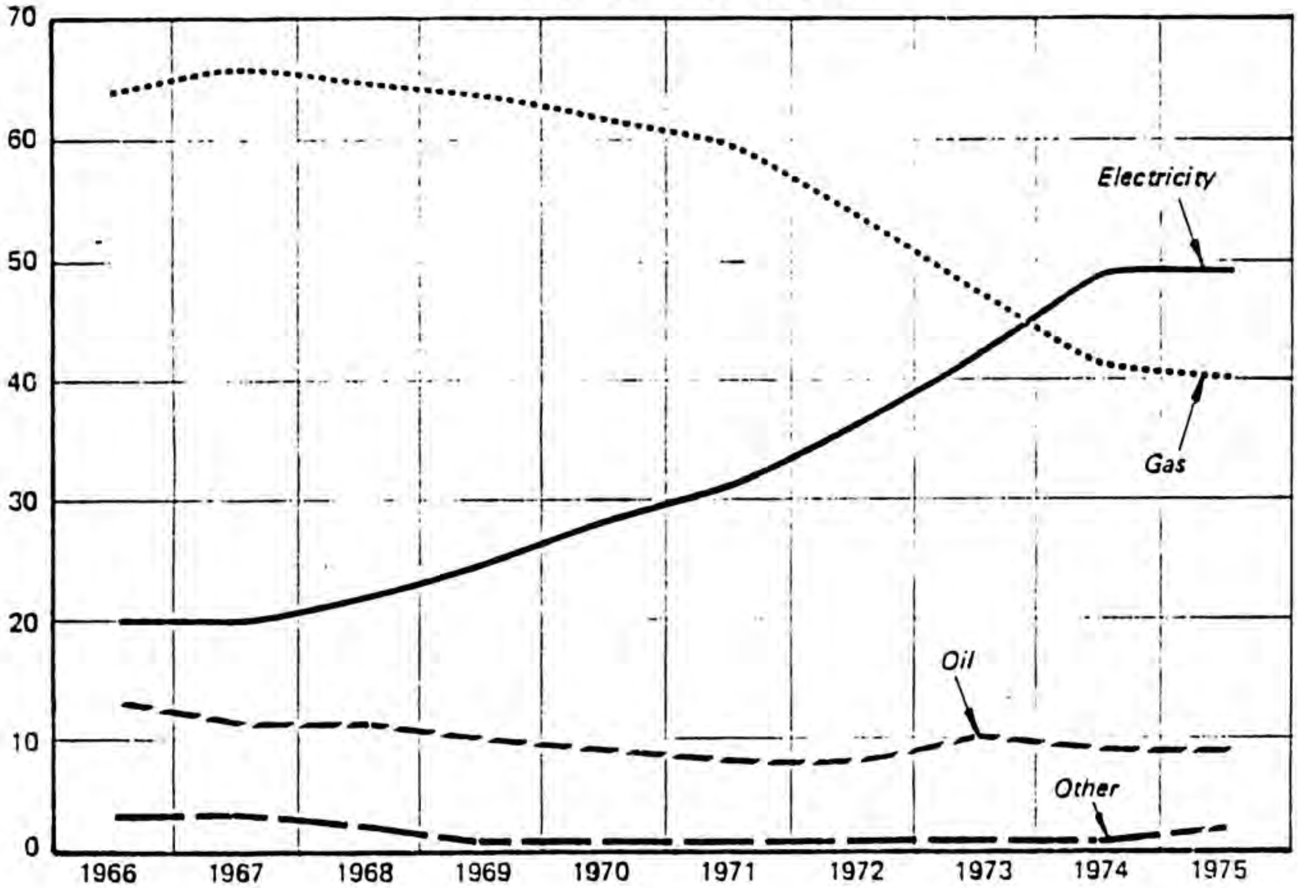
Based on these data, it may be concluded that gas competes with electricity and distillate fuel oil (DFO) in the higher priority markets and this will continue to be true at the time Prudhoe Bay gas is delivered to the Lower 48 States.

1/ In contrast, the FPC market value analysis in Opinion No. 770 (Appendix D) relies on residual fuel oil prices paid by electric utilities for boiler fuel. See Appendix to this study.

2/ The commercial sector is considered sufficiently representative of firm industrial use of energy for feedstock and process purposes.

It is of importance to note on the above table that more Btu's of electric energy are now consumed in these market sectors than DFO. (The consumption of residual fuel oil in the residential and commercial sectors is negligible.) In fact, electricity has made an astounding competitive penetration in the higher priority markets, demonstrated by the following chart:

PERCENT OF NEW HOUSE HEATING MARKET CAPTURED
BY COMPETITIVE ENERGY FORMS
IN THE UNITED STATES



Source: U.S. Bureau of Census Construction Reports.

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The chart shows that electricity has made an enormous competitive penetration in house heating since 1967, capturing about half of the market in 1974 and 1975. The same is true in other competitive household uses of energy such as cooking and water heating, and the same is true in the commercial sector. Thus, the major competitor to gas in the higher priority markets is electricity, not DFO.

In the residential and commercial markets the prices of competitive energy forms are "rolled-in" to the customer. The price of all gas streams -- "new" and "old" Lower 48, Canadian, SNG, and, prospectively, Alaska and LNG, are and will be rolled-in at the city-gate by the distributor. Similarly, the prices of "old" and "new" domestic oil and foreign oil are typically rolled-in, and the electric utility rolls-in the price of electricity from all generating plants.

Thus, rolling-in is the "real world" for pricing energy in the residential and commercial sectors.

In contrast, the incremental pricing of energy is not found in the residential and commercial markets. However, the impact of incremental pricing of Prudhoe Bay gas in the Lower 48 will be analyzed in this study, but the results will be brought back into the "real world" of rolled-in pricing.

The Incremental Market Value Analysis

The determination of an incremental market value for Prudhoe Bay gas in the Lower 48 starts by establishing the price of an incremental kilowatt-hour of electricity and the price of an incremental gallon of DFO -- the two

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energy forms competing with gas for high priority markets. The incremental kilowatt-hour of electricity would be generated from a new plant. The incremental gallon of DFO would be refined from foreign crude oil or would be imported from a foreign country.

Thus defined, recent prices of competitive energy forms, when measured at the "city-gate" for four large metropolitan areas in the United States, were as follows:

The Incremental City-Gate Price
of Energy Competitive with Gas in the
Residential and Commercial Markets

(¢/MMBtu)

	Electricity*	DFO**
New York City	1,013¢	323¢
Chicago	624	313
Detroit	703	316
Los Angeles	756	290
Average	774¢	311¢

* Average 1975 sales for resale by relevant electric utilities, set out in annual reports to stockholders and to SEC (Form 10K), increased by 20 percent. The incremental cost of generating electricity from a new generating plant is estimated to be 20 percent higher than average rates. Converted at 3,412 Btu per kwh.

** The computed reseller price of DFO refined from imported foreign crude oil, as of February 1977. Source - Platt's Oilgram Price Service, FEA publications. Converted at 138,690 Btu per gallon.

However, the raw incremental prices of electricity and DFO are not a proper basis for determining the market value of gas. There is agreement among energy experts and authorities

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that gas commands a premium over fuel oil in the high priority markets. For ex-mple, the U.S. Department of the Interior established the premium for gas over oil at 53 to 70 cents per MMBtu in a December 1975 report to the U.S. Congress entitled "Alaskan Natural Gas Transportation Systems."[1/]

Hence, the comparable average value of DFO for the purpose of measuring the incremental market value of Prudhoe Bay gas at the city-gate would be 311¢ per MMBtu for the price component plus an average 61¢ per MMBtu for the premium component, or 372¢ per MMBtu. Even measured on this basis, the value of DFO does not set a competitive ceiling for Prudhoe Bay gas. This is apparent **because** DFO has not set a competitive ceiling for electricity in either the new or replacement market. Electricity continues to penetrate these markets although the price is about twice the price of DFO.

Thus, all evidence indicates that the strongest competitor to gas in the residential and commercial markets is electricity. The Department of the Interior study did not speak to premiums for electricity. However, because this energy form is capturing 50 percent of the new house heating market, for illustrative purposes, a premium of 61¢ will be assumed, i.e., the same as the Department of Interior found for gas over oil. On this basis, the comparable value of electricity for the purpose of measuring the incremental value of Prudhoe Bay gas at the city-gate would be 774¢ less 61¢ or about 713¢ per MMBtu.

1/ The FPC in Opinion No. 770 found the value of gas at a discount compared with oil. However, Appendix D to Opinion No. 770 points out this discount was based on a historical pricing of gas low enough to compete with coal in boiler fuel markets. This pricing policy, of course, no longer exists. See Appendix to this study.

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In summary, the base case for determining the market value of Prudhoe Bay gas should emphasize the incremental competition from electricity for new residential and commercial markets. However, a more conservative base case will be used in this analysis, giving equal weight to electric and DFO prices in accordance with the 1975 consumption of energy in the residential and commercial sectors supra:

Incremental Market Value of Prudhoe Bay Gas

(¢/MMBtu)

	Base Case	Base Case Components	
	Measured by Reference to Electricity and DFO	Measured only by Reference to Electricity	Measured only by Reference to DFO
A. City-Gate Values			
1. Price Component	542¢	774¢	311¢
2. Premium Component	--	-61	+61
3. Market Value of Gas at City-Gate	542¢	713¢	372¢
B. Less Transportation Cost*	160	160	160
C. Market Value at Pipeline Inlet	382¢	553¢	212¢

* The transportation cost was found in the Initial Decision (page 350) to be $1.60, for the Arctic gas proposal.

Before proceeding with the rolled-in market value analysis, it should be noted that the prices of electricity and DFO are forecast to increase from the current period to 1982 when the Prudhoe Bay gas is projected to reach the Lower 48 market.

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The Rolled-In Market Value Analysis

As previously explained, the city-gate price of gas, electricity and distillate fuel oil in the real world is an average resulting from the "rolling-in" of various supplies. Utilizing this approach for the four key metropolitan areas, the actual city-gate prices of energy competing with gas for high priority markets were as follows:

The Rolled-In City-Gate Price of Energy Competitive with Gas in the Residential and Commercial Markets

(¢/MMBtu)

	Electricity	DFO
New York City	844¢	267¢
Chicago	520	258
Detroit	586	261
Los Angeles	630	235
Average	645¢	255¢*

* The average terminal reseller posting reported by Platt's Oilgram for the four cities is about the same as the national average price reported by FEA.

As to gas, the price of the Prudhoe Bay supply will be rolled-in at the Lower 48 city-gate with the price of U.S. Southwestern supplies, as well as with the prices of LNG and SNG. A special study projecting these various supplies was made for the four key metropolitan areas. Assuming the field price of "new" Southwestern gas is limited to levels set by FPC Opinion No. 770-A, and the Prudhoe Bay gas is priced at 382¢ per MMBtu at the pipeline inlet (the base case), the rolled-in current price of gas at the Lower 48 city-gate would be 196¢ per MMBtu in 1975/1976 dollars.

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It is immediately apparent that the rolled-in city-gate price and therefore the field price of gas from both Southwestern and Alaskan supplies is undervalued relative to competitive energy in the high priority markets. Therefore, the field price of gas in both the Lower 48 and in Alaska could increase to substantially higher levels and remain competitive:

Rolled-In Market Value of Competitive Energy at the City-Gate

(¢/MMBtu)

	Base Case: Electricity and DFO Combined
1. Average Rolled-In Price of Electricity and DFO	450¢
2. Premium	--
3. Average Rolled-In Value of Electricity and DFO	450
4. Rolled-In Price of Gas	196*
5. Undervalue of Gas	254¢

* Including Prudhoe Bay gas at the pipeline inlet at 382¢ per MMBtu.

The fact that rolled-in supplies of gas are substantially undervalued relative to competitive energy forms is primarily due to the low field price of "old" flowing gas in the Southwest. Clearly the price of both "old" gas and "new" gas in the Lower 48 could be appreciably increased and still the Lower 48 city-gate price of gas would be underpriced relative to competitive energy. This chronic underpricing of gas in the real world will also assure that Prudhoe Bay gas is marketable, even if the initial transportation costs are substantially higher than 160¢ per MMBtu.

AGO 913405

The rolled-in analysis demonstrates that either the illustrated incremental value of Prudhoe Bay gas at the pipeline inlet or the illustrated transportation cost could be increased substantially and the gas would remain marketable.

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APPENDIX

FPC COMMODITY VALUE ANALYSIS IN OPINION NO. 770

FPC Opinion No. 770 at pages 115-119 and No. 770-A at pages 112-113 focused on the "commodity value" of gas. In essence the FPC used the same market value concept set out by Appendix A to Order 558-D, i.e., the FPC established a current market value for gas at the city-gate by reference to competitive energy forms, then subtracted transportation cost to establish a field price for Lower 48 production.

While the commodity value concept used by the FPC is a useful contribution to determine a meaningful field price for gas, there are several fundamental errors in the analysis:

(1) The FPC relied on the price of residual fuel oil (RFO) to electric utilities as an energy form "competitive" with natural gas. But, natural gas is a premium energy form which should be conserved for high priority uses supra, and not be used as a boiler fuel where alternative energy sources such as RFO and coal are available. Thus, it is not meaningful to determine the commodity value of natural gas by reference to boiler fuels.[1/]

(2) The FPC gave no consideration to the price of electricity, although this energy form is the principal competitor to gas in the high priority markets.

1/ RFO and coal each accounted for only 1.2 percent of total 1975 energy consumption by the residential and commercial sectors in the United States supra.

(3) The FPC found the value of gas to be 85 percent of the price of fuel oil. The rationale is given at Appendix D (page D-6) to Opinion No. 770:

> "Historically, gas prices have not matched Btu-parity with oil, but have been 15%-25% lower. This is apparently due to the influence of coal as a ready substitute in many fuel-intensive utility and industry applications where gas is used mainly because it has been so cheap."

Clearly the United States has departed the era of gas supplies so plentiful it must be sold cheaply in order to compete with coal and RFO in the utility and industrial boiler fuel markets. Indeed, gas is a premium fuel in the relevant high priority markets and was found by the U.S. Department of Interior study supra to command a premium, not a discount, vis-a-vis oil.

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