Emergency Preparedness for Interruption of Petroleum Imports into the United States

A Supplemental Interim Report of the National Petroleum Council

November 15, 1973

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Prepared by the National Petroleum Council's
Committee on Emergency Preparedness
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TABLE OF CONTENTS

SUPPLEMENTAL INTERIM REPORT

INTRODUCTION

On July 24, 1973, the National Petroleum Council approved and transmitted to the Secretary of the Interior an Interim Report entitled *Emergency Preparedness for Interruption of Petroleum Imports into the United States*. This report is a supplement to the July Interim Report and has been prepared expressly to report the findings and recommendations of the National Petroleum Council which are applicable to the interruption of petroleum imports currently being experienced by the United States.

When the Honorable Rogers C. B. Morton, Secretary of the Interior, wrote to the National Petroleum Council requesting an analysis of the Nation's ability to respond to a denial of imported petroleum, hypothetical "study" cases were prescribed (see request letters, Appendix A). Responsive to the Secretary's request, the six cases shown in the tabulation below were chosen for consideration:

Import Interruption Cases Considered

Date of Interruption	Volume (MMB/D)*	Period of Interruption (Days)	Type of Import
1/1/74	1.5	90	Crude 60/40 Crude/Product
	3.0	180	Crude 60/40 Crude/Product
1/1/78	3.0	180	Crude 60/40 Crude/Product

* Millions of 42-gallon barrels per day.

By letter dated October 26, 1973, the Honorable Stephen A. Wakefield, Assistant Secretary of the Interior--Minerals and Energy, wrote to the Council as follows:

> "One of the scenarios of the National Petroleum Council's Emergency Preparedness Study considers a major interruption in foreign oil supplies to the United States as of January 1, 1974.
>
> "Though this phase of your Study is nearing completion, recent events have added new urgency to this scenario. Therefore, I ask that you quickly draw together the work

you have accomplished regarding a January 1, 1974 supply interruption and submit it to the Department of the Interior at the earliest possible date."

This Supplemental Interim Report, therefore, is intended to amplify and expand upon the analyses of a 1974 interruption contained in the July Interim Report. This report is prepared by energy industry experts with the sincere purpose of aiding both government and industry in efforts to alleviate the effects of the current interruption and to cope with the current crisis at hand (see Appendix B for a list of members of the Committee and its Subcommittees). It should be emphasized that this does not represent the final or complete discussion of the 1974 cases, only a compendium of results obtained to date. The final report will be completed as soon as possible.

Prior to the current Middle Eastern crisis, the United States average 1973 refined petroleum product demand was projected to be 17.7 million barrels per day. Of this volume, over 35 percent was either directly imported or manufactured in the United States from imported crude oil. As a percent of total energy requirements, the United States was dependent upon foreign petroleum for 17 percent of its energy.

But this has not always been the case. Up until 1967, the United States had sufficient reserve or spare petroleum producing capacity to more than compensate for a loss in imports availability. The Nation's reserve producing capacity has now been exhausted, and in the short-term domestic petroleum self-sufficiency cannot be regained.

In 1970, about 3.4 of the 14.9 million barrels of petroleum required each day in the United States was imported. A number of factors have combined to almost double the import volume over the last three years:

- Stagnation of domestic crude oil production rates
- Decline of domestic natural gas production
- Delays in planned completion and operation of nuclear powered electric utility plants
- Technological difficulties with the development of sulfur control equipment for coal and oil burning equipment
- Rapid upturn of economic activity, and
- Environmental and safety related equipment on motor vehicles.

In combination, these factors, in addition to normal growth in petroleum requirements, forced demand up 2.8 million barrels per day over the 1970 level. The critical aspect of this growth

is the fact that all of the increase came from foreign--primarily Middle Eastern--petroleum reserves. Middle Eastern countries possess 63 percent of the total non-Communist world crude oil reserves, and the production from these reserves currently represents 42 percent of that in the non-Communist world.

With the resumption of hostilities in the Middle East on October 6, 1973, Arab oil became a diplomatic and economic issue. Since that time, prices nearly doubled, shipments were disrupted, production was cut back and embargoes were enacted. The Committee estimates that by the end of the year, the net effect upon U.S. petroleum supply will reach 3 million barrels per day or 17 percent of the 1973 domestic demand for petroleum products. A reduction of this magnitude will have serious repercussions upon the U.S. economy unless the United States immediately develops and implements a national program to increase supplies and reduce energy consumption on an emergency basis. This should be accomplished within a framework of minimum impact on the economy.

The immediate problems of realizing the potentials of conservation, curtailment and fuel substitution are both administrative and logistic.* Remaining available energy supplies and the results of savings from energy conservation measures will not be evenly distributed throughout the country. However, properly conceived and administered allocation programs will help redistribution greatly. In addition, if the fuel suppliers are allowed emergency flexibility and distribution priorities, the impacts of the denial will be minimized.

Over the longer term, the United States must develop an energy self-sufficiency which will not allow the Nation to be vulnerable to an imports interruption again. Domestic energy resources are more than adequate to meet this goal, but a national goal must be set to develop them. Only through a coherent and cohesive National Energy Policy can we avoid a repetition of the inconvenience and hardship facing the United States today and in the months ahead.

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* See Appendix C for a discussion of current and proposed administrative and legal authorities to cope with the current situation.

FINDINGS AND CONCLUSIONS

This Supplemental Report represents the first assessment by the National Petroleum Council's Committee on Emergency Preparedness of the impact of the current denial of Middle Eastern oil on the energy posture and economy of the United States. The magnitude and abruptness of the oil denial, the full impact of which will be felt in the next few weeks and months ahead, place the Nation in an extremely precarious situation.

FINDINGS

The National Petroleum Council's Committee on Emergency Preparedness submits the following findings:

The United States Energy Supply Situation was Tenuous Even Before the Arab Embargo.

Even prior to the Middle East conflict which began on October 6, 1973, and the subsequent embargo of Arab oil to the United States, this Nation was faced with an energy crisis. In addition to decreasing production of energy raw materials, refineries were running at maximum rates, inventories were being drawn down and overall energy supplies were short. Mandatory allocation programs were already in effect in an attempt to ensure equitable distribution of supplies.

Primary inventories of gasoline, distillates and heavy fuel oil, the three major liquid petroleum fuels, were 71 million barrels below normal as of October 26, 1973. Crude oil stocks were 14 million barrels below normal.

The United States Has Allowed Itself to Become Critically Dependent Upon Foreign Supplies.

The United States has not developed its own abundant natural resources and has allowed itself to become critically dependent upon imports. Domestic crude production continues to decline and natural gas production has peaked out. Nuclear plants are not being completed as rapidly as scheduled or anticipated. The use of coal has been depressed because of environmental and other reasons. Strip mining restrictions contribute to the limitation of coal supplies. Oil and gas reserves discovered on the North Slope of Alaska and offshore California 5 years ago are still untapped as environmental considerations immobilize their development.* Highly prospective offshore acreage on the continental shelves off our coasts have not been made available in a timely manner. Natural gas prices have been depressed to abnormally low levels under FPC regulations. Oil shale development has been delayed by lack of an effective federal leasing policy.

* These reserves total about 10.5 billion barrels of oil and 27 trillion cubic feet of gas.

These and other factors have discouraged the development of U.S. natural resources and caused the country to become critically dependent upon foreign imports of oil and gas. During the first quarter 1973, imports represented 35 percent of U.S. petroleum supplies and were growing rapidly. Had the Arab embargo not occurred, imports would have reached 7.4 million barrels per day, or 39 percent of U.S. petroleum supplies by the first quarter of 1974.

What Has Happended to Foreign Supplies

Following the outbreak of war between Israel and the Arab countries on October 6, 1973, the United States was cut off from crude and product supplies coming from Arab sources. The initial impact will be in the order of 2 million barrels per day and is expected to increase rapidly reaching 3 million barrels per day by year-end.

In addition to direct embargoes against shipments to the United States, the Arab countries have reduced total production by 5 to 6 million barrels per day resulting in world shortages of petroleum supplies, thus bringing world pressure on the United States to moderate its position of support for Israel.

Timing of the Impact Will Be Delayed

The impact of these denials is delayed because it takes about one month for a tanker, having been loaded in the Middle East, to reach the United States. Secondly, already critically short inventories needed for this winter season are being drawn down to temporarily to meet consumer demand.

What Will Happen If No Emergency Actions Are Taken

Inventories will be depleted early in the first quarter of 1974 and the petroleum industry will no longer be able to provide the supplies needed. Shortages in the three major products, gasoline, distillates and heavy fuel oil, will average 25 percent during the first quarter of 1974. Heavy fuel oil shortages would average 38 percent on a U.S. basis and could reach 49 percent on the East Coast.

The effect of shortages of this magnitude on the economy is difficult to estimate. On a conservative basis, the effect of a 2-million-barrel-per-day cutoff has been estimated to cause an annual loss of 48 billion dollars to the U.S. economy as measured by the Gross National Product. This slow-down in the economy would cause unemployment to increase from the current 4.5 to 5.0 percent level to over 6 percent. The projected 3-million-barrel-per-day cutoff would have an even greater impact and could push unemployment up to the 7.5 to 8.0 percent range.

It Is Critically Important That Emergency Action Be Taken Immediately.

Industry normally draws down inventories at the rate of about 1 million barrels per day to meet consumer needs in the first quarter of the year. If available inventories are depleted before the end of the year, the 1 million barrels per day of supplies from inventory will not be available. When combined with the 3-million-barrel-per-day import cutoff, a 4-million-barrel-per-day shortage would be created and an even more serious situation would develop.

For these reasons, it is imperative that emergency action be taken immediately so that available inventories can be conserved and used over a longer period of time.

What Emergency Actions Can Be Taken to Increase Domestic Supplies

Under emergency conditions, additional domestic energy supplies equivalent to about 700 thousand barrels per day can potentially be provided this winter if immediate actions are taken. Potential supply sources include: (1) producing the Naval Petroleum Reserves at Elk Hills, California, at maximum rates and temporatily increasing crude production above established field MER's (Maximum Efficient Rates), (2) incremental emergency gas sales to industrial customers now burning fuel oil or distillates, (3) increased electric power supplies by accelerating the licensing of already constructed nuclear power plants, and (4) increased use of coal.

To develop these potential emergency supplies will require a widespread commitment on the part of industry, Federal and state governments, and the American people in order to utilize all readily available resources. In some cases, enabling legislation is required. In almost all cases, quick and aggressive action is needed by both state and Federal governments. The respective jurisdictions and authorities of state oil and gas conservation bodies should be continued.

Even if all the above available emergency supply steps are taken, a significant net shortage of oil will remain.

What Can Be Done About the Net Shortage

The remaining net shortage can only be covered by a reduction in energy use. Many voluntary and mandated energy conservation steps are currently being considered (including such items as a reduction of speed limits, encouragement of carpooling, and a reduction in airline flights). While these measures are important, estimates indicate that they will account for only about 50 percent of the net shortage.

Mandatory rationing is therefore necessary to accomplish required reduction in use and should be instituted immediately.

A distinct difference should be drawn between rationing and allocation programs. Allocation programs should serve the basic function of distributing supplies (or distributing the shortage) throughout the market. Rationing, on the other hand, directly addresses and has the primary function of controlling and curtailing consumption in selected products.

Where Should Consumption Be Cut

The Nation must establish priorities and determine where cuts in demand should be made. On the one hand, priority can be given the individual consumer; on the other hand, priority can be given industry.

The Committee believes that the first reductions should take place in noncritical human consumption and less essential industry areas. High priority should be given to providing the fuel needed by those industries most vital to the economy. Critical human needs must, of course, receive high priority. However, the general public would undoubtedly prefer some discomforts and inconveniences to idle plants and high unemployment.

Mandatory rationing of gasoline for private transportation and of home heating oils offer the opportunity for significant reductions in petroleum use with minimum impact on the economy. Possibilities for comparable residential rationing of electricity and natural gas for residential heating should also be considered.

CONCLUSIONS

In view of the findings, the Nation has no other short-term alternative except to take immediate emergency action to reduce its consumption of energy and increase domestic energy supplies. With the goal of minimizing the effects on economic activity and the American consumer, the National Petroleum Council's Committee on Emergency Preparedness submits the following conclusions:

- Immediate and decisive action is needed by Federal and state governments to minimize the detrimental effects occasioned by the current energy crisis. Delay to act will compound the severity of the situation.

- Both the Federal Government and industry should immediately present the facts to the public and commence an educational program through all communications media to assure public awareness and to urge consumer energy conservation at all levels.

- Government-industry cooperation is needed at all levels. The operations of the energy industries are extremely complex. The expertise available from private industry should be utilized in an advisory and operational capacity.

- National economic health, employment, personal income and the strength of the Nation's defense system depend upon maintaining normal industrial operations. Therefore, every effort should be made to continue the operations of the industrial sector of the U.S. economy as close to normal as possible.

- The extent and endurance of the denial of oil imports to this Nation from the Middle East is beyond the determination of this Committee. However, the United States will experience an actual loss of about 80 million barrels of oil as a result of the embargo to date. Even if the embargo were lifted at an early date, critical shortages will be enacted, and therefore, the Committee emphasizes that programs and policies mentioned in this report should be initiated.

- Any emergency measures enacted during the current denial should be undertaken with the clear provision for their removal at the termination of the denial and its after-effects. The American system should continue to operate on a competitive, free-enterprise basis and increased government intervention for emergency purposes should not be continued upon the cessation of the emergency.

Chapter One

CURRENT SITUATION

PRE-DENIAL OUTLOOK

Prior to the resumption of the Middle East conflict in early October 1973, it had been anticipated that petroleum supply and demand in the United States would be in very tenuous balance during the first quarter of 1974. Despite the forecasted dampening in economic activity, product demands, particularly distillate and residual fuel oils, were expected to continue their vigorous expansion of the past several years. With domestic production of petroleum liquids declining slightly, the pre-denial supply/demand balance required the scheduling of sharply increased imports of crude oil and refined products. A comparison of the principal pre-denial supply/demand components for the first quarters of 1973 and 1974 is shown in Table 1.

TABLE 1

PRE-DENIAL U.S. PETROLEUM DEMAND AND SUPPLY

Item	1st Quarter 1973 Actual MB/D	1st Quarter 1974 Pre-denial MB/D	1st Quarter of 1974/73 MB/D	1st Quarter of 1974/73 Percent
Total Demand	18,488	19,774	+1,286	+ 7
Inventory Change	-795	-1,040	-245	+31
Required Supply	17,693	18,734	+1,041	+ 6
Domestic Production	10,957	10,853	-104	- 1
Imports:				
Crude	2,924	3,672	748	+26
Products, etc.	3,325	3,699	374	+11
TOTAL IMPORTS	6,249	7,371	+1,122	+18
Other Supply*	487	510	+ 23	+ 5
Imports as a % of Required Supply	35%	39%		

* Processing gain, other hydrocarbons, etc.

Total demand in the first quarter of 1974, projected at 19.8 million barrels per day, would be 1.3 million barrels per day or 7 percent greater than one year earlier. Inventory drawdown, a seasonal occurrence during the first quarter, was projected to be 245 thousand barrels per day greater than in 1973. With required supply increasing at 1.0 million barrels per day and domestic production declining at 0.1 million barrels per day, total required imports, after accounting for processing gain, were placed at 7.4 million barrels per day, an increase of 1.1 million barrels per day or 18 percent over the 1973 first quarter level. Thus, imports as a percent of total required supply would have reached 39 percent.

SOURCE OF IMPORTS

Crude oil imports into the United States during the first 7 months of 1973 are shown in Table 2. Imports from Organization of Arab Petroleum and Exporting Countries (OAPEC) were in the order of 800 thousand barrels per day during this period, the remaining requirements being made up primarily from Canada, Venezuela, Nigeria, Iran and Indonesia. However, incremental crude oil to accommodate rapidly escalating import requirements during the third quarter had to be scheduled largely from the Persian Gulf. For November 1973 imports from OAPEC nations were originally scheduled to have been about 1.2 million barrels per day.

Product imports during the first half of 1973 are shown in Table 3. During that period, total product imports were in the order of 3.0 million barrels per day, consisting primarily of residual and distillate fuel oil received from Venezuela and the Caribbean area. In the third quarter, product imports likewise expanded very rapidly with increasing amounts, including gasoline, coming from Western Europe refineries. For the first quarter of 1974, required product imports were estimated to reach 3.7 million barrels per day.

OIL IMPORT DENIAL SITUATION

In mid-October 1973, the Arab nations announced a series of cutbacks of oil exports to the United States and to countries supplying refined products to the United States. The initial effect of these denials is expected to be an imports reduction of about 2.0 million barrels per day from pre-denial levels, consisting of 1.2 million barrels per day of crude oil and 0.8 million barrels per day of products. The impact on U.S. import receipts will be delayed about 30 to 35 days from the date of denial, because of the one-way sailing time for tank ships carrying crude oil from Middle East loading ports.

TABLE 2

U.S. IMPORTS OF FOREIGN CRUDE OIL
(MB/D)

Origin of Imports	July 1973	Jan.-July 1973
Canada	959	1,042
Mexico	-	1
TOTAL NORTH AMERICA	959	1,043
Colombia	-	2
Ecuador	39	46
Trinidad	31	57
Venezuela	392	290
TOTAL CENTRAL & SOUTH AMERICA	462	395
TOTAL WESTERN HEMISPHERE	1,421	1,438
OAPEC Nations:		
Libya	116	142
Algeria	149	150
Saudi Arabia	644	392
Abu Dhabi and Dubai	102	76
Other OAPEC	36	59
TOTAL OAPEC	1,047	819
Angola	60	36
Nigeria	481	431
Tunisia	7	17
TOTAL OTHER AFRICA	548	484
Israel	-	2
Iran	229	171
Indonesia	256	195
Malaysia	-	1
TOTAL EASTERN HEMISPHERE	2,080	1,672
TOTAL WORLD	3,501	3,110

Source: U.S. Bureau of Mines

TABLE 3

UNITED STATES IMPORTS OF REFINED PRODUCTS
JANUARY - JUNE 1973
(MB/D)

Area of Origin	Motor Gasoline	Distillate Fuel Oil	Residual Fuel Oil	Other Oils	Total Products
North America	14	10	93	232	349
Central and South America	63	240	1,589	288	2,180
TOTAL WESTERN HEMISPHERE	77	250	1,682	520	2,529
Western Europe	11	122	141	8	282
OAPEC Nations	2	11	45	29	87
Other Middle East	4	-	-	6	10
Other Africa	-	-	17	-	17
Far East, Etc.	-	-	7	29	36
TOTAL EASTERN HEMISPHERE	17	133	210	72	432
TOTAL WORLD	94	383	1,892	592	2,961

Announcements of additional Arab production cutback plus the secondary effects of those cutbacks on the supply situation in other nations lead the Committee to believe that the United States will be denied approximately 3 million barrels per day by the end of the year. This denial is considered to be 1.8 million barrels per day of crude oil and 1.2 million barrels per day of refined products. As noted earlier, the reality of the current denial closely parallels the theoretical denial situation postulated in the Secretary of the Interior's original request to the National Petroleum Council's Committee on Emergency Preparedness.

Chapter Two

IMPACT OF IMPORT INTERRUPTION ON SUPPLY/DEMAND BALANCE

A 2.0 to 3.0 million B/D import disruption imposed upon an already tight supply situation in the United States creates a very difficult situation. Although everyone hopes for a cessation of the Mid-East conflict, with a prompt resumption of petroleum imports, nevertheless forward planning must recognize the possibility of continued oil disruption and the fact that the effects of the disruption will persist for several months after a restoration of some or all pre-denial of foreign oil production.

As indicated above, 30-35 days are required for new crude oil supplies to reach the United States after they are loaded in the Middle East. Furthermore, if the embargo continues for several weeks, U.S. inventories will be drawn down to abnormally low levels and will need to be rebuilt before normal operations are possible. Likewise European inventories must be restored before product imports can be expected from European refineries. Another aggravating factor which will extend the effect of the embargo is the current refining situation in the U.S. Refineries were running at peak capacity prior to the disruption, but many are now operating at less than full capacity, and this problem will be aggravated in the coming months. Reduced refinery runs resulting from the crude shortage is in effect lost output which cannot be made up at a later date.

Considering these factors, it is essential that the U.S. take immediate steps to curtail demand so that crude and product inventories are not excessively drawn down during the next 2 to 3 months. Although there is a great deal of uncertainty as to how long the disruption will continue and what the operating supply situation will be after the embargo is lifted, a review of the supply effects of the current denial illustrates what the impact of the disruption might be and the importance of taking immediate actions to curtail demand and augment supply.

For the purpose of quantifying the impact of the denial, it is assumed that the embargo would last through the first quarter of 1974. The type and volume of imports denied are shown below:

		Volume--Thousand Barrels Per Day
Crude		1,800
Products		
Gasoline	80	
Distillates	370	
Heavy Fuel Oil	750	1,200
TOTAL		3,000

The last actual inventory data available as of October 26, 1973, indicated total U.S. inventory of the three critical product groups, (gasoline, middle distillates, heavy fuel oil) was 515 million barrels (MMB) and crude oil inventory was 246 MMB. This is approximately 71 MMB below normal for products and approximately 14 MMB below normal for crude oil. Other products, such as liquefied petroleum gases (LPG), petrochemical feedstocks, asphalt, lubricating oils and coke, are not included. These other products, including unfinished oils, total approximately 250 MMB of inventory and are not available to meet major product (i.e., gasoline, distillate, or heavy fuel oil) demand. Stocks by major product groups, compared to generally considered "normal" levels for this time of the year, are as follows:

Stock	Inventory (MMB) as of Oct. 26, 1973		
	"Normal"	Actual	Difference
Gasoline	225	214	(11)
Distillates	298	244	(54)
Heavy Fuel Oil	63	57	(6)
TOTAL	586	515	(71)
Crude Oil	260	246	(14)

Minimum operable inventories for each product are not well defined. However, the Committee has estimated minimum inventories considered to be near the minimum under which reasonably uniform operations with only spot shortages can be maintained and before a physical breakdown occurs. Table 4 shows that if demand is not drastically curtailed inventories at the end of the first quarter 1974 will be hopelessly below minimum levels.

The total denial of 355 MMB represents 14% of total demand for the period November 15, 1973, to March 31, 1974, and 20% of demand for the period January 1, 1974, to March 31, 1974.

Figure 1 shows that the impact of the denial in the first quarter of 1974 will be significantly reduced if actions commence immediately to spread the required demand curtailment over a longer period of time. As indicated in Chapter Four a denial of petroleum products in the 8-10 percent range will begin to have very serious effects on the economy. This is particularly true for reductions in heavy fuel oil (HFO) which directly impact on industry operations. Where the reductions can be taken in less critical areas such as motor gasoline, the economic impact can be softened.

Table 4
Major Product Inventories
(Million Barrels)

	Normal	Without Denial	Effect of * Denial	With Denial	Memo Operable † Minimum
December 31, 1973					
Gasoline	247	225	(28)	197	195
Distillates	253	204	(30)	174	100
Heavy Fuel Oil	55	50	(31)	19	40
Total	555	479	(89)	390	335
April 1, 1974					
Gasoline	265	243	(111)	132	195
Distillates	149	125	(120)	5	100
Heavy Fuel Oil	46	42	(124)	(82)	40
Total	460	410	(355)	55	335

* Assumes 1.2MMB/D crude oil and .8MMB/D products denial from mid November through year end 1973; 1.8MMB/D crude and 1.2MMB/D products denial during first quarter 1974. Crude denials were converted to product effects based on the following yields for typical Middle East crudes: (Gasoline - 47%, Middle Distillates - 35%, HFO (less refining fuel consumed) - 16%).

†Operable minimum inventory results in spot shortages, but can meet required demand.

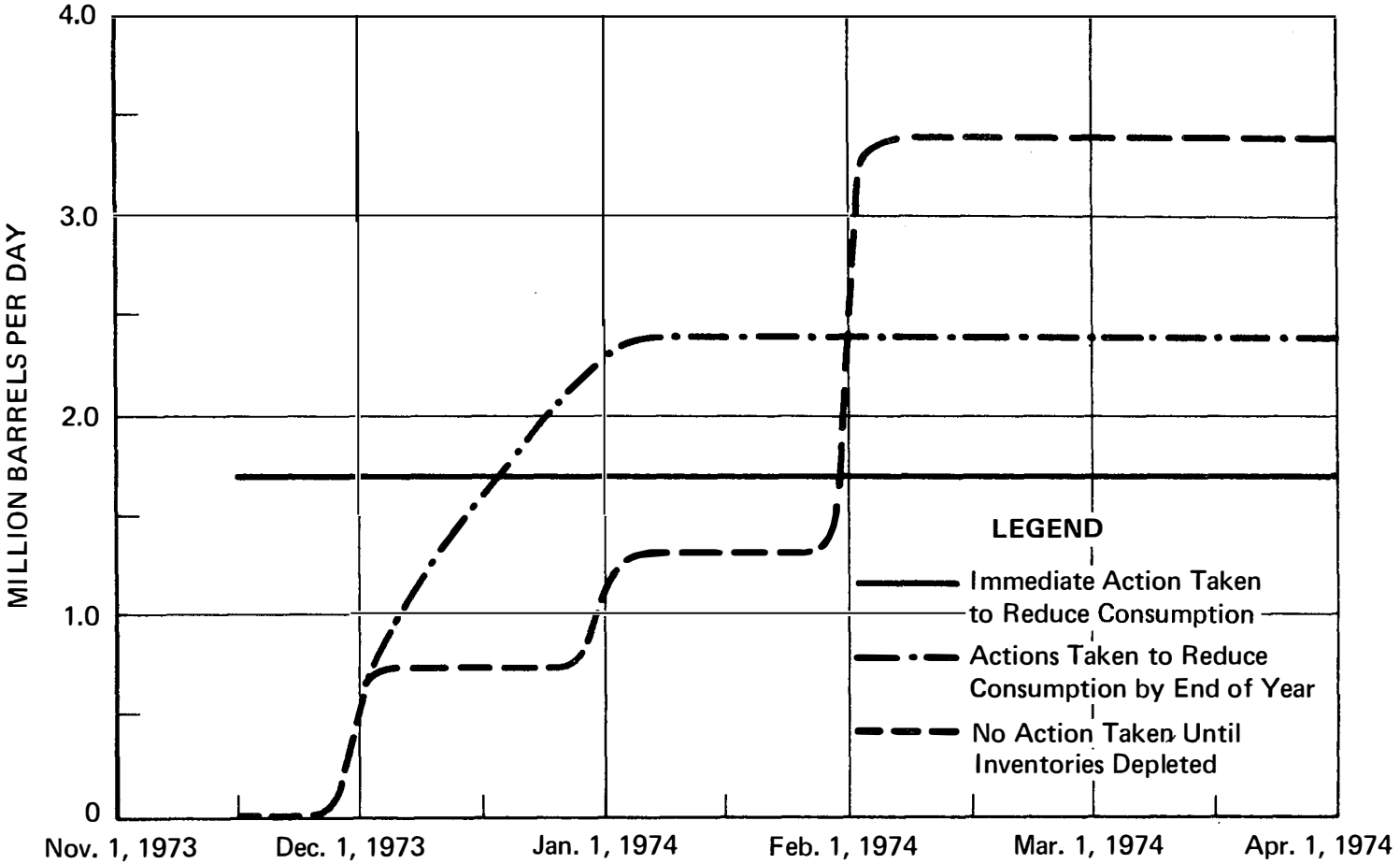

Figure 1. Net Impact of Import Interruption on Supply Availability Under Different Inventory Management Programs.

The seriousness of this situation can be better appreciated when the denial effects on specific product groups are examined. These data for the total U.S. are as shown below:

Product	Total Demand--Million Barrels		Denial		
	4-1/2 Months 11/15-3/31	3 Months 1/1-3/31	4-1/2 Months (MMB)	Percent Demand* 11/15-3/31	1/1-3/31
Gasoline	1,052	698	111	11%	16%
Distillates	589	417	120	20%	29%
Heavy Fuel Oil	464	327	124	27%	38%
Total	2,105	1,442	355	17%	25%

*Based on demand for the major product groups only. As a percent of total demand the denial percentage figures are 14% and 20% for the 4-1/2 and 3 month cases respectively.

There is no doubt that substantial curtailments of HFO and distillate consumption will be required. These effects will be heavily concentrated on the East Coast where imports of these products have been historically concentrated.

Although a complete analysis of geographical effects has not been performed, the potential impact on the East Coast is illustrated by the following:

PAD District I

Product	Total Demand--Million Barrels		Denial		
	4-1/2 Months 11/15-3/31	3 Months 1/1-3/31	4-1/2 Months (MMB)	Percent Demand 11/15-3/31	1/1-3/31
Distillates	357	253	80	22%	32%
Heavy Fuel Oil	324	217	106	33%	49%

Another way an import denial must be considered is to estimate the point of impact of the denial and the demand by location and then determine the necessary logistic response to equitably distribute the denial geographically.

Table 5 shows a distribution of a 3.0 MMB/D denial based on demand and historical import patterns for the first quarter of 1974. Reductions to the gross denial are included for additional emergency oil and gas production and conversion from oil to coal, and increased operation of nuclear plants. The net denial then may require geographical reallocation to give equitable distribution of the shortfalls. The illustrative balance assumes a pro rata allocation of the net denial based on demand. An analysis of specific inter- and intra-district movements required by this allocation was not possible

TABLE 5

TOTAL U.S. IMPORT DENIAL AND SUPPLY/DEMAND BALANCE
FIRST QUARTER 1974
(Thousands Barrels Per Day)

PAD DISTRICTS	I	II	III	IV	V	Total
			BASE SUPPLY/DEMAND BALANCE			
)CAL DEMAND FOR PRODUCTS	8205	5117	3433	445	2574	19774
ıterdistrict Shipments - Products	171	139	4057	88	30	
)TAL REQUIRED SUPPLY	8376	5256	7490	533	2604	19774
JPPLY						
:nterdistrict Receipts - Products	3253	964	78	62	128	
:nterdistrict Receipts - Crude	130	1884	110	-	30	
:nterdistrict Shipments - Crude	(90)	(40)	(1674)	(350)	-	
:rude Production	117	942	6277	672	1120	9128
IGL Production	22	245	1376	46	36	1725
'rocessing Gain and Other	50	126	227	10	97	510
:nventory Draw	460	185	395	(40)	40	1040
Sub-Total	3942	4306	6789	400	1451	12403
:mports: Crude (Offshore	1237	200	595	-	590	2622
Crude (Canada)	145	570	-	75	260	1050
NGL (Canada)	5	75	-	35	10	125
Unfinished (Offshore)	90	-	6	-	26	122
Products (Canada, Offshore)	2957	105	100	23	267	3452
Sub-Total	4434	950	701	133	1153	7371
'TAL SUPPLY AVAILABLE	8376	5256	7490	533	2604	19774
			DENIAL			
OSS DENIAL						
,800 Crude (Prorated on historical)	(846)	(135)	(516)	-	(303)	(1800)
,200 Products	(1200)	-	-	-	-	(1200)
	(2046)	(135)	(516)	-	(303)	(3000)
ERGENCY MEASURES*						
ıditional Crude Production	-	-	281	-	12	293
ıditional Gas Production	-	-	150	-	-	150
ɔnversion Oil to Coal	95	130	-	25	-	250
ıjust Processing Gain	(6)	(15)	(21)	(2)	(10)	(54)
T DENIAL	(1957)	(20)	(106)	23	(301)	(2361)
justment to Base Interdistrict ipments to Equate Denial :oss Nation: Crude	633	(358)	(220)	(55)	-	-
Products	344	(235)	(88)	(21)	-	-
IUSTED NET DENIAL Proportionate Local Demand PAD I-IV	(980)	(613)	(414)	(53)	(301)	(2361)

* These offsetting measures require governmental action such as:

- Approval of emergency MER increase
- Approval of certain third party gas sales
- Relaxation of sulfur restriction on plant emissions.

in the limited time frame of this report. The allocation of crude and products to eliminate logistic bottlenecks and meet demand equitably will be a function of the demand resulting after all conversions and curtailments, the available sources of product, and the intervening refining and transportation systems. The detailed logistic analysis must include all affected parties and can be started only after the level of demand to be satisfied and crude and import product availability are established.

In summary, the impact of the Arab embargo on petroleum shipments to the U.S. will have a substantial impact and it will last for a long period of time after the embargo is lifted. The effects of the embargo can be significantly reduced if substantial reductions in demand are made immediately. The seriousness of the situation is not now apparent to the general public, but deferral of action until the situation becomes apparent will lead to very disruptive shortages by early in the first quarter of 1974.

Chapter Three

AVAILABLE ALTERNATIVES FOR RESPONSE TO SHORTAGE

EMERGENCY OIL PRODUCTION

The Interim Report of the Emergency Preparedness Committee published estimates of the U.S. emergency oil production capacity. These estimates indicated that an average of 292 MB/D could be produced and delivered to refineries during a 90 day emergency, 331 MB/D could be delivered during a 6 month emergency. This emergency capacity builds up from an initial rate of 275 MB/D to a peak rate of 359 MB/D after about 3 to 4 months.

The emergency capacity consists primarily of production from NPR-1 (Elk Hills) and production in excess of the maximum efficient rate (MER) from several large Texas fields, such as East Texas, Yates, West Hastings, etc. The Texas fields are currently producing at their MER as established by the Texas Railroad Commission (RRC). Although these represent the maximum production rate which can be *sustained* without loss of recovery, the RRC does not establish emergency rates which could be produced for temporary periods. It is possible to exceed current rates in the high quality fields for short periods without significant reservoir damage. The precise volume and time period which production in excess of MER can be *sustained* depends on the individual field. This study has not considered producing in excess of MER for more than six months. Any production in excess of current MER would require recognition of an emergency situation by the appropriate regulatory agencies and a specific determination that the temporary production could not cause waste or reservoir damage. Also, any production of Elk Hills will require action by both the Executive and the Legislative branches of government.

Attainment of the estimated production volumes will require 2-3 months lead time and some investments in field oil and gas handling facilities. Also, in some cases gas flaring will be required. It should be emphasized that numerous legal problems can be encountered since there are substantial differences of opinion among operators regarding the effect of producing some of these fields at higher rates.

CONVERSION FROM OIL TO GAS

Gas reserves in the United States which can be economically produced and delivered to market are fully committed to gas sales contracts, with the exception of uneconomic reserves or recently discovered reserves where time has not been sufficient to conclude sales and install necessary facilities to commence deliveries.

In an emergency situation, gas can be substituted for oil by many consumers who have dual oil/gas burning facilities. It has been estimated that capacity is available to burn in excess of 4 billion cubic feet per day (BCF/D) of gas in lieu of oil provided the emergency gas can be made available where needed.

The multitude of gas contracts and number of gas producers make it extremely difficult to estimate volumes of gas which might be made available under emergency conditions. Available data indicate the spare capacity to deliver gas is small. Nevertheless, even a small volume of additional gas could play a significant role in alleviating the East Coast supply situation discussed in the preceding chapter.

It is estimated that perhaps as much as 1 BCF/D of gas could be produced under emergency conditions and delivered to customers currently burning oil. This would be equivalent to 150 MB/D of oil.

Under emergency conditions, mechanisms and incentives should be provided to release additional gas supplies by taking the following steps:

- The FPC should be authorized to allow, for a temporary period, emergency third-party sales of available interstate gas in excess of that now being taken under existing contracts.
- The FPC's current 6-month emergency gas sales program, wherein gas is allowed to be sold at market clearing prices, should apply to these incremental volumes.
- Gas transmission companies should be encouraged to transport and exchange gas to load all trunk lines to full capacity and deliver available gas to industrial customers after the essential needs of its residential customers are satisfied.

CONVERSION TO COAL

Estimates based on FPC and other data indicate that oil and gas fired boilers and furnaces could be converted to coal burning to the extent of about 250,000 B/D over a three-month period. Sulfur restrictions would have to be relaxed to accomplish this. This consumption rate is equivalent to 23 million tons of coal per year. Reaching this rate of additional coal use is believed realistic as there is an inventory of about 12 million tons of coal available for boilers not yet converted.

Based on the assumption that during the first 90 days of an interruption the rate of conversion would be 150 MB/D converted to coal in the first month and the remaining 100 MB/D converted over the second and third months, it would be possible to maintain operation at the full 250 MB/D rate for approximately 120 days without replenishment of supplies.

If coal production and transportation were not expanded, however, at the end of 7 months from the beginning of conversion, the stocks at the above plants would have fallen to 2 weeks' supply and operation of these boilers would have to be progressively curtailed.

The coal industry is unable to increase production to supply plants burning fuel oil and natural gas on the East Coast without building new capacity which would require at least three years; however, a coal allocation program could be implemented that would divert a portion of current production to convertible plants. The logistic problem with respect to coal is critical, especially in the large eastern metropolitan areas. The supply of open-top hopper cars is tight, facilities for distributing coal to alongside plants in the east must be repaired, and delivery to these plants is uncertain due to a shortage of barges and towboats. Emergency measures such as a coal allocation program and diverting some transportation equipment to critical areas offers some short-term relief, but the distribution system will be cumbersome, inefficient and expensive.

Coal mining capacity is critical throughout the eastern coalfields. An allocation program offers only temporary relief. Railroad repair facilities have deteriorated in the same degree as the inventory of rolling stock. Permanent long-term solutions are needed.

An additional contribution coal could make would be by increasing load factors on coal fired utility plants and thus reducing the oil/gas requirement of an electric power system. While this possibility has not been fully explored, it appears that existing transmission facilities are limited in their ability to distribute the added electricity to oil or gas consuming areas.

NUCLEAR POWER

Another potential means of assuring a degree of supply continuity during an import interruption is the expediting of nuclear plants already scheduled for operation. Conversely, slippages in operating schedules or deratings of existing plants would only serve to aggravate the crisis.

During the last quarter of 1973 and first 6 months of 1974, 12 nuclear power units are scheduled for commercial operation. These units total 9,800 megawatts (MW) of capacity equivalent to 300 MB/D of energy supply. Bringing these plants on stream promptly and at full capacity (instead of being derated) could make an additional 50 to 100 MB/D oil equivalent available during the first

quarter of 1974. Three of the units with a total capacity of 2,800 MW (84 MB/D equivalent) are located in PAD I. In addition, as of November 5, the AEC reported 5 nuclear plants derated by a total of 381 MW, equivalent to 12 MB/D of lost energy supply. Nearly 320 MW of this total were in PAD I. Thus, a temporary lifting of the derating measures (reasonable safely standard permitting) would provide PAD I with 10 MB/D of incremental supply.

ENERGY USE CURTAILMENT

Table 6 summarizes the net shortages resulting from a sustained 3 MMB/D loss of petroleum imports consisting of 1.8 MMB/D of crude oil and 1.2 MMB/D of refined products during the first quarter of 1974.

TABLE 6

NET SHORTAGE CALCULATIONS
(MB/D)

	Gasoline & Naphtha	Total Middle Distillates	Heavy Fuel Oil & Other
Crude Loss - 1.8 MMB/D			
Total Naphtha - 47%	846	-	-
Total Middle Distillate - 35%	-	630	-
Heavy Fuel Oil & Other - 22%	-	-	396
Product Loss - 1.2 MMB/D	80	370	750
Total Loss	926	1,000	1,146
Offsetting Measures *			
Additional Domestic Oil Production (293 MB/D)	(138)	(102)	(64)
Oil to Gas Conversion		(75)	(75)
Oil to Coal Conversion in Electric Utility Sector†	-	-	(250)
Gasoline Deconversion to Distillate‡	100	(100)	
Refinery Fuel & Process Gain	28	18	(98)
Net Shortage	916	741	661
Percent Demand	13.5%	13%	16.8%

* These offsetting measures require government actions to be fully effective.

† Attainment of these savings would require relaxation of sulfur in fuel standards.

‡ The figures shown are somewhat arbitrary--additional deconversion capacity probably exists at the lower crude runs if further use of this option is deemed desirable/acceptable.

The loss of crude and product imports results in total product losses of 926 MB/D motor gasoline, 1,000 MB/D total middle distillates, and 1,146 MB/D of heavy fuel oil and other products. After fully utilizing available emergency measures such as additional oil and gas production, maximum conversion of electric utilities from oil to coal and increased operation of nuclear plants, and adjustment of refinery yields, substantial shortages remain. These shortages are 916 MB/D of motor gasoline (13.5% of demand), 741 MB/D of middle distillates (13% of demand), and 659 MB/D of heavy fuel oil (16.8% of demand).

It should be emphasized that the denial offsets have been somewhat arbitrarily assigned to the major product groups. The U.S. refining system will have added flexibility when running at the reduced rates to make additional adjustments to product yields as required.

Steps which have been identified for conserving gasoline short of rationing are shown in Table 7. The 614 MB/D figure should be viewed as an optimistic assessment of what could be accomplished by these measures. Insofar as this is equivalent to only two-thirds of the reduction needed, it is obvious that additional stringent controls must be implemented to reduce demand as soon as possible.

Temporary restrictive measures which can be implemented immediately should be taken to dampen demand prior to the time formal controls can be effected. Examples of this type of measure include instructing suppliers to reduce motor gasoline allocations to all stations they supply by a certain percentage of a recent prior period sales level. Mandated efficiency measures which can also be implemented quickly such as reducing speed limits should be aggressively promoted to not only reduce demand prior to controls, but also to "force" more efficient usage after controls are established.

Similarly, the total distillate shortfall of 741 MB/D (13% of demand) is beyond the level of 601 MB/D shown in Table 8 that might be obtained by such steps as increasing airline load factors, reducing thermostat settings, reducing residential and commercial lighting, etc.

The situation is even more severe in the case of HFO where the shortfall is 659 MB/D or 16.8 percent of demand. Again, conservation steps such as reducing thermostat settings (330 MB/D), reducing residential and commercial lighting (35 MB/D), leaves a supply gap approaching 300 MB/D.

The voluntary and mandatory conservation measures outlined above may be optimistic as to the level of compliance and the time required to achieve these levels. They are to be viewed as a *maximum achievable volume* with a high level of Government leadership at all levels and a high degree of public acceptance. These

conservation measures are considered as being the maximum realistic/ acceptable curtailment which could be achieved without formal rationing. Figure 2 compares the cumulative denial and the offsets available through increased supplies and voluntary actions.

In view of the above, it becomes obvious that some form of mandatory regulations be placed on the use of these fuels. In the case of motor gasoline, and perhaps home heating oil, the most effective and equitable method appears to be a coupon-rationing system. A procedure already exists to allocate middle distillates (including No. 4 fuel oil) in the form of the Mandatory Allocation Program which went into effect November 1, 1973. This allocation program should be expanded to cover HFO in such a way as to best assure energy supply to industry.

It should also be modified to incorporate a philosophy or priority for demand reductions. Inherent in the data and findings of this report is the following order of use priorities.

1. Uses related to protection of the public health and welfare and National defense.

2. Uses related to the maintenance of employment, and a healthy domestic economy.

3. Uses related to public comfort and convenience.

Obviously, services related to public health and welfare such as police and fire protection, etc., must be maintained. This area also would include maintaining a minimum acceptable level of home heating.

Uses related to the maintenance of jobs and economic activity consist primarily of industrial activity. Business and industry must be encouraged by every available means to use energy more efficiently. However, it is considered imperative by this Committee that the basic industrial activities which provide the bulk of U.S. employment and economic strength be maintained at the highest possible level.

It is also imperative that these procedures be implemented as soon as possible in order to avoid even more severe problems later in the season if inventories and working stocks are depleted. Since it will take some 4 to 6 weeks to implement these formal curtailment procedures, it is absolutely necessary that we take maximum advantage of all conservation measures available to us in the interim.

SUMMARY

To summarize the analyses presented in Chapters Two and Three. it is evident that:

TABLE 7

Gasoline Conservation Measures--1974
(First Quarter 1974)

	Thousand Barrels per Day
1. Reduce speed limits to 50 M.P.H. (75% compliance).	190
2. Encourage car pools--	316
• 34% of automotive travel is commuting	
• Assumes voluntary increase in average car occupancy from 1.3 to 1.8 people	
• Reduces total motor gasoline demand by 4.5%	
3. Reduce recreational driving	108
• 1/3 of passenger car travel is social/recreational (i.e., 27% of total motor gasoline demand)	
• Assumes 50% reduction results in 108 MB/D reduction in winter, 315 MB/D in summer	
4. Other voluntary/mandated measures	*
• Regular tune-ups	
• Keep tires inflated	
• Minimize use of air conditioner	
• Good driving habits	
• 4-day work week	
TOTAL	614

* Have not been able to quantify.

TABLE 8

Distillate Conservation Measures

	Thousand Barrels per Day
Voluntary/mandated measures--	
1. Reduce speed limits to 50 M.P.H. (diesel powered vehicles)--75% compliance	19
2. Reduce R/C lighting	60
• 10% reduction in residential sector where lighting is 16% of electrical consumption	
• 20% reduction in commercial sector where lighting is 42% of electrical consumption	
• Assumes 50% of KWH savings will be reflected as reduced oil consumption (60 MB/D distillate, 35 MB/D HFO)	
3. Increase airline load factors from 50 to 65% (90% effective)--results in 20% fuel demand reduction	207
4. Reduce commercial airline speeds assumes 5% fuel savings by reducing speed and/or increasing ceilings	50
5. Reduce space heating thermostat settings 5°F	265
TOTAL	601

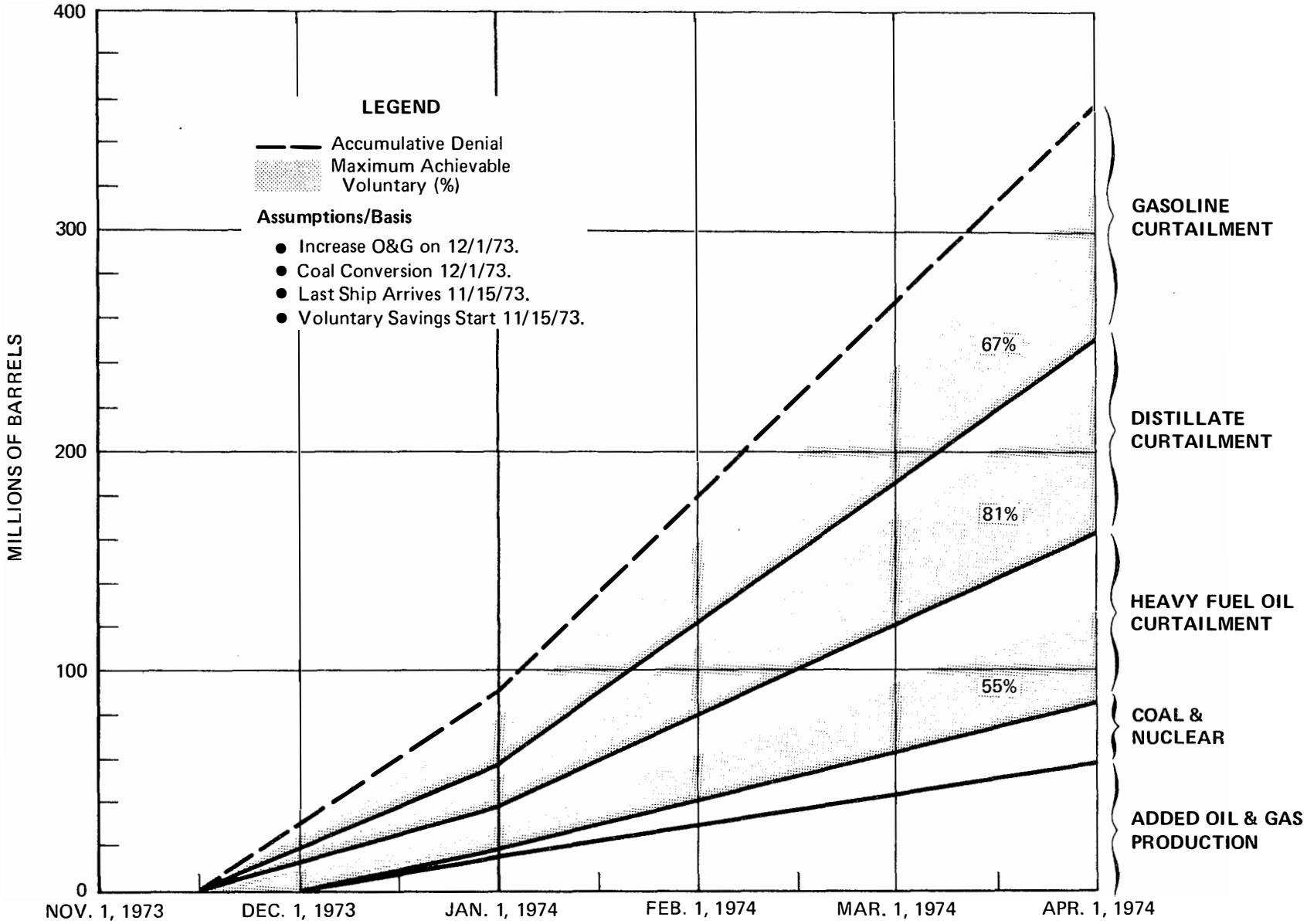

Figure 2. Comparison of Accumulative Denial and Available Alternatives for Response to Shortfall.

- Added domestic supplies of oil and gas, conversion to coal and acceleration of nuclear generation capacity can only make up about 24 percent of the expected denial through the first quarter of 1974.

- Curtailment of use of distillate and heavy fuel oil saves about 45 percent of the denial. Only about 2/3 of the reduction could be achieved voluntarily.

- The remainder of the denial, about 31 percent, must come from reduction in use of motor gasoline. Only about 2/3 of that reduction could be achieved by voluntary means.

- Since the necessary savings cannot be achieved by voluntary means, rationing seems to be essential.

- The rate of inventory drawdown is so high that rapid action is essential. Delay in taking any of the available actions could rapidly create truly critical supply runouts.

Chapter Four

IMPACT OF OIL IMPORT INTERRUPTIONS ON THE NATIONAL ECONOMY

Determination of oil import interruption effects on the national economy is extremely complex: however, since substantial oil supply shortages are certain for the 1973-1974 heating season, some quantification of the economic impact was considered essential for this report. While rigorous quantitative analysis of GNP/energy relationships was not possible on short notice, application of some simplifying assumptions permitted estimation of the economic impact that may result from various levels of oil supply shortfall.

The following table summarizes the estimated direct economic effects associated with the oil shortage levels noted. These estimates do not include secondary effects which could increase the magnitude of economic impact if the shortage were long lasting.

TABLE 9

	Reduced Oil Supplies		GNP Decrease	
	Thousand Barrels Per Day	Percent of Energy	$Billion Per Year	Percent
Case I	2000	5.6	48	3.6
Case II	1500	4.1	27	2.0
Case III	500	1.4	1	0.1

Figure 3 compares the estimates of GNP effects of fuel supply curtailments made by the NPC with other published and unpublished measurements by private econometric forecasting services.* It should be noted that the NPC assessment corresponds to a consensus judgment, e.g., it does not overstate the potential magnitude of an unmanaged energy crisis.

As shown in Chapter Two, logistical considerations concentrate the shortage effects in the coastal areas of the country. This is due to severely limited ability in the short run to transport domestically refined products from other regions into Districts I and V. However, the primary reasons why the fuel shortage situation will be most critical on the East and West Coasts this winter

* The Chase Econometric estimates are preliminary only and not based upon a complete model run.

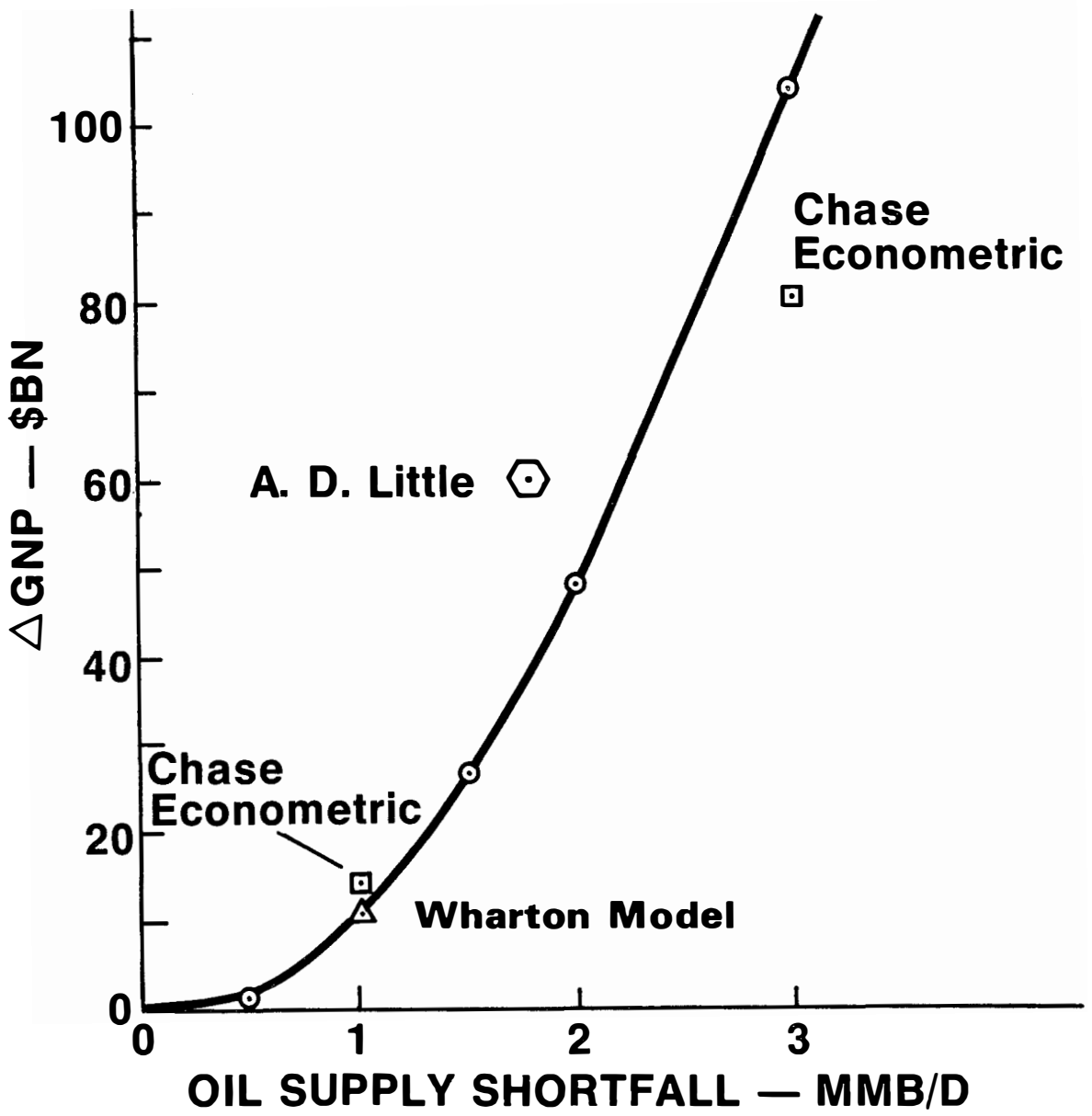

Figure 3. Comparison of Estimated Effects of Oil Supply Shortage on GNP.

is that those areas have been highly dependent upon imports of both refined products and crude oil from overseas. Thus, a cutoff of these supplies will bear most directly and immediately upon consumers of imports.

It should be noted that the GNP figures shown are annual rates and that if the oil shortfall did not persist for a full year, GNP actually lost would be reduced accordingly. However, it now appears that the shortfall during the current heating season will exceed the Case I level of 2 MMB/D and may reach 3 MMB/D by the first quarter. Thus, the short-term impact of energy shortages on economic activity and employment could be substantial, particularly in PAD's I and V. It is estimated that a 3 MMB/D petroleum shortage during the first quarter of 1974 alone could decrease 1974 GNP by up to $26 billion, with specific effects highly dependent upon alterations in consumption patterns and secondary economic effects resulting from fuel supply dislocations. Unemployment rates could well increase from current rates of less than 5 percent to levels exceeding 6 percent, in the 2.0 MMB/D curtailment case, and to nearly 8 percent if a sustained shortage of 3.0 MMB/D were experienced:

TABLE 10

Reduced Oil Supplies (Thousand Barrels Per Day)	Employment Effects: Rise In Unemployment (000)	Employment Effects: Unemployment Rate (Percent)
3000	2500	7.7
2000	1200	6.2
1500	700	5.7
500	-	5.0*

* Base 1974 forecast.

The above estimated effects, of course, could be made less visable by eliminating overtime, reducing normal working days, etc. Moreover, the economic impact of a supply shortage is very dependent upon consuming areas affected. If the shortage can be absorbed by curtailment of the less essential areas of activity, the economic costs would be minimized. Generally, public consumption could be reduced with comparatively small impact on the economy. Significant reduction of industrial energy supply would likely cause plant shutdowns and high levels of unemployment. Allocation or rationing programs must recognize these factors.

The table below illustrates in summary form the economic incentives to channel available energy supplies to industry under severe shortage conditions. This table notes the GNP dollar decrements corresponding to a dollar reduction in energy supplies. For example, in the industrial sector, if the overall energy supply deficiency is 5 percent, approximately $22 in goods and services production would be lost for each dollar of energy "saved." Small reductions in energy supplies are less costly because they can often be offset by conservation measures, but substantial denials of energy to industry are prohibitively costly. It should also be noted that this table does not highlight the full range of cost consequences. The GNP multiplier cost of reduced home heating or recreational driving is much lower than the averages noted in the transportation and residential/commercial sectors because a large share of energy applications in those sectors are linked to the production of commerical services, e.g., truck transportation, dry cleaning, etc. Thus, the economic cost of withholding energy supplies from some industries could be fifty or more times the cost of fuel denials to many non-industrial activities.

TABLE 11

GNP Reduction Per Dollar Due To Energy Denial By Sector

Sector	Energy Supply Reduction 1%	3%	5%
Transportation	3	6	10
Household/Commercial	4	8	17
Industrial	3	9	22

The previously mentioned economic effects assume only a moderately effective allocation of the shortages. However, the Committee's opinion is that well-conceived and effectively implemented management of the shortage could further soften the impact. On the other hand, failure to take effective action in a timely manner could result in more severe economic impacts.

Across the board mandatory reductions in energy supply allocations such as those advocated by President Nixon will not minimize the adverse economic costs of reduced energy usage unless the value of energy in each use is the same. Voluntary personal energy use curtailments, while appealing, are not likely to be very successful in limiting economic disruptions.

Ideally, the economic costs of the energy shortfall would be minimized by maximum reliance on free market mechanisms which would tend to insure that those uses of scarce fuels which could support the highest fuel costs would be the last to be eliminated. While

it is recognized that short-term disruptions may require statutory allocations approaches, timely return to free market mechanisms is considered essential. During the present emergency, a combination of maximum reliance on the price system supplemented by demand curtailment and mandatory rationing procedures is needed to achieve efficient distribution of existing energy supplies with minimum impact on the economy.

Fuel supply policies which are intended to minimize economic costs of supply disruptions must concentrate on the immediate problem of optimally distributing fuel oils. It appears that roughly two-thirds of the shortage of refined products this winter will be fuel oils (No. 2 through No. 6), and one-third will be gasoline and related materials. This condition indicates that the most pressing immediate energy problem is that of balancing fuel oil supplies with priority requirements. Unfortunately, the economic cost of failure to meet the needs of fuel oil users is much greater than in the case of gasoline, because a large portion of fuel oil is consumed in the production of vital goods and services. Thus, the economic burden of the fuel oil versus the gasoline supply problem is much greater than comparative volumes would indicate.

Appendices

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

DEC 5 - 1972

Dear Mr. True:

The United States is in a period of rapidly increasing dependence on imported petroleum. Associated with this dependency is the high risk involved to the Nation's economic well-being and security in the event these needed, imported energy supplies are interrupted for any reason. With such an alarming trend it becomes mandatory that the Nation's emergency preparedness program to insure supply of petroleum be improved without delay.

Over the past years, the Council has provided the Department of Interior with many outstanding studies which have contributed directly to preparedness for a national emergency. The Council's recent comprehensive energy outlook study indicates national policy options which will minimize dependence on imported petroleum over the long term. However, the study does not examine and evaluate alternatives, possible emergency actions and the results of such actions in the event of a temporary denial or marked reduction in the volume of imported petroleum available to the Nation during the next few years ahead.

The Council is therefore requested to make a comprehensive study and analysis of possible emergency supplements to or alternatives for imported oil, natural gas liquids and products in the event of interruptions to current levels of imports of these energy supplies. Where possible, the results of emergency measures or actions that could be taken before or during an emergency under present conditions should be quantified. For the purpose of this study only, assume that current levels of petroleum imports to the United States are reduced by denial of (a) 1.5 million barrels per day for a 60-day period, and (b) 2.0 million barrels per day for a 90-day period.

Of particular interest are supplements to normal domestic supply such as: the capability for emergency increases in production, processing, transportation and related storage; the ability to provide and maintain an emergency storage capability and inventories; interfuel substitution

or convertibility of primary fuels in the major fuel consuming sectors; side effects of abnormal emergency operations; gains in supply from varying levels of curtailments, rationing and conservation measures; gains from temporary relaxation of environmental restrictions; as well as the constraints, if any, imposed by deficient support capability if an extraordinary demand occurs for manpower, materials, associated capital requirements and operating expenses due to emergency measures.

Such studies should be completed as soon as practicable, with at least a preliminary report presented to me by July 1973.

Sincerely yours,

Hollis M. Dole

Assistant Secretary of the Interior

Mr. H. A. True, Jr.
Chairman
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer to:
MOG

JAN 22 1973

Dear Mr. True:

In our letter to you of December 5, 1972, we asked that the National Petroleum Council make a comprehensive study and analysis of possible emergency supplements to or alternatives for imported oil, natural gas liquids and products in the event of interruptions to current levels of imports of these energy supplies. We are pleased that the Council has agreed to undertake this study.

Our request letter set out several assumptions regarding petroleum supply levels which we now believe require clarification. Rather than assuming a reduction in petroleum imports to the United States of (a) 1.5 million barrels per day for a 60-day period, and (b) 2.0 million barrels per day for a 90-day period, it would be more useful to assume a denial of (a) 1.5 million barrels per day for 90 days, and (b) 3.0 million barrels per day for a period of 6 months. It is anticipated that the Committee will consider the current and predicted mix between crude and product imports in determining the impact of the assumed denials.

We wish to reaffirm that a preliminary report should be submitted by July 1973.

Sincerely yours,

Rog Morton

Secretary of the Interior

Mr. H. A. True, Jr.
Chairman
National Petroleum Council
1625 K Street, N.W.
Washington, D. C. 20006

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
EOG

OCT 26 1973

Dear Mr. True:

One of the scenarios in the National Petroleum Council's Emergency Preparedness Study considers a major interruption in foreign oil supplies to the United States as of January 1, 1974.

Though this phase of your Study is nearing completion, recent events have added new urgency to this scenario. Therefore, I ask that you quickly draw together the work which you have accomplished regarding a January 1, 1974 supply interruption and submit it to the Department of the Interior at the earliest possible date.

Sincerely yours,

Assistant Secretary of the Interior

Mr. H. A. True, Jr.
Chairman, National Petroleum Council
1625 K Street, N.W., Suite 601
Washington, D.C. 20006

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AUTHORITIES AND ACTIONS TO COPE WITH THE CURRENT SITUATION

ADMINISTRATIVE AND LEGAL AUTHORITIES

Summary

The President appears to have adequate authority under the Economic Stabilization Act Amendments of 1973 to redirect available petroleum supplies in the Nation's priority interests, including consumer rationing. This authority does not cover other mandatory use curtailment. Mandatory allocation regulations for propane and middle distillates have been promulgated by the Energy Policy Office under this Act.

Federal authority is available under the Defense Production Act of 1950 Voluntary Agreement Provisions for the President to consult with representatives of industry and other groups to encourage the development of voluntary agreements and programs to further the objectives of the Act. The Secretary of the Interior has under this Act recently activated the Foreign Petroleum Supply Committee and the Emergency Petroleum Supply Committee. The Voluntary Agreement authorizing the plans under which these Committees function applies only to emergencies in which deprivation of petroleum supply occurs in friendly foreign nations. A new and different Voluntary Agreement would be necessary for an industry advisory group to address domestic supply problems.

Also under authority of the Defense Production Act of 1950 and other statutes, the Emergency Petroleum and Gas Administration can be activated by the Secretary of the Interior to coordinate and direct the operation of the petroleum industry in mobilizing the oil and gas resources of the United States. Except in the case of an attack upon the United States when activation would be automatic, the Secretary cannot mobilize the EPGA until a National Defense Emergency is declared by the President or Congress.

Except for oil reserves under public lands and the Outer Continental Shelf controlled by the Federal Government, all oil and gas production in the United States is under statutory authority of the respective states. Production from Naval Petroleum Reserves is restricted by law to those situations when it is needed in the national defense and is approved by the President and a joint resolution of the Congress.

Statutes of oil-producing states forbid the production of any oil or gas field in an inefficient manner or in a way that would reduce ultimate recovery. Therefore, state regulatory agencies cannot legally allow production rates above currently established

maximum efficient rates (MER's) unless there is technical evidence to show that the field MER's on a field-by-field basis can be increased in the short-term without affecting ultimate recovery.

Economic Stabilization Act Amendments of 1973

The Economic Stabilization Act Amendments of 1973, Section 203(a)(3) give the President authority: "...for the establishment of priorities of use and for allocation of supplies of petroleum products, including crude oil, in order to meet the essential needs of various sections of the Nation."

Action has already been taken by the Energy Policy Office for mandatory allocation of propane and middle distillates by suppliers to wholesalers. Priority users were specified for propane, but all middle distillate users were considered essential.

The broad authority of the President under the Economic Stabilization Act Amendments of 1973 appears adequate to initiate consumer rationing of any type of petroleum products.

Energy conservation and use curtailment measures are outside the President's existing peacetime authority except for agencies in the Federal Executive Department. Cooperation of state and local governments is essential to a use-curtailment program, such as highway speed limits and outdoor lighting.

Voluntary Agreements

The Defense Production Act of 1950 contained specific titles authorizing priorities and allocations, requisitioning and condemnation, expansion of productive capacity and supply, stabilization of wages and prices, settlement of labor disputes, and control of real estate credit. The Section on general provisions authorized the President to consult with representatives of industry and other groups to encourage such persons to develop voluntary agreements and programs to further the objectives of the Act. Such agreements and programs were required to be approved by the President and the Department of Justice. The Act exempted certain actions taken pursuant to an authorized voluntary agreement or program from the antitrust laws or the Federal Trade Commission Act of the United States.

The first "Voluntary Agreement Relating to Foreign Petroleum Supply" was approved in 1951 with 19 oil companies participating. That Voluntary Agreement established the procedure under which participating companies could take cooperative action to prevent, eliminate or alleviate shortages of petroleum supplies from friendly foreign nations which threaten the defense interests or programs of the United States. The procedure prescribed in the Voluntary Agreement included an emergency plan of action and established the Foreign Petroleum Supply Committee to assist in carrying out the objectives of the Agreement.

The Voluntary Agreement has been amended several times, the most recent being in 1967. The emergency provisions have been used in three serious petroleum crises (1951, 1956 and 1967) when interruption of oil supplies have occurred in one or more of the principal oil-exporting nations.

In June of 1967, at the time of the Arab-Israeli confrontation, the Foreign Petroleum Supply Committee was convened and subcommittees established. A plan of action was developed which provided for the establishment of the Emergency Petroleum Supply Committee. Schedules were developed and approved but were not utilized as the supply situation was eased by individual company action.

The Foreign Petroleum Supply Committee was called into closed session by the Secretary of the Interior on October 30, 1973, to address the present situation. The Emergency Petroleum Supply Committee was also activated by the Secretary on November 8, 1973.

The Department of Justice has pointed out that the Voluntary Agreement Relating to Foreign Petroleum Supply is very explicitly limited in scope both by its terms and historical practices to emergencies in which deprivation of petroleum supply occurs in friendly foreign nations. For the President to utilize the Voluntary Agreement provisions of the Defense Production Act to consult with representatives of industry on domestic oil supply problems, an entirely new and separate Voluntary Agreement would have to be developed and approved.

The Emergency Petroleum and Gas Administration

The President promulgated a National Plan for Emergency Preparedness in 1964 under authority of the Defense Production Act of 1950, the National Security Act of 1947, the Federal Civil Defense Act of 1950, and the Strategic and Critical Materials Stockpiling Act. The plan recognizes that a future emergency might range in seriousness from international tension to limited conventional warfare or even to a nuclear attack.

Chapter 10 of the National Plan for Emergency Preparedness entitled "Fuel and Energy," deals with oil and gas, solid fuels and electric power. In oil and gas, the most important planning effort has gone into the establishment, staffing and training of the Emergency Petroleum and Gas Administration (EPGA). The EPGA is a standby organization designed to meet the need for an agency which is ready and authorized to coordinate and direct the operation of the petroleum industry in mobilizing the oil and gas resources of the United States in the event of a national emergency.

Depending upon the severity, EPGA may be partially or fully activated by the Secretary of the Interior upon declaration of a national defense emergency by the President or the Congress. EPGA's primary function in a declared national emergency is to

assist, coordinate and direct, where necessary, activities of the oil and gas industry, in order to assure that domestic and foreign supplies of oil and gas meet essential military and civilian requirements of the Nation and Allies. This includes formulation and coordination of oil and gas supply programs and acting as claimant for the oil and gas industry before other government agencies to obtain supporting resources.

By Executive Order 10480 and Defense Mobilization Order 8400.1, the Secretary of the Interior has the authority to impose priorities and allocations over petroleum and gas upon the declaration of a national emergency. This authority has been predelegated to EPGA.

The EPGA, on activation, would be an independent government agency headed by a National Administrator who would be the Secretary of the Interior. Other key positions would be filled primarily by personnel drawn from the petroleum and gas industry who are immediately available and trained because they are members of the Petroleum and Gas Unit of the National Defense Executive Reserve with specific responsibilities in the EPGA.

The EPGA cannot be activated by the Secretary of the Interior unless there has been a declaration by the Congress or the President of a National Defense Emergency. If the United States is attacked, activation would be automatic.

The Defense Production Act of 1950 says: "The term 'National Defense' means programs for military and atomic energy production or construction, military assistance to any foreign nation, stockpiling and directly related activity." It thus appears that since denial of petroleum supplies would affect military programs, a serious denial could be considered as affecting National Defense and justify the President or the Congress declaring a National Defense Emergency which would authorize activation of the EPGA.

Naval Petroleum Reserves

Naval Petroleum Reserve 1 (Elk Hills Field) located about 20 miles west of Bakersfield, California, is by far the largest petroleum reserve in the United States from the standpoint of short-term additional production potential. Naval Petroleum Reserves are controlled and operated by the U.S. Navy's Office of Naval Petroleum Reserves and under existing laws can only be produced when "...the Secretary, with approval of the President, finds it is needed for national defense and the production is authorized by a joint resolution of Congress." The production of the reserves for national defense has been permitted once before when NPR-1 was authorized to produce 65,000 barrels per day during World War II.

The law here is clear. Authority to produce NPR-1 during the present emergency will require a resolution of Congress, approved by the President.

State Authority for Oil and Gas Production

With the exception of production from federal public lands and the Outer Continental Shelf, all oil and gas production in the United States is under the authority of the respective state laws. Therefore, any additional production from fields not under federally controlled lands must be in compliance with state laws.

Some additional short-term productive capacity may be made available from five major fields in Texas and a number of other scattered smaller fields. All are now producing at their maximum efficient rate as has been determined by state regulatory agencies, based upon technical data on individual fields. These maximum efficient rates (MER's) are for long-term continuous production without reservoir damage. State statutes forbid the production of any oil or gas field in an inefficient manner or in a way that would reduce ultimate recovery. Therefore, state regulatory agencies, such as the Texas Railroad Commission, cannot legally allow production rates above MER.

Since current field MER's are for sustained rates, the state regulatory agencies could make a technical determination of possible short-term higher MER's on a field-by-field basis where there is spare productive capacity. Setting up temporary higher allowables should be permissible for this procedure under the state laws.

To obtain this potential additional production for the duration of the present supply emergency will require the cooperation of the state regulatory agencies in establishing temporary higher MER's. Since oil production "allowables" are not mandatory producing rates, producers in the fields involved would have to voluntarily make whatever facility additions as are necessary to produce at the higher but temporary rates.

EXECUTIVE ACTIONS

On November 7, 1973, the President proposed to the Nation his recommendations for countering the domestic energy crisis. The President ordered the following actions:

- Industries which currently use coal will be prevented from converting to oil in the immediate future. Power plants using oil which are able to convert to coal will be encouraged to do so.

- Fuel allocations to commercial and other jet fuel users will be reduced, leading to schedule changes and a 10 percent cutback in the number of flights.

- Heating oil for homes, offices and other establishments will be reduced approximately 15 percent.

- In addition to the previously ordered 7 percent reduction in the Federal Government's consumption of energy, further steps will be taken. Daytime temperatures in federal offices will be maintained at 65-68°. In addition, the 500,000 federal vehicles will be ordered to travel no faster than 50 miles per hour, emergencies excepted.

The Atomic Energy Commission was requested to speed the licensing and construction of nuclear plants in order to reduce lead times for construction from 10 years to 6.

The President directed Governor John A. Love, Assistant to the President for Energy, to work closely with Congress to develop an emergency energy act. The proposed legislation would grant the executive branch the authority to:

- Order an immediate return to daylight savings time year-round

- Relax environmental regulations on a temporary, case-by-case basis

- Impose special energy conservation measures, i.e., reduction of commercial operating hours

- Increase the production of the Naval Petroleum Reserves

- Use the proceeds from the sale or exchange of the Navy-owned oil to fund further development and production from Elk Hills, California, and for exploration and proving the Naval Petroleum Reserves

- Reduce highway speed limits nationwide.

The President also requested that Governors and Mayors reinforce his actions on the state and local levels.

The following actions are currently being taken by the Administration, primarily under the authority of the Economic Stabilization Act of 1970 and the Defense Production Act of 1950:

- The President directed the Secretary of Transportation to give priority to grant applications for the purchase of buses for mass transit under the authority of the Federal Aid Highway Act of 1973 and the Urban Mass Transportation Act.

- The Office of Management and Budget has been directed to establish an interagency task force to monitor the allocation and rationing programs and develop plans in anticipation of a shortage.

- The Secretary of the Interior has been directed to establish a fuel allocation administration to administer all programs and to activate the Emergency Petroleum Supply Committee.

- The establishment of a National Industrial Energy Conservation Council has been directed of the Secretary of Commerce.

- Governors and Mayors are being asked to determine the supply/demand situation in their areas, develop programs to reduce energy consumption, coordinate with federal agencies that are allocating fuel. Steps requested of the Governors and Mayors to reduce gasoline demand include:

  - greater use of mass transit and car pools

  - 50 miles-per-hour speed limits on highways

  - special bus lanes

  - higher parking taxes

  - blocking off certain sectors to cars with only one passenger

  - preferential parking for car pools

  - staggering of working hours in state and local governments.

- Contingency plans are currently being developed which include programs for the rationing of gasoline. A proposed plan to ration heating oil will be published in the Federal Register in mid-December.

- Administration legislative proposals awaiting Congressional action during this session include:

  - Alaska Pipeline

  - Natural Gas Supply Act

  - Mined Area Protection Act

  - Deepwater Port Facilities

  - Energy Research and Development Administration/ National Energy Commission Reorganization.