REPORT BY THE

Comptroller General

OF THE UNITED STATES

Implications Of The U.S.-Algerian Liquefied Natural Gas Price Dispute And LNG Imports

In early 1980 Algeria demanded a 200-percent increase in the price of its liquefied natural gas. When the U.S. company involved refused to pay this price, Algeria stopped LNG deliveries. The Energy Department, which is now the primary U.S. negotiator with Algeria, says it will not agree to the price demand. If it did Canada and Mexico, at least in the long run, would probably request equivalent prices for their gas. If their price requests were met, U.S. natural gas import bills, at present import levels, would increase by about 79 percent, or $3.5 billion. However, as the prices increased, demand for imported gas would probably drop substantially.

GAO does not believe importing large amounts of LNG from OPEC countries is in the national interest. LNG imports generally trade oil dependence for gas dependence. It makes little sense to increase U.S. dependence on gas at a time when extraordinary steps are being taken to reduce dependence on oil. Current indications are, however, that not many more proposals for LNG from OPEC countries will be forthcoming in the next few years.

EMD-81-34
DECEMBER 16, 1980

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-201234

The Honorable Max S. Baucus
Chairman, Subcommittee on Limitations
of Contracted and Delegated Authority
Committee on the Judiciary
United States Senate

Dear Mr. Chairman:

In your June 27 and July 15, 1980, letters and subsequent discussions, you asked several questions relating to liquefied natural gas (LNG) imports and their implications. Citing recent Algerian price requests for LNG exports, you asked

--what the impact on Canadian and Mexican gas export pricing policies would be if the United States agreed to the high LNG price requested;

--how much more the United States in general, and Montana in particular, would pay for current and projected volumes of gas imports from Canada and Mexico if those countries raised their prices to equal that requested for Algerian LNG;

--if importing large volumes of LNG from members of the Organization of Petroleum Exporting Countries (OPEC) is in our national interest, and if such imports would worsen our vulnerability; and

--for information on any Government analyses of natural gas imports and the international natural gas industry.

This letter and the appendixes respond to your questions.

U.S.-ALGERIAN LNG PRICE DISPUTE

In April 1980, Sonatrach, the Algerian national oil and gas company, stopped delivering LNG to the El Paso Algerian Corporation due to a price dispute. At stake is about 365 billion cubic feet of gas a year, to be sold to El Paso and resold to three interstate pipeline companies. In May 1979, El Paso and Sonatrach had renegotiated their 1969, 25-year

supply contract to provide for LNG, as of January 1980, at $1.94 per million Btu's (British thermal units 1/) at the Algerian point of export. The price was based on a negotiated base price and agreed upon escalators. Ocean transportation and regasification costs brought the delivered, regasified price to $3.43 in the United States.

However, in early 1980, Algeria demanded that its gas be priced according to a new principle, that is, a price equivalent to the energy content of Algerian crude oil at the point of export. Because shipping gas in liquid form is more expensive than shipping oil, and because the liquid must be regasified, the delivered gas would be higher in price per Btu than oil. In fact, if Algeria were to obtain parity for gas, the LNG in early 1980 would have cost the United States about $8 per million Btu's (about $6.11 for the gas and $1.75 to $2.00 for transportation and regasification). At the time, average wellhead prices 2/ of domestic gas were about $1.30 per million Btu's; legal maximums for new gas were between $2.15 and $2.40 per million Btu's.

When El Paso and Algeria could not reach a new agreement, the U.S. Energy Department, with the assistance of the State Department, began negotiating with Algerian officials. Since April 1980, five negotiating sessions have occurred between the two countries. A settlement has not yet been reached. The United States has not accepted the Algerian price principle of Btu parity at the point of export, saying it will not agree to a delivered price higher than the cost of alternate fuels in the consuming area. Energy Department officials define alternate fuels as a composite of distillate and residual fuel oils, weighted 25 percent/75 percent respectively, to approximate the ratio of fuel oil used by industry and utilities in the consuming markets. This composite averaged $4.37 per million Btu's in early 1980. Canadian and Mexican gas imports were $4.47 per million Btu's. All of these alternate fuels are about $3.50 lower than the Algerian price request, once shipping and regasification costs are added.

Energy Department officials have told us they will not accede to the Algerian price demand. In our opinion, the United States should be able to maintain a firm bargaining position for two reasons: (1) our dependence on Algerian LNG is minimal;

1/A million Btu's is about equal to a thousand cubic feet of natural gas.

2/Wellhead prices reflect prices at the first point of transfer, representing sales made by producers.

and (2) our current gas supply condition is good. Negotiators also realize that Canada and Mexico might raise their gas export prices if the United States agreed to high-priced LNG.

U.S. dependence on Algerian LNG is low--in 1979, it was only about 1.3 percent of U.S. gas consumption. Furthermore, dependence of the three pipeline companies which purchase the LNG ranges from 0 to 14 percent of anticipated 1980-81 supplies. Even in the most dependent case, the company does not anticipate curtailing any users who have no alternate fuel capability. These alternate fuels, such as fuel oil and coal, are generally expected to be in adequate supply this winter.

Furthermore, the short-term overall U.S. gas supply situation is very good. In a recent Federal Energy Regulatory Commission survey of the 28 major interstate pipeline companies who transport about 99 percent of interstate gas, companies projected no significant industrial or commercial dislocation or shutdown during the 1980-81 winter, even if weather is colder than normal. A few pipelines will even have surpluses. According to the Commission's staff report, gas conservation, a slowdown of the national economy, and price competition from alternate fuels, such as fuel oil and coal, have reduced projected gas demand at least for this winter. The companies also indicated that alternate fuels are generally expected to be available throughout the United States to offset any expected curtailment this winter.

Another consideration for the United States in dealing with Algeria is the possibility that the Canadians and Mexicans will raise their prices if we accept higher-priced Algerian gas. Even worse, such an increase could lead to price "leapfrogging."

As noted above, Energy Department officials said the United States will not agree to the Algerian LNG pricing principle of parity with oil at the point of export. Nonetheless, as you requested, we evaluated the potential impact on Canadian and Mexican gas export pricing policies, and the resulting increase in our natural gas import bills, if the United States were to agree to $8 Algerian LNG.

As discussed in more detail in appendix I, we believe that both Canada and Mexico, who now receive $4.47 per million Btu's for their gas exports, would in the long run seek higher gas prices if the United States accepted Algeria's price. They would find it difficult to justify selling their gas to a neighbor for less than it pays to a country which is presumably a less secure source. However, Canada, in particular, is concerned about the marketability of its gas and would probably be more likely to restrain its immediate price increases.

(U.S. gas imports from Canada have already dropped substantially following the last price increase of February 1980). Mexico, on the other hand, is more likely to react in the short run.

Due to price escalation clauses, the two countries could, according to their own pricing principles (but subject to U.S. regulatory approval), currently raise their prices by about 17 percent to $5.25 per million Btu's. At the present level of imports, this action would raise the U.S. import bill for Canadian and Mexican gas from $4.40 billion to $5.16 billion, an increase of $767 million. If the two countries raised their prices to reach the equivalent Algerian price level (about a 79-percent increase) and received U.S. approval, and if U.S. demand for imports did not change, the action would increase the price of our imports by $3.47 billion, to $7.87 billion. At either price level, though, we believe that the demand for the imported gas would drop significantly as consumers switched to cheaper fuels and increased their conservation efforts, and the actual dollar impact would be substantially less. Potential dollar impacts through the year 2000 are described in appendix I.

In Montana, at 1979 import levels, gas bills would increase from about $137 million currently, to $161 million (a $24-million increase) if Canadian gas were $5.25, or to $245 million (a $108-million increase) if Canadian gas were $8. However, industrial users, which in 1979 received 41 percent of Montana's gas, have already begun to convert to lower cost coal and 1980 imports are well below 1979 levels. Another Canadian price increase could further reduce demand for Canadian gas, and therefore the actual dollar impact would be substantially less than the figures indicate.

Because of the factors cited above, we do not believe that the market will support LNG sales at $8 per million Btu's. However, we asked several agency and gas industry officials what they believe would happen to the price of domestically produced natural gas if the United States agreed, for whatever reasons, to buy $8 LNG. None believed that the high-priced LNG would set a precedent for domestic prices. Rather, the consensus was that as natural gas prices are decontrolled under the Natural Gas Policy Act, they will probably rise to the cost of alternate fuels, most commonly defined as a mix of distillate and residual fuel oils, in the consuming markets.

LNG IMPORTS FROM OPEC

You also asked if importing large quantities of LNG from OPEC countries is in our national interest. We believe it is not.

LNG imports generally trade oil dependence for gas dependence. In our judgement, it makes no sense to increase our dependence on gas at the same time we are taking extraordinary steps to reduce our dependence on oil. In importing oil, the United States leaves itself open to the risks of a political or technical supply disruption or arbitrary price hikes. Moreover, a politically induced LNG supply cutoff is easier to target than an oil cutoff. To help alleviate potential oil shortages, consuming country governments, through the International Energy Agency, have developed a formal oil-sharing agreement. Oil companies can also help alleviate shortages, and in the past have transferred oil to those countries most affected by a supply cutoff. However, no such formal or informal mechanisms exist to cushion the effects of an LNG cutoff. Expensive LNG facilities are built for specific LNG projects on the basis of long-term contracts, sophisticated technology, and dedicated markets. Furthermore, unlike oil, there is currently no significant spot market for LNG, the number of countries supplying LNG is minimal, and no large storage capacity for LNG exists.

The greater the U.S. dependence on the LNG, the easier it is for an exporter to accomplish a supply disruption or price hike. As noted above, low dependence on LNG is one of the reasons why the United States can maintain a firm bargaining position against the Algerian price hike demand. Although LNG projects impose heavy financial obligations on exporters, these may not prevent a short-term politically or economically motivated supply interruption. This, too, is demonstrated by the current Algerian situation. Large volumes of LNG imports may also threaten our national interest by potentially delaying development of and investment in synthetic fuels or other high-cost supplemental gas sources.

However, while we believe importing large volumes of LNG from OPEC is not now in our national interest, a March 1980 study conducted by the Office of Technology Assessment, "Alternative Energy Futures, Part I, The Future of Liquefied Natural Gas Imports" (OTA-E-110), estimated that only about 0.6 trillion cubic feet of additional LNG from OPEC could be imported by about 1990, or about 3 percent of estimated 1979 U.S. supplies. As described in appendix II to this letter, the low priority which the administration gives LNG as a supplemental gas source, current gas supply conditions, the lengthy and complex regulatory review process for LNG projects, and transportation and market differences with other potential LNG importers have all contributed to an unfavorable U.S. environment for LNG imports. These factors, and our discussions with numerous gas and oil company officials, indicate that not many more proposals for LNG from OPEC countries will be forthcoming in the next decade. However, in the long run, if a greater need for supplemental gas develops

or the new administration changes its priorities for supplemental gas sources, the United States may look upon LNG imports more favorably.

GOVERNMENT ANALYSES

Finally, you requested information on any Government analyses of the international natural gas industry or an LNG import policy. We have previously provided your office with a copy of a Treasury Department Special Report, "The Prospects for Establishment of an Organization of Gas Exporting Countries." This paper and other studies are described in appendix III.

- - - -

Our response to your questions is based on interviews with officials at the Departments of Energy, State, and the Treasury, the Federal Energy Regulatory Commission, the Central Intelligence Agency, the American Gas Association and three gas companies who purchase Canadian, Mexican, and/or Algerian gas. We also interviewed officials from seven oil and gas companies involved in LNG trade to solicit their views on the present LNG climate. Finally, we examined the Energy Department's Economic Regulatory Administration's decisions on individual gas import proposals, and reviewed and analyzed other relevant agency and company records and data.

We have not obtained comments of any Federal agency since we do not make any specific recommendations for Government action nor have we evaluated any Government programs. However, we did discuss and verify the factual content with several officials at the Departments of Energy, State and the Treasury.

As requested by your office, we plan to restrict further distribution of this report for 30 days from the date of this report unless its contents are released by your office before that time.

Sincerely yours,

Comptroller General
of the United States

Contents

APPENDIX		Page
I	POTENTIAL CANADIAN AND MEXICAN REACTION TO HIGHER ALGERIAN LNG PRICES, AND THE IMPACT ON THE UNITED STATES AND MONTANA	1
	Potential Canadian reaction	1
	Potential Mexican reaction	5
	Effects on natural gas import bills	7
II	UNFAVORABLE ENVIRONMENT FOR NEW LNG PROJECTS	12
	Current gas conditions	12
	U.S. policy on LNG imports	13
	Regulatory review process	15
	U.S. transportation and market differences	16
	Industry assessment of near-term LNG prospects	17
III	GOVERNMENT ANALYSES OF THE INTERNATIONAL NATURAL GAS INDUSTRY AND NATURAL GAS IMPORTS	18
	International natural gas industry	18
	LNG import policy	19
	ERA study	20

POTENTIAL CANADIAN AND MEXICAN REACTION TO HIGHER ALGERIAN LNG PRICES, AND THE IMPACT ON THE UNITED STATES AND MONTANA

The recent Algerian LNG price demand would result in gas delivered and regasified at almost $8 per million Btu's, or about $3.50 higher than the current Canadian and Mexican gas price of $4.47. Energy Department officials said that the United States will not accede to the Algerian price request. If the price were accepted, however, Canada and Mexico would, in the long run, probably seek an equivalent price.

In the short run, Canada is less likely than Mexico to seek an equivalent price increase because of its desire to maintain sales. In the United States, most Canadian gas is concentrated in a relatively few States, and already faces strong competition from abundant, often less expensive alternative fuels available in U.S. markets. If the Canadian price rose, U.S. demand might drop sharply. Because Canada exports a large percentage of its natural gas production (33 percent in 1979), some of its provinces and producers are very dependent on export revenues. Furthermore, Canadian gas has limited alternative markets in the short run.

Mexico, on the other hand, is more likely to seek an immediate price increase. If Algeria's price request is granted, Mexico would face strong domestic political pressure to raise its price accordingly, whether or not it could maintain its U.S. sales. In any case, Mexico exports only a small amount of gas to the United States, and has undertaken a successful program to expand domestic use of gas.

POTENTIAL CANADIAN REACTION

Canada's natural gas export pricing principle, the "substitution value" formula, calls for the border price of its gas to about equal the price of crude oil imported into eastern Canada on a Btu equivalent basis. In February 1980, Canada increased its price accordingly by $1.02 to $4.47 per million Btu's. Subsequently, the United States supported this pricing principle after a meeting held with the Canadian Energy Minister, provided that the resulting price meets the U.S. requirement that gas be competitive with alternative fuels in the United States.

Canadian gas sales in the United States declined substantially, however, after the February price increase, and the Canadian government came under considerable pressure from Canadian gas producers and some provincial governments to restrain additional export price increases. In fact, since February, the price of Canadian oil imports under the Canadian formula has risen to about $5.25 per million Btu's, but Canada has chosen to forego requesting an equivalent gas price

increase. Moreover, to boost the declining gas sales, the Canadian National Energy Board is considering a flexible pricing system, whereby prices could be discounted by season and volumes exported, particularly in regions where sales are depressed.

If the United States agreed to the Algerian price request, we believe Canada would try to raise the price of its natural gas exports accordingly in the long run. Currently, however, concern over the loss of sales due to price increases is great. At least three factors are likely to restrain Canada from seeking higher prices in the short run:

--The sensitivity of Canadian gas exports to changes in price.

--Pressure from producers and provincial governments against additional price increases.

--Limited alternative market opportunities for Canadian gas.

Sensitivity of Canadian gas exports to higher prices

Canadian gas exports face strong competition from abundant, less expensive alternative fuels currently available in U.S. markets. Specifically, Canadian gas is being replaced with cheaper fuel oil, coal, domestically produced natural gas, and hydroelectricity. One of the difficulties Canadian gas faces is its concentration in a few areas. While the prices may be averaged with those of cheaper domestic sources, its concentration limits the effect of this averaging. (Canadian gas will face even greater difficulties in the future if it is priced incrementally to the end user instead of averaged with cheaper sources.)

According to a Federal Energy Regulatory Commission official, from April through August 1980, gas shipments to the United States dropped to an average of about 55 percent of total authorized levels, compared to 82 percent for the same period in 1979. While the economic recession and conservation programs have contributed to the decline in imports, the primary cause has been recent price hikes. In early 1979, Canadian gas exports were $2.16 per million Btu's. Four price increases, totaling 107 percent, resulted in gas prices of $4.47 by February 1, 1980.

The impact of higher prices on U.S. purchases of Canadian gas has varied by region. In some areas, higher prices have precipitated a shift to other fuels, particularly in the industrial and electric utility sectors. For example, in

California, where extra domestic gas supplies were available at prices between $2.20 and $2.30 per million Btu's, imports fell by 33 percent between April 1979 and April 1980. In the Pacific Northwest, Canadian imports competed unfavorably with cheaper high-sulfur fuel oil, which cannot be used in California due to environmental regulation, and hydroelectric power. Residual fuel oil was also available from the glut of the Alaskan North Slope crude oil on the West Coast. In Montana, as discussed later in more detail, the greatest impact has been in the industrial market, where lower priced indigenous coal is displacing imported natural gas. On the other hand, in some States with low Canadian dependence, such as Michigan, Illinois, Colorado, and Minnesota, the increases can be better absorbed because they can currently be masked more easily once averaged with lower cost domestic sources.

The American Gas Association recently estimated the following 1979 levels of Canadian dependence by State.

Canadian gas supply sensitivity by State (note a)

State	Gas utility sales (trillion Btu's)	Approximate percent Canadian gas
California	1,728.8	23
Colorado	254.5	11
Idaho	50.4	48
Illinois	1,193.5	12
Michigan	889.4	5
Minnesota	276.7	12
Montana	64.8	46
Nevada	75.3	69
North Dakota	25.1	22
Oregon	92.4	63
Vermont	4.7	100
Washington	153.7	64
Wisconsin	365.9	17
Wyoming	57.0	34

a/States where Canadian gas is less than 5 percent of supply are not shown.

Domestic pressure against higher prices

Canadian gas producers are beginning to feel the consequences of the recent drop in sales. For example, at least two major Canadian pipeline companies, Trans Canada and Pan-Alberta Gas, have already requested from their suppliers reduced purchase commitments by 20 to 24 percent over the next 2 years. Revenue losses from a serious sales drop could adversely affect gas producers' current operations as well as plans for exploration

and development of new fields. Consequently, this could limit the growth boom of the domestic gas industry.

British Columbia and Alberta, the two major exporting provinces, have also been concerned about the loss of gas export revenues, which are an important part of their annual budgets. For example, according to a State Department official, natural gas exports were about 10 percent of Alberta's general revenues for the fiscal year ending March 1980. The two provincial governments have already expressed dissatisfaction with Canada's recently announced National Energy Plan, which, among other things, calls for an excise tax on all gas sales. Currently this tax is to be deducted from the revenues the provinces or producers have traditionally received. The provinces object since the tax will presumably decrease their revenues.

Limited market opportunities

If, as a result of higher prices, Canada loses some of its U.S. sales, it would need to seek new sales opportunities. The market for Canadian gas is, in the short run, limited to those regions in the United States and Canada which currently have the necessary transportation and distribution facilities. In the near term, facing a fuel oil and gas glut, and U.S. price controls on domestically produced crude oil and natural gas, Canadian gas would not likely penetrate large new U.S. markets.

In a January 1980 Report to the Governor in Council, "In the Matter of the Pricing of Natural Gas Being Exported Under Existing Licenses," the Canadian National Energy Board acknowledged the search for new U.S. markets could be long and complex. New facilities might be required to move gas to new regions. Pipeline companies would probably be unwilling to undertake such projects unless they saw them as permanent and economically attractive. Transferring volumes of gas from one market to another would require the approval of the U.S. Federal Energy Regulatory Commission and Economic Regulatory Administration, which takes time and, in part, depends on U.S. need and willingness to import new volumes. Political factors in both the United States and Canada could delay or impede the process.

While Canada may want to redirect gas to its domestic markets, the lack of a transportation and distribution network may prevent this. It would take some time before Canada could use all of the gas that it produces. In the longer run, however, Canada may develop more fully its domestic and export market. As a first step, in fact, one Canadian company has recently signed a letter of intent to sell LNG to Japan. Deliveries would begin in 1985.

POTENTIAL MEXICAN REACTION

We believe that Mexico would be more likely than Canada to immediately react to U.S. acceptance of Algerian LNG at $8 per million Btu's. Mexico is less concerned about gas marketability in the United States because of its domestic political situation and its low export volumes and growing internal demand.

Domestic pressure to raise prices

The Mexican government would be under considerable domestic political pressure to demand higher prices for its gas exports if Algerian gas were $8. For nationalistic reasons, some factions already object to the sale of Mexico's energy resources to foreigners, especially to Americans. Although a relatively small group, at times these factions have been a vocal minority. The Mexican government would be under political pressure not to accept a price lower than the price the United States was paying for another country's gas.

Precedent for this kind of reaction has already been set. In September 1979, the United States and Mexico agreed to a gas export price of $3.625 per million Btu's as of January 1, 1980, to be adjusted quarterly by an agreed-upon formula. When, however, Canada raised its gas price in early 1980 to $4.47, Mexico did so also, despite the intergovernmental agreement so recently negotiated. Mexican gas exports to the United States are all sold under one contract to a consortium of six interstate pipeline companies. The contract now calls for a price equal to the greater of Mexico's original formula or the price of Canadian gas.

Low export volumes, growing internal demand

U.S. officials we spoke with from both Government and industry believe that Mexico is less concerned than Canada about selling its gas in the United States. Recently, in fact, Mexico announced its intention to hold U.S. exports to current levels, rather than expand. Exports to the United States of 300 million cubic feet a day represent only 10 percent of 1979 levels of production. (Canadian exports were a third of 1979 production.) Additionally, when in 1977 the United States and Mexico were unable to agree on price and other terms of a natural gas contract for up to 2 billion cubic feet a day, Mexico announced in 1978 a nationwide program to expand domestic use of gas, substituting natural gas for oil, thereby freeing up additional supplies of displaced oil for the international market. As we reported in May 1980, U.S. officials have said that Mexico has been successful in using more gas domestically than had been originally expected. Mexico's domestic gas consumption has grown phenomenally

since 1977, at a rate of over 20 percent per year. Domestic consumption should continue to grow rapidly as the distribution system is completed. 1/

In any case, if Mexico raised its price and if the United States approved the increase, it is not clear that U.S. demand for Mexican gas would drop as sharply as for Canadian gas. Mexican gas, which totals only about 0.6 percent of U.S. consumption, is purchased by Border Gas, Inc., a consortium of six interstate pipeline companies serving 34 States. Normal market forces would indicate that the pipelines would not buy high-priced Mexican gas as long as other cheaper supplies are available, which they currently are. However, the President of Border Gas told us the companies are more interested in Mexican gas for its longer run potential than for current sales. They may, therefore, be willing to pay higher prices now to assure themselves of supplies for when they see the gas market tightening in a few years.

The pipelines can do this, without much fear of losing sales, because unlike Canadian gas, Mexican gas is widely dispersed throughout the United States. Each pipeline is only minimally dependent on Mexican supplies, as shown in the following table.

Interstate pipeline company	Mexican gas as a percent of total supplies (note a)
Tennessee Gas Pipeline	3.5
Texas Eastern Transmission	2.1
El Paso Natural Gas	1.3
Transcontinental Gas Pipe Line	1.5
Southern Natural Gas	1.2
Florida Gas Transmission	2.1

a/Based on actual 1979 purchases.

Under the present pricing method, the companies average the total costs of their gas purchases and pass through any increases to their customers. Hence, with small Mexican volumes averaged with lower cost domestic gas, the impact of a Mexican price increase on most end users would be less than a Canadian price increase.

1/See "Prospects for a Stronger United States-Mexico Energy Relationship," ID-80-11, May 1, 1980.

EFFECTS ON NATURAL GAS IMPORT BILLS

We have previously discussed the possibility of the United States accepting Algerian LNG priced at parity with crude oil at the export terminal, currently almost $8 per million Btu's. Because the Energy Department said the United States will not agree to this price, we do not believe that Canada and Mexico will request equivalent gas export price increases. Nonetheless, as you requested, we calculated potential increases in U.S. natural gas import bills at present and projected levels of imports if Canada and Mexico did increase their prices. We also identified the impact on Montana. We calculated these increases based on two price levels--an equivalent increase to $8, and the maximum under the Canadian substitution value formula of about $5.25. Either amount, if requested, would first require approval by the Energy Department's Economic Regulatory Administration (ERA).

Present import levels

At current levels of imports, if both Mexico and Canada raised their natural gas prices from $4.47 per million Btu's, the annual U.S. natural gas import bill from those two countries (currently $4,395.6 million) would increase by 17 percent if the price was $5.25, and 79 percent if the price was $8.00, as follows:

	Annual import level (billion Btu's)	Annual increase in import bills	
		At $5.25 per million Btu's	At $8 per million Btu's
		($, millions)	
Canadian imports	871,669	$679.9	$3,077.0
Mexican imports	111,690	87.1	394.2
Total	983,359	$767.0	$3,471.2

Canadian import levels, which average about 2.3 billion cubic feet a day, are based on actual imports between October 1979 and September 1980, the latest 12-month period for which data is available. 1/ Mexican imports, which began in January 1980, are based on current volumes of about 300 million cubic feet a day.

1/It is important to note that, during this 12-month period, Canadian imports have dropped greatly since the price increase of February 1980.

However, it is important to note that if import prices increased, we believe that demand, particularly for Canadian gas and perhaps Mexican, would drop substantially. While Canadian imports are only about 5 percent of national consumption, they are not widely dispersed. This concentration means that, while high-cost Canadian supplies may be averaged in with lower cost domestic supplies, the increases to the consumer would be quite substantial in selected areas. The effects of any increase would be felt most strongly in those States with the greatest concentration of imported gas (see p. 3 of this appendix). Industrial users in some areas began switching to alternate fuels, such as residual fuel oil and coal, when the export price rose three times in 1979 and once in 1980 from $2.16 to $4.47.

On the other hand, effects of Mexican gas price increases are not as clear. As discussed earlier, Mexico supplies only about 0.6 percent of U.S. annual consumption and the gas is distributed among 34 States. No pipeline company is more than 4-percent dependent on Mexican supplies. Effects on end users of small-volume, high-cost Mexican gas would be minimized once the gas is averaged in with cheaper domestic sources. Pipeline companies may be willing to buy this gas to assure themselves of future Mexican supplies.

Projected import levels

To estimate projected levels of Canadian and Mexican gas imports, we used the estimates we recently published on import levels through the year 2000. 1/ The lower import levels represent a reasonable estimate based on current facts and a conservative outlook. In the case of Mexico, we assume that no new pipeline is constructed. The higher import levels are more speculative. For example, in the case of Canada, continued increases to natural gas reserves and new agreements to replace expiring contracts are assumed. In the case of Mexico, we assume an originally planned 42-inch pipeline is constructed by 1985 and the capacity of this system is doubled by 1995. This more optimistic projection ignores potential political constraints based on the theory that economic incentives tend to overpower political considerations. Therefore, regardless of political orientation, it is assumed that Mexico and Canada will find it expedient to sell natural gas to the United States to the limits of their technical capacity and economic needs. Actual imports to the United States will probably be between the low and high estimates for each country.

1/See General Accounting Office, "Oil and Natural Gas from Alaska, Canada, and Mexico--Only Limited Help for U.S.," EMD-80-72, Sept. 11, 1980.

Based on these projected import levels, the following chart illustrates the increases in U.S. natural gas import bills from 1985 to 2000 if Canada and Mexico raised their prices to either $5.25 or $8 per million Btu's. Assuming a low level of imports, maximum increases in import bills will be in 1985. With a high level of imports, maximum increases will be in 1995.

Estimated increase in U.S. annual natural gas import bills if Mexico and Canada raised export prices 1985-2000

	Levels of imports (in quadrillion Btu's)			Increase in natural gas import bills	
	Canada	Mexico	Total (note a)	at $5.25 per million Btu's	at $8.00 per million Btu's
				($, billions)	
Low estimate:					
1985	.9	.2	1.1	$ .88	$3.96
1990	.3	.2	.5	.40	1.80
1995	-0-	.2	.2	.16	.72
2000	-0-	.2	.2	.16	.72
High estimate:					
1985	1.1	1.0	2.1	$1.67	$ 7.56
1990	1.3	1.5	2.9	2.23	10.08
1995	1.1	2.0	3.2	2.47	11.16
2000	.5	2.0	2.6	1.99	9.00

a/Totals may not add due to rounding.

Impact on Montana

In 1979, Montana gas utility sales were about 64 billion cubic feet. According to data from the Montana Power Company, about 47 percent of the gas, or 30 billion cubic feet, was from Canada. 1/ The Montana Power Company, which serves western Montana, received this Canadian gas from two suppliers.

If Canada were to raise the export price of its gas from $4.47 per million Btu's to $8.00, and if Montana imports remained at 1979 levels, the Montana import bill would increase from $137

1/The percentage of Canadian dependence varies slightly from the American Gas Association estimates on page 3 of appendix I.

million to $245.2 million, or about $108.2 million. At $5.25 for Canadian gas, Montana import costs would increase by $23.9 million, to $160.9 million, at 1979 import levels.

However, it is important to note that demand would be significantly less than 1979 levels if Canada raised its price to $8 per million Btu's, or even $5.25. In fact, with an increase to $4.47, 1980 levels are already well below 1979. This is well demonstrated by comparing the export volumes for April 1979 and April 1980, reported by the two Canadian suppliers to Montana. Exports of one, the Canadian-Montana Pipeline Company, dropped from 68 to 41 percent of the maximum allowable. Exports of the other, the Alberta and Southern Gas Company (which also serves California) fell from 98 to 79 percent. Although, as noted earlier, several factors contributed to a decline in most Canadian gas exports, the 107-percent increase in price is the major factor. During this 12-month period, the Canadian government raised its prices four times--from $2.16 per million Btu's to $4.47. While the Montana Power Company can "roll in" the cost of the Canadian gas with lower cost domestic supplies, its high dependence on Canadian gas (58 percent in 1979) limits the effect of this averaging.

The effects of another Canadian price increase will in part be determined by the consumers of the gas and their sensitivity to price changes. In 1979, the Montana Power Company distributed its total supplies among the following sectors:

Residential	22 percent
Commercial	19 percent
Industrial (including utilities)	41 percent
Other (special sales, storage, company use)	18 percent

The Montana Power Company could not quantify the effect of Canadian price changes on the demand for Canadian gas, but it estimated that the near-term ability of high-priority (mostly residential and commercial) customers to convert to alternate fuels is extremely limited or prohibitively expensive. However, it also estimated that between 1972 and 1981, interruptible industrial consumers will have converted to coal and wood and carbon monoxide byproducts for over 11 billion cubic feet of the 25 billion cubic feet previously demanded. The company estimates conversion of an additional 10 billion cubic feet is technically feasible in the 1980s, but could not determine the price at which these conversions would be economically feasible. As industrial users consume less gas, prices for

residential and commercial users could increase substantially as greater financial burdens from fixed overhead costs are placed on the remaining users. According to the Montana Power Company, when the gas market softened due to conversions and conservation, the company developed a short-term excess supply of Canadian gas. While it has been able to sell some of this gas to other pipeline companies or their customers, Montana is currently committed to take or pay for 25.98 billion cubic feet of gas annually.

UNFAVORABLE ENVIRONMENT FOR NEW LNG PROJECTS

Although the gas industry in this country has shown interest in importing LNG, the current gas surplus, the low priority the administration gives LNG, the complex and lengthy project approval process, and U.S. transportation and market differences with other gas importers have created an unfavorable environment for new import projects. As a consequence, only four LNG import projects, totaling 0.8 trillion cubic feet (Tcf), 1/ have been approved, and it is unlikely that many more projects will be proposed in the near term.

Previously, it was thought that LNG would provide a large supplement to the Nation's declining natural gas reserves. By 1976, when the Federal Power Commission had approved 0.4 Tcf of LNG imports, an additional 3 Tcf of projects were already pending or planned. At about the same time, the American Gas Association projected LNG imports could rise to about 4 Tcf per year between the late 1980s and 1990s.

Since then, however, two projects have been disapproved because, among other things, the applicants failed to prove a regional or national need for the LNG. Additionally, several planned projects were either withdrawn or never submitted for approval due to difficulties in the United States or host country. For example, projects with Iran and the Soviet Union have been cancelled or suspended because of the change in relationship with those countries and questions about supply security.

Recent gas supply projections include substantially smaller quantities of imported LNG. The Energy Department's Energy Information Administration, in its 1979 Annual Report to Congress, estimated that LNG imports may reach 0.8 to 0.9 Tcf per year from 1985 to 1995. The Office of Technology Assessment estimated about 1.4 to 2.0 Tcf per year was possible through 1990. Even the American Gas Association's moderate case estimates LNG imports at only 2.5 Tcf by the year 2000.

CURRENT GAS CONDITIONS

Although domestic gas production peaked in 1971, the outlook for gas supply appears to have improved since the steep declines experienced in the mid-1970s, reducing the immediate interest in imported LNG. Available domestic supplies, imports from Canada and Mexico, construction of the Alaskan natural gas pipeline,

---

1/One of the four proposals, the Pacific Indonesia project of 0.2 Tcf a year, was approved but the decision has been appealed.

and passage of the Energy Security Act, authorizing over $21 billion for synthetic fuels and biomass development, have reduced both the immediate and midterm need for additional gas supplies through LNG imports. Another major change was passage of the Natural Gas Policy Act of 1978, which provided additional supplies to the interstate gas market, decontrolled most categories of gas by 1985, and required a form of incremental gas pricing for low-priority users.

Natural Gas Policy Act improved gas outlook

Until 1978, only the interstate gas market was subject to Federal control. The Federal Power Commission, with authority to regulate, among other things, gas selling prices, allowed interstate gas prices to rise slowly, while intrastate prices rose much more quickly. As a result, supplies to the interstate market declined, and by the early 1970s shortages occurred in this market.

The Natural Gas Policy Act of 1978 made several significant changes in the regulatory structure which improved this domestic supply outlook. First, the Federal Energy Regulatory Commission (the Federal Power Commission's successor agency) obtained significant regulatory authority over certain aspects of intrastate natural gas, reducing some problems with the intra-interstate distinction. The act also allowed, subject to the Commission's approval, the intrastate market to move much of its excess gas supply into the interstate market. By so doing, the interstate market received considerable relief from its existing shortage. Secondly, most categories of gas are being decontrolled through 1985. By decontrolling the price of gas, additional incentive is given for drilling activities. Further, as the price of gas is decontrolled, the possibility of curtailment to firm service customers is decreased. Thirdly, a system of incremental pricing was established to protect the delivered gas price to high-priority users by allocating a larger share of gas acquisition costs to industrial users. Basically, this means that charges above a base cost would be passed through first to low-priority users. However, if these charges push the price above the cost of alternate fuels, excess costs are then recovered from all users. Natural gas, which has been a relatively cheap fuel encouraging demand, will be priced more competitively with alternate fuels in some markets as a result of these provisions. The Secretary of Energy estimated in 1979 that the prospective availability and production of natural gas in the lower 48 States is 2 Tcf greater for 1985 than it would have been without passage of the Natural Gas Policy Act.

U.S. POLICY ON LNG IMPORTS

In 1977, as a part of the National Energy Plan, President Carter replaced an LNG import policy which contained guidelines

for U.S. and per country limits with one which set no limits and provided for a case-by-case review of individual LNG projects. A more explicit, evolving policy can be seen through the Secretary of Energy's priority listing of preferred natural gas sources and pricing principle, and decisions made by the Energy Department's Economic Regulatory Administration on individual import project proposals. Both cast a negative light on LNG imports.

Priority listing of gas sources and pricing principle

In January 1979, the Secretary of Energy informally outlined U.S. policy on future sources of gas for domestic use, including LNG imports. The Secretary said that the United States should rely on domestic gas as much as possible to reduce dependence on oil imports, particularly since there is a surplus of natural gas. Reasonably priced supplemental sources should be used to displace oil imports, assuming gas production from the lower 48 States can be maintained. However, long-haul LNG imports rank last in priority as an attractive supplemental source of natural gas, and are only to be used if other lower cost sources of gas do not materialize. Supplemental sources of gas were ranked by their decreasing marginal attractiveness, as follows: (1) Alaskan gas; (2) Canadian and Mexican gas; (3) short-haul LNG (generally considered to be from the Western Hemisphere); (4) domestically produced synthetic gas; and (5) long-haul, high-cost imported LNG (generally considered to be from the Eastern Hemisphere).

In his speech, the Secretary also referred to a pricing principle which has taken on increasing importance. He noted that gas imports, to be considered acceptable, must be priced competitively, defined at the time as no higher than the price of residual fuel oil. This definition has since evolved into a mix of residual and distillate oils.

ERA review of LNG projects

ERA is responsible for determining whether LNG imports are consistent with the public interest and national energy policy. It has generally made a cautious, even skeptical, assessment of of each LNG import project, allowing some new imports but not encouraging them. Since it was created in 1977, ERA has approved one LNG project and disapproved two.

Although it has no formal criteria for evaluating projects, ERA generally considers several factors in any review, including price; regional and national need for the gas; the security and reliability of supply, including technical, political and economic aspects; contingency planning for long-term supply disruptions; and balance of payments effects. ERA has also determined that,

in light of national energy policy, an LNG import project should not discourage the development of potential domestic sources, such as Alaskan or synthetic gas.

Because many factors are considered, there are many opportunities for project approval to be denied. In 1978, ERA disapproved two projects in light of, among other things, anticipated additional supplies of gas from the Natural Gas Policy Act and the applicants' inability to prove a regional and national need for the proposed LNG imports.

One of the greatest discouraging factors to new LNG imports may be the recent statements ERA and other groups in the Energy Department have made about gas prices. Energy Department officials have said that imports from any new project must be competitive with the cost of alternate fuels. Because LNG is such a high-cost gas source, this test may prove very difficult.

REGULATORY REVIEW PROCESS

The Government regulatory process has discouraged potential applicants and host countries from considering new LNG import projects. By itself, the process may be no more complex or lengthy than that required for some other new energy projects, such as coal or nuclear. However, when combined with the other impediments, the process increases the negative environment for LNG imports. 1/

Many agencies are involved in approving an LNG project, including the Departments of Energy, State, Transportation, and the Interior; the Federal Energy Regulatory Commission; the Maritime Administration; the Army Corps of Engineers; the Coast Guard; and the Environmental Protection Agency. As many as 100 or more permits from Federal, State and local governments could be required to build an LNG receiving facility. A terminal at Cove Point, Maryland, for example, required over 140 permits.

As part of the review process, applicants must allow time, perhaps several years, for hearings related to an LNG application. Even if a project is approved, it still runs the risk of litigation because of environmental and safety concerns about the location of facilities. Difficulty arises because sites located in rural, residential, or industrial areas usually offer tradeoffs between environmental impacts and safety.

1/See General Accounting Office, "Need to Improve Regulatory Review Process for Liquefied Natural Gas Imports," ID-78-17, July 14, 1978.

Various industry representatives agreed that numerous disincentives to continuing LNG expansion exist. In fact, the American Gas Association, in its October 1980 report, "The Gas Energy Supply Outlook: 1980-2000," stated that,

> "For the U.S., the regulatory constraints presently appear to be the major impediment to expanding LNG projects. Some current projects have taken five to seven years to go from the proposal stage to regulatory approval."

A few industry and Government officials indicated that foreign countries have also been discouraged, and even sometimes angered, by delays in the U.S. regulatory process. An example is Indonesia. Seven years after an Indonesian import proposal was filed, the case is still being reviewed. 1/ Potential exporting countries may be reluctant to enter into LNG trade with American companies in the future because of regulatory delays, even if the United States later decides to encourage LNG imports.

U.S. TRANSPORTATION AND MARKET DIFFERENCES

In buying LNG, the United States is at a competitive disadvantage compared to other potential LNG buyers in Europe and Japan, in part because of its substantially greater distance from the gas sources and high costs of transportation. Algeria, for example, is over twice the distance from the United States as from Europe (about 3,600 to 5,000 nautical miles, depending on the port selected, versus 1,600 miles). Although the relative advantage to Europe is less for Nigeria, another potential gas exporter, there is still an 800- to 1,800-nautical-mile difference. Japan, a major LNG importer, is 5,000 miles closer to Indonesia than the United States. These distances make it difficult for U.S. companies to offer prices competitive with Europe and Japan. If the companies did, U.S. importers would have difficulty in profitably selling LNG at competitive fuel prices because of the substantial transportation and regasification expenses.

Furthermore, according to an Energy Department official, the European and Japanese markets are different than the U.S. market. Alternate fuels for gas are more expensive in Europe and Japan than in the United States. While alternate fuels are,

---

1/Final approval was granted in late 1979, but the decisions have been appealed. This 7-year process is due in part to changes in the initial application and the changing of authority from the Federal Power Commission to the Economic Regulatory Administration and Federal Energy Regulatory Commission.

as in the United States, a mix of distillate and residual fuel oils, the mix is more heavily weighted towards distillate, the more expensive fuel. Therefore, those countries can offer the gas exporter a higher price than the United States can while still allowing the LNG imports to be competitive with their own mix of alternate fuels.

INDUSTRY ASSESSMENT OF NEAR-TERM LNG PROSPECTS

Considering gas supply conditions, the present LNG policy, the regulatory review process, and U.S. transportation disadvantages and market conditions, current indications are that only a limited number of new projects will be submitted for approval in the next few years. Numerous oil and gas company officials we interviewed agree with this assessment.

Company views toward LNG vary. Those companies with capital already invested in LNG facilities said they are more likely to consider new projects despite the negative attitudes toward LNG. Because these companies may be able to use or modify existing facilities, they may avoid many of the difficulties associated with facility siting. Applications from them for LNG projects with Nigeria and Trinidad seem possible in the near future. On the other hand, companies who do not have existing facilities may be more reluctant to consider new LNG projects requiring facility siting.

Regardless of a company's involvement in LNG, officials we interviewed said they believe that future demand for gas will exceed supplies. Consequently, they feel some source of additional gas will be needed and do not preclude the possibility of a greater number of LNG projects in the long run.

In summary, we do not believe significant volumes of LNG from OPEC will be imported in the near term unless present conditions change considerably. Further, there appear to be few new applications being prepared for submittal in the next few years. Beyond this time frame, however, conditions may change and the demand for LNG may increase, resulting in new proposals for deliveries in the next decade.

GOVERNMENT ANALYSES OF THE INTERNATIONAL NATURAL GAS INDUSTRY AND NATURAL GAS IMPORTS

As you requested, we contacted several Federal agencies to identify any analyses performed on the international natural gas industry or natural gas import policies. We wrote to the Departments of Energy, State, and the Treasury, and contacted the Central Intelligence Agency, to request copies of studies, reports, or other types of analyses the agencies may have conducted or participated in. Only the Treasury Department said it had performed an analysis of the international natural gas industry. In 1977-1978, the Energy Department headed a multiagency task force to review, among other things, the LNG import policy and the need for LNG limits. However, after much background analysis, no formal study or policy statement was issued. The four agencies said they had performed no other analyses in the areas about which you asked. However, the Energy Department's Economic Regulatory Administration is currently studying the question of U.S. dependence on Mexican and Canadian gas imports.

INTERNATIONAL NATURAL GAS INDUSTRY

In August 1980, the Treasury Department prepared a special report entitled, "The Prospects for Establishment of an Organization of Gas Exporting Countries." One of the purposes of the report was to determine if a gas cartel could impose supply conditions on natural gas, especially uniform pricing, like OPEC does for crude oil. The report stated that it is unlikely that an effective cartel, able to dictate supply and price terms, could be established in the next few years. Factors cited included:

--International gas trade accounts for only 11 percent of world gas demand.

--OPEC natural gas exports total only 1.6 percent of world consumption. While such exports could triple by 1990, they would still represent less than 5 percent of world gas demand.

--Potential cartel members are dependent on consuming countries for technology and perhaps capital, limiting their bargaining power.

--OPEC gas producers may prefer to rely on OPEC itself to set a uniform pricing policy. OPEC recently endorsed gas prices in line with crude oil prices, but did not indicate at what point the parity should occur, at the point of export or delivery.

During the course of this review, we requested and received a copy of this August 1980 report, which Treasury officials said is the Department's official views on the subject. We have previously provided your office with a copy of this report.

LNG IMPORT POLICY

In April 1977, the President issued an LNG import policy as a part of the first National Energy Plan. It replaced a policy which contained guidelines for total U.S. and per country import levels with one which set no limits. The President's statement called for a case-by-case analysis of each LNG project to consider its reasonableness. 1/ Recognizing that some issues were unresolved, the Department of Energy, assisted by an Interagency Task Force, conducted a review during 1977 and 1978 of the need for and desirability of further LNG imports and the implications of dependence to the United States.

The Task Force included staff from the Departments of Energy, State, Commerce, and Transportation, and the Council on Wage and Price Stability. Two contractors also assisted. Numerous background studies were prepared addressing potential markets for LNG, changing industrial gas demand, price escalation clauses in LNG contracts, project financing, incremental pricing, balance-of-trade implications of LNG versus imported oil, criteria for reliability of exporting countries, and LNG siting, safety, and liability.

The Task Force prepared a paper in mid-1978 addressing the question, "Is it in the national interest to impose controls on LNG imports to limit U.S. dependency?" The paper presented the Secretary of Energy with options for controlling import levels, including:

--No conditions beyond the incremental pricing provisions contained in the Natural Gas Policy Act, that is, certain low-priority industrial users pay for the high cost of LNG up to the cost of alternate fuels. After that, any additional costs are divided among all users.

--A national import quota, country of origin import quota, or both.

--Evaluation criteria to evaluate project usefulness and desirability for use by ERA, which

---

1/See General Accounting Office, "The New National Liquefied Natural Gas Import Policy Requires Further Improvement," EMD-78-19, Dec. 12, 1977.

reviews projects for consistency with the public interest.

--A requirement that local distribution companies directly contract for LNG purchases.

--Full incremental pricing, requiring that low-priority customers pay the full cost of LNG with a guarantee of no LNG curtailments to those customers even during severe gas shortages.

Instead of formally choosing one of the above options for controlling LNG imports, however, the Secretary of Energy chose to continue to allow ERA to review LNG import projects on a case-by-case basis. Energy Department officials cite two reasons for this. At the time, the Congress was considering passage of the Natural Gas Policy Act, and any LNG policy statement might have been considered premature. Also, officials felt a policy statement might require an accompanying environmental impact statement, delaying the policy statement by perhaps 6 months. Therefore no final paper or policy statement was issued from this project.

ERA STUDY

The Economic Regulatory Administration is currently reviewing the Canadian and Mexican gas import situation. It is concerned about undue U.S. dependence on these two import sources and whether they are secure and economic for the importing regions. ERA is considering, among other things, whether it should:

--Impose conditions on individual pipelines to reduce reliance on imported gas.

--Limit the importers' take or pay obligations (while they vary, most contracts call for American companies to take or pay for about 75 to 90 percent of contracted volumes).

--Require that importers obtain ERA approval for a plan under which they would take appropriate steps to obtain supplemental supplies of domestic natural gas to lessen dependence on imports and ensure service to high priority customers if authorized imports are curtailed.

--Recommend to the Federal Energy Regulatory Commission that it establish a separate tariff

for Mexican and Canadian imports, so that they would be priced incrementally to the end users (ERA does not have the authority to do this itself).

--Require that distribution companies or other end users contract directly with the importer to send clearer price signals regarding the true cost of the imports.

ERA has received written comments from parties that may be affected by any decisions on these issues, but has not yet reached any conclusions. ERA may hold an evidentiary hearing or an oral argument but no such determination has yet been made.

(001691)