MINNESOTA'S ENERGY OUTLOOK

HEARING

BEFORE THE

JOINT ECONOMIC COMMITTEE

CONGRESS OF THE UNITED STATES

NINETY-FOURTH CONGRESS

FIRST SESSION

OCTOBER 14, 1975

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MINNESOTA'S ENERGY OUTLOOK

TUESDAY, OCTOBER 14, 1975

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, D.C.

The committee met, pursuant to notice, at 9:30 a.m., in the Commissioner's Room, Government Center, Minneapolis, Minn., Hon. Hubert H. Humphrey (chairman of the committee) presiding.

Present: Senator Humphrey; Representative Karth; and Minnesota State Senator Hubert H. Humphrey III.

Also present: William A. Cox, George R. Tyler, and Larry Yuspeh, professional staff members.

OPENING STATEMENT OF CHAIRMAN HUMPHREY

Chairman HUMPHREY. We will proceed with the hearing that is under the sponsorship of the Joint Economic Committee.

This is one of several hearings that our committee will be holding. We will be making an overall review of the Employment Act of 1946, 1976 being the 30th anniversary of that law. We shall be studying the effect of the Employment Act, its adequacies and inadequacies. We shall be making a proper report to the Congress of the United States with legislative recommendations and other recommendations.

This hearing this morning is essentially directed toward the energy problems that confront the upper Midwest and particularly the northern tier States and, specifically, the State of Minnesota.

We will be holding other hearings similar to this in other parts of the country. For example, Senator Kennedy and Congresswoman Heckler have requested such a hearing in Boston because of the nature of the energy problems in that area. Other members of the Joint Economic Committee have asked for hearings in their respective States.

I thought I would let you know that this is a part of an overall review of national economic policy and it encompasses the work of the Joint Economic Committee and its role as an economic advisory body to the Congress.

We have asked members of the State legislature to sit with us who are interested in and have responsibility for the energy policy. I see that we have one young member here, a State senator, and I welcome him, Senator Hubert Humphrey III.

I believe there are other members to come, are there not?

Mr. HUMPHREY. Representative Monger.

Chairman HUMPHREY. Representative Monger will be here.

Mr. John Hill of the FEA, the Federal Energy Agency, was coming in this morning by plane and he has been detained for a while. We will put him on when he arrives. One or two other panel members on panel No. 2 are yet to arrive.

I am very pleased that Congressman Joseph Karth of the Fourth Congressional District and one of the outstanding Members of the House of Representatives is here with us. As you know, he serves on the Ways and Means Committee of the House of Representatives and that committee has a great deal to do with overall economic policy, believe me, since it deals with matters relating to trade, finance, and taxation.

I have an opening statement that I would like to read and following that I have an insert for the record for the Congress.

Let me welcome you to this hearing by the Joint Economic Committee. As I have indicated, I am very pleased with the fact that we have Representatives here from the U.S. House of Representatives and of the Minnesota State Legislature. I think my colleagues will agree that our State and Nation have never before faced such uncertainty about the supply and price of oil, gasoline, propane, and natural gas.

Washington has simply been unable to settle on one national energy policy. President Ford wants to decontrol oil prices, a step which Congress fears will push us into, at least, further inflation and another recession. Studies by the Joint Economic Committee, the Library of Congress, and the Congressional Budget Office reveal that decontrol now—letting the OPEC, that is, the oil-producing export countries, set our domestic American oil and gasoline prices—will allow oil prices to rise almost 30 percent. It will, in fact, rob consumers of spending power—rob them enough to cause as many as 500,000 jobs lost, to be added to our unemployment rolls.

Those are the generally accepted figures as a result of separate studies by the Budget Office of the Congress, the Joint Economic Committee and the Library of Congress, in our Congressional Research Service.

In addition to the possibility of decontrol, Minnesota's energy outlook this winter is clouded by the likelihood of natural gas shortages—shortages of 5 percent or even more if our winter is unusually cold. While this shortage is relatively modest compared to situations in some areas, it still could cost us around $7 million or more to find and buy substitute fuels. One of these substitute fuels for natural gas is propane. Propane suplies may be extremely tight this winter, but no shortages will occur if—and I emphasize if—oil controls are continued. These controls contain an allocation component vitally necessary to insure that the smaller propane users. our farmers, our food processors, and also some of our rural residential people, receive adequate supplies.

So in addition to the dangers of oil decontrols and a natural gas shortage, Minnesota may encounter—and I underscore the word "may"—a propane shortage if oil is decontrolled.

Yet, to my mind the real danger to Minnesota's energy supply lies with the Canadian decision to stop selling us their oil and natural gas. But I remind you it is their oil and gas and we should and will respect their right to use it in any way they see fit. At the same time, we must recognize that the Canadian policy has a special and a severe impact on Minnesota and the northern tier States.

It will cost Minnesota some $100 million each and every year in higher fuel prices to bring oil in from Texas and Oklahoma to replace Canadian oil. That means gasoline prices 2 to 3 cents per gallon higher. It also could mean higher unemployment as our oil refineries shut down without Canadian oil, and it means a sharp downturn in our effort to attract industry and jobs, in other words, to grow economically.

I can't overemphasize the importance of a stable, sustained, adequate supply of energy as a means of economic growth and development. I know that the State of Minnesota spends a great deal of time, efforts, and resources to encourage economic development. We are very proud of it, both in the Iron Range area and throughout the State. But this is dependent upon in a large measure three very important areas of our economy, finance and credit, transportation, and energy.

The likely Canadian natural gas cutoff will affect only 10 percent of Minnesota along the border. That's the estimate. While it will not affect most of us at all directly, its impact in northern Minnesota will be far, far worse than the oil cutback.

The life of entire communities in that area of our State will be jeopardized. Homes, factories, stores, everyone will be forced to pay for new heating and cooking systems. Factories must find and use other sources of fuel adaptable to their unique processes. For some, the cost will be too much. They may just close up shop and be required to move away. New plants and the vital jobs they bring will go elsewhere where gas or fuel is abundant and cheap.

The Canadian policy has created special energy problems for Minnesota and therefore requires special solutions. In the case of oil, for example, I have offered legislation requiring the President to facilitate a Canadian-American energy swap—an exchange of American oil elsewhere for continued flows of Canadian oil to Minnesota and the northern tier State. I intend to explore this possibility this afternoon with Mr. Priddle of the Canadian Energy Department.

I might also add that my colleague, Senator Mondale, has introduced a Canadian oil allocation bill, S. 2364. I'm a cosponsor with Senator Mondale of that particular piece of legislation. I am sure you recall the fact that Senator Mondale did go to Ottawa, Canada, and did meet with the energy officials there and laid our case before the top Canadian authorities.

It is important also that our Government seek to allocate Canadian oil among American refineries to insure that ours in Minnesota are not cut off before other permanent oil sources can be developed.

To discuss these and other features of the energy outlook in Minnesota and the northern tier, I welcome a distinguished official from Washington—I am pleased to see that he has arrived and is now with us—Mr. John Hill, who is the Deputy Administrator of the Federal Energy Administration.

He will be joined on our first panel by leading Minnesota energy officials: Former Gov. Karl Rolvaag, now the chairman of the Public Service Commission; and Mr. John Millhone, Director of the Minnesota Energy Agency.

Following this panel, we will hear from another panel representing a cross-section of municipalities, businesses, and organizations vitally concerned with our energy situation. On this panel will be: Mr. Jack

Murray, president of the International Falls City Council; Mr. James Williams, general manager with Boise-Cascade in International Falls; Mr. Gordon Severa, president of the transmission division, Northern Natural Gas; Mr. John Roper, vice president of Koch Refining Co.; Mr. Cy Carpenter, president of the Minnesota Farmer's Union; and Mr. Norman Dyer, president of Q Petroleum Corp., Minnesota's largest chain of independent gas stations.

At this point I want to place in the record the prepared statement of my colleague, Senator Mondale. Senator Mondale could not be with us today but he has taken a very active role as a Member of the Senate, and particularly as a member of the Senate Finance Committee, in reference to energy problems. He is a strong supporter of the Emergency Petroleum Allocation Act and he has been in the forefront of every battle in the Congress for energy legislation. I ask that the prepared statement of Senator Mondale be included at this point.

[The prepared statement of Senator Mondale follows:]

PREPARED STATEMENT OF HON. WALTER F. MONDALE, A U.S. SENATOR FROM THE STATE OF MINNESOTA

Mr. Chairman, I would like to commend you for holding these important hearings today on the major energy issue confronting our state at this time. I regret that I am not able to be at this hearing because of previous commitments.

The energy problems facing the state of Minnesota are serious and pressing. None is more urgent than the potential harm that the expiration of the Emergency Petroleum Allocation Act of 1973 would produce. Some of these effects are unique to Minnesota, others are shared with the entire nation. All are important.

We share with other states the prospect of sharply higher energy prices if the Allocation Act is not renewed beyond November 15 and if all price controls on domestically-produced oil are removed.

The President seems determined to take the single biggest step he possibly could to slow and maybe even destroy our present economic recovery. He has decided that his energy policy will consist of higher prices—higher prices for oil, higher prices for natural gas, higher prices for coal, higher prices for every energy source we need to fuel our economy.

No one questions the fact that for years, we have been an energy-wasting nation, and that until recent years the low price of energy encouraged this waste. But there are ways to save energy without bankrupting the consumers of this country. And we can encourage the production of the secure, domestic energy we need without surrendering to OPEC and the multinational oil companies.

The President has said that he wants to compromise on the energy pricing issue. But his "final offer" consisted of a plan that would cost consumers over $40 billion a year by the end of 1978, add over 600,000 to the ranks of the unemployed and increase inflation by almost 2%.

This "compromise" would take over $600 a year out of the pocket of every American family. And for farm families, the added energy costs would total almost $1400 a year.

This is no compromise. The President's plan is simply bankruptcy on the installment plan. And just as bald, it would allow the OPEC, cartel-imposed price for oil to continue to control the price of oil we produce here at home.

There is no justification for this outrageous OPEC oil price. Secretary of the Treasury William Simon recently admitted that "there are no economic or financial justifications for the present price of oil." Yet the Administration that Mr. Simon represents now wants OPEC to control not only the price of their own production, but also the price of oil production here at home.

There is no rational reason for surrender to OPEC. There is simply no logic in letting them tell us how much to charge for American-produced oil. And yet the Administration plan would do just that.

There is an alternative that would try to set the price for domestic oil high enough to encourage new exploration, but not so high as to endanger our economy and penalize every American.

The House has passed a bill that would roll back the price of some domestic oil from the present $13 a barrel to about $7.50 a barrel, with $10 a barrel for very high-cost oil. This bill, when compared to the President's latest plan, would save the average American family $264 next year and $404 in 1977. And these savings could well be the difference between continuing recession and a strong recovery.

That bill is now in conference with similar legislation passed by the Senate that would also impose new price ceilings on domestically-produced oil. The issues involved in consideration of these bills are complex. But I am very hopeful that within the near future, both Houses will agree on a Congressional oil pricing plan that will truly be an alternative to the President's decontrol proposals. We must arrive at such a plan if our economic recovery is to be preserved and made more vigorous.

In addition, however, we must at the same time extend the allocation authority for domestic oil. Unless we do, Minnesota will be hit doubly hard.

First, we in Minnesota are quite heavily reliant for our fuel products on independent refiners and marketers. One of the important provisions of the Allocation Act requires an equitable distribution of petroleum supplies across all sectors of the industry. The major oil companies must share their crude with independent refiners and their products with independent marketers. If this act lapses, these companies would be free to use their own crude oil to the maximum extent possible in their own facilities. They might well try to freeze out independent markets, who supply a significant share of the Minnesota market.

Second, and perhaps most importantly for Minnesota, without an extension of the Allocation Act authority, our state's situation regarding the importation of Canadian oil will be greatly worsened.

For a number of Northern Tier States, the continued flow of Canadian crude to our States' refineries is of crucial importance. For no State is it more important than for Minnesota. We are dependent on Canadian crude for about half of all the petroleum products in our State, and the three refineries in Minnesota rely on Canadian crude for over 75 percent of their crude feedstock.

The Canadian Government has indicated clearly that it intends to continue phasing down the volume of crude oil exported to the United States, and to eliminate all crude oil exports to the United States by 1983. While a system of priority allocation of Canadian crude is not a long-term solution to the problem of decreasing Canadian exports, it would give those refiners who are now most dependent on Canadian crude oil, and for whom transportation alternatives are the most difficult to obtain, time in which to conclude exchange arrangements with Canadian companies currently supplying crude oil. This allocation system, therefore, would give Canadian-dependent refiners the time they need before a longer-term solution to the problem of declining Canadian crude oil exports can be arranged.

In recent months, the Federal Energy Administration has been in the process of setting up such a system for priority allocation of Canadian crude oil to American refiners. I am hopeful that they are moving toward such a system, and that it will be designed to meet the needs of the most Canadian-dependent refiners to the maximum extent possible.

However, the recent failure of the Senate to override the President's veto of S. 1849, extending the Emergency Petroleum Allocation Act for 6 months, has created a potentially severe problem for the implementation of priority allocation system for Canadian crude oil. With the future of the EPAA in doubt beyond November 15, it is questionable whether the President possesses any secure legislative authority under which such a priority allocation plan for Canadian crude might be implemented.

I have therefore introduced legislation that would give the President the authority to allocate Canadian crude oil exports to the United States on a priority basis. I am pleased, Mr. Chairman, that you and a number of other Northern Tier state Senators have joined with me in cosponsoring this legislation.

Under this bill, among the factors that would be given consideration in formulating a priority allocation plan would be whether U.S. refineries were constructed for the purpose of refining Canadian crude oil, the extent of refineries' historical usage of Canadian crude oil, the lack of availability of sources of crude oil alternative to Canadian crude oil in sufficient quantities and at reasonable prices, and such other factors the President my determine.

Mr. Chairman, I am a strong supporter of the Emergency Petroleum Allocation Act. I believe that we must do everything possible to insure its extension. But I

am also aware of the possibility that such a long-term extension may not be obtainable at this time. Therefore, we must take whatever specific actions are necessary to protect those areas that would be hit with special difficulties should the allocation act expire. I believe that providing separate legislative authority for a program of Canadian allocation is one such specific action that is urgently needed.

We cannot consider Minnesota's problems in isolation from the problems facing the rest of the nation. But we must do everythig possible to ensure that those problems which are unique to our state or area are dealt with in the most effective way possible. I share with you the determination to continue pressing responsible government officials to act with the greatest speed possible on meeting these demands.

Chairman HUMPHREY. Also I have some inserts for the record establishing certain background information that will be helpful for our official record.

First, a projected Canadian oil production and export study through 1982; second, the Mondale-Humphrey Canadian Oil Allocation bill, S. 2364, and its explanation; third, the list of Canadian-dependent refineries and the degree of their dependence supplied by the Federal Energy Agency; an, fourth, the background data on United States and Canadian oil imports by source country, and by crude versus refined product for 1973 through early 1975; fifth, Canadian oil imports by province; sixth, Canadian shut-in production; seventh, a partial map of the U.S. oil pipeline system; eighth, U.S. exports and imports of natural gas, mainly imports; and, finally, a letter from Senator James Pearson of the State of Kansas to myself on the number and nature of natural gas users in Minnesota and the extent of gas curtailments in this State.

These items will be helpful to us as we go into further study of the energy situation in Minnesota and elsewhere.

[The information referred to follows:]

CANADIAN CRUDE OIL PRODUCTION AND EXPORT PROJECTIONS (MBD)

Year	Demand	Producibility	Producibility w/o tar sands	Exports available to United States		
				Maximum	Without	
					Tar sands	Condensate
1975	1,205	2,100	2,040	653	610	503
1976	1,225	2,070	2,005	617	569	467
1977	1,285	2,005	1,940	526	478	376
1978	1,360	1,885	1,820	383	336	733
1979	1,400	1,790	1,675	285	201	135
1980	1,440	1,710	1,555	197	81	47
1981	1,485	1,615	1,420	95		
1982	1,530	1,510	1,290			
1983	1,580	1,385	1,165			
1984	1,625	1,390	1,045			

Note.— Formula:

$$E = [P - (D + C)]\frac{t}{10} \text{ (t not to exceed 10)}$$

(all figures determined annually)

where:

E = annual average volume available for export.
P = forecast of annual average potential producibility of crude oil and equivalent.
D = forecast of annual average demand for Canadian use for western Canadian crude oil and equivalent.
C = forecast of total increase in demand that would have occurred if conservation measures had not been effective.
t = time during which supply is forecast to exceed Canadian demand.

Source: FEA.

[S. 2364, 94th Cong., 1st sess.]

A BILL To authorize the President to implement a system of priority allocation of Canadian crude oil to American refiners

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. The Congress hereby determines that—

(a) refineries in certain land-locked regions of the United States have been and are currently dependent on crude oil imported from Canada;

(b) the Government of Canada has announced its intention to reduce crude oil exports to the United States, and to totally eliminate such exports by 1983;

(c) as the volume of Canadian crude oil exported to the United States declines, those areas most dependent on such crude oil would experience severe economic and supply disruptions;

(d) such disruptions could be reduced or eliminated during the initial years of the reductions of supply from Canada by an effective system to allocate Canadian crude oil to those refiners most severely affected, and without economically viable alternative crude oil supplies available to them; and

(e) such an allocation system should be promulgated by the President at the earliest possible date.

SEC. 2. (a) The President is hereby authorized to promulgate a regulation providing for the mandatory allocation of crude oil imported from Canada to the United States in amounts specified in (or determined in a manner prescribed by) such regulation.

(b) To the maximum extent practicable, such regulation shall provide for allocation to refineries within the United States on the basis of (1) the lack of availability of sources of crude oil alternative to Canadian crude oil in sufficient quantities and at reasonable prices, (2) historical usage of Canadian crude oil, (3) construction of such refineries for the purpose of refining Canadian crude, and (4) such other factors as he may determine.

SEC. 3. The President shall report to the Congress within 60 days of passage of this Act on the measures taken to implement a system of allocation pursuant to section 2.

LIST OF CANADIAN-DEPENDENT REFINERIES—CANADIAN INPUTS AND TOTAL INPUTS 1973 AND TO AUG. 30 1974 (B/D)

Company and location	Canadian inputs, 1973	Total inputs, 1973	Percent Canadian	Canadian inputs through Aug. 30, 1974
Districts I–IV:				
American Petrolfina, El Dorado, Kans	3,205	19,413	16.5	1,510
Aapco-Oil Corp., Arkansas City, Kans	3,731	24,163	15.4	2,881
Ashland Oil:				
Buffalo, N.Y	58,863	62,439	94.3	
St. Paul Park, Minn	44,688	59,468	75.1	
Canton, Ohio	8,563	45,818	18.7	
Findley, Ohio	2,265	4,605	49.2	
Total	114,379	172,330		105,321
Atlantic Richfield, E. Chicago, Ill	19,163	125,778	15.2	18,351
BASF Wyandotte, Wyandotte, Mich	474	2,295	20.7	502
Canadian Hydrocarbons:				
Cut Bank, Mont	2,173	4,026	54	
Kevin, Mont	1,284	4,144	31	
Total	3,457	8,170		2,743
Clark Oil and Refinery, Blue Island, Ill	43,266	67,186	64.4	30,800
Coastal States, Wichita, Kans	2,020	26,559	7.6	943
Continental Oil:				
Billings, Mont	19,640	47,380	41.5	
Wrenshall, Minn	15,393	19,022	80.9	
Ponca City, Okla	316	113,067	.3	
Total	35,349	179,469		58,721

LIST OF CANADIAN-DEPENDENT REFINERIES—CANADIAN INPUTS AND TOTAL INPUTS 1973 AND TO AUG. 30, 1974 (B/D)—Continued

Company and location	Canadian inputs, 1973	Total inputs, 1973	Percent Canadian	Canadian inputs through Aug. 30, 1974
Districts I–IV—Continued				
Crystal Oil, Carson City, Mich	3,507	4,754	73.8	2,512
Dow Chemical Co., Bay City, Mich	10,991	16,581	66.3	6,159
Exxon Corp., Billings, Mont	10,732	46,490	23.1	8,041
Farmers Union Central, St. Paul, Minn	15,015	33,527	44.8	14,324
Farmland Industries:				
Coffeyville, Kans	881	32,614	2.7	
Phillipsburg, Kans	1,727	18,965	9.1	
Scottsbluff, Nebr	403	5,006	8.1	
Total	3,011	56,585		3,737
First Gen. Resources, Commerce City, Colo	976	13,851	7	918
Getty Oil Co., Through Skelly, El Dorado, Kans	4,142	85,594	4.8	5,289
Gladieux Refinery, Fort Wayne, Ind	1,417	3,129	45.3	1,100
Gulf Oil Corp., Toledo, Ohio	28,746	53,097	54.1	22,267
Husky Oil:				
Cody, Wyo	836	11,591	7.2	
Cheyenne, Wyo	1,607	20,964	7.7	
Total	2,443	32,555		1,806
Koch Ind., Pine Bend, Minn	87,408	100,939	86.6	76,723
Laketon-Asphalt, Laketon, Ind	2,412	5,162	46.7	734
Little American Refinery, Evansville, Wyo	876	16,149	5.4	847
Marathon Oil, Detroit, Mich	16,530	61,048	27.1	11,752
Midland Cooperative, Cushing, Okla		11,001		
Mobil Oil:				
Buffalo, N.Y	40,464	40,780	99	
E. Chicago, Ind	10,441	40,493	25.8	
Juliet, Ill	29,652	159,286	18.6	
Total	80,557	240,649		49,005
Murphy Oil Corp., Superior, Wis	33,434	36,577	91.4	32,594
National Cooperative, McPherson, Kans	3,471	47,999	7.2	3,485
Phillips Petroleum, Kansas City, Kans	4,537	90,760	5	5,176
Rock Island, Rock Island, Ill	2,890	26,597	10.9	1,914
Shell Oil, Wood River, Ill	14,620	267,615	5.5	22,651
Standard Indiana:				
Mandan, N. Dak	7,416	48,649	15.2	
Salt Lake City, Utah	339	40,068	8	
Casper, Wyo	1,865	38,253	4.9	
Sugar Creek, Mo	2,773	102,664	2.7	
Whiting, Ind	41,660	297,513	14	
Wood River, Ill	1,063	97,933	1.1	
Total	55,116	625,080		49,773
Standard Ohio:				
Toledo, Ohio	55,530	119,869	46.3	
Lima, Ohio	6,809	152,770	4.5	
Total	62,339	272,639		43,027
Studebaker Worthington (Pasco), Sinclair, Wyo	4,778	33,645	14.2	1,735
Sun Oil, Toledo, Ohio	32,399	107,592	30.1	22,380
Tenneco Inc., Chalmette, La		76,560		680
Tesoco Petroleum:				
Wolf Point, Mont	71	1,831	3.9	
Newcastle, Wyo	808	8,956	9	
Total	879	10,787		516
Texaco Inc.:				
Lawrenceville, Ill	3,683	83,186	4.4	
Lockport, Ill	26,823	70,426	38.1	
Casper, Wyo	1,351	20,659	6.5	
Total	31,857	174,271		14,231
Total petroleum (Leonard), Alma, Mich	15,883	37,553	42.3	20,211
Union of California, Lamont, Ill	16,289	153,136	10.6	14,638

LIST OF CANADIAN-DEPENDENT REFINERIES—CANADIAN INPUTS AND TOTAL INPUTS 1973 AND TO AUG. 30, 1974 (B/D)—Continued

Company and location	Canadian inputs 1973	Total inputs 1973	Percent Canadian	Canadian inputs through Aug. 30, 1974
United Refineries:				
Warren, Pa.	22,349	33,696	66.3	
West Branch, Pa.	5,607	7,791	72	
Total	27,956	41,487		25,101
Total, districts I–IV	801,132			685,067
District V:				
Atlantic Richfield	58,292			41,800
Mobil	58,292			48,437
Shell	72,641			55,740
Texaco	53,808	53,808		39,239
Continental	8,968	17,432		
Totals district V	252,001			185,216
Grand total	1,053,133			870,283

UNITED STATES AND CANADIAN TOTAL OIL IMPORTS BY SOURCE, 1973

Country of export	Volume	Percent	Cumulative Volume	Cumulative Percent
	United States 6,200			
1. Venezuela	1,840	29.7	1,840	29.7
2. Canada	1,100	17.7	2,940	47.4
3. Saudi Arabia	590	9.5	3,530	56.9
4. Nigeria	550	8.9	4,080	65.8
5. Iran	420	6.8	4,500	72.6
	Canada 1,000			
1. Venezuela	470	47	470	47
2. Iran	180	18	650	65
3. Nigeria	80	8	730	73
4. Saudi Arabia	80	8	810	81
5. Abu Dhabi	60	6	870	87

UNITED STATES AND CANADIAN CRUDE OIL IMPORTS BY SOURCE, AUGUST 1974

Country of export	Volume	Percent	Cumulative Volume	Cumulative Percent
	United States 3,924			
1. Nigeria	880	22	880	22
2. Canada	746	19	1,626	41
3. Saudia Arabia	584	15	2,210	56
4. Iran	481	12	2,691	68
5. Venezuela	375	10	3,066	78
	Canada 817			
1. Venezuela	373	45.6	373	45.6
2. Iran	268	32.8	641	78.4
3. Saudi Arabia	66	8.1	707	86.5
4. U.A.E.	49	5.9	756	92.4
5. Yemen	39	4.1	790	96.5

TRENDS IN OIL TRADE FOR THE UNITED STATES AND CANADA, 1973–74

[Thousand bbl/d]

	January	February	March	April	May	June	July	gust	September	October	November	December	Annual average
United States:													
1973:													
Crude imports	2,732	2,873	3,162	3,049	3,215	3,220	3,501	3,593	3,471	3,740	3,452	2,891	3,244
Product imports	3,079	3,501	3,413	2,551	2,603	2,659	2,671	2,913	2,903	2,785	3,412	3,055	2,958
Total imports	5,811	6,374	6,575	5,600	5,818	5,879	6,172	6,506	6,374	6,525	6,864	5,946	6,202
Exports	210	260	224	275	237	215	240	217	242	221	202	227	231
Net imports	5,601	6,114	6,351	5,325	5,581	5,664	5,932	6,289	6,132	6,304	6,662	5,719	5,971
1974:													
Crude imports	2,382	2,248	2,462	3,277	3,908	3,925	4,091	3,924	3,797	3,810	3,997	4,017	3,485
Product imports	2,973	2,973	2,753	2,703	2,580	2,493	2,397	2,434	2,225	2,320	2,581	2,646	2,584
Total imports	5,355	5,221	5,215	5,970	6,488	6,418	6,488	6,358	6,022	6,130	6,578	6,663	6,069
Exports	207	203	196	243	247	238	253	247	171	221	250	250	230
Net imports	5,148	5,018	5,019	5,727	6,241	6,180	6,235	6,111	5,851	5,909	6,328	6,413	5,839
1975:													
Crude imports	3,934	4,061											
Product imports	2,324	2,136											
Total imports	6,258	6,197											
Exports	220	220											
Net imports	6,038	5,977											
Canada:													
1973:													
Crude imports	945	975	932	772	930	741	1,058	937	940	799	934	802	897
Product imports	163	93	55	37	119	121	122	153	105	132	140	149	116
Total imports	1,108	1,068	987	809	1,049	862	1,180	1,090	1,045	931	1,074	951	1,013
Exports	1,357	1,500	1,364	1,472	1,495	1,446	1,162	1,298	1,300	1,363	1,357	1,273	1,364
Net exports	249	432	377	663	446	584	18	208	255	432	283	322	351
1974:													
Crude imports	822	988	717	718	971	763	816	817	672	787			
Product imports	96	44	142	33	114	125	89	104	58	75			
Total imports	918	1,032	859	751	1,085	888	905	921	730	862			
Exports	1,180	1,402	1,056	1,266	1,270	1,220	956	978	1,026	988			
Net exports	262	370	197	515	185	332	51	57	296	126			

CANADIAN OIL IMPORTS BY PROVINCE

	Atlantic Provinces	Quebec and East Ontario	Central and West Ontario	Prairies	British Columbia	Yukon and Northwest Territories	Total
Crude oil:							
1973	306,064	550,950	1,354				858,368
1972	266,261	523,684	1,163				791,107
Motor gasoline:							
1973		316	4	47			366
1972	6	8,054	2	47			8,109
Middle distillates:							
1973	4,957	7,121	1,048	911	1,554	10	15,602
1972	13,578	19,228	4,347	684	2,667		40,504
Heavy fuels:							
1973	8,261	40,691	5,970		9,644	8	64,574
1972	9,914	45,431	6,323		8,502	13	7,0184
Other products:							
1973	2,794	11,806	8,168	457	2,406	36	25,668
1972	2,720	9,111	8,306	221	1,505	43	21,906
Total products:							
1973	16,013	59,934	15,190	1,415	13,605	54	106,209
1972	26,217	81,824	18,979	951	12,675	56	140,702
Crude and products:							
1973	322,077	610,884	16,544	1,415	13,605	54	964,578
1972	292,479	605,508	20,141	951	12,675	56	931,810

Note.—1972 revised; 1973 subject to revision.

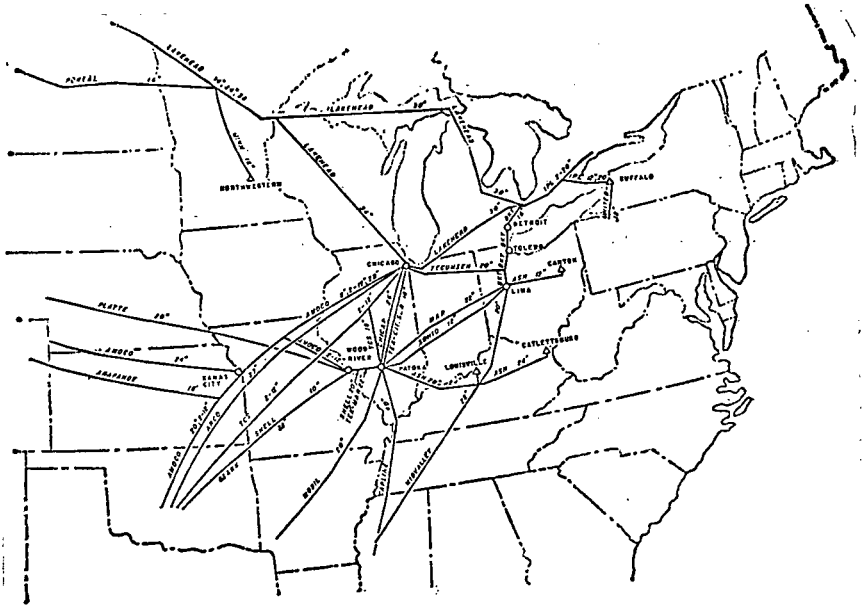
Sources: Company import reports and NEB 1973 annual report.

CANADA: SHUT-IN OIL PRODUCTION

Producers in western Canada are expected to have about 380,000 b/d or crude oil shut-in in October, roughly 20% of production capacity. The amount is down sharply from last May when reduced shipments to the U.S. market resulted in shut-in production of 500,000 b/d. Exports to the United States have increased in recent months, partly because of a reduction in export taxes on crude; since June, they have been running at nearly 750,000 b/d.

The existence of shut-in capacity assures Ottawa that oil will be available for supplying eastern Canada once the 520-mile pipeline extension from Sarnia to Montreal is completed. The line, now under construction, will handle 250,000 b/d beginning in late 1976 or early 1977. At present, imports satisfy all eastern Canada's requirements, averaging about 800,000 b/d. About 45% of western Canada's crude output goes to the U.S. market; the share almost certainly will decline next year as Ottawa follows through on plans to phase out crude exports [unclassified].

U.S. OIL PIPELINE SYSTEM



U.S. IMPORTS AND EXPORTS OF NATURAL GAS, 1955–73

Year	Imports from Canada	Imports from Mexico	Total imports	Exports to Canada	Exports to Mexico	Total exports	Net imports
1955	10,885	7	10,892	11,494	19,903	31,397	(20,505)
1956	10,586	6	10,592	17,164	19,499	36,663	(26,071)
1957	21,060	16,970	38,030	25,368	14,998	40,366	(2,336)
1958	88,230	46,211	134,441	32,128	10,790	42,918	91,523
1959	81,892	50,929	132,821	11,740	10,794	22,534	110,287
1960	109,855	46,988	156,843	5,574	10,526	16,100	140,743
1961	168,822	51,755	220,577	5,578	9,638	15,126	205,361
1962	342,770	51,066	393,836	5,575	10,255	15,830	378,006
1963	357,961	49,762	407,723	6,880	10,068	16,948	390,775
1964	392,239	52,620	444,859	9,654	9,842	19,496	425,363
1965	404,687	52,007	456,694	17,892	9,536	27,428	429,266
1966	431,855	48,636	480,491	44,958	9,902	54,860	425,631
1967	513,256	50,972	564,228	70,456	11,139	81,595	482,633
1968	604,462	47,423	651,885	81,647	12,098	93,745	558,140
1969	680,107	46,845	726,952	34,936	13,390	48,326	678,626
1970	778,688	41,336	820,024	10,860	14,678	25,538	794,486
1971	910,925	20,689	931,615	14,349	15,785	30,134	901,481
1972	1,009,092	8,140	1,017,233	15,553	14,579	30,132	987,101
1973 [1]	1,027,122	1,632	1,028,754	14,823	12,729	27,552	1,001,202

[1] Preliminary.
Note.— All volumes in millions of cubic feet. Volumes reported for 1966 and later are at 14.73 Psia and 60 °F. Volumes for 1965 and prior years are "as reported". LNG imports and exports are excluded.

Source: Federal Power Commission national gas survey.

U.S. SENATE,
Washington, D.C., September 26, 1975.

HON. HUBERT H. HUMPHREY,
U.S. Senate, Washington, D.C.

DEAR HUBERT: I want to provide you with some material collected by my staff on the natural gas supply emergency faced by Minnesota in the coming heating season (December 1975–March 1976).

On a statewide basis, Minnesota has 638,400 residential natural gas consumers. Your state has 56,300 commercial establishments dependent upon natural gas, as well as 5,600 industrial facilities which depend upon the use of natural gas for manufacturing processes.

It is estimated that the state of Minnesota consumes 321.8 billion cubic feet of natural gas annually. The most recent estimates of curtailments show that the aggregate supply available to Minnesota during the 1975–76 heating season will be 5 billion cubic feet below requirements. The Minnesota industries which are considered major consumers of natural gas include paper and allied products and good and kindred products.

The major interstate pipelines serving your state include (1) Northern NG, (2) Montana Dakota Util. Co., (3) Midwestern Gas Transmission, (4) Great Lakes Gas Transmission, and (5) Interstate Power Co. Of these pipelines, Northern NG has been identified as curtailing their customers.

Assuming for the purposes of illustration that the entire gas supply shortfall expected in Minnesota could be met by using fuel oil, the increased fuel costs to Minnesota would be $7,415,000. Of course, not all facilities can convert. There will be unemployment in such situations.

Needless to say, because of the problems faced by the pipelines serving Minnesota, it is crucial that supply availability be increased at the earliest possible time to prevent dislocation, unemployment and substantially higher alternate fuel costs in the State of Minnesota.

With kindest personal regards,

Sincerely,

JAMES B. PEARSON,
U.S. Senator.

Chairman HUMPHREY. Congressman Karth, do you have any statements you would like to make?

Mr. KARTH. No.

Chairman HUMPHREY. All right. We will proceed, then, with our first witness.

Mr. Hill, we appreciate very much your coming to Minnesota and testifying for us.

Do you have a prepared statement?

Mr. HILL. Yes; I do, Mr. Chairman.

Chairman HUMPHREY. If you will proceed with your statement, we will follow up, then, with Governor Rolvaag.

Governor, I gather you would like to follow Mr. Hill, is that correct?

Mr. ROLVAAG. Senator, I would suggest that Mr. Millhone, who has another important engagement today, should follow Mr. Hill.

Chairman HUMPHREY. Fine. I understood that that might be the case but I wanted you to make the decision.

All right, Mr. Hill.

STATEMENT OF HON. JOHN HILL, DEPUTY ADMINISTRATOR, FEDERAL ENERGY ADMINISTRATION

Mr. HILL. Mr. Chairman, it is a pleasure to be here in the lovely State of Minnesota with you this morning and to talk about the overall energy situation that exists in the State, not only as a result of our own domestic oil and gas and energy situation but the Canadian situation as well.

I would like to cover in my brief statement this morning the Canadian situation——

Chairman HUMPHREY. Right.

Mr. HILL [continuing]. The oil and gas situation and the propane situation if I may. I will probably summarize parts of my testimony so if I could put it in the record, I would appreciate it.

Chairman HUMPHREY. The prepared statement will be printed in its full text, so, if you would proceed to take those statements that you think are of vital importance, we will question you on that.

Mr. HILL. All right. As you know, Canada has come to an increasing awareness that her oil and gas reserves are insufficient to meet both Canadian domestic demands as well as traditional U.S. export demands. Future Canadian supplies will be very expensive to find, to develop and to transport to market. In addition the quantities initially believed available have proved to be very disappointing in recent months.

Canadian Frontier, OCS, and tar sands are by no means assured supplies for Canada, let alone the export market here in the United States. As a result, the Canadian Government has embarked on a thorough-going program to reconcile her domestic supplies with national needs and U.S. import requirements will clearly take second place.

Since the early 1960's U.S. importers of Canadian natural gas have known that no new exports would be approved by the National Energy Board after 1970. The NEB took this action when Canadian gas reserves were judged inadequate to meet the needs of Canada. This summer the NEB released a report on the Canadian natural gas situation which suggested the likelihood of export curtailment. There is no question that the NEB has not only the authority to limit exports but also the responsibility in Canada to assure that energy exports are permitted only when such supplies are in excess of reasonably foreseeable requirements for use in Canada.

I have a table, Mr. Chairman, which highlights the Canadian natural gas situation and these would be the authorized exports to the United States. As you can see on this table, Canadian natural gas is in short supply and those shortages do increase over time. That is table 1 in my prepared statement.

Shortages, in fact, may be felt in the export markets, if we look at that chart, during the 1976–77 heating season.

Former Canadian Energy Minister McDonald in a July meeting with Mr. Zarb stated that Canada would make every effort to meet natural gas contracts for the 1975–76 heating season. Mr. McDonald further stated that the Government of Canada would like U.S. assistance in determining how to implement the possible future cutbacks in Canadian natural gas exports. Consultations between our two Governments on this issue will take place later this year.

FEA's natural gas task force, which is an interagency effort, will be addressing Mr. McDonald's request regarding U.S. assistance. It should be noted that no U.S. natural gas allocation authority presently exists on the books. We in FEA believe that we have the responsibility to address the Canadian request, however, despite uncertainties concerning our future allocation authority so as to prepare for shortages and to seek alternative energy for any affected areas.

Turning to the oil situation, the oil embargo of 1973–74 highlighted a Canadian need for a change in their domestic oil policy. The continued high level of Canadian oil exports to U.S. markets had become

understandly worrisome to Canada in the face of their own declining supplies and rising domestic demands. The NEB recommended to the Government a gradual curtailment of oil exports from a 1973 high of 1.1 million barrels a day to a completed cutoff by 1983.

The attached table, table 2, in my prepared statement, shows the current level of Canadian exports allowed to the United States. Currently the U.S. refineries are not importing a full allowance of Canadian crude oil, however. This has been due to a variety of reasons which include costs, FEA's entitlement program, and the state of the U.S. economy.

There is little doubt that Canadian actions curtailing the exports of oil and gas to the United States are probably in the best interest of the Canadian people. The United States fully appreciates the Canadian situation; as President Ford recently stated, "Our friends to the North have had to reduce and may in the distant future eliminate exports of oil and gas to the United States. For you in the northern tier, this future may appear to be very near. Yet I think we do have time to prepare for and adjust to a changing situation if we begin to make our adjustments now.

Focus now for a few minutes on Federal programs to alleviate the impending curtailment of Canadian oil. The Federal Energy Administration has been aware for some time of the need to develop an allocation program for importing Canadian crude oil. On April 22, 1975, a notice was published in the Federal Register inviting refiners to describe their present degree of dependence on crude oil imported from Canada, their projected future dependence, and the current availability, if any, of all current energy sources. Public hearings were held in May. We received 31 written comments and oral testimony by 19 interested parties.

Chairman HUMPHREY. That is the session that some of us attended, is that correct?

Mr. HILL. That's correct.

Chairman HUMPHREY. Senator Mondale and I were there.

Mr. HILL. You submitted a statement for the record there as well, in addition to your appearance.

A review of this commentary received during this hearing indicates a preferential allocation program is clearly required for the northern tier refiners. Such a plan is now under final development by FEA and will provide the first level of protection to landlocked northern tier refiners. Allocations to all refiners will be based upon evaluation of their demonstrable reliance on Canadian crude and on their access to alternative crude oil supplies and distribution systems. This system will be reviewed by the National Energy Board in Canada and will be subject to another round of hearings in early November.

In addition to a regulated allocation program, certain other possibilities exist to relieve the situation. The Federal Energy Administration participated in the establishment of a bilateral Canadian-United States working party in Ottawa on March 17, 1975, through the Department of State. Subsequent meetings of the working party were held in Ottawa on April 2 and in Washington, D.C., on June 13, 1975.

The working party made a comprehensive review of alternatives available to northern tier refiners that are affected by the anticipated

decline in Canadian export availability. The review covered the legal, fiscal, and administrative factors which might bear on alternative solutions to the problems. The review also developed and analyzed the possibilities for the exchange of oil between Canadian and U.S. refiners within the framework of existing policies.

The working party concluded that commercial exchanges between Canada and U.S. companies, if consistent with the broad energy policies of both countries, should not be precluded by either government. It was also determined that governments would not be parties to exchanges but would work to maintain a favorable environment within which such exchanges could take place. Both United States and Canadian officials agreed to consider modifying or removing any legal, fiscal, or administrative impediments to commercial workable and mutually beneficial exchanges consistent with our respective national authorities.

The working party has also addressed long-term possibilities for international exchanges compatible with the policies of both governments. Six basic scenarios involving additional Canadian supplies to Canadian-dependent refiners in exchange for U.S. domestic or offshore crude oil supplied to refineries in British Columbia, Ontario, and Quebec were considered. The exchange volumes assumed were 250,000 barrels a day in Ontario or Quebec and 150,000 barrels a day into British Columbia. Potential savings in transportation varied from 20 cents per barrel to $1.30 per barrel in the Alaska-to-British Columbia route.

Three scenarios were tentatively examined which required probable additional Canadian investments. These were movement of crude oil from the U.S. gulf coast via the Capline, Chicago, IPL system, into Ontario; second, imports of offshore crudes to Vancouver refineries; and, third, movement of North Slope Alaskan crude to Vancouver refineries.

A large part of the investment that would be required in Canada would be attributable to the substitution of different qualities of crude oil feedstocks into their refineries. These substitutions require the installation of additional refinery equipment in order to maintain present product yield on changed crude lots. Large U.S. investments will also be necessary.

Two cases resulted in possible investment savings, however; these were. first, the transportation of U.S. domestic crude to Ontario via the Capline, Chicago, IPL route and, second, the transportation of U.S. domestic crude to Montreal via Portland, Maine.

Reversal of the Transmountain Pipeline would afford the greatest potential for relief, we believe, by providing direct access to Alaskan and/or offshore crude oil. However, the reversal of the Transmountain Pipeline should be assigned, in our view, a low degree of probability. This assumption reflects in part environmental concerns with respect to tanker traffic in Puget Sound and, in part, commercial constraint relating to substantial investment in refineries presently running Canadian crude which would be needed to accommodate U.S. or overseas crude oil.

To the extent that alternative port facilities can be developed, environmental concerns in the Puget Sound area may be reduced. But

options concerning reversal of the Transmountain Pipeline should be kept open until all of the basic decisions regarding Puget Sound tanker traffic have been made.

Now, all of these actions, Mr. Chairman, are designed to provide long-term protection to the landlocked northern tier refineries.

Looking at propane for a minute, it appears to us that over the next few years propane is expected to become increasingly scarce. Domestic production will continue to decrease as domestic reserves of natural gas become further depleted and propane production from gas-processing plants declines.

The problem for the northern tier States may be exacerbated because of their relative dependency on Canadian imports and the possibility that this supply source may be substantially reduced. Of the 21.5 million barrels of propane imported last year, about 75 percent of that came from Canada and most of this product was consumed in the northern tier States. Although the level of Canadian imports for this heating season that we are now approaching is expected to be at least as high as last season, long-term supplies to the northern tier could be seriously jeopardized by reduction in Canadian imports. The State of Washington, for example, is almost entirely dependent on Canadian imports for its propane supply.

Supplies of propane in the Northern States are traditionally affected primarily by the requirements of farmers in the fall for crop drying and winter space heating requirements. In the future three more variables must be added—the impact of natural gas curtailments, Canadian Government policies with respect to propane exports, and the availability of domestic propane in a period of generally declining propane supplies.

Now, the U.S. Department of Agriculture reports that crop-drying requirements for this harvest season should be less than normal. The crop in the Midwestern and North Central States generally is about 2 weeks ahead of the normal harvest date and the forecast for the area is for lower than normal precipitation. If the weather continues dry as expected, the crop-drying requirements for propane should not place undue burdens on the available supplies.

None of the northern tier States use significant volumes of propane as a natural gas substitute or replacement. Industries in this State typically are able to convert to residual or distillate fuel and typically have done so rather than rely on the limited sources of propane that have been available. Therefore, the FEA does not expect that propane availability in these States will be substantially affected by natural gas curtailments this winter in the northern tier area.

In the long term, supplies of propane to the northern tier could be substantially affected by natural gas curtailments unless there are continued controls on the distribution of propane, however. As curtailments increase, industrial firms in the Middle Atlantic, Midwest, and Southeast could divert substantial volumes away from the traditional propane markets in their efforts to replace their source of gas use fuel. The gas utility industry could also bid away the available supplies as it attempts to meet the requirements of its customers for gas.

As you know, Mr. Chairman, we have submitted legislation which would place continued controls both on the price of propane and on its

distribution in the event that the Allocation Act is not extended past November 15. It is also a part of the Pearson-Benson bill that the Senate will be voting on, I understand, soon after it returns from recess, so we will have that particular piece of authority.

Chairman HUMPHREY. It was a part also of the Hollings bill and the Stevenson amendment.

Mr. HILL. That is correct.

Chairman HUMPHREY. So there is a standard line on propane as well as natural gas for agricultural processing and agricultural users.

Mr. HILL. That is correct. The same exists on all of the bills.

Chairman HUMPHREY. Yes.

Mr. HILL. In spite of the controversy over oil price controls which has existed both with the administration and within the Congress itself, we have seen no fundamental objections anywhere to continued controls on propane. We expect to have that legislation extended through some vehicle in order to give this basic protection that we think is going to be needed.

In summation, Mr. Chairman, the Federal Energy Administration is taking all actions commensurate with its current authorities to avoid adverse impacts in Minnesota and other northern tier States which might otherwise result in decreasing Canadian exports.

Enabling legislation to allow the allocation of Canadian crude oil is essential and rapid congressional action on natural gas and propane authorities already proposed by the administration will be essential to this program.

This concludes my testimony, Mr. Chairman, and I will be glad to answer any questions you may have.

Chairman HUMPHREY. Thank you, Mr. Hill. I believe we will move along with the other two witnesses and then we will take time with this panel for questioning.

[The prepared statement of Mr. Hill follows:]

PREPARED STATEMENT OF HON. JOHN HILL

Mr. Chairman, Distinguished Members of the Joint Economic Committee, Ladies and Gentlemen.

My name is John Hill. I am Deputy Administrator of the Federal Energy Administration. I would like to thank you for giving me the opportunity to address the Joint Economic Committee concerning the effects of a decline in Canadian hydrocarbon exports on the State of Minnesota and the Northern Tier area. In my testimony I will cover the situation in the Northern Tier with respect to natural gas, oil and propane.

Canadian Oil and Gas Curtailments

Canada has come to an increasing awareness that her oil and gas reserves are insufficient to meet both Canadian domestic demands as well as U.S. export demands. Future Canadian supplies will be very expensive to find, develop and transport to market. In addition, the quantities initially believed available have proved to be very disappointing. Canadian frontier, OCS and tar sands are by no means assured supplies for Canada let alone the export market. As a result, the Canadian government has embarked on a thorough going program to reconcile her domestic supplies with her national needs. U.S. import requirements will take second place.

GAS SITUATION

Since the early 1960's, U.S. importers of Canadian natural gas have known that no new exports would be approved by the National Energy Board (NEB)

after 1970. The NEB took this action when Canadian gas reserves were judged inadequate to meet the needs of Canada.

This summer the NEB released a report on the Canadian Natural Gas Situation which suggested the likelihood of export curtailments. There is no question that the NEB has not only the authority to limit exports, but also the responsibility in Canada to ensure that energy exports are permitted only when such suppliers are in excess of reasonably foreseeable requirements for use in Canada.

The attached schedule (table 1) highlights the Canadian natural gas situation vis-a-vis the authorized exports to the U.S. As one can see, Canadian natural gas is in short supply and those shortages will increase with time. Shortages may be felt in the export market during the 1976–77 heating season.

Former Canadian Energy Minister Macdonald, in a July meeting with Mr. Zarb, stated that Canada would make every effort to meet natural gas contracts for the 1975–76 heating season. Mr. Macdonald further stated that the Government of Canada would like U.S. assistance in determining how to implement the possible future cutbacks in Canadian natural gas exports. Consultation between our two governments will take place later this year.

FEA's Natural Gas Task Force will be addressing Minister Macdonald's request in an interagency effort. It should be noted that no U.S. natural gas allocation authority presently exists. We, in FEA, believe that we have the responsibility to address the Canadian request despite uncertainties concerning our future allocation authority so as to prepare for the shortages and seek alternative energy for affected areas.

OIL SITUATION

The Oil Embargo of 1973–74 highlighted the Canadian need for a change in oil policy. The continued high level of Canadian oil exports to the U.S. market had become understandably worrisome to Canada in face of their own declining supplies and rising domestic demand.

The NEB recommended to the Government a gradual curtailment of oil exports from a 1973 high of 1.1 MBD to a completed cutoff by 1983. The attached schedule (table 2) shows the current level of Canadian exports allowed to the U.S. Currently, the U.S. refiners are not importing the full allowance of Canadian crude oils. This has been due to a variety of reasons which include costs, FEA's entitlement program and the state of the U.S. economy.

SITUATION

There is little doubt that the Canadian actions curtailing the exports of oil and gas to the U.S. are probably in the best interest of the Canadian people. The U.S. fully appreciates the Canadian situation as President Ford recently stated, "Our friends to the north have had to reduce, and may in the distant future eliminate, exports of gas and oil to the U.S." For you of the Northern Tier, this "future" may appear very near. Yet, we have time to prepare for and adjust to a changed situation if we begin to make adjustments, NOW.

CRUDE OIL AND OIL PRODUCTS

The Emergency Petroleum Allocation Act, which provides for the mandatory allocation and price controls with respect to crude oil and designated refined oil products has been extended until November 15, 1975. The Administration has proposed a phase-out of these controls over a 39-month period. Prospects for a compromise on these issues with Congress are unclear at this stage.

Another significant Federal program with respect to regulation of oil is the Oil Import Program, involving both basic and supplemental import fees. The FEA announced in the *Federal Register* of September 26, a reevaluation of the Oil Import Program other than the issues involving the supplemental fees, which are currently under litigation. This evaluation is proceeding on schedule.

NATURAL GAS

(a) *FPC Curtailment Priorities*

The Federal Power Commission, in Order No. 467, lists nine end-use priority categories. A regulated pipeline whose supply will be below demand is supposed to determine the percentage curtailment to its distribution companies according to the FPC's order of priorities. A distribution company, however, distributes

according to a state priority system, which is not necessarily the same as that of the FPC. The FEA has rules governing the allocation of alternative liquid fuels to curtailed natural gas customers and acts as rapidly as possible on such applications.

(b) *180-Day Emergency Sales*

The FPC, for the purpose of alleviating critical gas shortages in the 1973–74 winter heating season, adopted certain amendments to its regulations. By Order No. 491–B, the Commission extended from 60 to 180 days the allowable duration of temporary emergency sales of natural gas without Commission certification to jurisdictional pipelines operating under filed curtailment plans. This policy resulted in the introduction of 200 billion cubic feet of gas into the interstate gas stream. However, the U.S. Court of Appeals for the District of Columbia, by a March 13, 1975 decision, held that the Commission had exceeded its statutory authority by allowing 180-day emergency sales without certification. Another significant problem is posed by the recent holding of the U.S. Court of Appeads for the District of Columbia in another case that the Commission may not authorize abandonment of certain producer gas sales at the time it certifies the sales. These decisions raise serious questions regarding the nature and scope of the Commission's jurisdiction to take prompt action to alleviate the nation's critical natural gas supply shortage. Consequently, the Administration (in Title II of S. 2330) and the Commission have proposed similar bills to clarify the Commission's authority to exempt temporarily emergency sales, transportation, transfers and exchanges of natural gas from regulation in curtailment situations.

(c) *Direct End-User Purchases*

On August 28, 1975, the FPC issued a policy statement (Order No. 533) intended to encourage high priority customers facing curtailment and with no technically feasible alternate fuel to explore the possibilities of entering into direct sales contracts with producers and of arranging for transportation of the gas by pipelines subject to its jurisdiction.

Because that policy statement faces the strong possibility of being litigated in the courts for a protracted period of time, thereby worsening the natural gas supply situation, the Administration (in Title III of S. 2330) and the Commission have proposed similar bills to allow curtailed high priority consumers of natural gas to purchase natural gas from the intrastate market by enabling them to arrange for the transportation of such gas by regulated interstate pipelines.

FEA'S AUTHORITY FOR PREFERENTIAL ALLOCATION OF CANADIAN OIL

FEA has evaluated the various alternative possibilities for instituting an allocation system for oil imports from Canada. It is clear that if the EPAA is extended there would be sufficient authority for the establishment of a separate preferential Canadian allocation system. It is uncertain, however, that an extension will be adopted, or if adopted for what period it will be effective.

If no allocation authority exists because of failure to reach agreement on extension of the EPAA, there are two additional methods which FEA has evaluated with respect to allocation of Canadian imports. The first of these involves use of the Oil Import Program authority under Section 232 of the Trade Expansion Act of 1962. However, since a system for allocation of Canadian imports would not be designed to limit such imports, but rather as a means for domestic allocation, there are serious questions as to whether such a system would survive a court challenge.

Since the Administration does not support a lengthy extension of the EPAA, it would support special specific legislation for authority to allocate exports of oil from Canada.

FEA is currently in the process of putting the finishing touches on a proposed allocation program for imports from Canada that could be implemented under either the EPAA or other specific statutory authority for this purpose.

FEDERAL PROGRAMS TO ALLEVIATE THE IMPENDING CURTAILMENT OF CANADIAN OIL

The Federal Energy Administration has been aware for sometime of the need to develop an allocation program for imported Canadian crude oil. On April 22, 1975, a notice was published in the *Federal Register* inviting refiners to describe their present degree of dependence on crude oil imported from Canada, their projected future dependence and the current availability, if any, of alternative

feedstock and energy sources. Public hearings were held on May 12, 1975. Thirty-one written comments were received and oral testimony was presented by nineteen interested parties.

A review of this commentary indicates a preferential allocation program is clearly required. Such a plan is now under development and will provide a first level of protection to landlocked Northern Tier refiners. Allocations to all refiners will be based upon an evaluation of their demonstrable reliance on Canadian crude and on their access to alternative crude oil distribution systems. This system will be reviewed with the National Energy Board and will be subject to further hearings in the U.S. in November.

In addition to a regulated allocation program, certain other possibilities exist to alleviate the situation. The Federal Energy Administration participated in the establishment of a bilateral Canadian/U.S. Working Party in Ottawa on March 17, 1975. Subsequent meetings of the Working Party were held in Ottawa on April 2 and in Washington, D.C. on June 13, 1975.

The Working Party made a comprehensive review of alternatives available to Northern Tier refineries affected by the anticipated decline in Canadian export availability. The review covered the legal, fiscal and administrative factors which might bear on alternative solutions to the problems. The review also developed and analyzed the possibilities for the exchange of oil between Canadian and U.S. refiners within the framework of existing policies affecting them. The Working Party concluded that commercial exchanges between Canadian and U.S. companies, if consistent with broad energy policy guidelines, should not be precluded by government measures. It was also determined that governments would not be parties to exchanges, but would maintain a favorable environment within which exchanges could take place. Both U.S. and Canadian officials agreed to consider modifying or removing any legal, fiscal or administrative impediments to commercially workable and mutually beneficial oil exchanges consistent with our respective national policies.

EFFORTS TO FACILITATE THE EXCHANGE OF DOMESTIC ENERGY FOR CONTINUED IMPORTS OF CANADIAN ENERGY AS IT SPECIFICALLY AFFECTS THE STATE OF MINNESOTA AND THE NORTHERN TIER

The Working Party has also addressed long-term possibilities for international exchanges compatible with the policies of both governments. Six basic scenarios involving additional Canadian supply to Canadian-dependent refiners in exchange for U.S. domestic or offshore crude oil supplied to refineries in British Columbia, Ontario and Quebec were considered. The exchange volumes assumed were 250,000 B/D into Ontario or Quebec and 150,000 B/D into British Columbia. Potential savings in transportation varied from $0.20 per barrel (U.S. domestic to Montreal) to $1.30 per barrel (Alaskan to British Columbia).

Three scenarios were tentatively examined which required probable additional Canadian investments. These were:

(1) Movement of crude oil offshore from the U.S. Gulf via the Capline-Chicago-IPL System into Ontario.

(2) Imports of offshore crudes to Vancouver refineries.

(3) Movement of North Slope Alaskan crude to Vancouver refineries.

A large portion of the increased investment is attributable to the substitution of different qualities of crude oil feedstocks. These substitutions require the installation of additional refinery equipment in order to maintain present product yield on changed crude diets. Large U.S. investments will also be necessary.

One scenario, movement of offshore oil to Montreal via Portland, Maine, involved no additional investment.

Two cases resulted in possible investment savings. These were:

(1) Transportation of U.S. domestic crude to Ontario via a Capline-Chicago-IPL routing.

(2) Transportation of U.S. domestic to Montreal via Portland, Maine.

Reversal of the Transmountain Pipeline would afford the greatest potential for relief by providing direct access to Alaskan and/or offshore crude oil. However, the reversal of the Transmountain Pipeline should be assigned a low degree of probability. This assumption reflects in part environmental concerns with respect to tanker traffic in Puget Sound and in part commercial constraint relating to substantial investment in refineries presently running Canadian crude which would be needed to accommodate United States or overseas crude oil.

To the extent that alternative port facilities can be developed, environmental concerns may be reduced. Options concerning reversal of the TMPL should be kept open until basic decisions regarding Puget Sound traffic have been made.

All of these possible actions are designed to provide long-term protection to landlocked Northern Tier refiners.

Propane Supplies in the Northern States

BACKGROUND

Over the next few years, propane is expected to become increasingly scarce. Domestic production will continue to decrease as domestic reserves of natural gas become further depleted and propane production from gas processing plants decline. The problem for the northern states may be exacerbated because of their relative dependency on Canadian imports, and the possibility that this supply source may be substantially reduced.

Of the 21.5 million barrels of propane imported last year, about 75% was from Canada, and most of this product was consumed in the Northern Tier states. Although the level of Canadian imports for this heating season is expected to be at least as high as last season, long-term supply to the northern tier could be seriously jeopardized by a reduction in Canadian imports. The State of Washington, for example, is almost entirely dependent on Canadian imports for its propane supply.

Supplies of propane in the northern states are traditionally affected primarily by the requirements of farmers in the fall for crop drying, and winter space heating requirements. In the future, three more variables must be added: the impact of natural gas curtailments, Canadian government policies with respect to propane exports, and the availability of domestic propane in a period of generally declining propane supplies.

CROP DRYING REQUIREMENTS

The U.S. Department of Agriculture reports that crop drying requirements for this harvest season should be less than usual. The crop in the midwestern and north central states generally is about two weeks ahead of normal harvest date, and the forecast for the area is for lower than normal precipitation. If the weather continues as dry as expected, the crop drying requirements for propane should not place undue burdens on available supplies.

IMPACT OF NATURAL GAS CURTAILMENTS

None of the northern states use significant volumes of propane as a natural gas replacement. Industries in these states typically are able to convert to residual or distillate fuel, and typically have done so rather than rely on the limited supply of propane. Therefore, FEA does not expect that propane availability in these states will be substantially affected by natural gas curtailments this winter.

In the long term, supplies of propane to the Northern Tier could be substantially affected by natural gas curtailments unless there are continued controls on the distribution of propane. As curtailments increase, industrial firms in the Middle Atlantic, Mid-West and Southeast could divert substantial volumes away from the traditional propane market in their efforts to replace their source of gaseous fuel. The gas utility industry could also bid away the available supplies as it attempts to meet the requirements of its customers for gas.

AVAILABILITY OF DOMESTIC PROPANE—HEATING SEASON 1975–76

In recent weeks, REA has contacted the major suppliers in each state to obtain forecasts of propane supplies for the coming winter. The results of this survey indicate that supplies will generally be adequate this winter to meet traditional demand. This holds true for the northern states as well. In these states, as in all other states, there are a few suppliers who are predicting shortfalls, as a result of decreased refinery or gas plant production, but most suppliers expect to be able to meet their obligations. Where there are shortages, FEA will use its allocation authority to alleviate difficulties. If the control program ends, we have asked for new authority to take care of the special needs of propane users.

Domestic inventories of propane are at record high levels, and barring an unusually severe winter, the combination of current production and drawdowns of inventory should be sufficient to meet demand.

SUMMARY

Propane availability in the Northern Tier is not expected to be a problem for this winter. Although supplies are declining, there is no reason to expect extensive shortages in the short-term. In the long-term, legislation which the Administration has already proposed will be important to assure adequate propane supplies for agricultural and other small consumers in Minnesota and other northern states.

CONCLUSION

In summation, the Federal Energy Administration is taking all actions commensurate with its current authorities to avoid adverse impacts in Minnesota and other Northern Tier states which might otherwise result from decreasing Canadian exports. Enabling legislation to allow the allocation of Canadian crude oil is essential and rapid Congressional action on natural gas and propane authorities already proposed by the Administration will be essential to this program.

TABLE 1.—CANADIAN NATURAL GAS SITUATION

[Billion cubic feet]

Year	Deliverability	Canadian domestic demand	Exports			
			Maximum	Authorized	Shortfall	Percentage
1974	2,566	1,539	1,027	1,000	0	0
1975	2,651	1,714	937	1,074	137	12.8
1976	2,788	1,846	942	1,044	102	9.8
1977	2,909	2,026	883	1,044	161	15.4
1978	2,967	2,243	724	1,039	315	30.3
1979	2,970	2,370	600	1,032	432	41.9
1980	3,043	2,523	520	1,002	482	48.1
1981	3,041	2,651	390	951	561	59
1982	2,986	2,748	238	905	667	73.7
1983	2,985	2,831	154	899	747	82.9
1984	2,992	2,929	63	897	834	93
1985	2,927	3,047	−120	894	All	100
1986	2,810	3,116	−306	825	All	100
1987	2,697	3,224	−527	658	All	100
1988	2,594	3,334	−740	652	All	100
1989	2,480	3,444	−964	587	All	100
1990	2,325	3,568	−1,243	232	All	100
1991	2,226	3,679	−1,453	135	All	100
1992	2,095	3,800	−1,705	53	All	100
1993	1,986	3,918	−1,932	50	All	100
1994	1,855	4,037	−2,182	8	All	100
1995	1,746	4,170	−2,424	0	All	100

Source: NEB's natural gas tables with their reservations on Arctic, OCS, and frontier sources. Exports are from existing contracts.

TABLE 2.—CANADIAN OIL SITUATION

Year	Domestic demand	Imports	Producibility	Exports available to United States	
				Maximum	Authorize
1975	1,910	955	2,100	1,145	755
1976	1,950	975	2,070	1,095	550
1977	2,070	787	2,005	720	410
1978	2,220	860	1,885	525	290
1979	2,300	900	1,790	390	210
1980	2,380	940	1,710	270	140
1981	2,470	985	1,615	130	80
1982	2,560	1,030	1,510	0	30
1983	2,660	1,080	1,385	0	5
1984	2,750	1,125	1,390	0	0

Chairman HUMPHREY. Mr. Millhone, I know that you have another engagement. I heard about it on radio and television this morning. We are going to let you proceed and we may want to ask you some questions out of order.

What is your time frame?

Mr. MILLHONE. Senator, I have asked someone else to deliver the speech at Chanhassen for me, so I anticipate staying around.

Chairman HUMPHREY. All right. If you need to get away, we will cooperate. So go right ahead.

STATEMENT OF JOHN MILLHONE, DIRECTOR, MINNESOTA ENERGY AGENCY

Mr. MILLHONE. Senator Humphrey, Congressman Karth, ladies and gentlemen, my name is John Millhone. I am the director of the Minnesota Energy Agency, an office which I assumed September 1.

Chairman HUMPHREY. Do you have extra copies of your statement, Mr. Millhone?

Mr. MILLHONE. I have some here and we are getting some more.

Chairman HUMPHREY. If you have one for Mr. Karth and myself and possibly one for the stenotypist, that would help. Thank you very much.

Mr. MILLHONE. Governor Wendell Anderson named me to this agency which has responsibility for the State's energy programs.

My purpose today is to bring to your attention a most acute and serious situation as it affects the refiners and the public in our State. My remarks are responsive to four questions.

First, what will be the impact of the expected phaseout of expected Canadian oil exports to Minnesota?

If the phaseout occurs as announced without immediate offsetting actions, the impact on Minnesota would be disastrous to its business, agricultural, and social life.

Minnesota relies more on Canadian crude oil than any other State. Petroleum products provide 46 percent of the energy consumed in Minnesota. About 60 percent of these petroleum products come from the three refineries located in the State and a nearby refinery in Superior, Wis. The other 40 percent comes from products pipelines entering Minnesota from the south.

More than 80 percent of the crude oil used by the four Minnesota area refineries comes from Canada. These refineries and refineries in Montana are part of the northern landlocked area which now have no practical alternative source of crude oil.

The proposed export levels set by Canada for crude and condensate moved into the United States was 800,000 barrels per day the first half of this year and 650,000 barrels per day the second half of 1975. The proposed export schedule drops to 560,000 barrels per day in 1976, 400,000 barrels per day in 1977, and 290,000 barrels per day in 1978, and then by smaller amounts until exports would cease in 1983.

Chairman HUMPHREY. May I just interrupt a minute. We have had so many conflicting dates. There are those who say that the Canadian exports would cease for all practical purposes in 1981.

Mr. MILLHONE. I think that the driplets that would come in after 1981 are really insignificant.

Chairman HUMPHREY. I see. That is why the date of 1981 seems to have some significance.

Mr. MILLHONE. The reduction in Canadian crude exports and the high price set on this Canadian crude already has affected the operation of the Minnesota area refineries. The agency recently surveyed the operation of the refineries and their operating plans for the coming winter.

The four refineries have a capacity of 235,000 barrels per day. They currently are operating at the level of about 215,000 barrels per day, and this is expected to drop down to an average of about 190,000 barrels a day this winter, with much of this decline due to limits on Canadian exports.

If the reduction in Canadian crude exports continues as scheduled and the share allocated the Minnesota area refineries is not changed, the Canadian crude available to the four refineries would continue to decline to about 170,000 barrels per day in 1976, to about 135,000 barrels per day in 1977, and about 100,000 barrels per day in 1978. The refineries undoubtedly would be squeezed out of business. They could not afford to continue operations when forced down to half their capacity and with only further reductions in sight.

If this were to happen, the State's economy would be crippled. If the refineries in the Minnesota area were forced to close, we would lose one fourth of the energy now used in the State. There would be a ripple effect, or perhaps what more appropriately might be called a tidal effect. The impact would first affect the refineries but as inventories were depleted every segment of the State's economy would be harmed. There would be widespread unemployment, economic strife, and social unrest. Quite obviously, something must be done.

The second question you asked me to address myself to was to describe and evaluate the costs and benefits of the different ways that Canadian oil can be replaced by other oil, either oil or finished products, as Canadian exports are phased out over the next few years.

First, and this is the matter that Mr. Hill referred to, a preferential allotment of available Canadian crude to U.S. refineries which have no alternative source of crude oil. The impacts of Canadian curtailments are far more severe on those refineries which have no alternative source. These refineries should be given top priority. This would not be a long-term substitute for Canadian crude, but it would give our refineries time to find a substitute.

Second, the use of Canadian oil-swapping agreements. For example, offshore crude could move up the Capline system to the Lakehead pipeline and then into Canada in exchange for Canadian crude being delivered back into the United States to plants that do not have a pipeline connection with the gulf coast.

Third, the shipment of Alaskan crude into the upper Midwest by offloading it in the Puget Sound area and reversing the flow in the Trans-Mountain Pipeline and the Interprovincial Pipeline. A study by the Koch Refining Co. has estimated the cost of reversing these flows at $20 million and has estimated the cost of expanding the dock facilities in the Puget Sound area from $65 to $175 million.

An intermediary measure, the so-called yo-yoing of sweet crude from the Edmonton area to Vancouver and then reversing the flow

and bring back sour crude into the upper Midwest would cost even less, an estimated $30 million.

These alternatives have several features in common. They are relatively inexpensive. They would continue to make use of the large investment already made in the Minnesota area refineries. They would not upset existing market patterns. They would require negotiations and agreements between the United States and Canadian governments. They would not have serious environmental repercussions, as would some of the other alternatives. They are complementary. They offer in combination a course through which the Minnesota refineries could continue to be supplied with crude oil.

There are other alternatives that have been considered.

A new 1,500-mile pipeline from Puget Sound through Washington, Idaho, Montana, North Dakota, and Minnesota, terminating at Clearbrook, Minn., has been proposed by Michael Curran & Associates of Great Falls, Mont. The pipeline would provide an all-American route for Alaskan crude into the upper midwest but, at an estimated cost of $1 billion, it would be far more expensive than the other alternatives. It would have more severe environmental impacts and would take longer to achieve.

Another possible alternative would be to serve the Minnesota market through an increase in the capacity of refineries in States south of us and to increase the number of product pipelines coming into the State. This also would be an expensive option. Although I know of no estimate of the cost of the new product lines, they would be relatively expensive coming through developed area and it also would mean that there would be a loss of the capital investment which you have already in the Minnesota refineries. It also would mean that there would be no residual fuel oil available in Minnesota, or very little. Residual oil cannot be transported by pipeline because of its viscosity. This heavier oil is the primary fuel used here in heating hospitals and schools and they would bear the cost of converting to other fuels.

The third question is the impact of oil decontrol on employment, on the price level for oil jobbers, and on the solvency of independent oil refiners, jobbers, and retailers.

The Energy Agency has undertaken no independent analysis of the impact of oil decontrol on employment. In this area, there are studies that you mentioned, Senator, that come up with similar conclusions, such as the one by the Congressional Budget Office.

Applying its assumptions to Minnesota, the immediate decontrol of oil prices would add 1.5 percent to prices and one-half of a percent to unemployment.

The abandonment of the entitlements program would have a severe impact on Minnesota area refiners and on the jobbers and retailers who use their products. The entitlements program provides a partial offset for the high prices paid for Canadian crude. If entitlements lapse, the Minnesota refiners would have to bear the full brunt of these higher costs. They would have to compete against the major refiners who own a higher portion of their own crude and consequently would experience no increase in a high portion of their crude costs.

It is imperative to the public health, safety, and well-being of Minnesota and the region that our independent refiners be kept operating competitively. The lapse of the entitlements program would be another blow to their independence and solvency.

The fourth question is to evaluate the adequacy of propane supplies for meeting this winter's needs of Minnesota users. There is a danger of dislocation in traditional propane marketing patterns. Propane is the only fuel that can be directly substituted for natural gas. With declining natural gas supplies, propane has a new and valuable use for natural gas users facing curtailments and seeking to avoid or postpone conversion costs.

Propane supplies are limited, however, and there is not enough propane available for this new use, certainly not in Minnesota. If propane is diverted as a natural gas substitute, propane supplies will not be adequate to meet the traditional farm and household uses.

Chairman HUMPHREY. You apparently mean, that new use, new industrial use?

Mr. MILLHONE. New industrial use.

Chairman HUMPHREY. Instead of conversion from natural gas to coal, you are talking about the conversion to propane?

Mr. MILLHONE. Propane probably would be too expensive to be a long-term substitute but as a method of delaying conversion costs, it would have some appeal.

The Energy Agency currently is undertaking a survey to determine whether and to what extent this diversion is occurring. Our early findings are not conclusive. In southeastern Minnesota where the corn crop is relatively wet, some propane shortages are reported. Other parts of the State do not appear to have problems.

The propane allocation to Minnesota this October is 10.7 percent below last year's October allocation, but this 1-month variation is not conclusive. Our study is expected to be completed by early November and I would appreciate an opportunity to file a copy of it with the committee.

Chairman HUMPHREY. We will welcome that. Needless to say, this is a topic of vital concern to us in Minnesota. Might I ask, Mr. Millhone, you are the Director of the Minnesota Energy Agency?

Mr. MILLHONE. That's correct.

Chairman HUMPHREY. Correct. Now we have a Minnesota Energy Study Commission that is the legislative counterpart, is that correct?

Mr. MILLHONE. That was a legislative group with some citizen participation that, as I understand it, had a 1-year life and is now no longer in existence, but it did some very good work during the year that it was around, including its recommendation for an energy director.

Chairman HUMPHREY. Thank you.

Governor Rolvaag, we surely welcome you, sir.

STATEMENT OF KARL ROLVAAG, CHAIRMAN, MINNESOTA PUBLIC SERVICE COMMISSION

Mr. ROLVAAG. Thank you, Senators Humphrey, Senior and Junior, and Congressman Karth.

I bring you greetings from the members of the Minnesota Public Service Commission and their expression of thanks, along with my own, for this opportunity to express some viewpoints on the economic impact of the energy crisis on Minnesota citizens.

As you know, Senator Humphrey, the Minnesota Public Service Commission is the economic regulator of gas and electric rates and tariffs in this State. It is a relatively new responsibility of Minnesota State government, beginning the first of this year. We undertake these tasks at perhaps the worst of all times, as costs of all sources of energy skyrocket and we note rates of electricity and natural gas showing increases upward of 300, I repeat 300, percent. Believe me, Senator, neither electricity nor any other energy is any longer "penny cheap" for the consumer or the utility.

From our staff having discussed this situation with some of the members of your staff, I know that you already have reams of statistical data reflecting the amount of natural gas available, the amount to be tapped, and an equation for exploration.

You have the figures on electric generation capacity and a variety of short-range and long-range projections on what we'll need to meet Minnesota's energy demands for the future. If you want more numbers and statistics, we can provide all of the numbers and statistics you want.

But, Senator Humphrey, what I want to talk about goes beyond statistics. The cause may be reflected in numbers, but the effect is on people. That's what I want to talk about this morning, the people needs.

I want to talk about the people whose electric bill goes up each month because of the passthrough provisions of costs that neither State regulators nor the utilities can control. I want to talk about people who were paying $35 per month to heat their home last winter and will be paying $70 this winter. If I had time, I would like to talk about the little old lady who appeared before us, the so-called little lady in tennis shoes, who couldn't afford the electric bill, so she heated and lighted her home by candle power, literally candle power.

I want to talk about the folks in 26 Minesota communities facing fantastic increases in their gas costs because those communities are enitrely dependent upon Canada for their natural gas supplies.

Right now, the Minnesota Public Service Commission is setting three electric rates cases for Northern States Power, Otter Trail Power, and Interstate Power. We have an additional 15 cases yet to hear. Before those are heard, we'll have another 15 or 20 or 30 rates cases on the calendar to be heard.

Be it 1 case or 20, I can tell you now, Senator Humphrey, that the sum and substance of the testimony will be that the ravages of inflation have engulfed the utilities, that the costs of capital, fuel, and all expenses are going up, up, and up. We all know who is going to pay for those upcosts.

The Minnesota Public Service Commission is a rate-regulating body, and we believe we are proficient in our work, but our regulatory responsibility to keep the rates in line is preempted by earlier decisions down the line that impose costs beyond regulatory control back here in Minnesota.

This very day major economic decisions are being made in Saudi Arabia, in 10 agencies of the Federal Government, by the Energy Board of Canada, at various points in Texas or Louisiana and a thousand places in the United States and around the world. Those decisions, Senator, could and do affect next month's and next year's electric or gas bill for Mrs. Hildor Johnson, 67, widow, trying to make it on her social security in a second-floor flat in the 1400 block on Third Avenue.

Senator, we're losing control and there is need for a national energy policy that will reassure the people that our governments, local, State, and national, have the capabilities to represent their interests in the face of this energy dilemma.

As an example, there is the plight of about 100,000 good Minnesotans who are already victims without alternatives, no alternatives. I'm referring to the people in 26 Minnesota communities wholly dependent on Canadian natural gas supplies, facing supply/price implications that could virtually destroy the economic virility or viability of those communities.

While we are talking about 10 percent of the Minnesota gas users who must rely on Canadian gas as compared to the 90 percent who are customers of gas companies supplied by Northern Natural Gas, the impact is substantial and will impose severe economic hardships on both individual residents and commercial users.

For example, those Minnesotans being served by Canadian gas will face an increase of 40 percent from the end of the 1975 heating season to the end of the 1976 heating season. Based on the already established cost differences, this means that the average resident heating his home on Canadian gas this winter will be paying $498.45 as compared to $316.91 to the average Minnesotan heating his home on domestic gas, a difference of 57.2 percent. For the average commercial user supplied by Canadian gas, the cost will be $1,514.96, as compared to $909.79 for the user of domestic gas, a difference of 66.5 percent.

I know, gentlemen, Senators Humphrey, and Congressman Karth, that you are familiar with the multitude of studies and programs designed to slow down the outmigration of people from rural communities into the overcrowded metropolitan centers. You are also well aware that any one single factor ranging from fuel cost differentials to the availability of adequate transportation services can make or break any given community in providing the necessary opportunities to halt the outmigration from the rural areas to the metropolitan centers.

The loss of a single job opportunity in a small rural community can often mark the start of an exodus, particularly of the young people so desperately needed to keep our Minnesota rural areas growing and vibrant.

A creamery handling milk or processing dairy products, a grain elevator drying grain or manufacturing livestock feeds, a confined poultry feeding operation or a poultry processing plant, a potato warehouse, a small cannery or any small local business, they all work on such a narrow margin that pennies often determine the extent of the plant's operation or whether it will operate at all. These operations are small

by money standards but they are the lifeblood of the 26 communities that are in the unfortunate competitive position because they must carry the brunt of the imported gas price increase and still try to compete with their neighboring communities where the increase is considerably less.

Right there, Senator, you have 100,000 reasons why we need a national energy policy. This extends beyond the economics of price. We're concerned about the survival and social impact on these 26 communities in Minnesota that must remain competitive with their neighboring towns if they are to maintain a population base, sufficient business volume, and competitive merchandising for their residents and continue to provide essential services to the agricultural community in the surrounding areas.

The question is often raised, what about alternative fuel sources? In terms of cost per million Btu output, Canadian natural gas costs $4.09; U.S. natural gas, $1.88; No. 2 fuel oil, $3.71; northern propane, Canadian, $4.84; southern propane, $3.32; and coal, $6.06.

Domestic propane may at the surface look to be a viable alternative. The cost to convert heating facilities from natural gas to propane would be minimal. But propane is produced from 40 percent natural gas and 60 percent crude oil, meaning that greater propane production would create increased shortages of natural gas and oil. Even if production could be increased, greater consumption would make a more scarce commodity, inevitably resulting in more price increases.

In terms of converting from natural gas to oil for residential use, even if the supply were available, it would be nearly impossible to convert gas-burning units to oil-burning without prohibitive reconstruction costs. May I add parenthetically, this was a most interesting fact developed while preparing this testimony. Most houses built since 1950 for natural gas have flues rather than ceramic chimneys which oil furnaces require because of higher vent gas temperatures. So literally you are facing tremendous reconstruction costs.

Chairman HUMPHREY. Might I say, Governor, this is the sort of detail that we seldom get when we hear testimony at the Washington level. It indicates again the complexity of the problem. We are indebted to you and your Commission for this kind of detail. People talk very loosely about conversion, you know, from gas to oil to coal, just as if all you really had to do was sit down and put in a new burner, even though that itself is rather costly. I just wanted to thank you.

Mr. ROLVAAG. Senator, we can provide you with much more detailed information, but let me reiterate, most houses built since 1950 for natural gas have flues rather than ceramic chimneys which oil furnaces require because of higher vent gas temperatures, which means that you have to reconstruct practically the entire heating system of homes built since 1950 in these northern climates. Coal, as you can see, does not provide a reasonable economic alternative.

Another question is, what are the possibilities of linking pipelines from the present domestic sources to serve those communities facing curtailment of Canadian supply? As all gas is transported into Minnesota, this becomes an interstate jurisdictional matter, beyond State regulatory authority and in the realm of the FPC or the FEA.

Still, regardless of whose authority it would be to order such linking of supply, the construction costs would be huge and the gas would

have to come from the major Minnesota domestic supplier which has already announced a 2.45 percent curtailment for this heating season and in all probibility will be implementing more curtailments in the future.

The decision relating to the fuel supplies for those 26 communities was made in Ottawa. Other State and Federal agencies may decide that there be additional scrubbers or cooling towers in electric plants. Some other agency may decide the transmission corridor should not follow the most economical path. OPEC may make additional decisions, along with the FEA and FPA and REA and EQC and HUD, any one of 100 agencies in Washington, Oklahoma, Texas, Atlanta, or Saudi Arabia.

Those decisions, wherever they are made, are made without any correlation or relationship to each other because the United States of America does not have an energy policy to bring uniformity or consistency to the decision as we view it. Yet, when those decisions are converted into dollars, Minnesota ratepayers have to pay and all we can do as State regulators is to pass them along. We have no other alternative, sad as it may be. One company may be soliciting business while another may be curtailing existing customers.

We need a national energy policy, and we need a policy that will provide that State regulators have some input into those decisions that affect the ratepayers in their respective States.

Let me give you another example. The overall economic impact of the gas shortage will run into the millions of dollars in Minnesota alone. Increases in the price of $1 to $2 per 1,000 cubic feet will result in a 1-percent rise in the inflation factor. If the price of natural gas, whether it be imported or domestic, should rise at the rate of $4 per 1,000 cubic feet on as little as 10 percent of the old $2 natural gas, it would contribute 2 percent to our inflation each year. Thus the ratepayer gets it twice, once in his own rates, and again in the higher costs in purchases of goods and services affected by the higher rates.

There is need for curtailment and allocation policies, no question about that. But conservation, allocations, or curtailment also come at a price. Here, again, the ratepayer picks up the tab.

In our current Northern States Power rate case, it was cited that curtailment will mean an estimated loss in the utility revenues in excess of $12 million by 1978. May I repeat that. While Northern States Power is a significant corporation in our State, in our area, it is not a major corporation by national standards. Curtailment will mean an estimated loss in utility revenues in excess of $12 million by 1978. That means there is less volume over which to spread the costs.

Shifting of available gas supplies from industry to homeowners sounds pretty great and reassuring. But don't forget that when much of the gas formerly used by large volume interruptible is shifted, it will be shifted to the premium user who pays twice the rates of the interruptibles.

The people in Minnesota need to know what's going on. We need a national energy policy. We need the assurance that our representatives in Washington haven't lost control, and I don't think I'm directing my remarks to the gentlemen here today.

We need to know what to tell the man who comes in and says, "What kind of a furnace should I put in my home or my store?" We need to

know what to be able to tell people, what the situation is now, what it will be 3 years hence, 5 years hence, and 10 years from now.

Senator, we need a national energy policy which every industry group and Government unit is going to continue to understand. The whole burden of the confusion is going to be passed on to the same guy who always gets stuck with the cost of indecision, Johnny Q. Public.

Get us a national energy policy. Then we'll be in a position to face up to the supply, the allocation, the price, and the curtailment and all the other issues that are now unattended. Thank you very much.

Chairman HUMPHREY. Governor, I want to commend you.

Mr. ROLVAAG. It is a rather strong statement, critical somewhat of the National Administration, critical perhaps of the Congress, but it puts out the position that we have in the State of Minnesota.

Chairman HUMPHREY. It was an excellent statement, Governor, and I want to express our profound thanks to you not only for the quality of the statement but for its candor. As you know, the biggest battle that is going on in Washington is over national energy policy. As you were testifying, I turned to one of our staff people, Mr. Cox, who is working on energy policy from the Joint Economic Committee, and Mr. Tyler, who are both here with me, and I said, quickly give me a list of the items of legislation that we have passed.

Of course what's happened is that we have passed a number of pieces of legislation to formulate a national energy policy, but we run into the constant confrontation of Congress and the executive branch on a veto. Now it's my judgment that what has happened is we have put these pieces of legislation into comprehensive bills. I think I should say here what I told the caucus, I think the time has come when we must take the energy program item by item and build it block by block, rather than trying to come up with some sort of prefabricated policy all in one comprehensive program, because the minute we do that, we run into the battle over allocations, over pricing, over phase decontrol, over decontrol, and we are in a stalemate.

In the meantime organizations such as the one you represent, the Public Service Commissions, find it literally impossible to deal with the confusion that is evident. I think your statement reveals that.

I also want to compliment you on what I call the common sense of the statement. When you mention, for example, what do you tell the person who comes in today and asks you what kind of a furnace to buy, that gets right down to where people live and where their daily problems exist. People are being told that they need to convert. They are being told that there is going to be a shortage. What do they convert to?

Mr. ROLVAAG. I tell them a wood-burning stove.

Chairman HUMPHREY. You had better be careful because even that may be in short supply.

Mr. ROLVAAG. At least that's renewable.

Chairman HUMPHREY. Yes, that's renewable, but if our reforestation program isn't stepped up, Governor, it won't be very good, either. I might get my lick in right now for planting a few trees instead of people just going on unemployment compensation.

Mr. ROLVAAG. As a matter of fact, Senator, I shouldn't get into this dialog, but I had dinner last night with Mr. Borlog, the renowned

Nobel Prize winner, and we had a discussion about the renewable resource of food and how it relates to an energy problem and the great possibilities and potentialities that we have in these United States of America to deal in energy. Enough said. I shouldn't have said that.

—Chairman HUMPHREY. Yes. We have had a tremendous supply of energy in this Nation and the problem is how to use it. That, of course, is a question of judgment and of political and economic decisions.

Right here in Minnesota, for example, I read where you are discussing again the possibilities of the utilization of peat resources. That, by the way, as you know, has been done in a very substantial way in Ireland where they have had to use those resources.

Mr. ROLVAAG. Senator, I hate to correct a man of your eminence but in Minnesota, we say Finland.

Chairman HUMPHREY. Yes, but also in Ireland, I understand. I want to repeat Ireland as well—and Finland, too. I haven't worked that far east yet.

Mr. ROLVAAG. All right.

Chairman HUMPHREY. All right, Mr. Hill, I would like to start with you on a few questions and then we will have a chance to visit with Mr. Millhone and Governor Rolvaag.

On the basis of your statement, and again our thanks to you for it because it outlines some of the options that are available and some of the alternatives that we have, just a general question that popped up as you were going along. I have advocated energy swaps, for example, and you have indicated that as one of the alternatives. Can we view energy swaps as a permanent solution or will Canada's reduction in oil reserves mean they just won't want to swap in any situation by, let's say, the late 1970's or 1980's?

Mr. HILL. I think, probably, Mr. Chairman, by the early 1980's the swaps will pretty well have run their course. I think we fundamentally have to put in motion a series of plans to provide the energy requirements of the northern tier apart from anything we may get from Canada over the long term. The swaps will give us a cushion; they will help absorb some of the impact while we implement those plans, but they are not a solution in and of themselves.

Chairman HUMPHREY. What do you think the possibility is for a swap, for a swap deal, so to speak?

Mr. HILL. I think they are very good in the meetings that have been held so far in the joint U.S.-Canadian working groups. I think both sides have come to an agreement that these exchanges ought to occur within the framework of existing policy. Of course it would take, we think, some adjustments of policies; the Canadian export tax, for example, we think should definitely not be applied in a situation such as this where it is simply just an exchange of oil and not a buy or sell of oil. U.S. traiffs on imports would fall in the same category.

I think there are probably six or seven of these U.S.-Canadian policies which we currently have under review that in our mind should not govern any of these exchanges of oil or should not be applied.

Chairman HUMPHREY. Is the FEA conducting these negotiations or is this State and FEA?

Mr. HILL. It is the Department of State wth FEA combined itself.

Chairman HUMPHREY. You understand the urgency of the situation?

Mr. HILL. Yes; we do.

Chairman HUMPHREY. My friends in the State Department have what I call a lackadaisical sense of timing on these things. We don't have anybody out here from State.

Are you from the State Department?

Mr. WATSON. Yes; I am.

Chairman HUMPHREY. What's your name?

Mr. WATSON. Alexander Watson.

Chairman HUMPHREY. Mr. Watson, what is the situation in the State Department negotiations? What is your feeling about the sense of urgency?

Mr. WATSON. I think we feel that it is very urgent, indeed, sir. We have been negotiating with the Canadians now in vast numbers of issues for several months. It may be very close to a pipeline treaty being made with the Canadians.

Chairman HUMPHREY. A pipeline treaty?

Mr. WATSON. Yes, sir.

Chairman HUMPHREY. What about swaps?

Why don't you come up here in the chair? We don't like to have a State Department back there one row behind.

Mr. WATSON. I have come really just on behalf of Mr. Katz who was planning to be here to testify but, because of a death in the family, unfortunately, he could not.

Chairman HUMPHREY. We appreciated Mr. Katz' willingness to be with us and we knew that he could not be here. He has been handling these Canadian negotiations, hasn't he?

Mr. WATSON. Yes, he has, sir.

Chairman HUMPHREY. How do you measure the progress in these negotiations? Is this the working group that you are talking about?

Mr. WATSON. There is a working party and there also are negotiations on the pipeline treaty.

Chairman HUMPHREY. On a pipeline treaty.

Mr. WATSON. Yes, sir.

Chairman HUMPHREY. Now, I want you to tell me what that pipeline is about, its geographical location, and more significantly to the immediate topic—let me hold you to it a minute—what is the program on oil swaps?

Mr. WATSON. I think that Mr. Hill is more qualified than I to tell you exactly where we stand on the oil swaps right now. I think that as he pointed out, the Governments are working hard to facilitate efforts which will be assisted by the private firms to work out swaps among themselves. Is that not correct?

Mr. HILL. That's correct.

Chairman HUMPHREY. But isn't the $64 question here the willingness of the Canadians to waive their duty?

Mr. HILL. I think so. I might run over, Mr. Chairman, a series of actions that are currently under review by the working group. I think I should point out that the working group has concluded and recommended to their officials on both sides of the border that the swaps and exchanges are beneficial to both countries. They do have decided advantages to both countries, and as far as we can tell, virtually no disadvantages, so, we think, if we can work out the Government-to-Government relationship, it should occur.

Chairman HUMPHREY. We have to understand that the swap is still an emergency measure; it is temporary.

Mr. HILL. That is correct. It is not a solution to the problem.

Chairman HUMPHREY. I think the point has to be made here because people tend to go, you know, you get something moving and they say, well, now it's under control. The real fact of the matter is that the swap is a way to ease the present restrictions, the projected restrictions for the next 3 or 4 years. Once you get into the 1980's, the Canadians are not going to have anything that they will want to swap with you.

Mr. HILL. That is correct. This is a short-term cushioning type of effect to give us the time we need to plan the alternative systems to provide the northern tier with their oil and their gas.

Chairman HUMPHREY. I bring this up because as I was posing this to you, I noticed some heads shaking in the back, men who have been in the oil industry, and they apparently are of the mind that the swaps could continue beyond, let's say, the dateline of 1980.

Mr. HILL. Well, I think what you have to keep in mind, Senator, is that the swaps or the exchanges may go on for a long time. We would certainly hope that those exchanges occur wherever they are economical. But if you look at Canada with a declining domestic resource base, as this country has, but hopefully, with continuing growth in the GNP and their economic development, the demands for energy resources will continue to climb, to climb over time. As the resources fall off, both countries are going to face continuing shortages, so you are going to be swapping a smaller and smaller amount, but it is not going to anywhere meet the requirements of the economy on either side of the border.

Chairman HUMPHREY. Isn't the purpose of the swap to fill in the time that the normal Canadian exports fall off? In other words, you don't really need a swap at this particular moment? At this particular time, the amount of Canadian oil, while it has been reduced coming in, speaking of 1975, is still adequate apparently for our refineries. We will come to that. There is some question about it. But at this particular year, as that amount of exported Canadian oil drops, then the purpose is to phase in the swap; namely, to keep the rate of Canadian export at a higher level.

Mr. HILL. That's correct.

Chairman HUMPHREY. Bringing in oil that we import on the eastern seaboard or bringing in oil that comes in from Alaska, helping the Canadian economy where it needs the help, particularly in the eastern segments, in the Ontario section and so forth, and in the developing sections in the West, so that actually the swap operation is an advance look as to how we will repair the damage to the American economy, particularly in the northern tier section, as the rate of Canadian exports drops in case you didn't have any other means of getting oil.

What's the present rate of exports of Canadian fuel or Canadian oil here to the northern tier?

Mr. HILL. I think it is running about 1.1 million barrels. I can check that number. I have it in my book here. It is 650,000 barrels a day.

Chairman HUMPHREY. 650,000 barrels a day.

Now, the purpose of the swap is that as that drops, then we would put in American imported oil, from, let's say, Venezuela or the Arabian countries or even some domestic that was more convenient in terms of transportation, and be able to hold up, able to sustain the level of, say, 600,000 or 700,000 barrels of Canadian oil coming into the United States in this area.

I just wanted to get the picture of the swap, and what I am getting at, Mr. Watson, is the State Department pushing the swap operation?

Mr. WATSON. We are working energetically with FEA and our Canadian counterparts to make sure that the companies have all of the impediments which would be in the way of swaps removed so that they will be able to undertake the negotiations which they have to do.

Chairman HUMPHREY. So you are saying, in other words, if the Government can remove the impediments, you will rely entirely upon the commercial sources?

Mr. WATSON. That's right.

Chairman HUMPHREY. What happens if some of the smaller independents find themselves crowded out in this kind of operation? Does the Government have any way to alleviate that?

Mr. WATSON. I believe, if I'm not mistaken, that the FEA has talked to virtually all of the refiners on both sides of the border, including independents, and no one has complained thus far about possible swap arrangements.

Chairman HUMPHREY. They think they can handle it?

Mr. WATSON. Yes, sir.

Mr. HILL. We think that is the case.

Chairman HUMPHREY. We will hear from some of our refiners here today.

Mr. ROLVAAG. Senator, may I ask a question?

Chairman HUMPHREY. Yes.

Mr. ROLVAAG. I should know the answer. What are the northern tiers that you refer to?

Chairman HUMPHREY. That's Minnesota, Wisconsin, North Dakota, just across the belt line here, Montana.

Mr. ROLVAAG. Montana, North Dakota?

Chairman HUMPHREY. Idaho, Washington.

Mr. ROLVAAG. Mr. Hill?

Mr. HILL. That's correct.

Mr. ROLVAAG. Michigan?

Chairman HUMPHREY. Yes; the northern tier States.

Mr. ROLVAAG. From Michigan to Montana.

Chairman HUMPHREY. Out to the west coast also.

Mr. HILL. All the way to Washington.

Chairman HUMPHREY. Washington, strangely enough, is highly dependent on Canadian resources; even in New York, as I recollect, there is some dependency there.

Mr. HILL. That's correct.

Chairman HUMPHREY. There is a pipeline that comes up from the South into Chicago and Ontario, isn't there?

Mr. HILL. Yes.

Chairman HUMPHREY. So that some areas of New York and others are supplied by that southern pipeline.

Mr. HILL. That's correct.

Mr. ROLVAAG. The reason I asked the question, Senator, is Minnesota has been very active in the National Association of Regulatory Commissioners in this matter and the only State that we found really affected other than Minnesota in the Midwest was North Dakota. But it is interesting for me to know when I go to the next meeting that from Washington to New York they are also affected.

Chairman HUMPHREY. Our situation is more clearly dependent upon Canadian resources because of our refineries getting most of their crude from the Canadian sources—not all, but, what is it, about 60 percent?

Mr. HILL. Yes, sir.

Chairman HUMPHREY. 60 percent of our energy resources, I think, come from Canada, but our refineries rely about 90 percent upon Canadian crude. So we are really in a bind insofar as our reliance is concerned upon Canadian crude. All right. What is the pipeline situation, Mr. Watson?

Mr. WATSON. What we are working on at present is the overall pipeline treaty with the Canadians which would cover all existing and future pipelines. It does not refer to any specific pipeline route for gas or petroleum but it will give a legal basis for protecting the throughput of pipelines both of gas and oil that transit through Canadian and American territory. In the negotiations thus far, we have reached agreement that the treaty should contain the following basic elements: Reciprocity or symmetrical application to both parties, guarantee of throughput by which public authorities in both countries would be prohibited from interfering or impeding hydrocarbons moving in transit pipelines, nondiscriminatory treatment which would insure that public authorities in both countries would be prevented from discriminating against transit pipelines with regard to taxes and other monetary charges, so-called in-bond treatment for hydrocarbons moving in the pipelines, and provisions for equitable sharing of pipeline capacity in the event of emergencies on a predetermined basis, and provisions for protocols on specific pipeline projects.

We are moving rather rapidly forward on that and it is hoped that we can initial some sort of agreement in the relatively near future.

Chairman HUMPHREY. And, of course, if that is done, if we get that basic agreement, then, of course, it becomes a matter of the financing and the engineering and the environmental impact of any development of a pipeline. As you know, we are very interested in the trans-Canada pipeline down the McKenzie Valley and this treaty would cover some of the concerns that we have in reference to that pipeline.

Mr. WATSON. It certainly would, Senator.

Chairman HUMPHREY. It would be very helpful, but then, of course, comes the financing of it and the time factor that is involved.

Mr. WATSON. That's correct. There is a multiplicity of other factors.

Chairman HUMPHREY. Yes.

Congressman Karth?

Mr. KARTH. Pursuing that line of questioning, how about the reversal of the Trans-Mountain Pipeline? Is that under present negotiations or consideration of the Canadian Government?

Mr. HILL. I'm not sure it is under consideration by the Canadian Government. A number of U.S. entities, both private and public at the

Federal governmental level have looked at the feasibility of reversing the Trans-Mountain Pipeline. The capital costs look to be fairly low compared to the other alternatives but there are a number of other problems with reversing that pipeline which I alluded to briefly in my testimony. The need to change the refineries would be fairly substantial investment requirements in Canadian refineries to handle the different kinds of crude and the environmental problems of tanker activity in Puget Sound.

We have these all under review but at the current time it does appear, Congressman Karth, that there are going to be a substantial number of hurdles to clear if that's going to be a reality.

Mr. KARTH. Senator, if I may just pursue this.

I understand there are going to be technical problems. There are going to be investment problems. There are going to be some environmental problem, but all of those problems are inherent in all of these alternatives you are talking about.

Mr. HILL. That's correct.

Mr. KARTH. It seems to me, Mr. Chairman, if we are going to benefit, we of the northern tier States, particularly those that have already been mentioned, if we are going to benefit at all from Alaskan crude, this is probably the quickest way that we can benefit and probably the most economical way that we can benefit.

I would hope, Mr. Chairman, that someplace along the line this matter will become a matter of priority discussion with the Canadian Government, like some of these other matters that we talked about.

First of all, let me thank you, sir, for inviting me to sit in with the Joint Economic Committee hearings. This is the first time I have had an opportunity to sit in with you. I am so busy sitting in on the Ways and Means Committee about 6 or 7 hours a day, I am getting a square back end. This is very interesting and I want to thank you, Mr. Chairman, for the opportunity.

Let me say, Mr. Chairman, that the problem has been clearly defined and we have a definition of the problem which we have had for months and months now. The solutions are pretty fuzzy and I think rather than talking about regulation, deregulation, pipeline here, pipeline there, reversal here, reversal there, maybe we ought to be thinking a little bigger than that, and I am not sure we are.

Governor Rolvaag, at one point in his testimony—I think he is the only one who mentioned it—said we have several hundred years of supply of coal in this country, and I guess it is the only viable alternative, really, that we have.

This whole discussion has been about petroleum, which is a fine product, Mr. Chairman, and we're using more and more, and the more we use of it the less we're going to have to use because the supply is insufficient. Occasionally I think we ought so be talking more aggressively about alternatives.

That leads me to this question. Has the executive branch of the Government considered at all a program that would force industry, all of industry that can convert, and that's most all of industry, to convert from petroleum and gas to coal, and use the tax system, the tax code, as a means of reimbursing industry for the conversion costs? I know that is a big project and I know it is expensive. I know it's new, but I think it has to be done eventually. If we don't start think-

ing about the longer range, with due deference, Mr. Chairman, we've been talking about the next 3, 4, 5 years, with all due deference, I think we've got to think bigger than we've been thinking, and we've got to be thinking about using these alternative sources of energy that are going to cure our problem on the long range.

That's not going to be easy to force all industry to convert from petroleum and gas to coal, but I think it's going to have to be done. I believe 40 percent or so of all petroleum gas produced in this country is consumed by industry. It is a lot easier to convert that segment of our society than it is to convert domestic home places from the petroleum product and gas to something else. Has the executive branch of the Government given any consideration to a long-range alternative use such as the one I have described?

Mr. HILL. Yes; we have. As you know, Congressman, we in FEA have converted or are in the process of converting a number of ultility boilers in the country from oil and gas to coal.

Mr. KARTH. That's been in the works for some time. I'm talking about all of industry.

Mr. HILL. I'll get to that in 1 minute. We of course had that authority but it expired in June and has not been reestablished by Congress yet. We're waiting for that authority to come back down. We have in our plans a series of further conversions of utilities as the second phase of this program, then moving to industry in the third phase, I would imagine sometime around 1978, late 1978, early 1979. We're now doing a large series of baseline economic studies on industrial conversions on the economics and the technical aspects of that.

We went after the utilities first because they tend to be the easiest. Most of them that we are converting have been on coal in the past and already have the transportation systems for coal. They may need a little repair or something, but the basic systems are there and the coal handling facilities are on site.

The first round of industries that we're looking at are companies that have burned coal sometime in the past, probably as late as 1968 or 1969, before the application of the Clean Air Act requirements moved them off of coal.

We're looking now, doing a large survey of the number of companies that have, already have the coal handling capability and have burned coal in the recent past, and are looking at the economics of converting them back to coal. We do have that authority. It was in the expired authority and we expect it to be in the new authority once it is enacted by the Congress.

We also have been working with the Senate Commerce Committee and the House Commerce Committee regarding further conversions off of gas. As you know, in S. 692 which is currently being considered before the Senate, natural gas, there is a requirement to convert industry or utility boilers off of gas everywhere in the country by 1985. We have done some of the economic analysis to that amendment and we are continuing to provide economic analysis regarding other industry conversions from gas to coal. I think your point is well taken.

Many people have laughingly said that the United States is the Saudi Arabia of coal. That's, in fact, the case. We are going to have to make greater use of our coal in the future. In fact, we have recom-

mended a doubling of coal consumption by 1985, moving from about 600 million tons a year to about 1.2 billion tons a year.

That is going to require substantial investments, and not just in coal mining but in the transportation systems as well. As you know, the President proposed last week this new Energy Independence Authority. We think that there are some coal transportation systems in the country, that if we're going to have them, the Government is going to have to help pick up part of the tab. And that is all included in the Energy Independence Authority which we sent Ford last week. There will be huge investments, huge capital investments.

Mr. KARTH. It's the only way we're going to cure the problem.

Mr. HILL. Most people who have looked at it have reached that same conclusion; we're just going to have to make those investments.

I think nuclear as well. We still have a number of areas in nuclear where we have crash efforts going underway, but I think many people believe that these problems can be resolved in the nuclear area and we can have a substantial reliance on nuclear energy in the future.

Coal and nuclear really, I think, have to be the workhorses of our energy question by the year 2000 or we're going to have serious economic problems, indeed.

Mr. KARTH. When did you say, Mr. Hill, that the study which you have undertaken with respect to converting industry from petroleum products to coal would be completed, 1979 or 1980?

Mr. HILL. I think we would be ready to start conversions in late 1979 or 1980. These are ongoing studies. We pick one industry at a time and study it, and if there are opportunities there we start preparing the legal work so it is kind of a rolling process.

Mr. KARTH. One final question. Excuse me for taking so much time.

Has there been any discussion between our Government and the Japanese Government with respect to the exportation of any sizable amount of Alaskan crude in that country?

Mr. HILL. I think there have been some discussions regarding Alaskan oil.

Mr. KARTH. Could you tell us what those discussions are about?

Mr. HILL. I think they've generally been sort of a very abstract policy level regarding that, but I think it's been basically this Government's position, our Government's position, that those exports are going to have to be constrained to a very small amount.

In the Conference Committee that we're working with right now, which Senator Humphrey has mentioned, there is a prohibition on export of foreign oil, domestic oil, whether it is on shore or off shore, to foreign countries, with special exemptions for countries such as Canada and Mexico, which have had a historically unique relationship, but if that bill is agreed to, if we all work out all of our differences and we get that energy bill, there will be this prohibition and it can only be waived by the President on a country-by-country basis for explicit foreign policy or national interest kinds of reasons, but it would be, I think, a highly restrictive kind of program. I doubt that any president would do a great deal of waiving under that particular law given our own domestic energy situation.

Mr. KARTH. John, you've taken about 5 minutes.

Mr. HILL. I'm sorry, Congressman.

Chairman HUMPHREY. You've been very helpful.

I think we should note at this time that that bill is in conference, House bill H.R. 7040, which is different from the Senate bill 622. Those two bills are in conference now and provide a very substantial number of items in our overall national energy policy. For example, 1 billion barrels strategic reserve is provided for, mandatory mileage standards for autos, energy efficiency labeling for appliances, ceiling on new oil prices. It's in that bill also, I believe, for the extension of the act.

Mr. HILL. That's correct.

Chairman HUMPHREY. That expired on June 30 and related to conversion and coal. I thoroughly agree with what Congressman Karth has said about the long-term needs.

One of the things that interests me and I am intrigued by in knowing that one-third of our coal resources are owned by the oil companies, is why they are not utilized and why they are not talking about conversion to coal. I mean, what kind of philosophy do they have, knowing what you know and what you have told us and what everybody else knows, that these oil resources and gas resources are limited and they pose tremendously difficult international problems, diplomatically as well as economically why is it that they haven't given us some lead information, conditioning people for the inevitable conversion to coal in its many forms, because coal can be liquefied and gasified, and also teaching the American people in these institutional ads that they have, you know, they always have what we call the institutional advertising, kind of the good message, about what you can do with depolluting coal? It just seems to me that they're missing the boat, and there must be a reason for it. I think the reason is that they're not prepared to make those investments at this time. That's undoubtedly one of the reasons.

You've rightly noted the transportation difficulties which is something that some of us have been pounding away at for a long time, because to move the amount of coal that would be required in a massive conversion would put a strain on our transportation facilities today that is beyond what anybody has even talked about intelligently. We simply don't have those resources now.

Mr. Millhone, I want to talk with you and Mr. Hill on something here for a minute. We're not going to keep this panel much longer. You indicated, Mr. Millhone, as I recollect, that modification of the Trans-Mountain Pipeline in Western Canada and the expansion of oil importing facilities, that is, docking facilities and so forth, on the Pacific coast, would be far cheaper than other alternatives to supplying the upper Midwest with crude oil in the future, is that correct?

Mr. HILL. That's correct, although that would not apply to the kind of swap arrangement——

Chairman HUMPHREY. No, no, I understand that, but as I understand Mr. Hill now, you stated that you placed a low probability on this option, is that correct?

Mr. HILL. That is correct.

Chairman HUMPHREY. Well, now, I'm sure that when we look at the other options we'll find serious obstacles there, too.

May I ask you, gentlemen, therefore, what must be done to clear the way for this relatively efficient solution to our problems? The one that you propose, Mr. Millhone, seems to have some credibility to it.

Mr. MILLHONE. If I recall Mr. Hill's comments, he felt there were environmental problems in locating new off-loading facilities in the Puget Sound area. There would be some environmental value in new facilities. There are six different ports in which crude is off-loaded now. It would seem to me as if a very promising subject would be the possibility of consolidating those port facilities. Some facilities are quite old. A single off-loading facility would provide some protection to the environment which the current facilities do not have.

Another aspect of this problem is the Vancouver-Canadian refineries which use a relatively sweet, that is, low sulfur crude from the Canadian provincial——

Chairman HUMPHREY. In the Alberta fields.

Mr. MILLHONE. Right. One of the problems that is involved is the conversion of those refineries to the use of the higher sulfur Alaskan crude which would require considerable capital investment. I think the figure is, and I'll correct it if I'm wrong, right at $40 million, which is a substantial amount but not an overwhelming one.

One aspect of this, though, is as the Alberta crude production declines, the amount of crude shipped across that Trans-Mountain Pipeline from east to west will diminish and the capacity of those refineries will be cut because of the same thing we are finding here, a sharp fall in the Canadian supplies. To use more fully that pipeline and to use more fully the Vancouver refineries there would be some capital advantage to the Canadians in reversing the flow in the Trans-Mountain Pipeline. The additional capital costs of the change could be taken care of in a matter of 5 to 10 years through the higher efficient use of the pipeline and the refinery facilities. I think there are problems here but these are problems that we would have in any area and problems that have some promising approaches or solutions.

Chairman HUMPHREY. Mr. Hill, what is your comment on that?

Mr. HILL. I think that any transportation of Alaskan crude across either Canada or the United States is clearly, of course, going to have some degree of environmental impact. It is unlikely that one line would have any greater impact than the other, at least in terms of the Puget Sound kind of situation. I don't think that the Trans-Mountain Pipeline would really be in any different situation here than, say, a pipeline across the Northern United States, at least in terms of where it comes in from Alaskan tankers.

I think the large part of the problem will center around the willingness of the company, Trans-Mountain Pipeline Co. and they have expressed an interest in studying the feasibility of this reversal-type operation. They've done so in the context of they're always willing to study whatever is best in the interest of their stockholders. Then they will have to look at this proposition from an overall business and stockholders' point of view. It is not just a matter of negotiating something with the Canadian Government or with our Government, but operating the company, that it is in the best long-term interest of that company to do this kind of operation.

Chairman HUMPHREY. Who owns Trans-Mountain?

Mr. HILL. It is a publicly-held corporation, I think.

Chairman HUMPHREY. It is my understanding that some of the majors own that pipeline. If that's the case, they wouldn't exactly be leading, would they, for the independence up here?

Mr. HILL. Well, I think, Mr. Chairman, what they did to the Trans-Mountain Pipeline would probably be more consideration of the Canadian refiners and the kind of investments they would have to make to burn the higher sulfur Alaskan crude. A good part of the capital investments for this operation would have to be borne by those Canadian refineries. They would have to make the switch. So they would have a number of competing interests, I think, to balance off and try to work out the best possible deal.

Chairman HUMPHREY. Just quickly on this Alaskan pipeline, I don't recall whether when we finally passed the Alaskan Pipeline Act we placed any restrictions or conditions on the export of Alaskan oil. Do you recall?

Mr. HILL. That's correct. That restriction is still in the pipeline bill. That just applies, I think, to oil, Senator, that comes through the pipeline and not to other Alaskan production that may be transported through other means.

Chairman HUMPHREY. So there are restrictions?

Mr. HILL. On the oil that comes through the pipeline, right.

Chairman HUMPHREY. All right. Can I get just a quick response, if possible, from you on the bill S. 2364, a bill introduced by Senator Mondale and myself, which would authorize the President to order mandatory allocation on the remaining Canadian crude supply amongst U.S. refineries, U.S. refiners, giving priority to those with the least favorable alternatives? Do you have any position on that?

Mr. HILL. I think, Senator, that we have looked at our own legal authority and concluded that in the absence of the Emergency Petroleum Allocation Act, that's this vetoed bill which we are currently debating, we would probably not have sufficient legal authority to do the allocation program that we have committed ourselves to do. We would very much, I think, in that sense, support the bill introduced by you and Senator Mondale to insure that we have the legal authority to run this preferential allocation-type system.

Chairman HUMPHREY. That would be very, very helpful to us.

State Senator Humphrey, do you have some questions you want to ask?

Mr. HUMPHREY. Mr. Chairman, I would like to ask Mr. Hill if he could just review for us, on the State level we're interested in trying to participate in some of the programs that I've heard talked about today.

One in which I'm particularly interested is in finding out whether or not the energy agency is regionalizing any of its views toward possible alternative energy sources. In other words, what kind of research is being done on a regional level since there are different conditions throughout the country, and particularly we noticed in our review, as much as we're depending on Canadian oil, we also have a different weather scheme here in certain respects?

Mr. HILL. I think, Senator, that several things are being done in this regard. The FEA, we're in the process now of breaking down all of our energy data that we did as part of our big project in the pending report, on a regional basis and on a State-by-State basis. I think this is going to be very useful for State-level people and people who work at regional kinds of situations to have a better data base on where

they are right now and where it looks like they may be going in the future or what their alternatives may be.

We're also, as you know, the Energy Research and Development Administration up here, making substantial investments in energy R. & D. The R. & D. program of the Government probably lagged behind where it should have been for many years, but I think in the last couple of years there has been very good agreement between the Congress and the Executive on the fact that we need substantially increased R. & D. This is in all areas: Different ways to use coal, which I think would have application for a State such as Minnesota, solar energy, which might even also have application here, believe it or not, more efficient heat pumps, just a wide variety of energy technologies.

The payoff on most of these, Senator, is probably anywhere from 8 to 10, 15 years down the road, but I think if you look at our R. & D. situation and the number of technical options we have, I'm hopeful that our energy problems are really, which we have today, are transitional problems, that by the year 2000 we'll have gotten this problem behind us and will have a stable energy economy for the future. It certainly looks like that opportunity, given the technical options.

Mr. HUMPHREY. Mr. Chairman, in particular I think there was reference made earlier to the peat supplies in Minnesota, and I know there has been some review and research done by the State legislature here with regarding to the use of those peat supplies. I would be interested in finding out if the energy agency is handling or is reviewing any alternative uses of those peat reserves. I have heard of a number of, I suppose they would be called esoteric uses, but traditionally I guess peat has been merely mined or taken and used in its original source. I have seen some research, though, that shows, in fact, that it can be used for other things, even growing energy crops, in a sense, and the use of the residue of agriculture residues.

Mr. HILL. Right.

Mr. HUMPHREY. For conversion. Again, these are long-term projects but for us in Minnesota it seems it is a very important resource to look to.

Mr. HILL. There is considerable activity going on today in federally funded activity in this area. It is called bio mass conversion. It's kind of a fancy term for taking lots of organic materials and converting them to a usable fuel. I'll be glad to send you a list of all the various types of R. & D. projects that are going on in the bio mass-conversion area. I'm not specifically familiar with what's being done in the peat area, but that would be included on any list.

Chairman HUMPHREY. Just a point that I want to raise here and then we're going to the other panel.

The Alaska pipeline in the Alaska oil. We've got the restrictions on exports. We're going to be producing there about a million and a half barrels a day. Obviously the west coast can't use all of that. Doesn't that force two, at least two or three options? No. 1, to waive the export restriction let it be exported, part of it; No. 2, to leave it in the ground; and No. 3, to find a way to deliver it to the energy-starved areas of the country.

Mr. HILL. I think, Senator, probably only one option and that is the latter. I don't think we want to export a substantial amount of

our hydrocarbons in the future. We certainly can't afford to leave it in the ground today, so I think there is only one option.

Chairman HUMPHREY. That, then, pertains to the building of the kind of facilities that make that possible.

Mr. HILL. That's correct.

Chairman HUMPHREY. Are we going to rely entirely on the private sector for that or are we going to give Federal encouragement to it?

Mr. HILL. I think there may have to be Federal encouragement regarding certain projects.

Chairman HUMPHREY. Does the project which the President advanced, this hundred billion dollar fund or hundred billion dollar Independent project meet these requirements?

Mr. HILL. I think it would. The Independence Authority, the way it is constructed, would be to offer financial assistance of various types, the projects that are either high risk in a technical sense or high risk in a financial sense, it is not to take over the financing of energy activities in the country in any sense of the term. The way the criteria is constructed it would appear, it appears to me, that a major pipeline, which could not be financed in the private markets, could have applied for assistance from the Authority, either an oil line or a gas line, and I personally expect that some of that type of financing will be done by this Authority over time. The costs of these things have just gone sky high over the years and a lot of companies that want to build them just do not have the personal asset base to put that kind at money into these kinds of distribution systems. We say we don't want to take over the traditoinal private market role here but our best assessment is that there might be some of these projects not developed in the future because of these financing restrictions. Our view is that financing should not be a constraint. There may be other reasons but it should not be financing.

Chairman HUMPHREY. I think the time has come for us to take a look at the new arithmetic. The day of cheap fuel is all over and the day of cheap food is over. There's going to be pressures on commodities that will raise prices, and there is a quantum jump that's taking place, every place except in the finance markets. They're still on Victorian standards and we are entering the 21st century, and that's what the problem is. That is beyond the scope of this hearing but not beyond the scope of this committee, the Joint Economic Committee. We're trying to operate or construct an economy on entirely new price structures far beyond anything we've ever known before, without the creation of the capital that is required for the structuring of that economy.

I want to ask you for a request and then we're moving on. Would the other members of the panel, let's see, we have two other members of the panel here, Mr. Williams and Mr. Murray, are you here? Please, would you come on up to this table, please.

Mr. Hill, I want to make a request for an assessment of supply alternatives to the Upper Midwest of you. My request is for the FEA to identify the options open to the Canadian dependent refiners to maintain their crude supplies, both during and after the phaseout of Canadian crude exports, and to report to this committee what these options are, which is the most efficient for the nation and for the refiners involved.

Also, please report any obstacles to the preferred solutions such as tariffs, uncertainty about crude supply patterns in the long-term future, inadequate incentives to modify important pipeline facilities, licensing, environmental problems, et cetera.

I'm going to pose this to you in the form of a letter. I just want you to know what we have in mind, and also possibly some inquiry along this line to the State Department in terms of your negotiations.

Might I ask, is the administration prepared to repeal, to waive the U.S. import duty to facilitate necessary oil exchanges with Canada?

Mr. HILL. Yes, we are prepared to do that.

Chairman HUMPHREY. That would be dependent somewhat upon Canadian willingness to repeal their export or waive their export tax?

Mr. HILL. That's correct.

Chairman HUMPHREY. May I ask, Mr. Watson——

Mr. HILL. May I interrupt for a minute. If I may, I would like to be excused, I have another engagement. If you're through I'd like to be on my way.

I want to thank you, though, for having me here today. I think it was a good discussion.

Chairman HUMPHREY. We appreciated your attendance.

Governor Rolvaag, did you have something to ask Mr. Hill?

Mr. ROLVAAG. First of all, I would like to get the answer for the same question you had.

Chairman HUMPHREY. We'll see that that material is made available to your agency.

Mr. ROLVAAG. Second, I suppose he can't answer the question in view of his time limit, but what about the transportation of coal by pipeline? We deal with this every day. You know, the increased price of fuel is a major component in every rate hearing case that we have and it affects every Minnesotan. I would like to get your response either orally or in writing about what the Energy Agency is doing about the movement of, transportation of coal by pipeline vis-a-vis rail.

Mr. HILL. We have a series of fairly recent studies on this issue and I think it would be best if I would just send it to you.

Chairman HUMPHREY. We would like that for the Joint Economic Committee and for the Minnesota Public Service Commission, your studies of the economics of the movement and transportation of coal.

Mr. HILL. That's correct.

Chairman HUMPHREY. When you're talking to the oil companies, tell them to start preparing the American people for conversion to coal. I think it is imperative, really. You have meetings all of the time with the oil companies.

Mr. HILL. I think that's the case. No doubt about it.

Chairman HUMPHREY. I'm not jumping on them, I understand their investment problems, and I think they need to tell us about those investment problems. I think people need to know what the real long-term needs are.

Thank you, Mr. Hill. You are excused to go.

Mr. HILL. Thank you.

Chairman HUMPHREY. Mr. Watson, we'd like to have you stay if you want, just to hear what our people have to say. Governor and Mr.

Millhone, if you can stay while this Minnesota panel talks to us, I'd appreciate it.

We'll start out with Mr. Severa, we'd like to hear your observations, and we'll proceed right down the line with Mr. Dyer, Mr. Carpenter, Mr. Williams, Mr. Murray and Mr. Roper. You may give your statements, and if you have a long statement we will include it all in the record.

You've listened to what's been said this morning on the gas problems, and you may want to direct your attention to some of that commentary as well.

STATEMENT OF GORDON SEVERA, PRESIDENT, TRANSMISSION DIVISION, NORTHERN NATURAL GAS CO.

Mr. SEVERA. I certainly do.

I do have a rather lengthy prepared statement and I will not read any portion of it. I will try to give just a brief couple of minutes' overview and then be available for questioning later.

Chairman HUMPHREY. By the way, Mr. Severa, we have staff people here with us from the Joint Economic Committee and some of them may be in touch with your respective offices as a follow up on this conference.

Go ahead.

Mr. SEVERA. A lot of the discussion has centered around oil. I want to make sure that it is understood that natural gas also has a very significant role in the Minnesota energy picture. Natural gas furnishes 32 percent of the State's total energy requirements, and when you exclude transportation fuel, natural gas furnishes 46 percent of the stationary energy requirements, so it is a significant factor and there is a substantial gas supply problem approaching. The reason primarily is because natural gas has been underpriced. This has had the dual effect of stimulating the demand beyond what it otherwise might have been and, at the same time, reducing the supply because the prices have not been adequate to stimulate the necessary exploration for new reserves.

The situation is going to get worse each year with respect to natural gas; for instance, Northern Natural Gas finds our deliverability declining at the rate of about 6 percent to 7 percent each year. Another important factor is that there are several years leadtime required for solutions.

Alaskan gas, for instance, can't be expected to reach Minnesota until probably 1981, or maybe even 1982.

One of the problems I think we have is that it is hard for people to understand that there is a shortage approaching until it actually arrives, and by then it is too late because it takes several years to get the solutions to the point where they are effective.

Now, the gas supply problem differs among various parts of the country, and fortunately Minnesota at this point is in a better position, for instance, than many of the eastern States, but Minnesota is still facing a natural gas supply problem.

Northern reached its peak sales level in 1973. We have had declining sales volumes since then. The first several years of our need to curtail has been relatively painless because we serve a lot of boiler fuel for

electric generation. The generating companies have used coal in the off-peak months for many years. They have the handling facilities, they have the ability to burn coal without any capital cost for conversion and they have been very good in cooperating with us in terms of making a conversion to coal on a year-round basis. That's a several-year-phaseout program which will culminate by the end of next year in having natural gas out from under the boilers in Minnesota. By 1977 there will be no significant quantities of natural gas burned for electric generation.

The real problem, then, that Minnesota is facing, at least with respect to Northern Natural Gas Co.'s situation is that in the years beyond 1976, starting in 1977, we will be forced to curtail other large volume industrial interruptible consumers. Many of them will have to convert to oil, at least in the short run, because they don't have the ability to burn coal, and thereby is a substantial problem as the Canadian oil supplies are being gradually phased out at the same time that natural gas deliveries are also being decreased.

That's why our position has been that there is a way to alleviate some of the substantial curtailments that we're otherwise going to be facing on natural gas, although I can't say that it is a complete solution because I don't think we're ever going to come back to the day where we will have all the gas that we want for all purposes, but the curtailment can be alleviated. The solution lies in higher prices and it lies in action by the Congress. Next week I understand the Senate is to vote on gas deregulation legislation, and I certainly commend the sense of urgency that the Senate has. I hope that the House of Representatives will also move promptly, and I would encourage that they avoid the inclination of some of your colleagues to deal with the problem on a short-term basis and to enact only emergency, 180-day legislation but rather that they enact legislation that will move our country toward some long-term alleviation of the gas supply problem.

I think it is important to note that the days of cheap energy are over, as you so aptly stated, and there just isn't any way for the country to continue to have adequate energy at historically low prices, and that's true with respect to all forms of energy. Probably the energy solution that can be enacted with the least impact in the way of higher prices is the deregulation of only new natural gas prices or reregulation to some higher price level because all of the gas presently flowing in interstate commerce is committed under long-term contracts at low prices, because the well-head price of gas, which is the only portion recommended for deregulation, represents only 20 percent of the total price and the remainder would continue to be regulated, and because the gas industry already has in place a $50-billion investment to transport gas to market.

We feel that the Nation's energy problems, the solutions, at least, certainly ought to include congressional action which would give greater incentive to explore for new gas reserves and to move those gas reserves into the interstate market rather than keeping them in the State of production.

Chairman HUMPHREY. You're familiar with the progress in the legislation of the Senate thus far. The Pearson amendment is the deregulation on new gas, and it is now the prevailing provision in the current legislative picture.

Mr. SEVERA. I am aware of that and I think that type of legislation could be very helpful in alleviating natural gas supply problems for Minnesota.

Chairman HUMPHREY. Now, the deregulation or Stevenson amendment did not provide for total deregulation. By the way it was defeated. That provided $1.30, I think per thousand BTU, what do you call it, cubic feet, per thousand cubic feet. That would have taken care of most of the gas that's intrastate, too, because of the price of intrastate. Much of it was under $1.30.

Mr. SEVERA. That's correct. I think the one cloud I see with the Stevenson-Hollings type of bill is the probable court test on whether the Federal Government can take control of intrastate prices. If that provision were to be overturned by the courts then $1.30 would not be sufficient to allow interstate pipelines such as Northern to compete with the intrastate purchasers.

Chairman HUMPHREY. It would not?

Mr. SEVERA. Not if the ultimate result were to be that a court test would say that the Federal Government cannot control intrastate prices. That's really the key issue.

Chairman HUMPHREY. Of course the Federal Government does control intrastate oil prices now under the Control Act, at least up through November 15.

Mr. SEVERA. Right.

Well, I think $1.30 would be sufficient to allow exploration for a good share of the remaining natural gas reserves, but it is probably a little on the short side. There have been several independent studies made by government agencies in recent months that indicate that probably somewhere in the range of a dollar and a half to a little higher than that is necessary on an overall average basis to give the proper incentive.

Chairman HUMPHREY. What we were trying to do was put the BTU equivalent, the price structure so that you would get your oil and your gas and your coal pretty much within a reasonable price rate insofar as the BTU is concerned.

Mr. SEVERA. I understand.

Chairman HUMPHREY. But it now appears that we will be taking action within, I'd say the next 10 days or so, final action on the gas bill.

Do you think there will be substantial new discoveries with improved prices?

Mr. SEVERA. I do, yes. There are indications that there are 5, 6, 700 trillion cubic feet of reserves remaining undiscovered. That relates to a little over 200 trillion that are presently discovered and not produced. So we're talking about potentially a 30- to 50-year supply on natural gas with the right price incentives. I think that the current action in the intrastate market proves that higher prices will bring forth more gas. There has been an increase in exploration activity in Texas, Oklahoma, and Louisiana, and there has been an increase in discovery of gas reserves, because the intrastate prices have been in the range of $1.50. We're actually at the point now where there is a slight surplus of gas.

Chairman HUMPHREY. Intrastate.

Mr. SEVERA. In the intrastate market, but it won't move into the interstate market at 51 cents.

Chairman HUMPHREY. I think most of us who have studied this in the Congress feel that there obviously has to be, whether we like it or not, a substantial increase. The Commerce Committee made these studies, as you know, that resulted in the Stevenson bill. I cosponsored that bill. I'm not on the committee, because I thought that the $1.30, from what we saw of the intrastate price, I think it covered most of the intrastate area, did it not?

For the average intrastate, but it may very well be that there were certain instances where intrastate prices were higher.

Mr. SEVERA. There are some undiscovered reserves that won't be explored for at $1.30. For instance, in western Wyoming, western Colorado, and Utah, there are the so-called tight formation reserves where instead of being able to drill one well on a section of land and draining the reservoir you would probably have to drill eight wells. Eventually our country must use those gas reserves, too, and that will require a price higher than $1.30.

Chairman HUMPHREY. We have included all of your testimony in the record because it is a very substantial body of testimony with questions and answers that are very significant.

I notice that you do say it is possible to tie in, to fulfill the needs of the northern communities which would require a very careful study of your availabilities, but engineering wise, pipeline wise, you do have the interconnection.

Mr. SEVERA. We do interconnect with both Great Lakes Pipeline and Midwestern. That covers most of the 26 communities. It does not cover International Falls and maybe one or two other communities that are right on the border that get their gas from sources other than Great Lakes and Midwestern.

Chairman HUMPHREY. Thank you, Mr. Severa.

[The prepared statement of Mr. Severa follows:]

PREPARED STATEMENT OF GORDON SEVERA

Our country is faced with a serious natural gas shortage. National data on natural gas supplies, compiled by the Federal Power Commission, shows curtailments by interstate pipeline of 2.9 trillion cubic feet for the 12 months ending March 31, 1976, or a deficiency of 19%.

A major factor causing the natural gas shortage and the deepening curtailments has been the shortfall between new reserve additions and natural gas production. Each year since 1968, natural gas production has exceeded net reserve additions. From 1969 to 1974, U.S. reserve additions in the lower 48 have averaged only 41% of production. For the interstate pipelines, the situation is even more drastic. Over the past six years, interstate pipelines have replaced only 10% of withdrawals. Interstate pipelines at the end of 1974 had a reserve to production ratio of 9.3 years, excluding Alaskan reserves.

Minnesota's annual energy usage totals a little over 1,100 trillion Btu and of that amount, natural gas provides 32%. Of Minnesota's non-transportation energy usage, natural gas provides 46%. Northern's pipeline delivers about 90% of the natural gas consumed in Minnesota. The other 10% comes from Canada.

The natural gas shortage and Northern's inability to buy sufficient new reserves is causing a decline in Northern's peak day and annual deliverability. Our current market-supply balance indicates a decline in peak day availability from traditional sources of about 6% per year. We are working hard on many fronts to develop more storage capacity for meeting these peak winter demands. The additional storage capacity near our market area will allow summer time deliveries of gas into storage which would otherwise be sold to large volume interruptible consumers. This in turn will allow gas to be withdrawn in the winter time to meet the requirements of the presently connected firm customers and to

make up for the declines in deliverability which would otherwise make it impossible to meet the requirements of the firm markets in the winter. For instance, we have built a multi-million dollar LNG peaking plant near Carlton, Minnesota. We are developing a new underground storage field near Lyons, Kansas and have negotiated leased storage agreements with Michigan Wisconsin Pipe Line Co. and Northern Illinois Gas Company. In addition, we have applied to the FPC for a second LNG peaking plant.

However, the annual supply problem cannot be solved by developing storage. The annual supply imbalance can only be alleviated by substantially increasing the supply, which is doubtful in the next few years, or by lowering sales to a level in line with the volume of gas that can be produced.

This coming heating season, Northern will meet its contract commitments to the firm and small volume market. However, before commenting on that, the record needs to be set straight relative to comments by a member of the FEA Washington, D.C. staff then speaking in St. Paul in late September to a seminar of regulatory commissioners. The FEA indicated a "12% increase in deliveries to Minnesota during the 1975–76 period". We asked the FEA to re-check their data. They subsequently indicated a significant error in the figures presented by the FEA, but they were unable to provide corrected figures.

We have just recently filed up-to-date data with the FPC on estimated requirements, deliveries and curtailment for the next 12 months. Based on information in that report and assuming normal weather, during the period November, 1975 through March 1976, we projected deliveries to Minnesota utilities of 146 billion cubic feet, which is 97% of the actual deliveries for this same five-month period of last year. Thus, during the critical heating season, Northern's gas deliveries to the Minnesota utilities are expected to decline only 3% from the previous year. However, on an annual basis, the decline in gas supply becomes more apparent. For the 12-month period ended September, 1975. Northern's deliveries to Minnesota utilities were 292 billion cubic feet. For the succeeding 12-month period, projected deliveries are 269 billion cubic feet, a decline of 8%. Thus, through our storage programs we are holding winter season deliveries about level, but on an annual basis, the gas delivered to Minnesota is being reduced to bring sales into balance with supply. Similar reductions are taking place in the other states we serve.

There has been a great deal of publicity concerning Northern's advance warning to utilities of the pending curtailment of power plants and other large volume consumers. In order that these consumers might have the lead time to modify fuel equipment and to arrange for other fuel supplies, Northern felt it prudent to give this advance warning.

Northern expects to file with the FPC before the end of this year a proposed tariff revision to allow additional curtailments. The exact form of this has not yet been decided nor has it been possible to determine what effect it might have on Minnesota consumers.

The attached Exhibit I gives some summary information about the Minnesota markets which rely on natural gas from Northern's pipeline.

EXHIBIT I

NORTHERN NATURAL GAS

State of Minnesota—year end 1974

Large volume interruptible consumers	415
Large volume interruptible EG consumers	52
Total	467
Number of residential consumers	635,000
Number of nonresidential consumers	63,000
Number of communities served	377
Estimated served population (million)	2.8

The following information deals with three issues on which Senator Humphrey requested some comments:

Question 1. Extent of natural gas curtailments in Minnesota the next two years.

Answer 1. Before discussing curtailment, I believe it would be helpful to have a background of Northern's sales in Minnesota during 1974. They are as follows:

	Billion ft³
Residential and small volume	175
Firm industrial (primarily taconite)	43
Large volume interruptible	47
Large volume interruptible electrical generation	42
Total sales	307

During this same year, Northern's curtailment below contract demand in Minnesota was 6 billion cubic feet.

In 1971 Northern filed a curtailment program with the Federal Power Commission in which we outlined the need to "phase out" the electrical generating companies use of natural gas over a period of time. The reason for the first step being electrical generation was twofold. First: In the generation of electricity, the natural gas was being converted from one form of energy to another with a loss of approximately 65%–70% of the input energy. Second: Most of the electrical generating companies have coal as an alternate fuel and have been using it for 25 years or more during winter periods when natural gas was not available for interruptible consumers.

In Minnesota the largest generating company in Northern States Power Company. As a matter of fact, they are the largest served from Northern Natural's transmission system. Northern States Power Company's management understood the problem that the gas industry was to face and planned an orderly reduction of the use of gas and increase in the use of coal and nuclear which has been extremely helpful in the reduction of sales of gas for this end use.

Under our presently effective tariff, the latter two sales classes are subject to curtailment. With the current projection of our market-supply balance, all large volume interruptible electrical generation across Northern's entire system will be curtailed by the end of 1976. By the end of 1977, some of the other large volume interruptible will be curtailed.

Northern projects curtailment of Minnesota utilities at about 9 billion cubic feet during 1975. For the following year, or 1976, Northern projects curtailment of Minnesota utilities to be about 48 billion cubic feet. The majority of this will be experienced by large volume interruptible powerplants. Based on Northern's present projected market-supply balance, and with our presently effective tariff, curtailment in 1977 could increase to 52 billion cubic feet.

There are at least three factors which could impact these curtailment levels:

1. Northern operates under an FPC approved tariff with an approved curtailment plan. However, the Company expects to propose a new curtailment plan before the end of 1975. This, along with other regulatory orders could change the priority of gas use and markets served in the future.

2. If new natural gas were deregulated at the wellhead, additional supplies of gas would be forthcoming to the interstate market which would alleviate projected curtailment.

3. Projected curtailments are based on present levels of consumer conservation and normal weather. If fuel conservation by the public increased, curtailment would lessen, but if there is colder than normal weather, curtailment of large volume users will increase. For instance, a 10% colder than normal winter would require complete curtailment of large volume interruptible consumers in the winter.

Question 2. Impact of Minnesota natural gas curtailments in the next two years on employment and energy price levels.

Answer 2. For the next two years, the bulk of the curtailment will be of large volume interruptible electrical generation, or power plants. Most of these plants are capable of burning coal and have made plans to operate on coal. Presently the cost of coal to large power plants is about the same as natural gas (both about 65¢/MMBtu), so there will be essentially no change in energy price levels because of the curtailment. However, some smaller power plants will experience fuel cost increases of up to 40¢/MMBtu if their alternate fuel is coal and up to $1.50/MMBtu if their alternate fuel is oil.

In the case of large volume interruptible, which will affect industrial consumers with alternate fuel capability, we assume these plants will be required to burn additional quantities of oil in lieu of natural gas. Since interruptible

natural gas on Northern's system presently is sold for around 70¢–80¢/MMBtu, and No. 2 oil sells for about $2.60/MMBtu, this will means a cost differential of about $1.80–$1.90/MMBtu. For every 1 billion cubic feet of natural gas that must be replaced with oil, the Minnesota industrial users will have to pay nearly $2 million more than presently. By 1977, it is estimated that curtailments will require about 12 billion cubic feet of gas having to be replaced with oil. At today's prices, this will result in an additional fuel cost of nearly $25 million in Minnesota. It is difficult to quantify an effect on employment, but we believe the effect will be minimal, particularly if the industries can obtain oil to replace the gas.

Exhibit II presents Northern's latest market-supply balance placed on file with the FPC. This exhibit presents a five-year forecast, on both an annual and peak day basis, of Northern's natural gas sources and requirements.

Question 3. Evaluate the feasibility of diverting Northern Natural Gas Company's supplies to the parts of Minnesota that will be without natural gas, due to Canadian natural gas export curtailments.

Answer 3. Northern is physically interconnected to Midwestern Gas Transmission and Great Lakes pipelines, both of which deliver Canadian gas to some parts of the State of Minnesota. Great Lakes, in addition to serving Minnesota, also makes deliveries in northern Wisconsin, the Upper Peninsula of Michigan, sourthern Michigan and moves a substantial amount of its throughput back into Canada in the Detroit area. Midwestern Gas Transmission delivers gas to communities located in Minnesota and North Dakota, but delivers the majority of its gas into the State of Wisconsin.

In order to evaluate the feasibility of Northern Natural delivering gas for consumption in the Minnesota communities curtailed, due to a cutback in imports from Canada, an evaluation would be necessary on the types of markets being served in these other states from those pipeline companies. Any deliveries made by Northern would of necessity reduce the sales to other consumers presently being served off of Northern's transmission system in the state and, therefore, it would merely be a rearrangement from one market to another.

Overall, it would be a regional problem and should be dealt with on that basis, rather than looking to an individual pipeline for the solution.

(EXHIBIT II)

NORTHERN NATURAL GAS COMPANY PROJECTED MARKET SUPPLY BALANCE ANNUAL VOLUMES, ESTIMATED FOR YEARS 1975–80 (BCF AT 14.73 PSIA)

Line No. and particulars (a)	Annual volumes 1975 (b)	1976 (c)	1977 (d)	1978 (e)	1979 (f)	1980 (g)
Sources:						
1 South end supply area:						
2 Permian	419	383	348	322	291	260
3 Anadarko	452	404	413	398	389	380
4 Total south end supply area	871	787	761	720	680	640
5 Montana supply area:						
6 Traditional Montana	21	19	18	19	18	18
7 Montana CIG transportation		1	2	3	3	3
8 Total Montana supply area	21	20	20	22	21	21
9 Gulf coast supply area—Louisiana		4	9	18	26	22
10 Gulf coast supply area—Texas				7	13	11
11 Net deliveries from storage:						
12 Redfield	1	3	2	4	1	
13 Other storage to be provided						2
14 Total storage	1	3	2	4	1	2
15 Total sources	893	814	792	771	741	696

(EXHIBIT II)

NORTHERN NATURAL GAS COMPANY PROJECTED MARKET SUPPLY BALANCE ANNUAL VOLUMES, ESTIMATED FOR YEARS 1975–80 (BCF AT 14.73 PSIA)—Continued

Line No.	Particulars (a)	Annual Volumes 1975 (b)	1976 (c)	1977 (d)	1978 (e)	1979 (f)	1980 (g)
	Requirements:						
16	Sales	783	717	687	659	631	631
17	Fuel and unaccounted for	87	77	74	71	69	69
18	Net deliveries to storage:						
19	Redfield						1
20	LNG plants	1	1	2			
21	Lyons	3	8	2	3	3	6
22	Michigan-Wisconsin	8	8		4	9	
23	Northern Illinois		3	8	6	12	12
24	Northern Illinois post delivery	11					
25	Other storage to be provided			19	28	17	26
26	Total storage	23	20	31	41	41	45
27	Indicated reduction in annual requirements						(49)
28	Total requirements	893	814	792	771	741	696

NOTE.—This document was filed with the FPC September 26, 1975, in docket No. RP 74–102, Volumetric Limitations.

NORTHERN NATURAL GAS COMPANY PROJECTED MARKET SUPPLY BALANCE JANUARY PEAK DAY VOLUMES ESTIMATED FOR 1975–76 THROUGH 1980–81 HEATING SEASON (MMCF/D AT 14.73 PSIA)

Line No.		Heating season 1975–76	1976–77	1977–78	1978–79	1979–80	1980–81
1	Requirements:						
2	Peak-day demand north of Clifton	2,810	2,810	2,810	2,810	2,810	2,810
3	Peak-day demand south of Clifton	115	115	115	115	115	115
4	Total peak day demand	2,925	2,925	2,925	2,925	2,925	2,925
5	Fuel, use and unaccounted for	298	298	298	298	298	298
6	Total requirements	3,223	3,223	3,223	3,223	3,223	3,223
7	Sources:						
8	Certificated sources:						
9	Traditional sources	2,531	2,316	2,156	1,926	1,703	1,552
10	Redfield	315	250	190	155	155	155
11	Michigan-Wisconsin	40					
12	Lyons		50	75	80	95	100
13	LNG No. 1	92	130	130	130	130	130
14	Subtotal certificated	2,978	2,746	2,551	2,291	2,083	1,937
15	Deficiency ( )	(245)	(477)	(672)	(932)	(1,140)	(1,286)
16	New acquisitions—traditional sources	127	175	207	233	271	293
18	Deficiency ( )	(118)	(302)	(465)	(699)	(869)	(993)
19	Pending applications:						
20	Northern Illinois (CP75–336)	60	60				
21	Michigan-Wisconsin (CP75–237)	42	42	42	42	42	42
22	LNG No. 2 (CP74–264)			70	70	70	70
23	CIG No. Natural Gas portion (CP75–243)		6	8	9	9	8
24	Subtotal pending applications	102	108	120	121	121	120
25	Deficiency ( )	(16)	(194)	(345)	(578)	(748)	(873)
26	Offshore acquisitions:						
27	Gulf coast—Louisiana		23	48	72	59	51
28	Gulf coast—Texas				36	30	26
29	Subtotal offshore acquisitions		23	48	108	89	77
30	Deficiency ( )	(16)	(171)	(297)	(470)	(659)	(796)
31	Additional storage to be developed:						
32	Michigan-Wisconsin		56	56	116	236	236
33	Northern Illinois			30	66	132	228
34	Other	16	115	211	288	156	182
35	Subtotal additional storage	16	171	297	470	524	646
36	Total sources	3,223	3,223	3,223	3,223	3,088	3,073
37	Deficiency ( )					(135)	(150)

NOTE.—This document was filed with the FPC September 26, 1975, in docket No. RP 74–102, Volumetric Limitations.

COMMENTS ON DEREGULATION

We continue to believe that the best solution to the gas supply shortage is the deregulation (competitive pricing) of new natural gas. Deregulation is the lowest priced, long term energy choice for the consumer because alternate forms of energy will be priced higher—in most cases much higher. Exhibit III attached is a brief summary of a report issued by the Federal Energy Administration commenting on the benefits of deregulation.

The higher prices are needed to cover increased exploration costs. The "easy" gas has been found. Most of the reserves remaining to be discovered are located offshore where the cost of drilling and establishing production is much greater than wells at the same depth onshore. Undiscovered reserves onshore are much deeper than present producing horizons with costs increasing geometrically in relation to depth. These factors plus inflation increase drilling costs substantially.

It is also important to keep in mind that it is the position of the gas industry that only newly discovered reserves should be deregulated. Since most proven reserves are now committed under long term contracts at low price levels, even a very substantial increase in the wellhead price for new gas will have only a moderate price impact on customers for a number of years. Other energy sources do not have this reserve of long term contracts. Also, the wellhead price of natural gas constitutes less than 20% of the consumers bill, with the remainder needed to cover the costs of pipeline companies and local distributors in transporting the gas to market. This means that a very large percentage increase in the wellhead price translates itself into a much smaller percentage increase to the ultimate consumer.

The cost of deregulation of new natural gas would not be high when you consider that the industry has the most efficient energy delivery system already in place—a one million mile pipeline network at an investment of $50 billion. The existing pipeline network is also significant because of the urgent need for more energy in the United States. The development of new natural gas in conventional supply areas where pipelines are in place will bring new energy supplies onstream quicker than any other energy alternative.

The most important point, however, is that without deregulation, gas supplies will continue to deteriorate and the cost of alternate fuels will cause a substantial increase in energy prices. While the shortage of natural gas will have the greatest impact on industry, the higher energy costs as industry is forced to convert to coal, oil and electricity will inevitably be passed on to consumers in the way of higher product prices, thereby reducing their disposable income.

However, since energy shortages are not currently severe, people can still heat their homes and drive their cars, and, therefore, most are complacent about energy supply problems. Unfortunately, the lead times are so great that by the time people recognize these problems as being severe, it will be too late to develop timely solutions.

Inaction on the part of the Congress will force our country to drift into greater reliance on imported oil from the Middle East which is intolerable both from the standpoint of balance of payments and potential embargoes which would cause severe dislocations in our national economy. Now is the time for Congress to make some difficult and perhaps unpopular decisions, even if the mass of energy consumers are complacent and not yet ready for tough energy supply measures. We can't afford to let short term considerations override the long term programs needed to lead us toward energy self-sufficiency. Exhibit IV is a one-page summary explaining why natural gas should be the focal point in the drive toward domestic energy self-sufficiency.

The Upper Midwest Council has an Energy Studies Program and has published several reports on future energy supplies for Minnesota and Wisconsin. A volunteer group made up of representatives of business, government, labor and education has assisted the Council in this effort. About two months ago the Upper Midwest Council published a report "Oil and Natural Gas Problems For the Immediate Future In the Upper Midwest" which contained the following statements in the section headed "Natural Gas Supplies":

"It is evident that although natural gas supplies are dwindling and appear to be in serious jeopardy over the next five years, there is still a potential for bringing on new supplies. The incentives for such new discoveries should be as great as possible. The analysis published by the Federal Power Commission staff on April 28, 1975, concludes that prompt, partial deregulation of the wellhead price of natural gas will not result in prohibitive costs to consumers in any user classification."

The section headed "Major Courses of Action" included the following recommendation: "Deregulation of new natural gas wellhead prices, at least to open up intrastate market supplies to allow more natural gas to flow in the interstate natural gas pipeline system."

Exhibit V is an excerpt from the above-mentioned report listing all of the major findings and Exhibit VI is an excerpt from a more comprehensive report titled, "Managing Our Energy Future" published by the Upper Midwest Council in August, 1974. The latter exhibit deals in more depth with the price disparity between the interstate and intrastate natural gas prices.

Exhibit VII attached in a brief memo prepared by the American Gas Association entitled, "The Case for Deregulation".

EXHIBIT III

SUMMARY OF THE F.E.A. DRAFT REPORT ON THE ECONOMIC IMPACT OF NEW GAS DEREGULATION

In March 1975, the Federal Energy Administration, Office of Economic Impact, released a final draft of a report analyzing the economic impact of new gas deregulation.[1]

Generally, the report concluded that failure to deregulate new gas prices will adversely affect the nation in six major areas: (1) unemployment and reduced national output will be aggravated as a result of cutbacks in gas deliveries to industrial consumers; (2) imports of oil (the swing fuel) needed to replace gas could rise to an estimated 4 million b/d by 1985; (3) cost increases will become more pronounced because industry shifts from gas to oil will involve higher energy costs; (4) electric heating—which is used when homemakers are unable to obtain gas service—involves inefficient use of energy if fossil fuels are used to generate the electricity; (5) to the extent that natural gas is not available, air quality standards will be lowered by the use of oil or coal, and water will be adversely affected by nuclear generating plants; and (6) consumers in the interstate market will be further disadvantaged when interstate pipelines are no longer able to maintain even current sales levels.

Although new gas deregulation would cause the average wellhead price of gas to rise more rapidly than under continued regulation, the report stated, regulated prices to consumers will rise significantly without new domestic gas supply additions. Among other things, with continued regulation, gas curtailments will become increasingly severe and as a result, transmission costs per unit of delivered gas will continue to escalate. Also, the report noted, substitutes for domestic natural gas will raise the consumer's bill much higher than deregulated gas. Customers who cannot be supplied by gas utilities will be forced to other fuels, primarily imported oil. However, the "use of oil as a long-run substitute for lost natural gas production with continued regulation would cost over 21¢/Mcf more than deregulated gas in 1985."

Further, the report declared, the effect of new gas deregulation on prices paid by residential consumers will be small and gradual both because of a slow buildup in the proportion of new gas sales to total interstate gas sales (only 40% by 1980) and the relatively low proportion (about 20%) of the residential price attributable to wellhead cost.

EXHIBIT IV

NATURAL GAS AND U.S. ENERGY SELF-SUFFICIENCY

During these times of concern about energy and the environment, it is important that the role of natural gas be understood. Following are six specific reasons why the development of U.S. natural gas supplies should be the focal point of the drive toward domestic energy self-sufficiency.

NATURAL GAS IS OUR DOMINANT DOMESTIC ENERGY SOURCE

In provides over 30% of our nation's total energy requirements. However, when we eliminate oil imports and focus on U.S. energy production, natural gas

[1] This summary was developed from an initial draft of the report dated Mar. 8, 1975 since the final report is not yet available from F.E.A. The basic conclusions of the report are included in an F.E.A. draft environmental impact statement on the Administration's various energy proposals, including deregulation of new gas sales.

is our largest source of energy. Natural gas and natural gas liquids which are produced from gas wells account for 40.4% of total U.S. energy production, compares with 1974 U.S. production of 21.3 tcf. Long before these sources are and nuclear.

NATURAL GAS IS THE KEY TO OUR ECONOMY

In 1974, it provided about 50% of the energy used by U.S. industry, almost twice that supplied by any other fuel. If our nation's economy is to be stimulated and unemployment reduced or avoided, natural gas supplies must be increased.

THERE IS A HUGE RESOURCE BASE OF POTENTIAL NATURAL GAS SUPPLIES IN THE UNITED STATES

In addition to the proved reserves of 237 trillion cubic feet (tcf) at the end of 1974, estimates of potential domestic supplies from a variety of sources range up to nearly 3000 tcf, with the most detailed estimate being over 1450 tcf. This compared with 30.5% for crude oil, 21.9% for coal, and 7.2% for hydropower exhausted, supplemental gas supplies will be making a substantial contribution. However, while this is an impressive resource base of natural gas, it is at this point still a projected potential which must yet be found, developed and delivered to consumers.

NATURAL GAS IS OUR CLEANEST FUEL

It is virtually free of sulphur and particulates. It does not pollute land or water and offers the best hope for alleviating air pollution, especially in urban areas. Every other fuel, including uranium, requires expensive emission control devices to protect land, water or air environment. As we take the needed steps toward domestic energy self-sufficiency, the contribution which natural gas can make toward our national environmental goals cannot be ignored.

NATURAL GAS IS OUR MOST EFFICIENT FUEL

Delivered through a million mile underground pipeline network, 90% of the gas produced at the wellhead is utilized directly by the consumer. This high efficiency is achieved because there is no need for downstream energy conversion as in the refining of crude oil and in transforming the primary energy of coal or oil into electricity. In addition to the energy losses in these conversion processes, each has its own environmental, capital and time-lag problems. Again, if we are to move toward domestic energy self-sufficiency as soon as possible, natural gas can make a very special and timely contribution.

NATURAL GAS IS THE LEAST INFLATIONARY FUEL

The higher prices necessary as an incentive for developing new natural gas supplies will have a gradual application to consumers. This is because essentially all of the proved reserves are under long-term contracts, usually 20 years, at historically low price levels which results in the average field price for natural gas of less than 30 cents per mcf, or per million Btu. This is an energy equivalent price of less than $2.00 per barrel of crude oil. When the higher prices for new supplies are rolled in with the lower prices of existing supplies under long-term contracts, the impact on the consumer is reduced. Other energy sources do not have this backlog of long-term contracts. Inflation is a serious national problem; however, natural gas not only can make the greatest contribution to domestic energy self-sufficiency, it can do it with the least inflationary impact.

American Gas Association, April 1975.

EXHIBIT V

MAJOR FINDINGS

The potential energy shortfall which would be created by declining supplies of Canadian crude oil and curtailments of domestic natural gas could be quite large. At one level—a minimal shortfall, additional oil supplies could be obtained from other imported and domestic sources. A major shortfall where extremely

large quantities of oil would be needed to replace curtailed natural gas, possibly would be greater than the existing supply system's capability for bringing petroleum products into this region.

The price of fuel oils being appreciably higher than the interruptible natural gas it would replace, there would be major economic adjustments which would have to occur. Those businesses, industries and utilities could pass along these higher costs. At the same time, higher prices will provide further incentive for efficiency and removal of waste energy using activities. The consumer, however, ultimately will feel the effects of this major price jump.

Regarding natural gas, we can see the next two years quite clearly. After that, through 1980, the natural gas supply situation is uncertain. After 1980, we can expect some relief with North Slope and Canadian supplies and synthetic gas.

This region may be in a better natural gas supply situation than other regions. However, if there is a significant national supply problem, any federal natural gas allocation program surely would erase any advantage this region may now hold.

Given no other alternatives, the nation will continue to import more crude oil; we will continue to experience balance of payments problems, we will continue to be vulnerable to embargo situations, whether instituted by political decision-making or physical force due to war in the Mideast.

With continued inflation, energy costs will continue to rise. Also, development of domestic supplies will ultimately make energy more expensive. This is due to the fact that our cheap resources have been all but used up and we are now having to pay enormous prices to develop what we have left.

Particular industries dependent upon natural gas—food processing, argriculture, fertilizer production and Minnesota's taconite industry—could be particularly affected. Also, customers of the state's municipal power suppliers will be significantly affected by any switch to other, more expensive fuels.

Yet to be resolved is the question of what kinds of priorities should be have to deal with various kinds of potential shortages.

The timing for development of solutions is critical. Lead times for developing supply and conversion systems or for implementing energy conservation techniques require that decisions be made in the immediate future. Each and every potential solution offered must be analyzed in terms of its timeliness, its ultimate cost and/or benefits to the consumer and its appropriateness for the long-term future, not just the next few years.

From: Upper Midwest Council Report "Oil and Natural Gas Problems for the Immediate Future in the Upper Midwest" dated Aug. 1, 1975.

Exhibit VI

Interstate Versus Intrastate Rates

The price disparity between these two categories should be removed and natural gas should be viewed as a national resource. The price of what is now intrastate natural gas should not fall toward current interstate levels, but should remain rather constant. The price of interstate gas should be allowed to rise to the approximate level of current intrastate prices through a controlled deregulation program.

Controlled deregulation of wellhead prices is critical if incentives are to become available for new finds and for increases in current well production.

Controlled deregulation of interstate natural gas supplies should be conducted in the following manner:

a. Wellhead prices for new gas supplies—new finds and new contracts written after such deregulation becomes effective—should be completely deregulated so that the price of natural gas can seek its own position in the marketplace.

b. These deregulated supplies, and ultimately all supplies would be allowed to reach a price level that would place them on an equivalent basis with other available energy sources, new sources such as synthetic gas and intrastate natural gas. Economic value, based upon net energy content in equivalent BTU's, not production costs, should be the criteria for determining natural gas costs.

c. Legislation should be developed to insure that additional profits generated by these price increases will be applied to the development of new supplies, increased production from present sources and development of synthetic gas production facilities.

Controlled deregulation of new natural gas supplies is desirable to encourage conservation through higher prices, to raise the price of natural gas to its true economic value in relationship with other fuels and to provide incentives for development of additional supplies. The impact of controlled deregulation will be much less than total deregulation and will cause less economic disruption.

Deregulation will require the combined efforts of state and federal regulators and Congress.

From: Managing Our Energy Future Published by Upper Midwest Council, August 1974.

EXHIBIT VII

THE CASE FOR DEREGULATION

Natural gas remains the least understood of all of our energy sources. We became dependent upon it almost overnight after W.W. II because of its sudden abundance at low cost, and because of its premium qualities of cleanliness, versatility and efficiency.

Today people are frankly surprised when they finally come to understand the pervasiveness of its use. Natural gas and its related supplementals provide over 31% of the primary energy used in the United States; over 41% of the non-transportation energy used; more primary energy than any other source produced domestically (41% gas, 30% oil and 23% coal); 17% of our National Electric Power Generation; nearly 50% of all industrial energy, and 42% of the residential and commercial market. Natural gas heats 39.4 million homes and 56% of all dwellings. It is the largest single fuel source for the residential, commercial and industrial markets.

Because of our preoccupation with oil (gasoline) and concern for the highly visible and vigorously promoted electric utilities, many of our decision makers still do not comprehend that there would have been no "energy crisis" if we had continued to have an abundant supply of natural gas. From a purely theoretical technological standpoint, all energy is interchangeable. We measure it in terms of "Quads" (10^{12} BTU's) and in the U.S. we use about 60 quads each year (23 of which are natural gas). An energy source is selected for use in the basis of whether it is more economical, more convenient or cleaner.

In the early 70's, our use of energy exceeded our domestic production capability and we greatly increased oil imports. But the unmet demand that caused the increase in imports was a natural gas demand that, because of its unavailability, was shifted to oil. Last year our gas curtailments (2.5 trillion cubic feet (TCF) were just about equal to the president's goal of oil import reduction of one million barrels per day.

The energy shortage therefore is really a natural gas shortage. The problem however, doesn't stop simply with an annual shortage of 2.5 quads of natural gas energy. Under existing conditions, the supply deficit this year will be 2.9 TCF or 3 quads and by 1980 could reach 6.1 quads. This is almost as much energy as our present total electric generation (6.3 quads). It is more than 25% of all the energy used by industry from all sources (23.86 quads), and is much more than could possibly be made up by imported oil, even if this solution were politically palatable.

The direct economic impact alone of such a shortage would be devastating. A recent study shows that if the major gas-consuming manufacturing industries had their gas supply reduced just 20%, an estimated 2,140,000 manufacturing industry workers could be unemployed. This, of course, does not include the cascading affect on employment in other industries and businesses.

If then the energy crisis is a gaseous fuels shortage, what can be done about it? Three solutions are theoretically possible: 1) initiate rigorous conservation measures 2) switch to alternate fuels 3) stop the downward trend of natural gas availability (including supplementals), and increase supply. Although this last solution (increase gas supply) is really the only feasible alternative, it is usually the least often considered.

Conservation seems obvious and easier, and, therefore, is attractive but it is also deceptive. One can go only so far with energy saving (non-use) before the impact begins to cut into economic growth (GNP) and life style. In any event, the results obtainable from conservation are finite. Project independence estimated that between 1.1 and 1.43 TCF, only about 5 or 6% of total gas consumption, could be saved by accelerated conservation measures. Because of rising

energy prices, concern for the availability of energy in the future, and curtailments, most of the conservation steps that do not have secondary economic impacts have already been taken. Conservation is a must but it doesn't solve the basic problem of shortage.

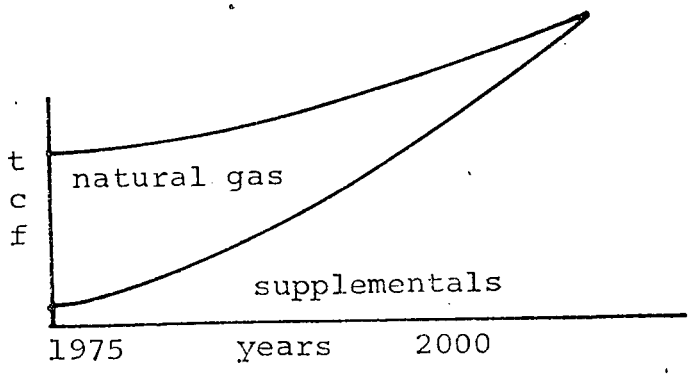
The prospects for being able to switch to alternate fuels are also dim. Alternate fuels are: Oil (imported), coal and nuclear (primarily for electric power generation), and exotic fuels (geothermal, solar, biomass conversion, etc.)

Domestic oil is in as short supply as gas, and increasing imports is politically and economically (balance of payments) unacceptable. Reasonable energy self-sufficiency is a high priority national goal and policy.

Hopefully the use of coal and nuclear material for electric power generation will increase in the years to come, as indeed it must, if we are to reestablish a condition of economic progress but we can hardly expect electric power generation to more than double in 5 years, which is what it would have to do if it were to make up the gas deficit predicted by 1980. This is particularly true since the electric industry faces its own monumental problems meeting normal demand.

Exotic fuels are also attractive for the future but will not be available in time to provide any real assistance for the next 10 to 25 years.

The "bottom line" then is that there just are no feasible alternatives to an adequate gaseous fuel supply. The gaseous fuel supply is now, and increasingly will be, made up of natural gas and supplementals.



In fact at some point in time, our natural gas supply will be depleted and gaseous fuels, the requirement for which will be undiminished for those tasks which they perform most efficiently, from the standpoint of cost and resource use, will be composed entirely of supplementals. These in turn will by that time all be synthetics.

Supplementals today, however, make up only a very small part of our utility gas fuel supply—a total of only 1 TCF out of 16 TCF total utility gas consumption, and most of this consists of politically vulnerable imported Canadian Gas. Even by 1990 the total maximum potential from supplementals, under presently predicted fiscal and political conditions, is only 6.0 TCF. For the same economic and technological reasons that exotic fuels are not going to be available soon, supplements will not be realistically usable, as a significantly abundant alternative to natural gas, until 1990 and beyond.

The "bottom line" again is that there is no feasible solution to the present and deepening energy crisis except to increase the natural gas supply—reversing the current trend.

As an insight to how this may be accomplished, it is useful to understand the causes of the shortage. As long as there was abundant domestic supply, gas was readily available at market clearing prices both *intra*state (unregulated) and *inter*state (regulated). Once total energy demand exceeded domestic supply at regulated field prices, we became subject to cartel pressure and open market prices started to climb. However, the FPC retained (with the help of the Supreme Court in 1954) tight "traditional cost of service" regulation over the interstate market and it dried up. Reserve additions (new gas) to the interstate pipelines since 1969 have been insignificant—to the degree that the gas which remains dedicated to these pipelines under long-term contracts is inadequate to support required deliverability in the non-gas producing states.

Potentially, adequate gas is available. Even by the most recent, highly conservative United States Geological Survey estimates, the U.S. has a potential supply that should last at least 35 years (760 TCF)—time enough to develop a commercially feasible synthetic gaseous fuels capability.

But this gas must be found and developed and this means economic incentives to explore and drill. The fact that this works is illustrated in the unregulated intrastate market where there is significant drilling activity and no significant gas shortage at wellhead prices up to $2.00 per MCF (though the average in producing states for open market, new gas, ranges from $.75 to $1.25).

It is generally conceded that the basic reason for the gas shortage in the interstate market (in all but the 4 largest producing states) is the artifically low wellhead price imposed by the FPC that has inhibited exploratory activity. The national area rate presently allowed by the FPC is $.52 per MCF—roughly the energy equivalent of oil at $3.12 per barrel.

The need for adequate price incentives is not a matter of profit. It reflects the increased cost of drilling at greater depths, and in the horizon or frontier areas, including the Atlantic and Alaskan OCS—costs which are an order of magnitude more than they were just a few years ago. The only certain way to provide this incentive is to remove field price regulation over *new* gas and permit natural gas to compete with other energy sources on the open market.

Recently conducted simulation studies show that removal of field price regulation (deregulation) could, by 1985, result in a 50% increase in production that will otherwise have declined dramatically with economic consequences of the most severe nature. This would permit natural gas production equal to at least present volumes; and, with the addition of competitively available supplementals would support growth as needed by a healthy economy.

The impact of deregulation—aside from increasing production or supply—would be higher price, *but* not as high as the doomsayers are predicting. Deregulation would apply only to new gas which would be rolled in with old gas under existing long-term contracts. The average net effect on the residential consumer, with new gas at $1.50 per MCF, would be an increase of about 5.5% a year in his gas utility bill.

Gas would still be a bargain as compared to alternate fuels, and the following chart shows average costs per million Btu at the residence for competitive home heating fuels in 1985, assuming deregulation in 1975:

Gas	$3.96
Oil	4.36
Electric	21.74

It is noted that continued regulation is no assurance that prices will not rise. The 5.5% increase predicted for deregulated gas is based on the price of old gas remaining constant but this, of course, would not happen. The combined effect of increased load factors, increased cost of rolled in supplementals, and the always belated or "after the fact" recognition by the FPC that costs do go up, would push the price of regulated gas up to or above deregulated gas—except that in more and more areas it simply would not be obtainable!

While the impact of deregulation on the residential consumer will be much less dramatic than the critics forecast, this is certainly not true for the industrial sector. Under existing policies, the industrial user is the first curtailed, and the prospect of operating under continuing regulation, as now, is almost incomprehensible. By the early 80's, we face a loss of 50% of the energy that powers industry, and the impact of this would surely be economic disruption and depression. For industry, deregulation may well be a life and death matter.

Chairman HUMPHREY. Mr. Dyer.

Mr. Dyer, we welcome you. You're president of the Q Petroleum Corp. which is an independent gas station, right?

Mr. DYER. That's correct.

Chairman HUMPHREY. Go right ahead.

STATEMENT OF NORMAN DYER, PRESIDENT, Q PETROLEUM CORP.

Mr. DYER. I want to make just a brief statement on the allocation of Canadian crude. It is important to the independent marketers, such as myself and others here in Minnesota.

There are four refineries located in Minnesota and western Wisconsin supplying about 50 percent of all petroleum products used in this area. These four refineries, because of their geographical location, are approximately 90 percent reliant on Canadian crude. Therefore, if this crude source is not first allocated to refineries almost totally reliant on it, Minnesota will suffer a severe economic hardship. The independent marketers in this area are 50 percent or more reliant upon the production of these local refiners for the product needs.

If the Canadian crude is not first allocated, 100 percent of the needs of the refineries of Minnesota and western Wisconsin, then independent marketers would no longer be able to get the necessary supplies to remain a viable economic force in this market.

Without viable independent marketers, consumers of this area will pay additional millions of dollars for their petroleum needs, because without the competition of independent marketers, product prices would be 3 to 10 cents higher than those prices that exist when we have viable, competitive, independent marketers. Therefore, because of Minnesota's heavy reliance on the four local refineries for its petroleum needs, it is absolutely necessary that we secure an adequate allocation of the available Canadian crude to supply 100 percent of these refinery needs. The continuation of the revised form of the present allocation of the refined products from all suppliers is also essential for the independent marketers of Minnesota as long as the industry is allowed to operate in its present manner.

If there were competition within the industry, then allocation controls of refined products would not be necessary, but until the large oil companies are put in a position of competitiveness, then a revised form of the present allocation is necessary for the survival of the independent marketers in this marketing area.

In conclusion, I wish to reiterate my view that it is of extreme importance for the economy of Minnesota that it receives the necessary amount of available Canadian crude to operate its local refineries at full capacity, especially since our refiners do not at present have alternate means of securing the necessary crude supply.

Chairman HUMPHREY. Thank you, Mr. Dyer.

I think the panel would be interested in recalling that the vote in the Senate recently was 45 to 52; 45 voted for divestiture of the major oil companies. That was a surprising vote, to be quite honest about it. No one expected that number, and with a little effort I think more will come. I hope that the message is clear, but I doubt that it is, because you are talking about the marketing patterns of the large companies. We need large companies, and I'm not here to say the large companies don't serve a useful purpose, because they obviously do. It takes a large amount of capital to do what needs to be done. But when you have an industry in which the crude is owned, the pipeline is owned, and the ships are owned and the jobbers are owned and many of the retailers are owned all by the same company, you have a vertical type of integration that borders on the worst form of monoply, with only a limited form of competition.

Forty-five Members of the Senate, from every section of this country, regardless of political persuasion, the Republicans and Democrats alike, conservatives, moderates, and liberals, voted, 45 of them, for

complete divestiture. I think this is one of the most amazing votes that I've seen in the Senate for years.

Mr. Carpenter.

STATEMENT OF CY CARPENTER, PRESIDENT, MINNESOTA FARMERS UNION

Mr. CARPENTER. Thank you Senator.

We appreciate the opportunity to be here, and we appreciate the efforts on behalf of yourself and your committee to come to grips with this problem before an ever greater crisis develops in this area.

We are not going to burden you with additional statistics. I think we have an abundance of them, and I know of your personal competence in this area. I don't believe that we're in a position to advise on a broad basis in the total problems. There are many competent and dedicated experts that have a great divergence of opinion.

What we are more interested in is immediate planning and as fast as possible resulting actions and how we might contribute to this. We think that a lack of this kind of planning is perhaps a major contributor to the situation we find ourselves in today.

I think it is fair to state that this energy situation, this energy crisis, is a problem for all of us, or maybe some of us testifying here today are dealing with the situation more specifically, but the total results are for all of us. As a result it is natural that we look to Congress for representative action or corrective action in this situation.

We believe that we must have continued regulation, allocation, and direction on this problem as new plans are developed. I think we have established in the past that public utilities need this kind of direction, and when you have the added impact of shortage, to the monopoly that is necessary in serving areas, I believe there's little doubt of the need for this kind of overall supervision.

I'm speaking more specifically to agriculture. We are particularly vulnerable because of the changes in the product and the changes in the weather that we must cope with. In view of some of the testimony that's been presented here today regarding the change in supply from Canada or the use of different products, in each instance agriculture is perhaps more vulnerable. There is practically no way that we can convert, for example, to the use of coal for drying of crops.

The producer and the user of foods is going to be directly involved in the decisions that are made either way. So we're not speaking just to the position of the producer of agriculture. I think it has been clearly demonstrated as to the stability and the jobs that agriculture contributes to our economy, this area in particular. In the face of some of the unemployment and fluctuation in the economy, we've experienced that agriculture has had a very stabilizing effect, and the same thing is true, and increasingly so, in our international situation. Because of this, I believe there is a need for careful consideration of the involvement of agriculture in this total scheme.

The shortage of sources of energy, and particularly propane and those that agriculture is most dependent upon, or can least adapt away from, immediately cause results such as a black market that developed a couple of years ago. These things not only are a serious cost to the

producer and to the user, but they impede realistic planning and a true understanding of the situation and contribute to the problem rather than to the solution.

I believe even under the present situation of a lack of comprehensive planning and a sense of direction in where we're going, we've encouraged more who may term themselves as brokers or others, but they are interested to move into the total area because there is an opportunity for profit, and to create new positions that can tune in onto the profit resulting from shortage. Now, everybody may be entitled to a profit, but I doubt that it can be to the disadvantage of either the individual or an industry such as agriculture.

I further point out that agriculture cannot compete in the use of a product such as propane in that it has no way of either predicting the usage and therefore its activity, nor to pass on the price. While we aren't looking for special advantage, we do want a clear understanding of our situation. If a business or industry has to buy gas or propane at a higher price and add the price to the product, this is understandable. Those producing agricultural products can't do this.

Chairman HUMPHREY. Which, by the way, is generally not understood. I think that is a very valid point.

Mr. CARPENTER. That's correct.

I think that can be pretty carefully documented at the present time. There's been some very serious concern expressed over 20- or 30-percent increases for gas, for heating and so on, but little acknowledgment of a 200- or 300-percent increase in prices for propane for farmers, particularly during short periods. This either puts the farmer out of business or is added to the cost and adds to the problem.

I want to point out, too, that our farm cooperatives are in a particularly vulnerable position in that they are assigned the greatest responsibility in providing energy for our farmers and for food production and yet are least protected in terms of the supply or the ability to have a major voice in determining the price and the direction that these sources of energy will come from. I believe that this must be protected, not just in the interest of that particular cooperative, but its position in the total agricultural and economic scheme that we're dealing with. In this connection, I think we must have product allocation, because even the disruption or movement of product can be to the very severe disadvantage of the farmer and the cooperative.

And with that I think we must have a continuing recognition for priority of use and direction in pricing. While there may be need to increase price, I think there needs to be some means of directing the method and the amount of price, particularly as it relates to the production of food.

I think realistic treatment of the energy inputs and energy needs of agriculture must include input from agriculture producers and a means of determining the best production methods so that we don't just get bigger machines and a bigger fuel bill per unit of food produced. That's the way we appear to be going and without proper understanding we can accelerate what might seem to be better food production and we're really accelerating our consumption of energy in food production. This needs to be explored and better understood.

Along those same lines, I think that our energy policy needs to be more intertwined with a national food policy. There is no way that we

can properly plan for the production of food without knowing what the production and availability of energy is and, conversely, to process and distribute that food, others in the business must also be involved in the planning and distribution.

I think if we do have this kind of planning, rather than just to react to the weather, to a foreign involvement, to the profit motive, that we will come up with a condition where the job of our people and the production of food does come first. I am speaking on behalf of agriculture and am not attempting to be critical but rather to look ahead. I think agriculture would like an opportunity to be involved at the beginning or in the planning, a condition that we may have overlooked with Canada, and bring them in only when we have a problem. I think we would like to contribute all the way along.

Chairman HUMPHREY. Mr. Severa, could you tell us what is the current situation on propane pricing?

Mr. SEVERA. I'm not close enough to it to give you a good answer.

Chairman HUMPHREY. Is it going up or staying steady, do you have any idea?

Mr. SEVERA. I think on a short-term basis it is staying steady. I think the price this winter will depend a lot on the weather. A cold winter will tend to cause some shortages and some price increases.

Chairman HUMPHREY. Thank you, Mr. Carpenter, very, very much. We've talked these things out many times. As you know, every bill in Congress that we've had, as was mentioned here today by Mr. Hill, does have provision for allocation for natural gas and propane for agricultural purposes and processors, food processors.

Mr. CARPENTER. We're aware of that and appreciate it.

Mr. ROLVAAG. Senator.

Chairman HUMPHREY. Yes.

Mr. ROLVAAG. I may be completely out of character here, correct me if I'm wrong, but as Mr. Carpenter was speaking I couldn't help but think about, when he talked about the black market, one of the major trucking companies in the State of Minnesota, during the fuel crisis 2 years ago, paid 63 cents a gallon for diesel fuel to run its trucks, which had an effect on every user that Mr. Carpenter had. That was the black-market prices. And when major trucking companies have to pay 63 cents a gallon for fuel oil to run its trucks, it has a direct impact on what we do as a Public Service Commission in establishing rates to Mr. Carpenter's users.

Chairman HUMPHREY. Thank goodness, at least the supply situation is better than that now. I remember those conditions too well.

Mr. Williams. you represent industry throughout the northern part of our State and elsewhere.

STATEMENT OF JAMES WILLIAMS, GENERAL MANAGER, BOISE-CASCADE, INTERNATIONAL FALLS, MINN.

Mr. WILLIAMS. Yes, Senator. We really appreciate the opportunity to appear at this hearing.

Boise-Cascade Corp. of International Falls converted from coal to natural gas in 1970 for economic reasons. We first started taking that gas in December 1970. We do have a long-term contract with

Intercity Gas Ltd. from Winnipeg for 20,000 M ft³ per day of firm gas, and there's also a minimum in the contract. This contract expires November 1, 1991.

It should be noted that Intercity is the company that holds the export license from the Canadian National Energy Board for export at the border to International Falls. The export license itself is good until 1995.

The economics of constructing the transmission line to the International Falls mill were based on a conversion with not only International Falls but also the Fort Frances operation. In essence, those two facilities used over 75 percent of the gas supplied through that pipeline.

That pipeline comes down into the United States and passes through the communities of Waterloo, Roseau, Baudette; whereupon it goes back into Canada and travels along the Canadian border until it hits Fort Frances, and then it goes across the border into International Falls. The gas was previously not available to those communities until the line was built at Fort Frances and International Falls. The line does terminate at International Falls at this point.

We have obviously been very well aware, and we've had some meetings with the Canadian Energy Board in terms of what are our alternates in case there would be some curtailment possible in the future.

The alternate that we do have available to us is coal. We did burn coal at one time. There would be substantial pollution control investments that would have to be made before we could start upon coal again, and of course, obviously those revolve around the environmental considerations.

In essence, the boilers that we do have up there now are being gas fired. They did fire coal at one time, but there would have to be more added onto them in the way of capital investment to bring them back to the coal-burning state again, plus also the coal-handling facilities would have to be updated.

Chairman HUMPHREY. But you could do that, is that correct?

Mr. WILLIAMS. It would be a matter of money. We did at one time burn eastern bituminous coal prior to our conversion to natural gas. If necessary, we've been looking at the Montana subbituminous coal which also has a lower sulfur content.

In that area, we're also burning many of our wood wastes in terms of the hog fuel. We have taken a serious look at what would happen to us in that area of the country if we did get a 10-percent reduction or a 20-percent reduction. In essence, this would involve the jobs of anywhere from 100 to 300 people, in that range, if the curtailment was on a short-term basis. It is a serious matter to us, not only at the International Falls site, but it would be a serious matter to the Fort Frances operation in Canada also because their biggest pulp customer is International Falls. So, in essence, there would also be some impact on employment on the Canadian side if we were to suffer a reduction of the natural gas that was coming across the border.

Chairman HUMPHREY. Are we to assume that that reduction is going to take place, or do you feel that your contract gives you sufficient protection?

Mr. WILLIAMS. We feel that we have a very firm contract, but in terms of what might happen across Canada, if there are reductions

within Canadian communities, we have the feeling that we might suffer some type of reduction on the export of gas.

We do think we have an unusual situation at International Falls, because we really just don't have very many other alternates available. We think that some consideration ought to be given to that fact, that it isn't just a matter of bringing in a few oil tankers or anything like that. The alternates are very slim up in this country. Recognizing obviously the seriousness of this situation, we're attacking it in two major ways. We've assigned top priority within our operation there, including an energy engineer who works full time on nothing but energy reduction projects, due to the increased costs: To give you an example, our gas bill used to run about $4 million, and it is now running over $9 million. So the costs have increased substantially.

It also points out the things which were not feasible to do in the past but which we can now do and get a reasonable return on investment due to the fact that the gas cost itself is higher. So we can go through many conservation projects that we weren't able to touch before.

We've also engaged a well-known consulting firm to study in detail the overall situation at International Falls complex for both the insulating mill and the papermill because we do generate some of our own electricity and we do have some possibilities of being able to burn more hog fuel or wood base, plus the possibility of burning more coal or burning coal in the future which we don't burn right now. We're trying to take an overall look at the situation just to see what the best plan of action would be in the next 5 or 6 years.

Chairman HUMPHREY. I hope you'll pursue that relentlessly. My counsel and advice is don't depend on gas or oil in the large quantities, particularly if you happen to contemplate expansion of your plant in any way. The need for paper products is growing every year, and I would gather that your company does keep in mind growth and expansion of your production.

Mr. WILLIAMS. Very much so. This is one of the things obviously that we take a look at. We have capital funds to expend in the corporation, and one of the biggest factors to go into at this point in time, x'ing out the wood and water supply, is obviously the energy supply that is available at given locations. So we're taking a close look at the west coast, down South, northern Minnesota, and also our Canadian operations in terms of what we have as an overall base to work on.

Chairman HUMPHREY. You're obviously familiar with some of the tax provisions that are being contemplated in the Congress and some that have already been passed, on the basis of environmental controls, that give some benefits to companies?

Mr. WILLIAMS. Yes.

Chairman HUMPHREY. We have a State legislator here, I think they also are concerned about that, because it is going to take a tremendous amount of investment to maintain the environmental standards at the same time that you try to convert to these alternate sources of fuel, particularly if you go away from gas.

Mr. WILLIAMS. That's very true. It hasn't really been mentioned here, but some of the impact of what could happen in our area of the

country especially is the possibility of what's happening with this Clean Air Act. It would pose some very serious questions in that the facilities that are located within close proximity of, whether they be Federal parks or monuments and that type of thing, it would be questionable at some point in time whether or not those types of facilities would really be able to move on a realistic basis into the area of burning coal, for instance.

However, on a balanced basis we should be taking an overall look at where we're heading and not just spearhead in one direction in one way and go in an opposite direction in some other path.

Chairman HUMPHREY. The Clear Air Standards, many of them of course were designed, promulgated at a time when the energy crisis wasn't nearly what it is today, so it all has to be looked at again in terms of what the balance off between the environment protection, on the one hand, and the economic needs on the other. There are those of us in Congress who feel that that is a sensible approach, the way to look at it.

Chairman HUMPHREY. Mr. Murray, you're from International Falls, too, aren't you?

Mr. MURRAY. Right.

Chairman HUMPHREY. We're happy to have you here and welcome your comments.

Mr. MURRAY. Thank you.

Chairman HUMPHREY. Because you have a unique situation in your community as has been indicated.

STATEMENT OF JACK MURRAY, PRESIDENT, CITY COUNCIL, INTERNATIONAL FALLS, MINN.

Mr. MURRAY. Mr. Chairman, members of the Joint Economic Committee, and members of the panel.

On behalf of the citizens of the city of International Falls, Minn., I'm here to testify on our need and dependency on Canadian natural gas.

International Falls is located on the international boundary and is unique with respect to its distance from other areas in the community of population density. This distance represents approximately a hundred miles of sparsely populated area. Our nearest neighbor of comparable population density is Fort Frances, Ontario, which is located immediately across the international boundary. For this reason, we have never been seriously considered by any U.S. natural gas supplier. Exhibit 1 to this statement will help illustrate our unique location.

You can see the gas lines came through and circled up south, and did come into the Iron Range which is a hundred or more miles away from International Falls, and it is a hundred miles of rugged swamp and woodlands. Up to this time, no gas suppliers have made any attempt to supply our area.

Approximately 5 years past we were offered an opportunity by the Intercity Gas Utilities of Winnipeg, Manitoba, to be served by their proposed construction of a 165-mile, 12-inch natural gas pipeline. We were given assurance that surplus Canadian natural gas would be committed to our needs. Exhibit 2, paragraph 1 is presented for your

consideration. This goes on to explain where Intercity did go before the Canadian Energy Board in order to make this request. The request was made on this basis.

International Falls is the trade center for north central Minnesota and the major industry is Boise-Cascade International, Inc., which operates a paper mill and building products division which employs approximately 2,000 persons from this area. In addition, related industries are providing raw materials for this operation which, in turn, makes the entire area solely dependent upon this industry.

Natural gas arrived in International Falls in 1970 and the response by prospective consumers was immediate. Boise-Cascade immediately took advantage of the available natural gas to eliminate a large source of air and water pollution.

In addition, approximately 1,500 homes have converted to natural gas energy; likewise, numerous institutions such as elementary schools, high schools, hospitals, civic buildings, churches and commercial establishments have made the transition to natural gas. The cost of these conversions represents a large investment by homeowners and the industry and institutions that support and serve the people of this area. And now, Senator, we find ourselves very dependent upon this fuel.

Should the current attempt to restrict the export of Canadian natural gas succeed, an insurmountable hardship would be imposed in our community. As you realize, one of the hardships imposed would be survival, both economically and physically, in the "icebox of our Nation."

I think, Senator, in closing, you are from Minnesota, you have often heard the remark that once it gets down to zero, it doesn't make much difference from there down to 40 below, but when you look at your thermometer and you look at your furnace, it's kicking in pretty regular at 40 below where it isn't kicking in quite as regular at zero. So the fuel consumption is a lot greater at 40 below, although it might be just as miserable at zero as it is at 40 below.

I would like to thank you, Senator, and the committee, for giving us the opportunity to come before you.

Chairman HUMPHREY. We wanted this kind of specific information. May I say, Mr. Murray, and to the rest of you, that we have a special subcommittee on energy in the Joint Economic Committee. We are having elaborate studies made of the energy question. As with many of the institutions in Congress, like most everything else, it takes a period of time to crystalize this information, but so much of the information that we've been getting has been what I call of a very general nature in the big overall picture. The purpose of coming out to a particular State, as we will go to other places, is to get the specificity that we got here this morning, where we get detailed information of what happens in a particular community.

Now, this Intercity Gas Co., I have a copy of your exhibit here, and by the way, all of this will be included in the record.

[The exhibits referred to follow:]

EXHIBIT 1

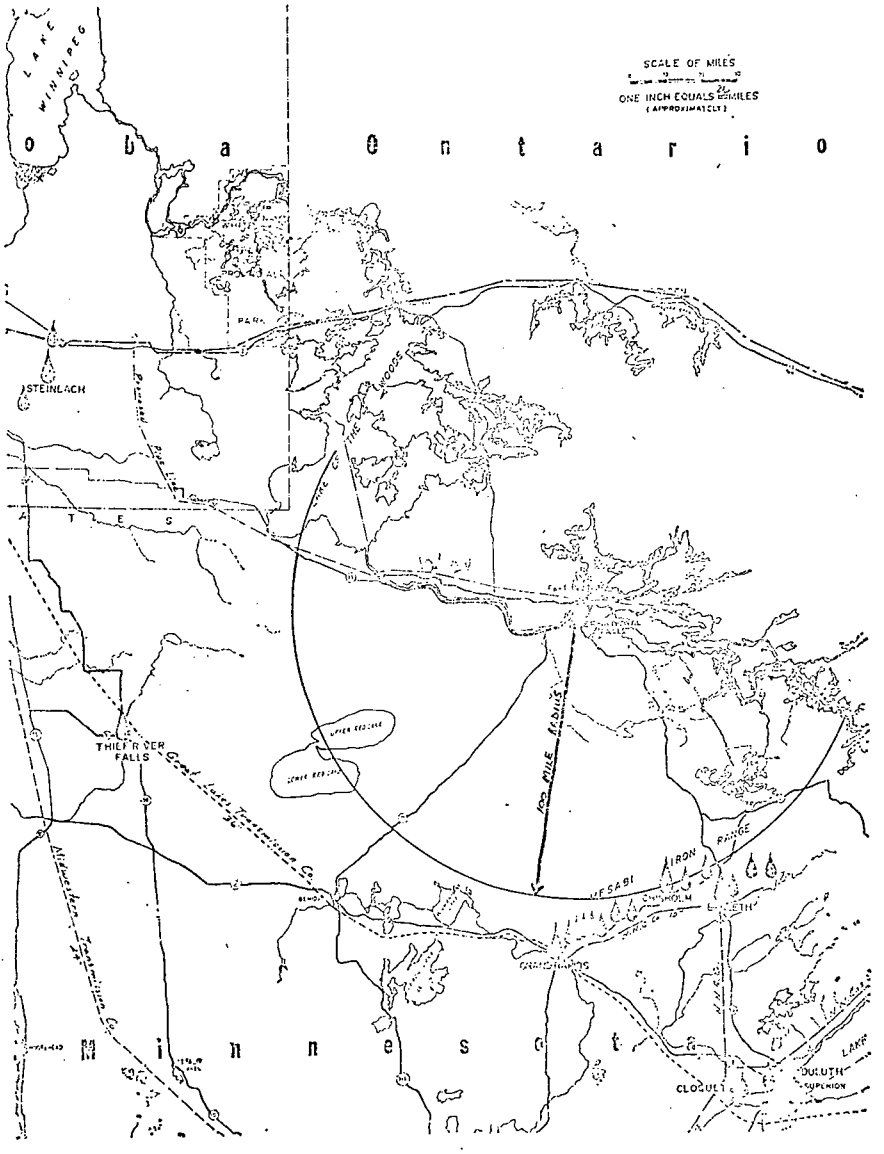


EXHIBIT 2

INTER-CITY GAS UTILITIES LTD.,
IRON RANGES NATURAL GAS CO.,
NORTH STAR NATURAL GAS CO.,
Winnipeg 2, Canada, June 20, 1969.

The COUNCIL,
City of International Falls,
International Falls, Minn.

GENTLEMEN: We take pleasure in presenting for your consideration our tender for a franchise to distribute natural gas in your City.

Investigations into the feasibility of serving International Falls were commenced by Inter-City in 1961. In September of 1964 and again in April, 1967, we presented proposals to your Council indicating our desire to serve your community.

Our plan continues to be to build a 165 mile 12" transmission system from a point on the Trans Canada Pipe Line near Spruce, Manitoba to your City. A map and outline specifications of this transmission line is contained in this submission. We also wish to construct and operate a distribution system in your City. Again, we refer you to latter pages of this proposal for more detail.

This is a complex project, and for it to be feasible there must be a concentration of return to a single company. This fact was recognized two years ago when Boise Cascade and yourselves both selected another company to be your supplier. At that time there was no way of you knowing that the gas company selected would fail to live up to its proposal. However, as we all know, you do not have natural gas as you should. When Boise Cascade realized that they were not going to be served they re-opened negotiations with us in January of this year. These have culminated in a firm contract between our companies. We wish to stress that it is not a letter of intent but a firm commitment to purchase in excess of $4 million worth of natural gas each year for a 20 year period from our Company, and from our Company alone. In addition, we have now completed negotiations for the purchase of the necessary gas for the overall project from Trans-Canada Pipie Lines Limited.

To export these quantities of gas from Canada requires a committed long term service of gas which can be proven before the National Energy Board of Canada to be surplus to Canadian requirements. Within the next few days Trans-Canada Pipe Lines will file a request to export 270,000 mcf of gas per day. Included in this application is an amount reserved for our Company (and our Company alone) sufficient to supply your needs. No other applicant for your franchise has this gas supply. Within the next few weeks, provided we successfully obtain your franchise, we will file our own export application covering this reserve volume of gas.

If you consider the map you will see why we feel we are uniquely situated to serve you. We have competent people in the northern Minnesota area where we now serve 34 towns. You will find that our Company really wishes to make a vigourous contribution to your City as your City will be a particularly significant member of the growing number of communities we serve. You will find that we will offer all the modern customer services provided by progressive gas companies and sell our gas at rates which will be attractive to your citizens. On the question of rates, we propose that we sell gas in International Falls on the same basis as we do in Thief River Falls. Thief River Falls is a community of approximately the same size as your's and also located in northern Minnesota. We have just completed our first two full operating years in Thief River Falls and 48% of the population are now our customers, which is as good a testimony as we can give for the reasonableness of our rates and the acceptance of our Company. On our proposed rates, as shown in the suggested franchise agreement of this submission, a customer would pay between $1.01 and $1.25 depending on how much (and when) the gas is used. This offers your citizens a saving of not less than 20% over the alternative fuel and energy sources. Additional rate schedules may be provided for commercial and duel fuel users if the potential customers request such service. Special contracts will be negotiated separately with larger industrial and commercial customers.

We refer you to the following pages for more detail on our proposal and particularly to our requested franchise agreement. We would be pleased to furnish such additional information as you may require and discuss any amend-

ment to the proposed franchise if such information is required to suit your particular circumstances.

It is imperative that all regulatory bodies co-operate to effect an early decision. We require your authority to distribute gas in the City, the National Energy Board's authority to export and construct the transmission line in Canada, and the Federal Power Commission's authority to construct the transmission line in Minnesota. We will have no difficulty having gas here by the end of 1970 provided we are able to progress through the regulatory commissions in an expeditious manner. Accordingly, we sincerely urge you to attend to our proposal as soon as possible.

Yours truly,

R. G. GRAHAM,
President.

Chairman HUMPHREY. Do you have a contract with them now?

Mr. MURRAY. Yes. We have a franchise.

Chairman HUMPHREY. What is the length of that contract?

Mr. MURRAY. Twenty-five years.

Chairman HUMPHREY. Do you have reason to believe that they will alter that contract?

Mr. MURRAY. Well, I've talked with Intercity Gas people and the local management, they don't have any fears. All we can go by is what we read, and the people are actually worried about this energy crisis. The local manager has told me that he has gas to sell, but this doesn't tell us what's going to happen in the future because the movement across Canada is to restrict the flow of gas.

Chairman HUMPHREY. The reason I asked this question is there have been literally, if not hundreds, at least many interstate contracts canceled for the supply of gas. We will be meeting this afternoon with our friends from Canada. We'll go into this matter, and Mr. Watson will be with us, I understand, and we'll look into it.

Obviously if the Canadians have to cut back on their own people, I would imagine you'd have to expect a similar reduction upon even contractual relationships of those of us in the United States.

Again, this goes back to the conversion problem. As you see it, most of the homes in your area now have been converted to gas, haven't they?

Mr. MURRAY. I would say over 50 percent in the immediate area, and of course the expense of the changeover, a lot of the older homes that had furnaces with probably several years of workability left were advised to put in a gas-burning furnace that was designed for gas rather than make a conversion. And now, to convert back, it's next to impossible, I guess it is impossible due to the design of the furnace, from gas to convert it to other fuel so it would be a tremendous cost for these people.

Chairman HUMPHREY. It means getting a new furnace.

Mr. MURRAY. Yes; it would mean a new furnace.

Chairman HUMPHREY. I know, I just got one.

All right, is there any chance, Mr. Severa, that your company can furnish, can tie in up there without disruption of your availability of supply to your customers in other areas?

Mr. SEVERA. I don't think so. It is over 100 miles from our closest facility, and we are curtailing other customers elsewhere and don't have adequate supplies to serve those that are already connected to our system.

Chairman HUMPHREY. We have some information here that I received from Senator Pearson as I mentioned earlier. He gave me a listing of some companies that are serving Minnesota.

The major interstate pipelines serving your State include Northern, Montana-Dakota Utility, Midwestern Gas Transmission, Great Lakes Gas Transmission, Interstate Power Co. of these pipelines, Northern has been identified as curtailing their customers. The others have not been so identified.

Do you have any information on that at all?

Mr. SEVERA. We serve about 90 percent of the natural gas in Minnesota, and we have been experiencing curtailments for the last several years. I was under the impression that Midwestern also had some curtailments but I'm not absolutely sure.

Chairman HUMPHREY. I'm not familiar with the layout, the geographical layout, of these pipelines and these transmission systems. You could connect in if you had the gas?

Mr. SEVERA. We are interconnected with Midwestern and Great Lakes already. We could furnish them some gas if it were decided that it were in the public interest to take it away from some of our other customers. That's the problem. When you are curtailing on your own system it becomes a little bit difficult to furnish any gas to other systems.

Chairman HUMPHREY. Do you furnish Mesabi, do you furnish up by Silver Bay?

Mr. SEVERA. We do.

Chairman HUMPHREY. There's that little spur line that runs off of there. Is that yours, it runs east-west?

Mr. SEVERA. We do serve all the taconite plants and a number of the communities on the Mesabi Range.

Chairman HUMPHREY. There's about 100-mile distance from your line on up to International Falls.

Mr. SEVERA. That's correct.

Chairman HUMPHREY. OK, I just thought we'd explore this, but I'm sure you men have been exploring this anyway without some Member of Congress coming to you and suggesting that all these possibilities ought to be explored. You don't have very many other ways to get fuel, do you, Jack?

Mr. MURRAY. No. We're kind of in a unique position. It is a serious problem. Even our fuel oil, we're at the end of the line and sometimes the tank's pretty near empty when it gets down to the final destination.

Chairman HUMPHREY. The coldest spot is at the end of the line for the fuel oil right? OK, let's move along.

Mr. Roper, you've waited patiently, but I'm sure you have information to offer us. You've heard all this testimony this morning.

Mr. ROPER. Yes.

Chairman HUMPHREY. We're fortunate in the sense that you're sort of the cleanup man here because you can put together what you've heard as to how it applies to your company, which I think would be indicative of what would happen to other refineries in the area. Your company is located where?

Mr. ROPER. Here in Minneapolis-St. Paul.

Chairman HUMPHREY. I just wanted to identify this for you.

Mr. WILLIAMS. Senator, could I be excused at this moment?

Chairman HUMPHREY. You may, Mr. Williams.

Mr. WILLIAMS. I have a plane to catch, but there's a Bob Martin here that can answer any questions.

Chairman HUMPHREY. Thank you very, very much. We hope you'll pursue those alternatives that you're looking into.

STATEMENT OF JOHN D. ROPER, VICE PRESIDENT, KOCH REFINING CO.

Mr. ROPER. I'm John Roper, vice president of Koch Refining Co. I want to respond directly to your letter.

In your request for my testimony, you asked two questions. The first question you asked is: What would be the impact of a cutoff of Canadian crude oil exports on Koch Refining Co. and other refineries in the northern tier of States? The second question was, How can we assure oil supplies to the northern tier refineries in light of the phaseout of Canadian exports ot the United States?

Chairman HUMPHREY. Right.

Mr. ROPER. Relating to the first question, an immediate cutoff of the Canadian oil exports would shut down Koch's refinery. We receive only approximately 10,000 barrels per day of crude oil via the Portal Pipeline. At this time any other domestic crude oil or non-Canadian foreign oil would have to be transported by nonconventional means at great expense and, in my opinion, would not permit a viable operation of the refinery. I believe that the other refineries in Minnesota and Wisconsin would be similarly affected. Your staff members have copies of our position paper concerning Canadian crude supply, and it supports the conclusion that for the immediate future the Minnesota-Wisconsin refineries are absolutely dependent upon Canadian crude oil.

The second question you pose requires more explanation. In the time allotted, I will attempt to outline how Koch feels we should assure crude oil supply to Canadian dependent refineries in light of the phaseout of Canadian exports to the United States.

Now changing, Senator, the question a bit from northern tier refineries to Canadian dependent refineries.

Chairman HUMPHREY. Yes, I understand.

Mr. ROPER. We should first note that Canadians are seeking only to phase out their crude oil over a period of time. It is not immediate, so we're not facing an immediate shutdown. We have been advised by the Canadians that they will modify their scheduled reduction sometime during the first week of November of this year. We were there in Ottawa last Tuesday, and hoping, knowing this hearing was coming up, to get some information that would be the latest information, but I couldn't get any insight into what their plan is for November 1.

It does appear to us, of course, that there will be substantial reductions commencing January 1, 1976. It is our guess that we will receive a little more than 400,000 barrels a day during 1976, approxi-

mately 300,000 barrels a day during 1977, and slightly more than 200,000 barrels a day in 1978.

Chairman HUMPHREY. That's the total, you mean, for the Minnesota——

Mr. ROPER. That's for districts 1 through 4, which would be exclusive of the Western District.

The first solution, or one of the ways of attacking it, would be the allocation. We've talked about this and I know you're interested in it, and we're interested in it, and we're glad to hear that the Federal Energy Administration is going to be publishing, before November 1, a priority allocation system for Canadian dependent refiners. I have not seen a copy of a draft of this allocation system, but I noted that you said you were submitting some material that might have an indication of how FEA is looking at that. I haven't seen that, but I understand that the draft is circulating within the FEA at this time. I believe that this priority allocation is essential for the short term to provide truly dependent Canadian refiners with crude oil supply. It is Koch's position that refiners in Minnesota and Wisconsin are, without a doubt, the most dependent refiners upon Canadian crude, and they have a need for Canadian crude of about 205,5000 barrels per day. If you include the Cenex refinery at Laurel, Mont., and the Continental refinery at Billings, Mont., in this group of truly Canadian dependent refiners, there would be approximately 50,000 additional barrels per day of Canadian crude required.

We can see, therefore, that a priority allocation system for truly dependent refiners should give adequate crude supply to these refiners during the years of 1976 and 1977. However, we all know that we cannot afford the luxury of doing nothing during this 2-year period.

The next alternative or supplement to supply is through exchanges, which I mentioned in Ottawa last Tuesday when we were talking at that meeting about exchanges. I'm sure other refineries have contacted Canadian refiners for swaps, and we were meeting there with the Natural Energy Board staff members to see what we needed to do as first, second, and third steps to get this accomplished.

These changes can be effectuated if Government approval can be obtained. We have drafted and will soon submit a letter describing a transaction involving somewhere between 4,000 and 10,000 barrels a day of Canadian type crude for some domestic crude in a swap with British Petroleum refining companies. We're submitting that letter to the NEB, copies going to the Energy Mines and Resources and Energy Supplies Allocation Board. I'm meeting next Tuesday in Washington to do the same thing with the FEA and the State Department and Commerce Department, and any other department of the Government that would be required to get approval.

Chairman HUMPHREY. This would be the first of such operations, the first swap deal, so to speak?

Mr. ROPER. They indicated that there haven't been any swaps that have taken place in Canada.

And what is required in Canada, as I understand it, is that the NEB has to make the recommendation to approve and then it goes eventually to the council for final approval. That may take, accord-

ing to Bill Porter there, 2 to 3 months, so we hope to be onstream with exchanges by the first of the year. That's our time frame. I'd be happy to try to answer any questions you may have.

Chairman HUMPHREY. Thank you, Mr. Roper.

[The prepared statement of Mr. Roper, together with a case study entitled "Reversal of Transmountain Pipeline" follow:]

PREPARED STATEMENT OF JOHN D. ROPER

In your request for my testimony, you have asked two questions:

(1) What will be the impact of a cutoff of Canadian crude oil exports on Koch Refining Company and other refiners in the northern-tier states?

(2) How can we assure oil supplies to northern-tier refineries in light of the phaseout of Canadian exports to the United States?

I

An immediate cutoff of Canadian oil exports would shut down Koch's refinery. We receive only approximately 10,000 B/D of domestic crude oil via the Portal Pipeline. At this time, any other domestic crude oil or non-Canadian foreign crude oil would have to be transported by nonconventional means at great expense and, in my opinion, would not permit a viable operation at the refinery. I believe that the other refineries in Minnesota and Wisconsin would be similarly affected. Your staff members have copies of our Position Paper concerning Canadian crude supply, and it supports the conclusion that for the immediate future the Minnesota-Wisconsin refineries are absolutely dependent upon Canadian crude oil.

II

The second question you posed requires more explanation. In the time allotted I will attempt to outline how Koch feels we should assure crude oil supply to northern-tier refineries in light of the phase out of Canadian exports to the United States.

We should note that it is merely a phaseout over a period of time. We have been advised that the Canadians will modify their scheduled reduction some time during the first week of November this year. It does appear, however, that there will be substantial reductions commencing January 1, 1976. We believe that Districts I through IV will receive a little more than 400,000 B/D during the year 1976: approximately 300,000 B/D during 1977; and slightly more than 200,000 B/D in 1978.

(*A*) *Allocation*

You are aware of the Federal Energy Administration's intention to publish, prior to November 1, a priority allocation system for Canadian-dependent refiners. I have not seen a copy of a draft on this allocation system, but I understand it is presently circulating within FEA. This priority allocation is essential for the short term to provide truly-dependent Canadian refiners with crude oil supply. It is Koch's position that refiners in Minnesota and Wisconsin are, without a doubt, the most dependent refiners upon Canadian crude, and they have a need for Canadian crude of about 205,500 B/D. If you include the Cenex refinery at Laurel, Montana, and the Continental refinery at Billings, Montana, as truly Canadian-dependent refiners, there would be an additional 50,000 B/D of Canadian crude required.

We can see, therefore, that a priority allocation system for truly-dependent refiners should give adequate crude supply to these refiners during 1976–1977: however, we cannot afford the luxury of doing nothing during this two-year period.

(*B*) *Exchanges*

A week ago today, I had the privilege of being in Canada to talk with the National Energy Board (NEB) staff members about refiner-to-refiner exchanges. These changes can be effectuated if government approval can be obtained. We intend to submit a letter describing our transaction to the NEB with copies to Energy Mines and Resources (EMR) and Energy Supplies Allocation Board (ESAB). If the NEB approves our proposal, it will make a recommendation of approval to the Canadian Minister who would then take it up with the Governor

and Council. We are arranging for meetings with administration officials next week concerning U.S. approval of our proposal. These exchanges are scheduled to be in operation by the first of the year.

(C) Pipelines

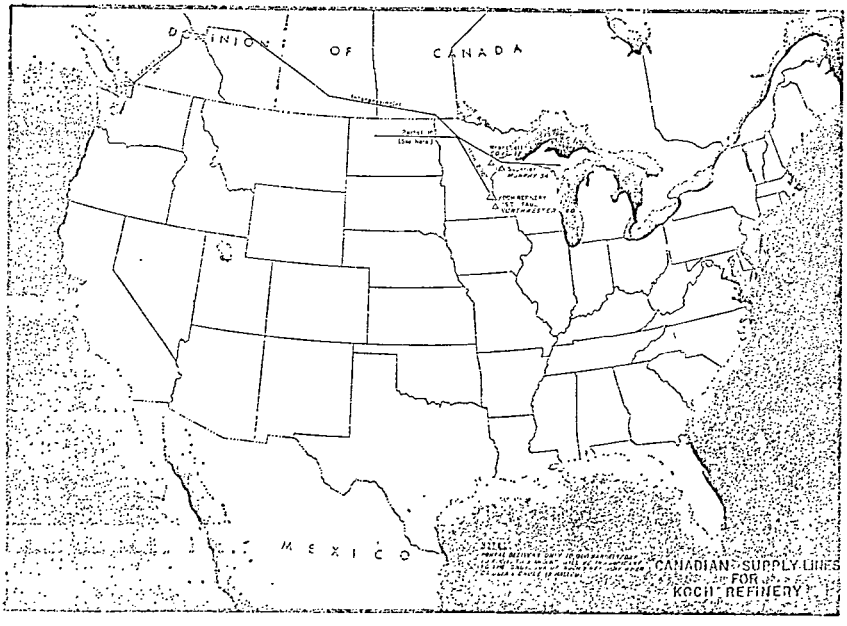
In addition to the priority allocation program and the exchange proposals, it is imperative that physical facilities be constructed to supply non-Canadian crude oil to our Canadian-dependent refiners.

By far, the most logical proposal is a reversal of Transmountain Pipeline. I have brought with me copies of this proposal describing four alternate ways of reversing the pipeline and locating terminals. It is estimated that the pipeline itself can be reversed at a cost of approximately $20 million which would permit 300,000 B/D of Alaskan crude to move from west to east. The problems concerning the reversal of this line are not technological or financial. They are largely political. Additional terminal facilities would have to be built off the coast of Washington or British Columbia. This is what we see to be the major obstacle in the reversal of Transmountain.

Other proposals for movement of non-Canadian crude oil to the Minnesota area are set forth in drawings, copies of which are attached to this presentation. All of these alternatives are quite expensive:

	Cost (millions)	Estimated completion date
Transmountain	$150	1977
Seaway and Texhoma Pipelines	600	1977
Gas line reversal	1,500	1978
LOOP—Capline	2,500	1980

I would caution that these are only preliminary estimates by Koch's engineers and pipeline personnel. Before a definitive estimate of these costs could be made, additional studies would, of course, have to be conducted.



REVERSAL OF TRANSMOUNTAIN PIPELINE

BACKGROUND

Transmountain Pipe Line Company, Ltd., owns and operates the crude oil pipeline that runs from Edmonton, Alberta, Canada, to Vancouver, British Columbia, and the Puget Sound area.

The present capacity of this system is 410,000 barrels per day. The 24-inch pipeline crosses two 4,000-foot mountain passes on the 711-mile route to the Puget Sound area. The line serves four refineries in Vancouver and four in Washington. For a capital expediture of $20,000,000 the line can be reversed. Three hundred thousand barrels per day of crude oil can be moved from the West Coast to Edmonton. This oil would arrive from offshore into the Vancouver or Puget Sound areas, be moved through the Transmountain system to Edmonton, Alberta, and then further transported via Inter-Povincial Pipe Line for distribution to northern-tier refineries.

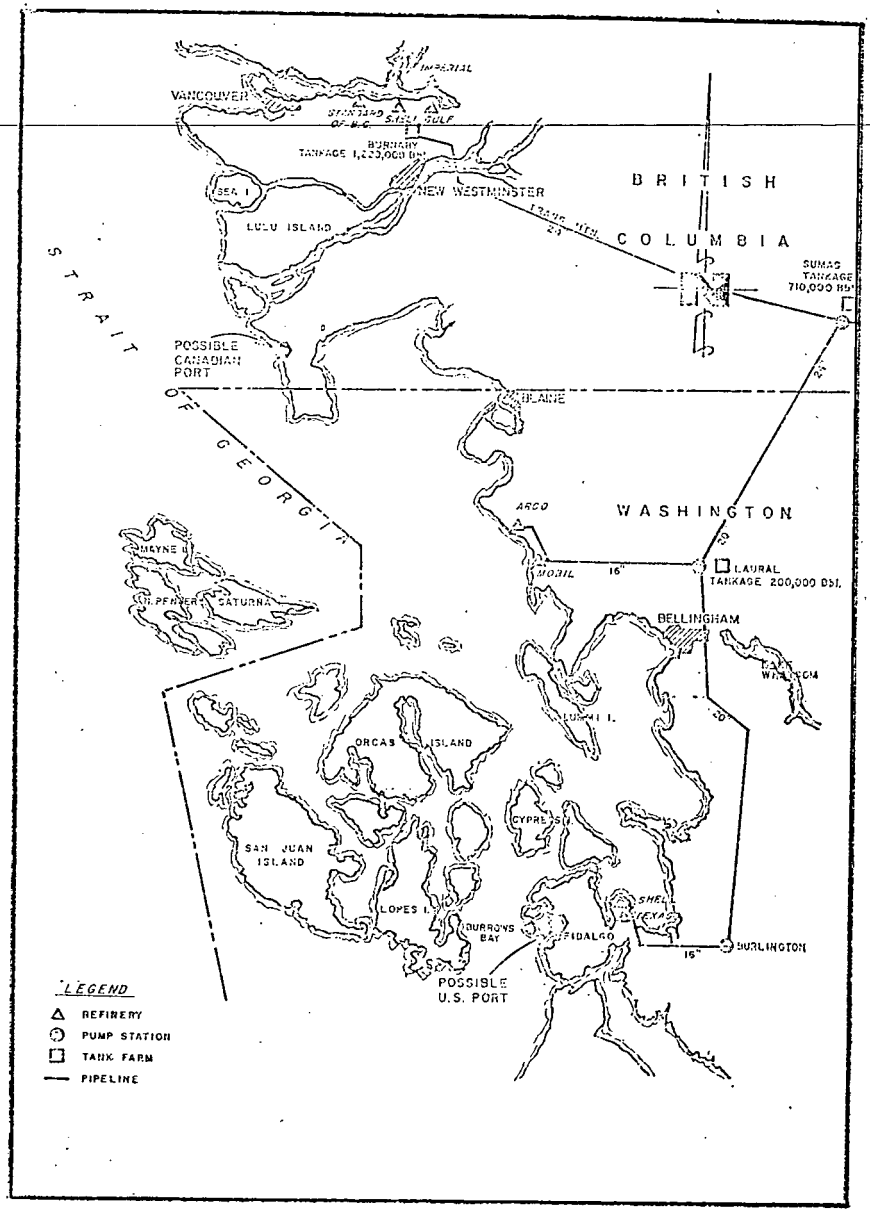
There have been many studies to consider this scheme. As early as 1968, Exxon and Mobil conducted the Trans U.S. Pipeline Study. They determined that a line across the northern United States was not economically feasible at that time.

The latest studies conducted by Transmountain Pipe Line Company indicate that the system *must* be reversed in order for it to remain in business after 1981. Transmountain Pipe Line suggests that there will be a shortage of Alberta crude for the coastal refineries after that year. The studies show that a full-looped system with 30-inch and 36-inch pipe would have a capacity of 1.1 million barrels per day when moving crude from the west to the east.

PROPOSALS

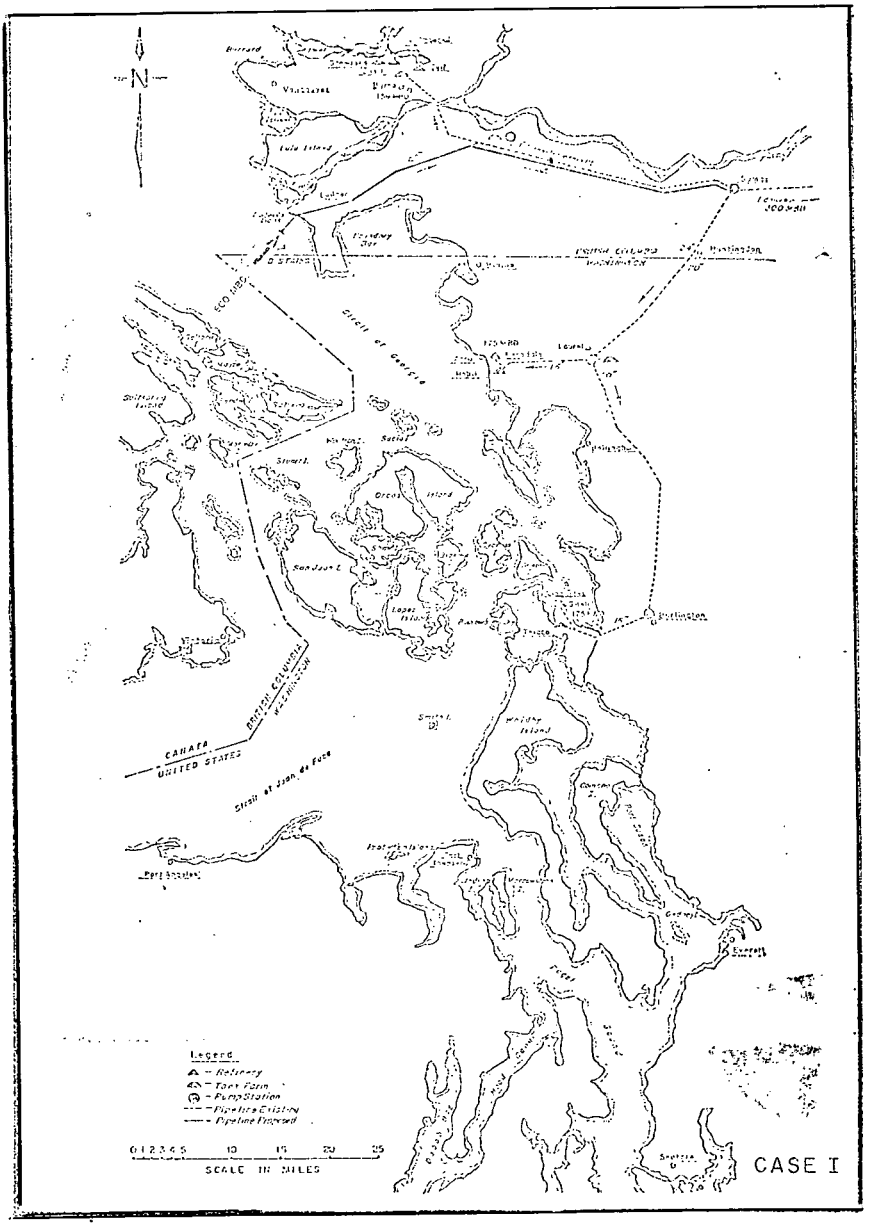
There are four possible cases to be looked at when considering offshore crude to be delivered into the Transmountain system. The cost to reverse Transmountain Pipe Line would be $20,000,000. This would be additive to all of the capital costs set out in the following cases.

See the following map showing the geographical site of proposed water terminals and existing pipelines.


IMPERIAL
VANCOUVER
STANDARD OF B.C.
SHELL
GULF
BURNABY
TANKAGE 1,220,000 Bbl
SEA I.
NEW WESTMINSTER
LULU ISLAND
BRITISH
COLUMBIA
SUMAS
TANKAGE
710,000 Bbl
STRAIT
OF GEORGIA
POSSIBLE
CANADIAN
PORT
BLAINE
ARCO
WASHINGTON
MAYNE I.
SATURNA
MOBIL
16"
LAURAL
TANKAGE 200,000 Bbl.
BELLINGHAM
ORCAS ISLAND
CYPRESS I.
SAN JUAN
ISLAND
LOPES I.
SHELL
TEXACO
BURROWS
BAY
FIDALGO
BURLINGTON
POSSIBLE
U.S. PORT
LEGEND
REFINERY
PUMP STATION
TANK FARM
PIPELINE

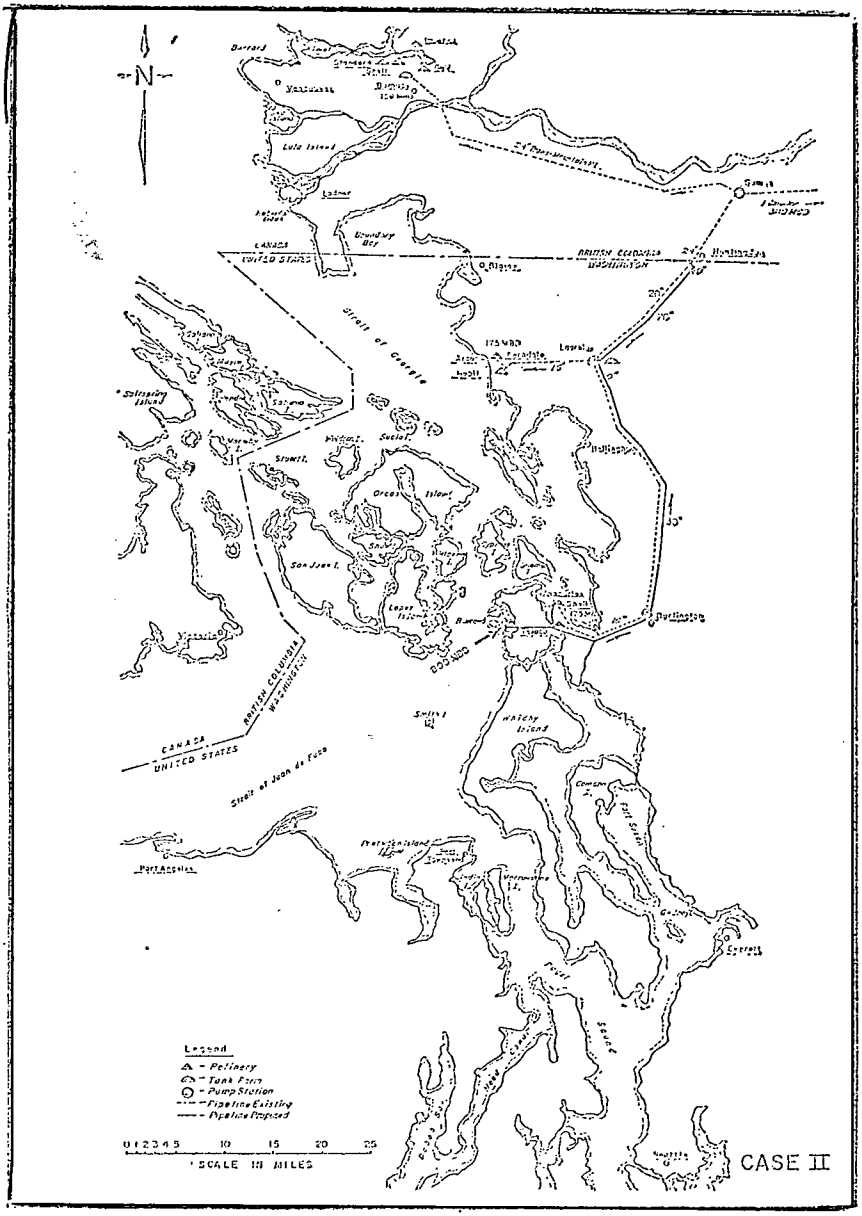
Case I

The port of entry in this case is Roberts Bank, British Columbia. A dock constructed at Roberts Bank would be capable of handling 325,000 DWT vessels. Construction includes a dock and approximately 30 miles of 40-inch pipe, 25 miles of 24-inch pipe, and related pump stations and tankage. Estimated capital costs are $100,000,000. [See the following illustration of this proposal.]



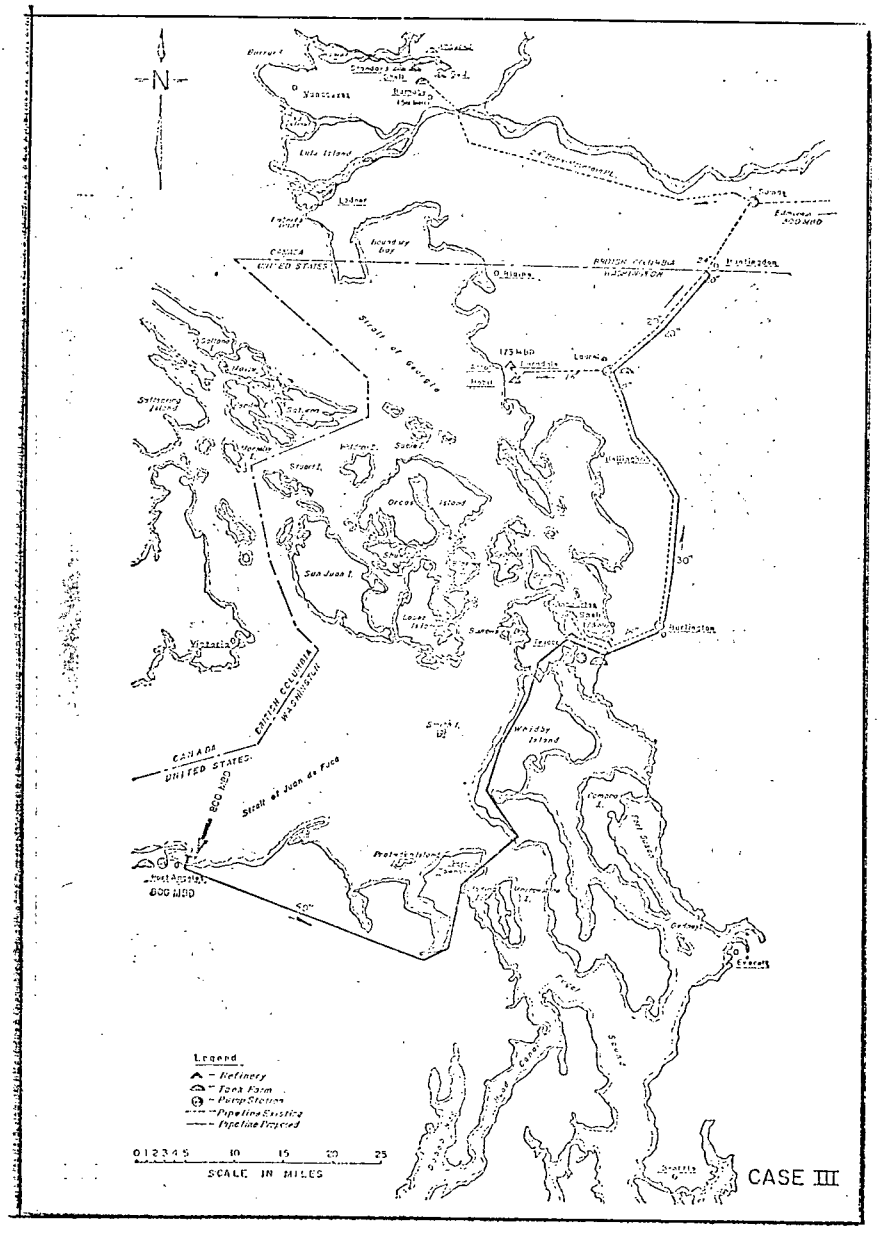
Case II

The port of entry in this case is Burrows Bay, Washington. A dock would be constructed at Burrows Bay capable of handling 325,000 DWT vessels. Construction includes seven miles of 36-inch pipe, 37 miles of 30-inch pipe, 15 miles of 20-inch pipe, plus the associated pump stations and tankage. Estimated capital costs are $95,000,000. [See the following illustration of this proposal.]



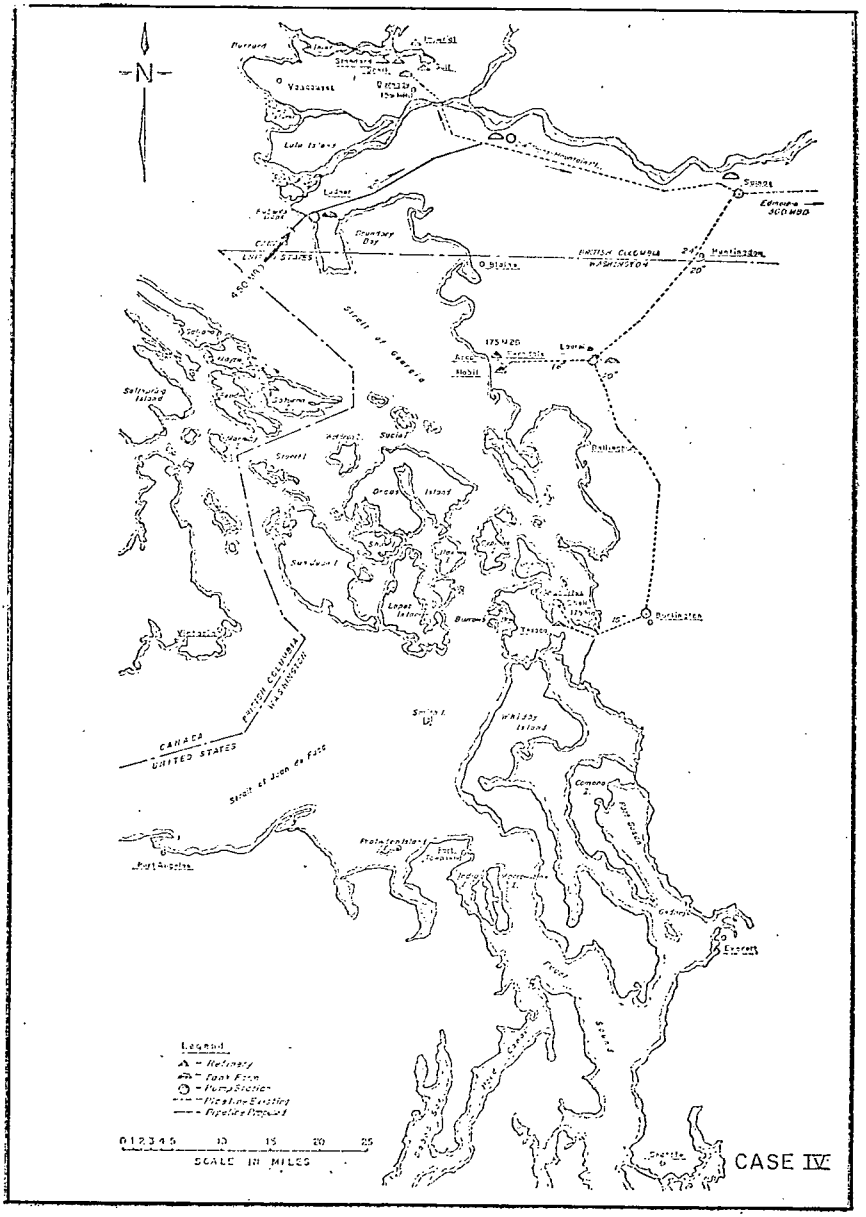
Case III

The port of entry in this case is Port Angeles, Washington. Construction would include a dock at Port Angeles capable of handling 325,000 DWT vessels plus 75 miles of 40-inch pipe, 37 miles of 30-inch pipe, 15 miles of 20-inch pipe and associated tankage and pump stations. Estimated capital costs are $175,000,000. [See the following illustration of this proposal.]



Case IV

In this case, it is assumed that the Ferndale and Anacortes requirements would be met by tanker movements over the existing refinery docks. Requirements for Vancouver, Edmonton, and further east would be met by the construction of a dock at Roberts Bank similar to that in Case I. The addition to this system would be 30 miles of 30-inch pipe plus tankage and pump stations. Estimated capital cost for Case IV would be $65,000,000. [See the following illustration of this proposal.]



PROBLEMS

There are several problems that must be overcome before the Transmountain Pipe Line Can be reversed:

U.S. political question

In the political climate in the United States, it will be difficult to construct a deep-water port on the Washington coast. In December 1974, the Oceanographic Commission of Washington presented to the 44th Legislature of the State of Washington a feasibility study for the offshore petroleum transfer systems for Washington. Senator John S. Murray was the Chairman of the Executive Committee for this study and included in the study a transmittal letter in which he said, in part:

"My personal conclusion, based on the current state of the art, the known demand for oil in Washington, and the stated intentions of the oil companies, I suggest the following actions be taken by the Washington State Legislature in 1975.

"That it be proclaimed as a stated policy of the State of Washington that we have no wish to bring more oil into the State than that which we need for our own consumption.

"Noting that the current stated intentions of the oil companies operating in this State are that they, too, desire only to fulfill the needs of the State of Washington, I recommend that the Legislature impose a tax or storage fee of Ten Dollars ($10.00) per barrel on crude oil brought into the State of Washington at any time that the quantity of such crude oil exceeds 400,000 barrels per day if brought here by ships navigating in Puget Sound."

U.S. regulatory controls

There obviously are many environmental and other regulations which would restrict construction of port facilities. We have attached for information purposes a summary of Federal Regulatory Controls affecting harbors, port facilities, and offshore facilities (Attachment A). This summary was compiled by Christopher S. Changaris, Commanding Officer, San Francisco Marine Safety Office, U.S. Coast Guard.

Canadian political question

The Canadians will offer resistance to a deep-water port constructed near Vancouver to serve primarily the needs of the United States; however, there are some incentives for them to favor such a project:

(a) The Transmountain Pipe Line Company has some 15,000 stockholders, and their incomes would be continued at the same level at which dividends are now being paid if the system could operate at near capacity.

(b) Another reason for building a port in the Vancouver area would be that the refineries now located in British Columbia could receive crude oil from offshore and not be dependent on sources in Alberta as they become depleted.

Canadian refineries

British Columbia refineries require approximately $40,000,000 to convert the existing plants to handle Alaskan crude. There is an argument for them to do this. If the Transmountain Pipe Line system has only the British Columbian refinery business, then the tariff will have to be increased from the now $0.40 per barrel to at least $0.60 per barrel. The refineries use about 100,000 barrels per day. This increase then would amount to about $7,000,000 per year and would allow them to pay out the capital requirements to make the changeover to heavy crude oil in less than six years.

SHORT-RANGE SOLUTIONS

There is a relatively short-range solution to the entire problem. That would be to yo-yo the Transmountain system. "Yo-yoing" means to pump crude oil in one direction for a time, then turn around and pump crude oil back the opposite direction for a time. This can be done by allowing 100,000 barrels per day to flow to Vancouver and 150,000 barrels per day to flow to Edmonton. If existing dock facilities could be used, the capital cost would be about $30,000,000, and the tariff would be approximately $0.55 per barrel. The Transmountain Pipe Line people certainly did not favor this as a viable solution, however, they agreed to look into it, and it certaintly can be done.

BENEFITS FROM SINGLE PORT

Mobil, Shell, and Texaco are considering expansion of their existing dock space; ARCO already has adequate tanker facilities. A major terminal in Vancouver could eliminate this cost for these three companies and allow them to be supplied with the existing pipeline connections. A tanker terminal located in British Columbia and connected to the 24-inch Transmountain pipeline could serve the needs of Mobil, Shell, and Texaco. Please refer to the map on page 2-A to see how this can be done.

CONCLUSION

The reversal of the Transmountain pipeline can be the quickest and least expensive way of physically delivering Alaskan crude oil into the northern tier. There are no insurmountable, technical problems involved in the construction of the terminal or the reversal of the pipeline. The principal problems are political on both sides of the border. We hope that solutions can be found so that the needed Alaskan crude can be brought into the northern tier.

ATTACHMENT A

HARBORS, PORTS, AND OFFSHORE TERMINALS, JANUARY 27-31, 1975, BERKELEY

SUMMARY OF FEDERAL REGULATORY CONTROL AFFECTING HARBORS, PORT FACILITIES, BY CHRISTOPHER S. CHANGARIS, COMMANDING OFFICER, SAN FRANCISCO MARINE SAFETY OFFICE, U.S. COAST GUARD

(Note: USC is United States Code; CFR is Code of Federal Regulations)

I. REGULATION OF NAVIGABLE CAPACITY

A. Corps of Engineers, Department of the Army		
1. Primary agency for development and regulation of the navigable capacity of the navigable waters of the United States and waters over the Outer Continental Shelf.		
(a) Definitions:		
	(1) Navigable waters of the United States.	33CFR209.120(d).
	(2) Outer Continental Shelf.	43USC1331(a).
2. Authority: see compilation in 33CFR209		
(a) Developmental—various Rivers and Harbors Acts for specific navigation projects.		
(b) Regulatory:		
	(1) Structures in navigable waters.	33USC401, 33CFR209.120(b)(1).
	(2) Obstruction or alteration navigable waters.	33USC403, 33CFR209.120(b)(2).
	(3) Obstruction (artificial islands and fixed structures), fairways and anchorage areas, Outer Continental Shelf.	43USC1333(f), 33CFR209.120(b)(2), 209.135, 209.138.
	(4) Trans-Alaska pipeline work in navigable and ocean waters.	43USC1652(c), 33CFR209.132.
	(5) Deposits of fill or dredge spoils in navigable waters.	33USC407, 1344, 33CFR209.120(b)(4)(7).
	(6) Deposits of dredge spoils in ocean waters.	33USC1413, 33CFR209.120(b)(8).
	(7) Establishment of harbor lines.	33USC404, 33CFR209.120(b)(3).
B. U.S. Coast Guard, Department of Transportation:		
1. (a)	(1) Bridges and causeways	33USC401, 491-507, 525-534, 33CRF114, 115.

(2) Alteration of obstructive bridges.	33USC511–524, 33CFR116.
(3) Drawbridge operation---	33USC499, 33CFR117.

NOTE.—See U.S. Coast Guard/Chief of Engineers memorandum of agreement in 33CFR209.120, Appendix A.

(4) Anchorages:	
(a) special anchorages.	33USC180, 258, 322, 33CFR109.10, 110.1–129.
(b) general anchorages.	33USC471, 33CFR109, 110.130–255.
(5) Safety zones, artificial islands and fixed structures, Outer Continental Shelf.	43USC1333(e), 33CFR147.

II. VESSEL AND PORT SAFETY

A. U.S. Coast Guard, Department of Transportation:

1. Primary agency for regulation of vessel and port safety and primary maritime law enforcement on navigable waters and high seas—

(a) Definitions:

(1) Navigable waters of the United States.	33CFR2.10–5.
(2) High seas----------	33CFR2.10–1.
(3) Water subject to the jurisdiction of the United States.	33CFR2.10–10.
(4) Navigable waters (water pollution.	33USC1362(7).

2. Authority—

(a) Generally:

(1) Vessel safety----------	Title 46 U.S. Code.
(2) Navigation and pollution.	Title 33 U.S. Code.
(3) Functions and power---	Title 14 U.S. Code.

NOTE.—For listing of statutory penalty provisions the Coast Guard is authorized to enforce, see compilation, 33CFR1.07, Appendix.

(b) Regulatory:

(1) Explosives and other hazardous articles on board vessels.	46USC170. 46CFR146–149.
(2) Flammable for combustible liquids in bulk on board vessels.	46USC391a, 46CFR30–40.
(3) Protection of vessels, harbors and water front facilities.	33USC1221–1227, 50USC191, 33CFR6, 127.
(4) Control over movement of vessels.	33USC1221–1227, 50USC191, 33CFR6, 124, 127.
(5) Handling of explosives, dangerous articles and flammable or combustible in bulk on waterfront facilities.	33USC1221–1227, 50USC191, 33CFR1.
(6) Pollution prevention:	
(a) Ocean pollution by oil from vessels.	33USC1001–1015, 33CFR151.

(b) Pollution of navigable waters, adjoining shorelines and contiguous zone —by—oil—and—hazardous substances.	33USC1321, 33CFR153.
(*i*) Shore transfer facilities.	33CFR154.
(*ii*) Vessel design and operations.	33CFR155.
(*iii*) Oil transfer operations.	33CFR156.
(7) Aids to navigation------	14USC81–87, 33CFR60–76.
(8) Lights and safety equipment on artificial islands and fixed structures on Outer Continental Shelf.	33USC1333e.
(a) Lights and warning devices.	33CFR60–76.
(b) Construction and arrangement.	33CFR143.
(c) Lifesaving equipment.	33CFR144.
(d) Firefighting equipment.	33CFR145.
(e) Operations ------	33CFR146.
(f) Safety zones -----	33CFR147.
(9) Deepwater Port Act of 1974: "An act to regulate commerce, promote efficiency in transportation, and protect the environment by establishing procedures for the location, construction and operation of deepwater ports off the coasts of the United States, and for other purposes."	

III. ENVIRONMENTAL PROTECTION

A. Environmental Protection Agency, independent agency:

1. (*a*) Primary agency for research, monitoring standards-setting and enforcement for environmental protection of air, land and water.

(*b*) Independent agency formed to administer various environmental protection functions in areas including storm water, municipal and industrial wastes, sewage, solid wastes, mine water, agricultural pollution, pesticides, and oil and hazardous substances, scattered through several departments and agencies, as well as to administer

new coordinated environmental programs.
(c) Jurisdiction extends to entire land area of U.S. including territories and possessions, navigable waters, contiguous zone and oceans.
(d) Definitions ---------- 33USC1321, 1362, Title 40 CFR.

2. Authority:
(a) Water quality---------- 33USC1251–1375, 33USC 1401–1444, 40CFR.
(b) Air quality---------- 42USC1857, 40CFR.
(c) Solid wastes---------- 42USC3251–3259.

B. United States Fish and Wildlife Service, Department of the Interior:
1. Primary agency for protection of fish and wildlife resources.
2. Authority (relation to port activities): 16USC661–661c, Title 50 CFR.
(a) Review of projects to prevent or minimize adverse impact on fish and wildlife.

(NOTE: Commercial fisheries regulation performed by National Marine Fisheries Service, Department of Commerce)

C. National Oceanic and Atmospheric Administration, Department of Commerce:
1. Primary agency for oceanic, atmospheric and marine biological sciences.
2. Authority (relation to port activities): 16USC1451–1464, 15CFR920.
(a) Development and supervision of State Coastal Zone Management, programs.

D. Bureau of Land Management, Department of the Interior:
1. Primary agency for regulation of mining and pipeline transportation of mineral resources in the submerged lands of the Outer Continental Shelf.
2. Authority ---------- 43USC1331–1343.
(a) Mineral leasing---------- 43CFR3300.
(b) Pipeline rights of way---------- 43CFR2883.

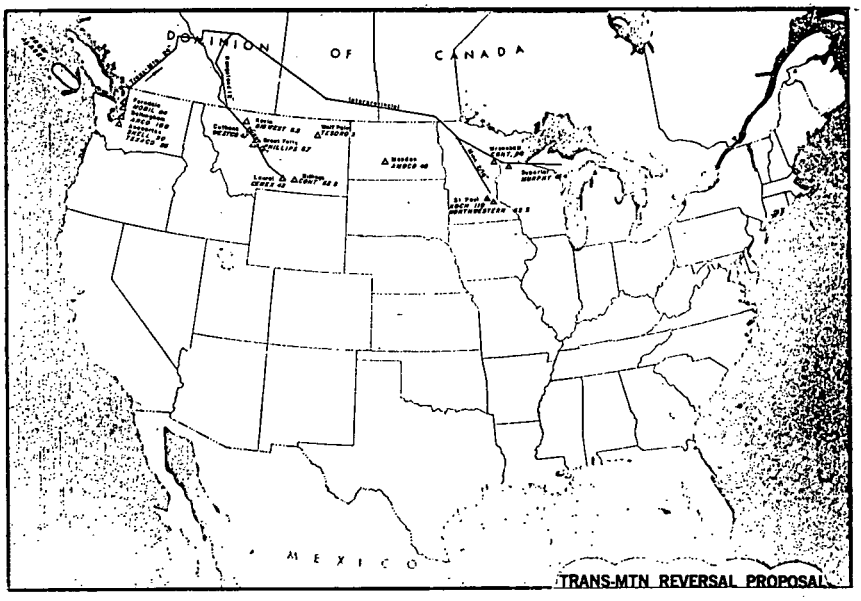
IV. OTHER AGENCIES WHOSE ACTIVITIES AFFECT PORT ACTIVITIES

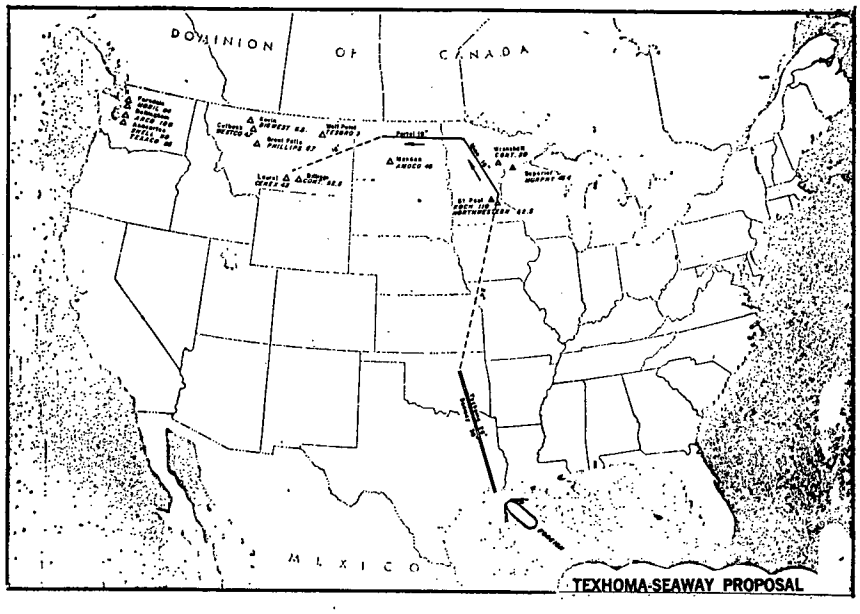
A. Maritime Administration—port development studies.
B. Department of Transportation—transportation planning and policy.
C. Economic Development Administration—grant authority.
D. Department of Housing and Urban Development—grant authority.
E. Urban Mass Transportation Administration—grant authority.
F. Bureau of Customs—clearance of vessels and entry of goods.
G. Federal Aviation Administration—height limitations near air activity.
H. Federal Maritime Commission—regulation of common carriers.

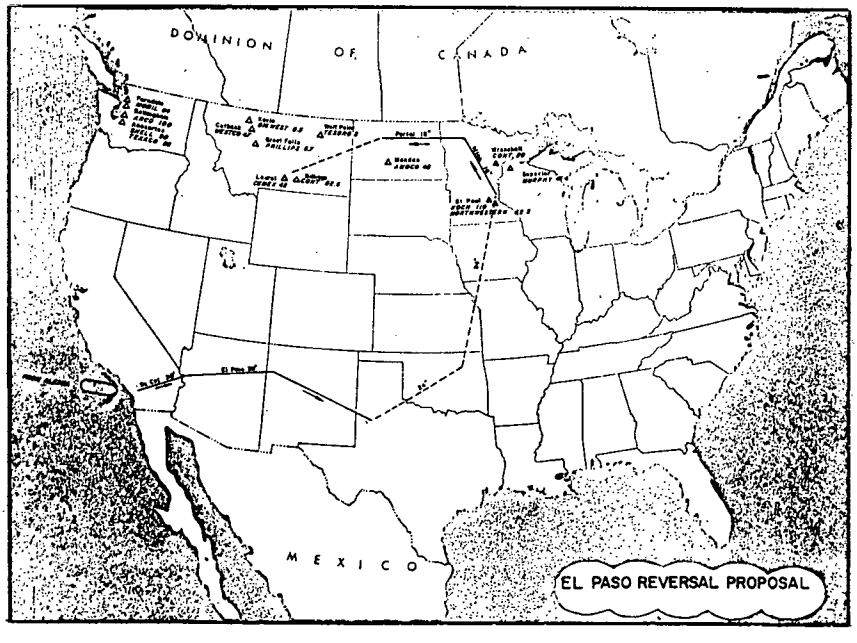
I. Interstate Commerce Commission—regulation of common carriers.
J. Foreign Trade Zones Board—duty free zone.
K. Department of Agriculture—regulation of plant and animal products.

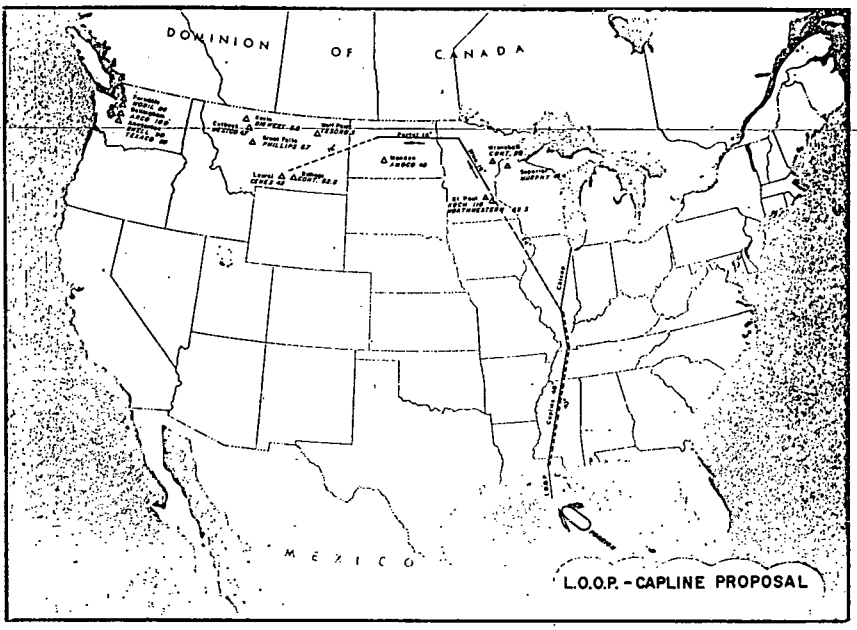
NOTE.—There are other agencies such as the Public Health Service and Immigration and Naturalization Service and the above list is not intended to be complete, only indicative of the many areas of Federal controls, some more direct than others, but all important to the planning and design of harbors, ports and offshore terminals.

Copies of the above cited statutes and regulations can be found in law libraries and the offices of the agencies concerned. Copies of the regulations can be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 at reasonable costs. Frequently copies of their regulations can be obtained from agencies at no or nominal cost.




DOMINION OF CANADA
MEXICO
TEXHOMA-SEAWAY PROPOSAL


DOMINION OF CANADA
MEXICO
EL PASO REVERSAL PROPOSAL



Chairman HUMPHREY. Will you be able to negotiate an exchange and have some time limit to it? I mean, how many years?

Mr. ROPER. We're thinking of 6 months. The problem with Canada right now, they don't have the authority to license for more than 1 year at a time.

Chairman HUMPHREY. I see.

Mr. ROPER. So our arrangement with British Petroleum is for a 6-month term.

Chairman HUMPHREY. So the swap arrangement is for a 6-month term?

Mr. ROPER. If it works we'll renew it. Of course, this is all conditioned upon getting the right approvals and getting the waiver of any supplementary fees, export, import fees.

Chairman HUMPHREY. What is your judgment of it? Does it look promising?

Mr. ROPER. I think it will go. I think it is likely to go so long as the Canadian crude that comes into this country is no better in quality than the U.S. crude that goes out. They prefer crude oil low gravity, which we can run. We are fortunate in our refinery to be able to run a low gravity, high sulfur crude oil which is not high quality. The economics dictate that we would have to be able to do this swapping without the burden of additional costs by either government. So if we can get that approval I think it can go.

Chairman HUMPHREY. You have no shortage of crude oil right now, do you?

Mr. ROPER. No.

Chairman HUMPHREY. The testimony this morning I believe was the fact that actually the amount from Canada available is not fully utilized due to economic conditions.

Mr. ROPER. Economic conditions, the price of Canadian crude, has dictated that those people who have rights presently to get it are not utilizing it so they're giving up their right to us.

Chairman HUMPHREY. How is this program worked out of adjusting the price with the mix of the domestic and the Canadian? What do we call that? Not the allocation, but the entitlements.

Mr. ROPER. Well, we just got the notice last Friday evening, and for our company the entitlements, for refinery runs in July, were worth $6,247,000. Obviously it keeps us in business, because without that program, as long as we have two-tier pricing, it's just a difference between red and black.

Chairman HUMPHREY. I want to just point out that I'm proud to say that the Joint Economic Committee started the hearings on the entitlement program and we pressed them real hard. When John Sawhill was with the Federal Energy Agency, and later on Mr. Simon was the director, we worked very closely with the agency to get this entitlements program working. It's a very complicated business, as you know. You have found it helpful?

Mr. ROPER. It is indispensable, Senator, so long as we have two-tier crude pricing. It is the only way that a refiner like us could be in competition.

Chairman HUMPHREY. Governor and Mr. Millhone, do you have any interrogations you want to put to these gentlemen?

Mr. ROPER. I might say, Senator, I have other portions of the speech which I will submit.

Chairman HUMPHREY. We have your excellent testimony and full copy and it all has been made a part of our record.

Mr. ROPER. We have a reversal of Transmountain which we have talked about.

Chairman HUMPHREY. Yes. How do you look on these alternatives?

Mr. ROPER. There's no question, Senator, that the most logical and least expensive is Transmountain. I've met personally with Transmountain in Vancouver and they're wanting to do it.

You questioned who owned Transmountain. It is a publicly-held company. The majority of the stock is owned by the Canadian citizens.

The effective control of Transmountain is in the majority of companies that are the refiners there in Washington. Mr. Hill seemed to be worried about their conversion, from sweet to intermediate Alaskan crude. Eventually it is going to have to happen, it's going to just be a question of time. They're going to have to spend the money eventually because they are not going to get Canadian sweet, so they just might as well start getting ready for it. I really don't think that is a valid objection.

It is not economics, it is not financing, it is not technology. It's just a political question of how do we want to utilize Puget Sound or British Columbia's shore to bring in a tanker. I believe a study could be made that you could utilize one facility. One huge facility that would have all the safeguards would make the environment in that area better than it is now.

Chairman HUMPHREY. Mr. Tyler. Mr. Tyler is on our staff.

You had a question that you wanted to put to Mr. Roper, and you, Mr. Cox, if you had one.

Mr. TYLER. What is the cheapest way to bring crude oil into Minnesota? Is it cheaper to bring it in by the Transmountain Pipeline or up the Capline from Texas and Louisiana?

Mr. ROPER. Well, you can't now bring it up Capline or any other way. In my study, I outlined to you the cost. To modify Capline to make crude oil come into the Minnesota area is $2,500 million.

Mr. TYLER. Two billion?

Mr. ROPER. Two billion.

And to reverse the El Paso Gas Line in California, to come across and up that way is $1,500 million. To go up Houston and Seaway & Texhoma lines and build another pipeline is $600 million. Transmountain would be roughly $150 million with all costs.

Chairman HUMPHREY. Transmountain?

Mr. ROPER. That is the alternative route that should be pursued.

Chairman HUMPHREY. How does that run? For the record here, everybody talks about Transmountain as if everybody knew the details. I know it is in your testimony but let's have a few details.

Mr. ROPER. We have a map here.

Chairman HUMPHREY. What page is that map on?

Mr. ROPER. It is the first map in attachment A of my prepared statement. It shows Transmountain.

It is 710 miles long, a 24-inch line, extending from the Vancouver area up into Canada at Edmonton, and then from that point you would be reversing, Transmountain and then bringing it down the conventional way through Interprovincial, indirectly into the Continental and other refineries there in Superior and Duluth, and then down the Minnesota Pipeline to Ashland, Northwestern and Koch refineries. Also you could supply refineries in Montana with this reversal.

Chairman HUMPHREY. There's some real economic and political hangups in this one. What you're really doing it taking the Interprovincial and reversing it, aren't you—the Transmountain, I mean.

Mr. ROPER. The Transmountain.

Chairman HUMPHREY. Reversing that.

Mr. ROPER. In Transmountain, the people there at Transmountain are very interested in doing this because they can see that they're going to have pipe in the ground that's not going to be used.

Chairman HUMPHREY. Then what is holding that up?

Mr. ROPER. I think what would hold it up would be, first of all, you can't do it without having the Alaskan crude in surplus, because you're going to take that Alaskan crude into the Washington refineries and fill them up.

Chairman HUMPHREY. It is to be presumed that there will be Alaskan crude surplus, that's the export controls that are to be made.

Mr. ROPER. I think the problem is the location. Getting environmental approval, the location of where a terminal should be at Puget Sound.

Chairman HUMPHREY. That will require both Canadian and American corporation.

Mr. ROPER. It will require a pipeline treaty because it would enter the U.S. port, come into Canada, and then back into the United States.

Chairman HUMPHREY. Does the pipeline treaty, Mr. Watson, include that possibility?

Mr. WATSON. As I understand it, it would include all pipelines that go either side of the border for gas and oil control.

Chairman HUMPHREY. It would boil down that if the treaty works out, it would boil down to the capital investment that's required, won't it, as well as environmentally, but the capital investment for the consolidated facility?

Mr. ROPER. If Transmountain built it, they right now have a tremendous amount of money in their corporation, and they really wouldn't have any problem financing it.

Chairman HUMPHREY. So then it becomes environmental next?

Mr. ROPER. That's right.

Chairman HUMPHREY. And the environmental part consists of what, primarily the Puget Sound area?

Mr. ROPER. We could put it in the port of Roberts Bank in British Columbia; there are four proposals in this testimony that would work and would probably be the cheapest.

There may be a reason that we'd want to have our own port for our own Alaskan crude located in U.S. waters rather than Canadian waters. That's a political question.

Chairman HUMPHREY. FEA is studying these possibilities; is that correct?

You're Mr. Sand?

Mr. SANDS. Mr. Sands, S-a-n-d-s.

Chairman HUMPHREY. That's one of the studies that we asked you to comment upon.

Mr. SANDS. I think that we've been glossing over the whole time, if I may speak up, sir.

Chairman HUMPHREY. Yes, sir.

Mr. SANDS. The political implications of the State of Washington and also the province of British Columbia. British Columbia feels very strongly that Canadian oil should serve Canadian refineries. They feel that as long as they are a part of the Dominion of Canada that it is the responsibility of the Federal Government to provide crude oil flowing into their refineries and they do not see that a reversal of Transmountain, taking essential oil away from them, would be an alternative at this time.

Chairman HUMPHREY. Couldn't you have a yo-yo operation there, having oil going both ways?

Mr. SANDS. Yes, but the problem is that the province of British of Columbia does not want any oil tankers coming into Vancouver or to Point Roberts, John, and there is no way of getting a port through the State of Washington Legislature this session, according to environmentalists, the Governor's office, and the legislators involved at this period of time. So we're sitting there with a situation where the major refiners in Puget Sound, of which we're talking of four major ones. Senator, only one plans to run Alaskan crude. The other three do not plan to run Alaskan crude.

Chairman HUMPHREY. You have Texaco, Shell, Arco, and Mobil, right?

Mr. SANDS. Right, and Arco is the only one that plans to run Alaskan crude oil.

Chairman HUMPHREY. And that's a hundred thousand barrels a day?

Mr. SANDS. Yes, sir. The other three refiners plan to import oil from Nigeria or some place like Indonesia to keep their refiners going as Canadian oil is curtailed. They also have their own port facilities and see no reason to have a duplication of port facilities at the present time. Frankly, the lack of action on the part of the State of Washington to come to grips with whether they want a central port or not means that the oil companies who are presently getting 50 percent of their oil provided by tankers coming into the Puget Sound area will get a higher and higher percentage than is coming in right now. They have adequate docking facilities, with the exception of Shell at Anacortes, to handle the type of crude tanks that they want to come in there.

Chairman HUMPHREY. We'll go into this this afternoon. Are you going to be with us this afternoon?

Mr. SANDS. Yes, sir.

Chairman HUMPHREY. Mr. Pribble.

Mr. PRIBBLE. Yes, sir.

Chairman HUMPHREY. Mr. Roper, we thank you for your thoughtful paper. What we're trying to do is just explore every possibility. There are possibilities. I think it is a matter of making up our minds what we want to do, and of course the intricate political problems that come, not just on the Federal Government, between Canada and Washington, so to speak, Ottawa and Washington, but also between Province and State.

Then, of course, as was indicated by Mr. Sands, the environmental concerns that are expressed very vocally by certain people, and they are serious environmental concerns. They're not to be minimized. But I think the point needs to be emphasized here which is not often understood, that with the Alaskan oil coming on line, for up to 1½ million barrels a day under the present plans, and of course there are still many more areas in Alaska to be explored, there are 13, I believe, potential sites, and this is one of the 13 on the Northern Slope that we're exploring right now.

With the 1½ million barrels a day, which I believe is about the maximum they contemplate, isn't that right, Mr. Sands?

Mr. SANDS. Yes, sir.

Chairman HUMPHREY. That would leave a considerable excess supply unless it can be domestically used, transported.

Mr. ROPER. It has to come in somewhere, Senator.

Chairman HUMPHREY. Somewhere along the line it has to be fed into the system.

Mr. ROPER. That's right.

Chairman HUMPHREY. Now the question comes up of how do you feed it in? We will look into this with more precision and more specificity than we have here today.

Mr. ROPER. I want to thank you for having me.

I want to say, too, that Gene Erickson of Ashland-Northwestern has read my comments, agrees with them, and asked me to tell you.

Chairman HUMPHREY. Thank you. I see Gene is here today. I appreciate his attendance.

We are just trying our best to find some answers before it is too late. I tried to indicate to our colleagues in the executive branch, and I am so pleased that they're well in attendance here today. We appreciate this very much. I talked to Mr. Zarb and he could not be here with us today. Mr. Katz from the State Department would have been but because of personal reasons in the family could not be here.

I wanted them to hear what it's like in a particular State, because as my son here, a State senator, indicated, there are State and regional problems that go beyond the national picture. We find ourselves at these hearings in Washington frequently getting the big picture, except I look around the big picture and I can't find Minnesota. Somebody forgot us along the line; it isn't big enough. We're talking about the big oil companies, we're talking about the overall problems with the international cartel, OPEC, we're talking about reserves and the argument over reserves, and all of these great, grandiose matters, but sooner or later we have to get down to the price of propane, its availability, what's going to happen to natural gas, what the investment is to move this type of product, what can we do with coal, what do we do with International Falls, what do we do with Boise-Cascade which means jobs? These get to be very specific and each one of them has a set of circumstance that are unique.

Governor Rolvaag, I believe, however, has set the mark for this meeting. When he says that it is literally impossible for a State to deal with these matters until we get a national energy policy, until the country knows, until individuals in business, municipalities, State and local governments, until they know what the national policy is.

It's very difficult for you, Mr. Roper, and your company to make any investment until you know just what the guidelines are going to be or what the national policy is. Hopefully between now and this January we'll be able to at least hammer out, and we have been hammering, I must say, hammer out the basic structure of the national energy policy. It is not as far away as the arguments would lead you to believe.

Actually, most of the pieces of a national energy policy are here. They have been fought over in the Congress, they've been passed time after time in the Congress, they run into the confrontation on the decontrol system. Actually, now we're not far apart on decontrol. We're so close that it is almost going to lose its news value. The last thing that we argued about was whether it ought to be 39 months or whether it ought to be 60 months; whether it ought to be 5 years or whether it ought to be 3½ years or 3¼ years. How to phase out controls, how to get rid of this two-tier system between new oil and old oil. I think most of us realize that the two-tier system has to go out; otherwise we come up with all these gimmicks that we have, the entitlements program which, thank goodness, we got. It took a long time to get it, it was very difficult, but we're going to get a policy.

The big hangup, and this is where we've had our battles, is over the economic impact of the rapidity or the phasing of decontrol. I've come to the conclusion that we just have to bite this bullet, that there is going to be decontrol, it's just a question of the timing of it. I happen to be one that believes that because of the delicate nature of our recovery, and because we've been in this serious economic recession,

that the decontrol has to be carefully tuned in because of these new costs that have come in. We're not just talking decontrol of oil. We're talking of forms of deregulation, either total deregulation or partial deregulation of natural gas. We're talking about tremendous investments that have to come into the mining of coal, we talk about the availability of coal, and it is out there, that's true. But a lot of it is very difficult to get at and it's going to be very costly. We're talking about tremendous improvements and costly improvements in a transportation system.

I still don't believe that we quite have appreciated as a public the unbelievable amounts of capital that are required in a relatively short period of time. We're not talking about 20 to 25 years here. In many instances we're being compelled in this part of the world to face up to the next 5 years. Then the question comes of where do you get the capital and the resources for the next 5 years in a small segment of the United States. And when you start talking pipelines, you start talking new terminal facilities and you start talking about all the depollution of the coal that you need as you go to conversion.

You are really looking at a totally different financial structure of this country in terms of the industrial expansion and development and modernization. It goes far beyond a simple hearing as to whether or not we have enough natural gas or whether or not we have enough coal or enough oil.

This is the most difficult assignment that any government has ever had to deal with, primarily because we're such large consumers and large users. Hopefully, we'll learn how to conserve a little more, and prices are going to force you to conserve, there's no doubt about it.

I thank all of the witnesses. You've been very considerate, very helpful to us.

All of this record is analyzed. It will be summarized, and it will be made available, by the way, to other committees of the Congress as we struggle with the most difficult economic and social assignment that we've had for many a decade in Congress, namely, the energy crisis, the energy policy.

Thank you.

Mr. ROLVAAG. Senator Humphrey.

Chairman HUMPHREY. Yes, Governor.

Mr. ROLVAAG. I want to make one comment. I'm particularly interested, because I'm chairman of a regulatory body in the State of Minnesota, in Mr. Roper's testimony and the problem that Mr. Murray has up at International Falls. I would request of them, particularly, that they send us a full copy of their testimony with the maps you have, Mr. Roper, and then one facetious, concluding comment.

Mr. Sands referred to the Governor, the legislature, and the environmentalists in the State of Washington. That's the first time that the Governor and the environmentalists have been lumped together.

Chairman HUMPHREY. You'll be able to withstand it.

Before closing I would like to mention that the record will be kept open for 2 weeks. I want to thank you all very much. The committee will now stand adjourned.

[Whereupon, at 12:55 p.m., the committee adjourned, subject to the call of the Chair.]

[The following information was subsequently supplied for the record:]

STATEMENT PREPARED FOR THE RECORD BY DOUG KELM, CHAIRMAN, METROPOLITAN TRANSIT COMMISSION, ST. PAUL, MINN.

The congressional failure to produce a meaningful energy program tends to jar public confidence in the political process for many; for others, it seems to say that there really is no problem at all. On the other hand, the President may be scoring some temporary political points, but the administration's "program" is as disastrous as no program all.

1. Simply allowing *all* petroleum products to seek their own price level would be damaging to the economy—it will lead to greater inflation, crippling of petroleum-dependent industries, reduced food production. Prices of home heating will become burdensome.

2. Little justification for decontrolling "old" oil has been given, and the price of "new" oil seems adequate to promote exploitation of less accessible oil sources.

3. Application of tariffs or taxes to *all* petroleum products will result in the same economic evils discussed in my first point regarding price decontrol.

4. Grossly insufficient funding has been provided for development of alternative energy sources.

All of the above seems to describe an insoluble problem—but I don't believe this to be the case. The real failure centers about the lack of an immediate petroleum conservation program, pending the development of other environmentally acceptable energy supplies, which may take 15 years or more to bring to an adequate level of production. Do we have the courage, then, to take the following petroleum conservation measures?

1. Force production of automobiles with high mileage performance either by mandate or taxation or both. While this is a "must" at this time, it should be recognized that:

(*a*) This *may* not be possible without a delay in achievement of pollution standards, which an important segment of our population may not permit.

(*b*) Even with automobiles characterized by fuel economy, we must ultimately face the finite nature of oil supplies, even if we're willing to rely on the tender mercies of foreign oil producers.

(*c*) The automobile, as far as one can predict, will remain dependent on a portable source of energy (gasoline). Progress toward applying a different portable energy source continues to be slow and the costs appear predictably high.

2. The second petroleum conservation step is most obvious, though politically difficult, and it also pertains to the automobile which far outstrips any other consumer of petroleum. Gasoline, then, must be the principal petroleum product subjected to high taxes—taxes of 20 cents or 30 cents in order to have a meaningful impact on consumption. Certainly, this means a change in life style, but it is a change that, in the final analysis, will be the least burdensome to the consumer—requiring ultimately a lesser sacrifice than those involving home heating, industrial growth, and agricultural production. Petroleum used to transport goods by rail or truck should be taxed at a much lower level than that used by the private passenger automobile. In respect to the latter, I would make several points:

(*a*) Generally, gas consumption by automobiles *does* increase with the increase in economic level of the user families. Care should be taken, therefore, to *not* rebate all of the gas taxes collected. Furthermore, such a rebate policy would tend to negate consumer conservation motivation. Perhaps no more than 30 per cent of the total revenue should be rebated via a formula designed to perfect equitable impact on all economic classes.

(*b*) The remaining 70 per cent or more should be applied to two basic programs on an approximately 50/50 basis: First, the financing of the development of alternate sources of energy for home, industry, and agriculture (the latter is more difficult in some respects than the other two); and second, the financing of alternate forms of transportation which do not rely on petroleum—most obviously intercity rail and urban mass transit, both relying on electrical energy. This nation has too long spent hundreds of billions of dollars on the auto-highway system while permitting more efficient railroads and transit systems to fall into decay and abandonment.

Sources for electrical production are varied and plentiful. Relative to the automobile (our prime polluter) the pollution producers (power plants) are highly centralized and capable of far easier monitoring and control. "Delivery systems" for electrical energy do not require the energy portability of auto-consumed gasoline.

In the very long term, certainly development of alternate energy sources has priority for a vigorous growing economy. But in both the short and long term, petroleum conservation (meaning substantial decrease in gasoline consumption) is necessary to prolong availability for those uses not so easily convertible to other energy sources.

My proposals are hardly unique. They've been suggested by many national experts. However, I suspect they continue to be ignored because they are hard political courses, temporarily. But I believe the Joint Economic Council possesses the prestige necessary to lead the administration and the Congress away from the brink of a national energy disaster.

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