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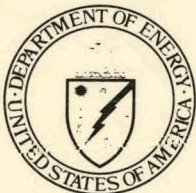
# Supplement to September 1977 Report

*Findings and Views Concerning the Exemption of Motor Gasoline  
From the Mandatory Petroleum Allocation and Price Regulations*

Published: May 1978

**MASTER**

**U.S. Department of Energy**  
Economic Regulatory Administration  
Office of Regulations and Emergency Planning



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## INTRODUCTION

In September 1977, the Federal Energy Administration ("FEA") issued its "Findings and Views Concerning the Exemption of Motor Gasoline from the Mandatory Petroleum Allocation and Price Regulations" (hereinafter referred to as "September Report"). The report contained FEA's findings prerequisite under the Emergency Petroleum Allocation Act ("EPAA") to submission to the Congress by the FEA Administrator of a proposal to decontrol gasoline.

Although the proposal could have been submitted by FEA to the Congress in September 1977, upon the completion of the September Report, FEA deferred any action on the proposal in order to afford the Federal Energy Regulatory Commission ("FERC"), which was activated along with the rest of the Department of Energy ("DOE") on October 1, 1977, an opportunity to consider the proposal under sections 402(c) and 404 of the Department of Energy Organization Act ("DOE Act"), Pub. L. 95-91 (see 42 FR 54423, October 6, 1977). Section 402(c)(1) of the DOE Act requires the FERC to "consider" and make recommendations with regards to any energy action proposed by the Secretary of Energy ("the Secretary") to, among other things, exempt any refined petroleum product from price or allocation controls.

Effective October 1, 1977, all functions previously performed by FEA and not transferred to the FERC were transferred to the Secretary by the DOE Act and Executive Order No. 12009 (42 FR 46267, September 15, 1977). Section 705(b)(1) of the DOE Act provides in part:

The provisions of this Act shall not affect any proceedings . . . pending at the time this Act takes effect before any department, agency, commission, or component thereof, functions of which are transferred by this Act; but such proceedings . . . to the extent that they relate to functions so transferred, shall be continued. . . .

Pursuant to the above provisions, the motor gasoline decontrol proceeding, begun by the FEA prior to the activation of the DOE, was continued and transferred to the Secretary.

After receiving the decontrol proposal on October 1, 1977, FERC held public hearings, received written comments, and consulted with the Secretary, pursuant to section 404 of the DOE Act, on various aspects of the proposal. On March 29, 1978, the FERC transmitted to the Secretary its final concurrence on the proposed exemption of motor gasoline from petroleum allocation and price controls.

Because of the length of time that has elapsed because of the FERC review process, we have reexamined the September Report to determine whether the original findings and conclusions are still valid. We have determined that the supply/

demand balance and other factors bearing on the exemption of motor gasoline from the regulations are essentially the same as presented in the September Report and that the rationale for the exemption is therefore still sound. However, recent events and recent revisions in macroeconomic forecasts change some of the underlying assumptions of the September Report. Therefore, we have prepared this supplement to the September Report which presents more up-to-date estimates of the supply/demand balance and other factors bearing on decontrol. For ease of reference, all tables and charts contained in this supplement bear the same identification number as their counterparts in the September Report. All data presented represents the most recent data available to DOE.

## EXECUTIVE SUMMARY

All of the conclusions presented in the September Report remain valid. In summary, we conclude, as FEA did in the September Report, that motor gasoline is not, and will not be through 1979, in short supply; that competition and market forces are adequate to protect consumers from undue price increases; and that exempting motor gasoline from price and allocation controls will not have an adverse impact on the supply of any oil or refined petroleum product subject to the EPAA and will not result in inequitable prices for any class of user of such oil or product. Finally, we conclude that the exemption of motor gasoline from allocation and price controls is consistent with and provides for the attainment, to the maximum extent practicable, of the objectives of section 4(b)(1) of the EPAA.

After decontrol, the Department of Energy will continue to survey gasoline supply, demand and prices and analyze and publish the available information. Should this continuing survey and analysis reveal that the prices or supply of motor gasoline are such as to invalidate any of the findings of this report, the Secretary would consider complete or partial reimposition of price or allocation controls.

CHAPTER I

INTRODUCTION

There are no changes to the September Report.

## CHAPTER II

### BACKGROUND

Since September 1977, the Administrator of the Environmental Protection Agency ("EPA") has granted waivers to refiners from the "lead phasedown" schedule required by the EPA. Waivers have been granted to refiners whose refineries produce approximately two thirds of the Nation's motor gasoline supply. The net effect of this action has been to improve the motor gasoline supply situation for 1978 and 1979. These waivers were not taken into account in the September Report but are factored into the new supply projections contained in Chapter IV.

In addition, the Bureau of Census now estimates that there are approximately 180,000 retail outlets, an increase of 1,000 over the estimate contained on page 13 of the September Report. No other changes are necessary to Chapter II.

## CHAPTER III

### HISTORIC CONDITIONS (1968-1977)

Because this chapter of the September Report dealt with historic data, all that is necessary is to update the data presented in this chapter to reflect actual data now available through the end of 1977. The extended data show a continuing decline of the number of lessee dealers supplied by refiners and a continuing increase in the share of total gasoline sales by non-major refiners.

Following are updated tables and charts as well as pages on which narrative changes are required as a result of data updates. Narrative changes from the September Report are underscored. To avoid duplication, updates have not been made to those charts and tables in Chapter III when the same data in Chapter IV are updated.

TABLE III-1

MOTOR GASOLINE DEMAND AND STOCKS

	<u>Demand</u> <u>(000 BBL/Day)</u>	<u>Stocks</u> <u>(000 BBLs)</u> <u>Dec. 31</u>	<u>Number of Days</u> <u>of Supply</u>
1968	5,344	211,526	39.6
1969	5,596	217,392	38.8
1970	5,839	214,348	36.7
1971	6,063	223,771	36.9
1972	6,376	212,770	33.4
1973	6,674	209,395	31.4
1974	6,537	218,346	33.4
1975	6,675	234,925	35.2
1976	6,978	231,387	33.2
1977	7,178	256,864	35.8

SOURCE: Bureau of Mines - 1968 through April 1977  
Energy Information Administration (EIA) for  
May 1977 through December 1977.

TABLE III-2

AVERAGE ANNUAL DOMESTIC PRODUCTION OF  
REFINER PRODUCTS AT REFINERIES FOR 1968-1977  
(Thousands of Barrels per day)

	<u>Motor Gasoline</u>	<u>*Distillate Fuel Oil</u>	<u>Residual Fuel Oil</u>	<u>Jet Fuel</u>	<u>**Other Products</u>	<u>Total All Products</u>
1968	5,212	2,300	756	863	2,001	11,132
1969	5,468	2,340	729	881	2,062	11,480
1970	5,699	2,454	705	827	2,222	11,907
1971	5,971	2,495	752	834	2,245	12,297
1972	6,281	2,630	799	847	2,149	12,706
1973	I Qtr. 6,213	2,875	1,035	893	2,299	13,315
	II Qtr. 6,695	2,626	914	854	2,520	13,609
	III Qtr. 6,830	2,790	870	839	2,628	13,957
	IV Qtr. 6,366	2,992	1,068	852	2,404	13,682
	AVERAGE 6,527	2,820	971	859	2,463	13,641
1974	I Qtr. 5,950	2,505	1,003	805	2,151	12,414
	II Qtr. 6,433	2,670	1,002	849	2,415	13,369
	III Qtr. 6,689	2,694	1,052	824	2,580	13,839
	IV Qtr. 6,358	2,808	1,220	865	2,301	13,552
	AVERAGE 6,358	2,668	1,070	836	2,362	13,294
1975	I Qtr. 6,285	2,688	1,356	855	1,964	13,148
	II Qtr. 6,290	2,496	1,182	856	2,110	12,934
	III Qtr. 6,900	2,663	1,161	917	2,422	14,063
	IV Qtr. 6,599	2,764	1,245	859	2,200	13,667
	AVERAGE 6,518	2,653	1,235	871	2,174	13,452
1976	I Qtr. 6,470	2,826	1,373	911	2,176	13,756
	II Qtr. 6,880	2,759	1,260	902	2,403	14,204
	III Qtr. 7,067	2,963	1,306	955	2,136	14,427
	IV Qtr. 6,931	3,144	1,568	903	2,357	14,903
	AVERAGE 6,838	2,924	1,377	918	2,268	14,325
1977	I Qtr. 6,872	3,419	1,852	948	2,639	15,730
	II Qtr. 7,021	3,108	1,691	989	2,811	15,612
	III Qtr. 7,167	3,259	1,702	994	2,996	16,118
	IV Qtr. 7,067	3,315	1,744	967	2,853	15,946***
	AVERAGE 7,033	3,272	1,746	974	2,825	15,852***

\* Excludes kerosene

\*\* Includes kerosene

\*\*\* Preliminary

SOURCE: Bureau of Mines

TABLE III-3

CRUDE AND PRODUCT IMPORTS FOR 1968-1977  
(Thousands of barrels per day)

<u>Year</u>	<u>Motor Gasoline Imports</u>	<u>Distillate Fuel Oil Imports</u>	<u>Residual Fuel Oil Imports</u>	<u>Crude Oil Imports</u>	<u>Total Product Imports</u>	<u>Total Petroleum Imports</u>
1968	59	132	1123	1294	1473	2767
1969	67	139	1264	1408	1651	3059
1970	67	147	1528	1324	2095	3419
1971	59	153	1582	1681	2245	3926
1972	68	182	1742	2216	2525	4741
1973	134	392	1853	3244	3012	6256
1974	204	289	1587	3477	2635	6112
1975	184	155	1223	4105	1951	6056
1976	131	143	1398	5287	2007	7295
1977	215	247	1349	6565	2143	8708

Source: Bureau of Mines

TABLE III-4  
MIXED BARREL PRICES AND MARGINS  
(dollars per barrel)

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	Average Mixed Barrel Price	Average Crude Cost	Refiner/Distributor Margin
1968	\$ 5.13	\$ 3.17	\$ 1.96
1969	5.24	3.29	1.95
1970	5.41	3.40	2.01
1971	5.85	3.60	2.25
1972	5.75	3.58	2.17
1973	6.73	4.15	2.58
1974	11.92	9.07	2.85
1975	13.57	10.38	3.19
1976	14.29	10.89	3.40
1977	15.65	11.95	3.70

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SOURCE: Energy Information Administration based on  
FEA Form P-302-M-1.

TABLE III-5

REFINER/DISTRIBUTOR MARGIN FOR MOTOR GASOLINE

(cents per gallon)

<u>Year</u>	<u>Margin</u>	<u>CPI*</u> <u>Deflated</u>	<u>WPI*</u> <u>Deflated</u>
1968	8.9	8.9	8.9
1969	9.4	8.9	9.0
1970	9.8	8.8	9.1
1971	9.5	8.2	8.6
1972	9.3	7.7	8.0
1973	9.6	7.5	7.3
1974	9.3	6.6	6.0
1975	10.9	7.0	6.4
1976	12.7	7.6	7.0
1977	13.2	7.6	7.0

SOURCE: Platt's Oilgram, FEA, Lundberg Survey, Inc.  
Bureau of Labor Statistics

\* Expressed in real 1968 dollars.

TABLE III-6

RETAIL DEALER MARGIN FOR MOTOR GASOLINE

(cents per gallon)

<u>Year</u>	<u>Margin</u>	<u>Margin*</u>
1968	6.5	6.5
1969	6.7	6.4
1970	6.7	6.0
1971	7.1	6.1
1972	6.7	5.6
1973	7.4	5.8
1974	9.7	6.8
1975	8.4	5.4
1976	7.6	4.7
1977	8.3	4.8

Source: Platts Oilgram, FEA, Lundberg Survey,  
Inc.  
Bureau of Labor Statistics.

\* Margin expressed in real 1968 dollars.  
(CPI deflated).

investment levels for the refiners, distributors and retailers are addressed in the discussion of profitability in Chapter IV.

#### MARKET STRUCTURE

This section addresses the adequacy of market forces in motor gasoline refining and marketing to preserve the competitive viability of independent refiners and marketers, and thereby ensure consumers an adequate supply of motor gasoline at equitable prices following exemption of motor gasoline from regulations.

Trends indicate that non-major refiners have increased their share of total gasoline sales every year since 1972 except for the year 1973. The group share of total gasoline sales has risen from 26.4 percent in 1972 to 29.3 percent in 1977. These trends are discussed in detail by:

- o Describing the refining and distribution system for motor gasoline;
- o Tracing the market structure of the refining and marketing segments before the period of allocation and price controls; and,
- o Examining the changes in market share experienced by different classes of refiners and marketers during the period of controls.

At the time EPAA was enacted, there were fifteen large integrated (or major) refiners, four large independent refiners, and more than 100 small independent refiners. Since 1973, there have been a few changes, however, for consistency of analysis, refiner shares data is based on December 1973 classifications.

The large integrated refiners' market share of motor gasoline sales increased slightly in 1973, and then declined approximately 3 percent by 1976. Conversely, the shares of large independent and small refiners gradually increased from less than 26 percent in early 1972 to over 29 percent of sales at the refiner level in 1977 (see Table III-7). Although the allocation and price regulations helped to preserve the shares of the independent and small refiners during the embargo-caused national crude oil shortage in 1974, the overall trend since 1971 and since the adoption of the FEA's Entitlements Program indicates that these refiners are able to maintain their market share when they have equal access to a competitively priced crude oil supply.

Table III-8 shows the market shares of unleaded motor gasoline sales by refiners since 1974. Large independent and small refiners have a smaller share of the unleaded sales than of the total motor gasoline sales

TABLE III-7

REFINER SHARES (PERCENT) OF TOTAL MOTOR GASOLINE SALES

<u>Quarter</u>	<u>Large Integrated Refiners</u>	<u>Large Independent Refiners</u>	<u>Small Refiners</u>	<u>Total Motor Gasoline Sales (Millions of Gallons)</u>
<u>1972</u>				
Jan-Mar	74.1	8.4	17.5	23,139
Apr-June	74.0	8.1	18.0	25,626
July-Sept	73.6	8.2	18.2	26,493
Oct-Dec	72.8	8.4	18.8	25,324
ANNUAL	73.6	8.3	18.2	100,581
<u>1973</u>				
Jan-Mar	72.8	8.5	18.7	24,547
Apr-June	75.0	7.6	17.4	26,698
July-Sept	75.0	7.5	17.5	27,606
Oct-Dec	73.3	7.8	19.0	25,973
ANNUAL	74.1	7.8	18.1	104,824
<u>1974</u>				
Jan-Mar	72.8	8.0	19.2	22,935
Apr-June	73.6	7.7	18.7	26,277
July-Sept	74.4	6.9	18.7	27,291
Oct-Dec	72.6	7.6	19.8	26,370
ANNUAL	73.3	7.6	19.1	102,873
<u>1975</u>				
Jan-Mar	71.5	8.4	20.1	24,214
Apr-June	72.0	7.8	20.2	27,298
July-Sept	73.4	7.4	19.2	27,709
Oct-Dec	71.5	8.1	20.4	26,565
ANNUAL	72.1	7.9	20.0	105,788
<u>1976</u>				
Jan-Mar	70.5	8.5	21.0	25,683
Apr-June	71.3	7.9	20.8	28,737
July-Sept	71.4	7.6	20.9	29,024
Oct-Dec	70.7	8.2	21.1	28,034
ANNUAL	71.0	8.0	21.0	111,478
<u>1977</u>				
Jan-Mar	70.7	8.0	21.2	26,490
Apr-June	70.9	8.1	21.0	28,807
July-Sept	71.0	7.6	21.4	29,309
Oct-Dec	70.3	8.4	21.3	28,364
ANNUAL	70.7	8.0	21.2	112,970

Source: EIA Refiner Survey (P-305-S-0 and P-306-M-0)

NOTE: Includes data for U.S. Territories (e.g., Puerto Rico and Virgin Islands) as well as from the 50 United States.

TABLE III-8

REFINER SHARES (PERCENT) OF UNLEADED MOTOR GASOLINE SALES

<u>Quarter</u>	<u>Large Integrated Refiner</u>	<u>Large Independent Refiners</u>	<u>Small Refiners</u>	<u>Total Unleaded Gasoline Sales (Millions of Gallons)</u>
1974				
Jan-Mar	94.7	4.9	0.4	358
Apr-June	87.4	5.1	7.5	720
July-Sept	80.4	4.7	14.9	2,040
Oct-Dec	80.3	5.2	14.6	2,328
ANNUAL	82.2	5.0	12.8	5,446
1975				
Jan-Mar	80.8	5.7	13.4	2,443
Apr-June	80.8	6.2	13.0	3,091
July-Sept	81.2	6.1	12.7	3,747
Oct-Dec	80.3	7.0	12.6	3,914
ANNUAL	80.8	6.3	12.9	13,196
1976				
Jan-Mar	78.4	7.4	14.2	4,275
Apr-June	78.9	7.0	14.1	5,361
July-Sept	79.1	6.8	14.1	6,034
Oct-Dec	78.6	7.3	14.1	6,105
ANNUAL	78.8	7.1	14.1	21,775
1977				
Jan-Mar	78.5	7.2	14.3	6,214
Apr-June	78.0	7.2	14.8	7,199
July-Sept	77.7	6.8	15.5	7,972
Oct-Dec	77.6	7.2	15.2	7,871
ANNUAL	77.9	7.1	15.0	29,256

SOURCE: EIA Refiner Survey (P-305-S-O and P-306-M-O)

NOTE: Includes data for U.S. Territories (e.g., Puerto Rico and Virgin Islands) as well as from the 50 United States.

volume, but they have been gaining shares relative to the large integrated refiners since 1972. There is no evidence of a shortage of unleaded motor gasoline supplies at the refiner supply level for marketers normally served by large independent and small refiners.

To protect independent gasoline jobbers as well as retailers during the embargo, supplier-purchaser relationships were frozen as of 1972, the last year in which a reasonably normal market situation existed. Despite this freeze, however, a strong consumer focus on low-price outlets caused significant changes in the market shares of various distribution channels, reflecting a trend that had started before allocation controls.

During 1974-1976, refiner and jobber volumes shifted toward lower-cost, higher-volume, and self-service retail outlets. Since branded lessee and open dealers generally operated the highest-cost, lowest-volume outlets, they were the most severely affected.

Reflecting the above trends (see Table III-9), the sales of nonbranded product by independent marketers increased 4.5 percentage points from 1974

TABLE III-9

MOTOR GASOLINE DISTRIBUTED THROUGH JOBBERS AND  
DISTRIBUTED DIRECTLY BY REFINERS, 1972-1977  
 (IN PERCENT)

Year	Sold through Jobbers		Direct Refiner Distribution				Total
	Branded	Nonbranded	Refiner Operated	Branded Lessee Dealers	Branded Open Dealers	Bulk Purchaser Consumer	
1972	20.4	15.2	7.9	36.6	11.1	8.8	100.0
1973	21.1	13.3	8.7	36.8	11.7	8.4	100.0
1974	21.3	16.0	9.1	33.8	11.6	8.2	100.0
1975	22.8	18.3	10.7	29.8	10.8	7.6	100.0
1976	24.1	19.5	11.9	27.6	10.4	6.5	100.0
1977	23.9	20.5	12.6	26.6	10.4	6.0	100.0

SOURCE: EIA Refiner Survey (P-305-S-0 and P-306-M-0)

to 1977. This reflects the recovery of the nonbranded sector from the depressed sales level of 1973. From 1972 to 1977, direct refiner sales to lessee and open dealers have dropped by nearly 11 percentage points, from 47.7 to 37.0 percent of refiner sales. This drop occurred in nearly all regions among dealers of both large integrated and other refiners (see Table III-10). Conversely, direct sales through refiner-operated outlets, which have higher average sales volumes, have steadily increased since 1972. As indicated in Table III-11, this trend has occurred in nearly all regions and among both large integrated and other refiners, but the largest growth has been realized on the part of small and independent refiners rather than large integrated refiners.

In terms of the absolute number of dealers affected, the trend away from lessee dealers is by far the most significant. The number of lessee dealers supplied directly by refiners has been declining since 1972, the earliest period for which complete market structure data are available. Refiners supplied 112,000 lessee dealers in the first quarter of 1972, but less than 63,000 by the fourth quarter 1977, a drop of 43.8 percent. This trend away from lessee dealers was evident among all refiners.

TABLE III-10

REFINER DIRECT SUPPLIES OF GASOLINE TO OPEN AND LESSEE DEALERS BY CENSUS REGION (VOLUMES IN MILLIONS OF GALLONS)

Refiner Group and Year	Total*	Census Region			
		Northeast	North Central	South	West
<b>Large Integrated Refiners</b>					
1972	41,159	10,099	9,177	12,063	9,426
1973	43,489	10,649	9,312	13,266	9,825
1974	40,282	9,973	8,458	12,428	9,022
1975	37,773	9,654	7,624	11,498	8,622
1976	37,706	9,742	7,302	11,380	8,845
1977	37,472	9,709	6,921	11,382	9,025
1976					
Jan-Mar	8,714	2,226	1,680	2,674	2,028
Apr-June	9,697	2,483	1,887	2,941	2,275
July-Sept	9,916	2,555	1,924	2,955	2,371
Oct-Dec	9,377	2,475	1,811	2,806	2,168
1977					
Jan-Mar	8,772	2,240	1,657	2,678	2,090
Apr-June	9,524	2,466	1,769	2,910	2,267
July-Sept	9,866	2,554	1,803	2,972	2,429
Oct-Dec	9,310	2,448	1,692	2,823	2,238
<b>Other Refiners</b>					
1972	6,780	918	3,471	1,913	468
1973	7,445	913	2,975	1,987	555
1974	6,197	763	3,238	1,665	517
1975	5,152	739	2,629	1,303	478
1976	4,718	688	2,361	1,120	548
1977	4,327	648	2,160	992	527
1976					
Jan-Mar	1,104	166	536	291	110
Apr-June	1,245	165	631	292	156
July-Sept	1,221	172	617	274	157
Oct-Dec	1,148	184	577	263	125
1977					
Jan-Mar	999	156	489	242	112
Apr-June	1,122	162	576	254	131
July-Sept	1,122	165	562	247	148
Oct-Dec	1,084	166	533	249	137

SOURCE: EIA Refiner Survey (P-305-S-O and P-306-M-O).

\* Regions will not sum since total includes data for U.S. Territories (e.g., Puerto Rico and Virgin Islands) as well as from the 50 states.

NOTE: Figures may not add due to rounding.

TABLE III-11

GASOLINE SALES THROUGH REFINER OPERATED OUTLETS  
BY CENSUS REGION (VOLUMES IN MILLIONS OF GALLONS)

Refiner Group and Year	Total*	Census Region			
		Northeast	North Central	South	West
<b>Large Integrated Refiners</b>					
1972	3,328	455	583	1,387	893
1973	3,799	558	791	1,434	1,004
1974	3,699	576	812	1,409	891
1975	4,501	622	1,166	1,730	974
1976	5,417	785	1,541	2,078	1,004
1977	5,776	834	1,800	2,256	874
1976					
Jan-Mar	1,230	163	332	466	267
Apr-June	1,335	195	371	515	251
July-Sept	1,428	222	408	550	246
Oct-Dec	1,423	205	430	547	238
1977					
Jan-Mar	1,366	188	399	523	223
Apr-June	1,459	213	447	576	220
July-Sept	1,506	223	480	580	220
Oct-Dec	1,475	211	474	577	211
<b>Other Refiners</b>					
1972	3,761	874	1,404	917	363
1973	4,460	962	1,712	1,371	413
1974	4,931	1,058	1,854	1,531	488
1975	6,291	1,272	2,386	1,978	657
1976	7,379	1,412	2,863	2,277	826
1977	8,146	1,476	3,213	2,448	1,006
1976					
Jan-Mar	1,739	334	665	568	171
Apr-June	1,800	358	689	554	199
July-Sept	1,881	361	731	564	224
Oct-Dec	1,959	359	777	591	232
1977					
Jan-Mar	1,846	328	736	565	234
Apr-June	2,033	375	795	609	254
July-Sept	2,112	384	831	632	265
Oct-Dec	2,137	388	851	642	256

SOURCE: EIA Refiner Survey (P-305-S-O and P-306-M-O)

\* Includes data for U.S. Territories (e.g., Puerto Rico and Virgin Islands) as well as from the 50 United States.

NOTE: Figures may not add due to rounding.

The most noticeable shifts, however were among the large integrated refiners who in 1972 depended more heavily than other refiners on the marketing of branded gasoline through independent dealers. These refiners accounted for 94.6 percent of the reduction in lessee dealers supplied by refiners between 1972 and 1977. Table III-12 and Figure III-11 show the number of lessee dealers supplied by each of the three classes of refiners from 1972 through 1977.

Following the price rises of late 1973, the trend toward lower-price, higher-volume retail outlets accelerated as a result of sharply increased consumer price sensitivity. Nonbranded independents and refiner-operators operated most of these newer higher volume outlets and maintained higher average sales per station (Table III-13). Both have increased their market shares since late 1974 (Tables III-14 and III-15). During this same period, the market share of branded independent retailers, who have lower average sales, decreased from approximately 79 percent to approximately 70 percent.

#### D. Summary

At the refinery level, the small and independent refiners have increased their share of motor gasoline sales from 1972 through 1976, indicating that these

TABLE III-12

NUMBER OF LESSEE DEALER RETAIL OUTLETS SUPPLIED DIRECTLY  
BY REFINER

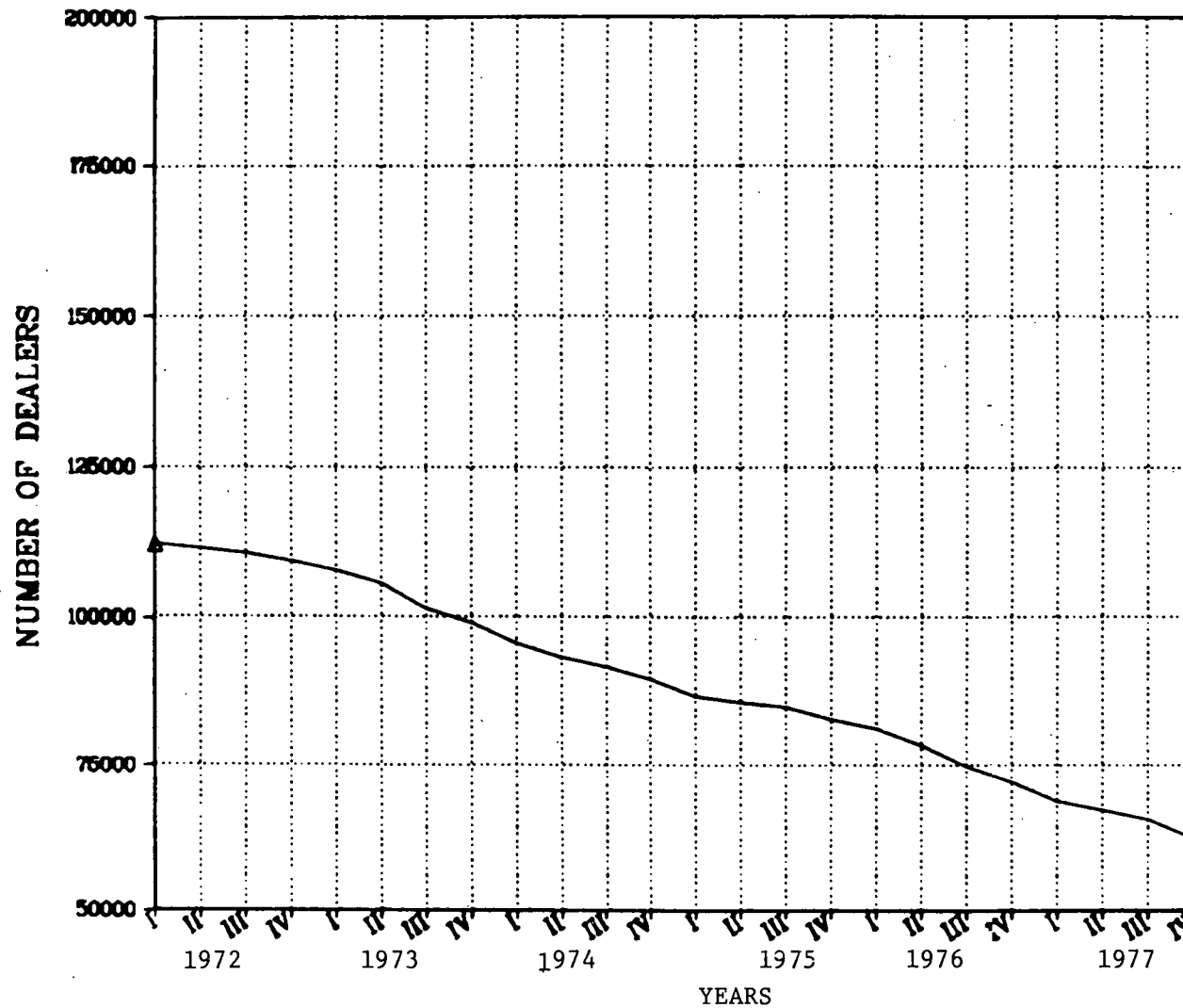
Quarter	Average Monthly Number of Outlets Supplied by:			
	Large Integrated Refiners	Large Independent Refiners	Small Refiners	All Refiners
1972				
Jan-Mar	100,308	5,374	6,365	112,047
Apr-June	99,785	5,147	6,415	111,348
July-Sept	99,344	4,814	6,408	110,565
Oct-Dec	98,426	4,618	6,326	109,370
1973				
Jan-Mar	96,565	4,358	6,872	107,795
Apr-June	94,525	4,292	6,706	105,523
July-Sept	91,726	3,359	6,429	101,514
Oct-Dec	89,581	3,229	6,168	98,979
1974				
Jan-Mar	86,884	2,952	5,809	95,645
Apr-June	84,971	2,806	5,664	93,442
July-Sept	83,549	2,600	5,644	91,793
Oct-Dec	81,331	2,457	5,489	89,278
1975				
Jan-Mar	79,148	2,710	4,958	86,816
Apr-June	78,425	2,561	4,864	85,850
July-Sept	77,566	2,493	4,771	84,831
Oct-Dec	75,941	2,428	4,558	82,957
1976				
Jan-Mar	74,028	2,574	4,371	80,974
Apr-June	71,449	2,498	4,423	78,371
July-Sept	68,178	2,449	4,126	74,754
Oct-Dec	66,174	2,418	3,674	72,267
1977				
Jan-Mar	62,960	2,373	3,445	68,778
Apr-June	61,658	2,308	3,208	67,174
July-Sept	60,242	2,256	3,103	65,601
Oct-Dec	57,298	2,224	3,037	62,560

SOURCE: EIA Refiner Survey (P-305-S-O and P-306-M-O).

NOTE: Includes data for U.S. Territories (e.g., Puerto Rico and Virgin Islands) as well as from the 50 United States.

Figure III-11

## NUMBER OF LESSEE DEALERS SUPPLIED DIRECTLY BY REFINERS



SOURCE: Department of Energy

TABLE III-13

NUMBER OF GASOLINE SERVICE STATIONS AND AVERAGE MONTHLY SALES BY MARKETER TYPE\*

	U.S. Total	Ref./ Mrktrs.	Non- branded Independ.	Branded Independ.
November 1974**				
No. of Stations	201,258	13,958	8,400	178,900
Average Sales (gallons per station)	28,123	56,813	55,500	24,600
January 1976				
No. of Stations	192,350	16,050	11,300	165,000
Average Sales (gallons per station)	28,916	63,863	56,814	23,606
July 1976**				
No. of Stations	187,500	17,300	10,400	159,800
Average Sales (gallons per station)	32,938	66,358	58,077	27,685
January 1977				
No. of Stations	180,250	16,750	11,400	152,100
Average Sales (gallons per station)	30,974	65,013	52,281	25,628
July 1977**				
No. of Stations	184,058	16,358	12,000	155,700
Average Sales (gallons per station)	35,587	74,214	57,750	29,705

SOURCE: Bureau of Census Retail Survey and EIA Refiner Survey (Form P-306-M-O).

\* These numbers have been revised since the preliminary report to reflect updates to data base.

\*\* Due to seasonality, it is best to compare January 1976 to January 1977. Other months have been included for completeness.

TABLE III-14 .

GALLONAGE SALES THROUGH SERVICE STATIONS BY MARKETER TYPE

		Millions of Gallons Sold by Service Stations			
		U.S. Total	Ref./ Mrktrs	Non- branded Independ.	Branded Independ.
1974	October	5,716	812	417	4,487
	November	5,660	793	466	4,401
	December	5,803	848	520	4,435
1975	January	5,506	827	505	4,174
	February	5,149	827	486	3,869
	March	5,618	940	533	4,181
	April	5,573	884	558	4,131
	May	5,916	952	564	4,400
	June	5,959	938	575	4,446
	July	6,153	958	581	4,614
	August	6,050	988	606	4,456
	September	5,650	949	572	4,129
	October	5,793	1,010	605	4,178
	November	5,536	982	596	3,958
	December	5,853	1,085	639	4,129
1976	January	5,562	1,025	642	3,895
	February	5,247	965	585	3,697
	March	5,794	1,092	614	4,088
	April	5,909	1,068	643	4,198
	May	5,914	1,082	661	4,171
	June	5,970	1,100	618	4,252
	July	6,176	1,148	604	4,424
	August	6,110	1,152	610	4,348
	September	5,779	1,107	606	4,066
	October	5,934	1,152	614	4,168
	November	5,819	1,115	602	4,056
	December	6,134	1,204	692	4,238
1977	January	5,583	1,089	596	3,898
	February	5,398	1,033	572	3,693
	March	5,885	1,163	615	4,107
	April	6,112	1,168	674	4,270
	May	6,163	1,207	682	4,270
	June	6,242	1,207	679	4,356
	July	6,532	1,214	693	4,625
	August (P)	6,573	1,258	685	4,630

(P) Preliminary

TABLE III-15

U.S. MARKET SHARES OF GASOLINE SERVICE STATIONS

		<u>Percent of Sales by Type of Service Station</u>			
		<u>U.S.</u>	<u>Ref./</u>	<u>Non-</u>	<u>Branded</u>
		<u>Total</u>	<u>Mrktrs.</u>	<u>branded</u>	<u>Branded</u>
				<u>Independ.</u>	<u>Independ.</u>
1974	October	100.0	14.2	7.2	78.5
	November	100.0	14.0	8.2	77.8
	December	100.0	14.6	9.0	76.4
1975	January	100.0	15.0	9.2	75.8
	February	100.0	15.6	9.4	75.0
	March	100.0	16.1	9.5	74.4
	April	100.0	15.9	10.0	74.1
	May	100.0	16.1	9.5	74.4
	June	100.0	15.7	9.7	74.6
	July	100.0	15.6	9.4	75.0
	August	100.0	16.3	10.0	73.7
	September	100.0	16.8	10.1	73.1
	October	100.0	17.5	10.4	72.1
	November	100.0	17.8	10.7	71.5
	December	100.0	18.5	10.9	60.6
1976	January	100.0	18.5	11.5	70.0
	February	100.0	18.4	11.1	70.5
	March	100.0	18.8	10.6	70.6
	April	100.0	18.1	10.9	71.0
	May	100.0	18.3	11.2	70.5
	June	100.0	18.4	10.4	71.2
	July	100.0	18.6	9.8	71.6
	August	100.0	18.8	10.0	71.2
	September	100.0	19.1	10.5	70.4
	October	100.0	19.4	10.4	70.2
	November	100.0	19.2	10.3	70.5
	December	100.0	19.6	11.3	69.1
1977	January	100.0	19.5	10.7	69.8
	February	100.0	19.5	10.8	69.7
	March	100.0	19.8	10.4	69.8
	April	100.0	19.1	11.0	69.9
	May	100.0	19.6	11.1	69.3
	June	100.0	19.3	10.9	69.8
	July	100.0	18.9	10.6	70.5
	August (P)	100.0	19.2	10.4	70.4

(P) Preliminary

## CHAPTER IV

### IMPACT OF THE EXEMPTION OF MOTOR GASOLINE ON SUPPLY/DEMAND PRICE AND MARKET STRUCTURE

We believe the discussion in Chapter IV of the September Report continues to represent a generally accurate review of the supply factors which will restrain the retail price of motor gasoline either with or without decontrol, as well as those factors which could exert upward pressure on gasoline prices. We also believe that the conclusions in the September Report that supply will be adequate to meet demand through 1979, and that the price increases associated with decontrol will be small in comparison with increases which will occur under continued controls, have been strengthened by the receipt of additional data and the results of a more up-to-date demand projection based on such data.

In summary, most refiners continue to have large amounts (around \$1 billion as of January 1978) of unrecovered or "banked" costs that could be passed through on gasoline, suggesting that the total gasoline market at the refiner level is in equilibrium. Average retail margins also continue to be below the amount allowed by regulations. Ample supplies and stocks of gasoline continue to exist, providing the basis for competition in the petroleum industry. The April 1978 Lundberg Letter indicates that the consumer price index published by the Bureau

of Labor Statistics is running ahead of the national retail gasoline price index. All these factors suggest that competition, rather than price controls, is the principal factor in the marketplace restraining gasoline prices, and that, therefore, the removal of price controls should not have a significant impact on the price or supply of motor gasoline.

#### Revised Supply/Demand Projections

In this Supplement, we have made an effort to update the economic forecast upon which FEA's analysis of the viability of motor gasoline decontrol was based. The September Report relied on economic forecasts consistent with the President's overall economic objectives, and appeared at that time to represent the most realistic "worst case" scenario of high motor gasoline demand in 1979. The macroeconomic forecast used in the analysis contained in the September Report (Data Resources, Inc. CEASPIRIT) reflected economic targets established in early

1977. The Supplement, however, updates the high demand "worst case" projection to reflect a supply/demand analysis performed by the Energy Information Administration based on macroeconomic forecasts which approximate the Council of Economic Advisers' more recent forecast of overall economic activity (Data Resources, Inc. OPTIMO325).

A Macroeconomic Appendix (I-A) has been included in the Supplement which compares the key assumptions of the CEASPIRIT and OPTIMO325 forecasts with the recent CEA forecast of economic activity. Chapter IV of the Supplement contains tables, numbered to correspond with those in the September Report, which have been updated to reflect the OPTIMO325 forecast, and annotated to indicate the resulting minor adjustments.

The revised DOE forecasts based on OPTIMO325 contain several key changes in assumptions. The OPTIM forecast contains a lower gross national product ("GNP") growth rate in 1978 and 1979 than the CEASPIRIT-based forecast used in the September Report. In addition to updating the data base, our forecast incorporates new information which points toward more gains in motor vehicle fuel efficiency than originally predicted, and excludes from analysis the proposed crude oil equalization tax ("COET"), upon which Congress has not yet completed its consideration.

With respect to GNP growth rates, the OPTIM projection is 4.8 percent in 1978 and 1979, whereas the CEASPIRIT projection was 5.8 percent in 1978 and 5.4 percent in 1979. As to gains in motor vehicle fuel efficiency, the revised motor gasoline demand projection accounts for improved efficiency in light trucks, which was not included in the September Report. The adjustments for increased auto and light truck fuel efficiency total 317,000 and 525,000 barrels per day, respectively, in 1978 and 1979. In comparison, the September Report, which based its fuel efficiency adjustment solely on passenger cars, projected a demand reduction of 200,000 and 344,000 barrels per day in 1978 and 1979 due to increased fleet efficiency.

The September Report assumed that COET would be implemented in January 1978, which would have raised crude oil costs and subsequently refined product prices, and would thereby have reduced petroleum product demand. While we continue to believe that COET will be enacted, it clearly was not enacted on the schedule proposed by the President, and it will not likely have a major impact during the period covered by this analysis. If it is implemented in the near future, its effect would be to improve still further the supply/demand balance projected in this Supplement.

We have also revised the estimate of increase in the use of diesel fuel in passenger cars based on more recent information. The assumptions in the September Report of 16,500 and 35,000 barrels per day in 1978 and 1979, respectively, are revised downward to 3,000 and 15,000 barrels per day in 1978 and 1979.

In general, our revised motor gasoline and overall petroleum product demand projections using OPTIMO325 do not differ greatly from those presented in the September Report. The net result of all changes is to revise upward from 7.4 million barrels per day to 7.5 million barrels per day the demand forecast for motor gasoline in 1979. Total demand for all petroleum products in 1979 is also revised upward, from 20.4 to 20.7 million barrels per day. The demand projections presented here represent the Energy Information Administration's high estimates of the demand which could reasonably be expected, under a conservative set of assumptions, in the event of motor gasoline decontrol. Somewhat lower demand projections would, in our opinion, represent the "mostly likely" case.

In preparing this Supplement, we have also reexamined factors which might influence particularly the projected supply, demand and price of unleaded motor gasoline in the event of decontrol. The Supplement adds four additional tables to Chapter IV which assist this analysis. Table IV-24 compares the retail price for leaded and unleaded regular gasoline in 1975, 1976 and 1977. Table IV-25 compares

retail dealer margins for leaded and unleaded regular gasoline in those years. Table IV-26 compares refining and distribution margins over crude costs for leaded and unleaded regular gasoline in those years. Table IV-27 projects motor gasoline demand, production, imports and stocks.

#### Leaded/Unleaded Price Differential

With respect to the price of unleaded gasoline, EPA has expressed concern that if, in the event of decontrol, the current differential between leaded and unleaded gasoline prices were to increase still further, it might cause an increased number of motorists to use leaded gasoline in cars designed for unleaded gasoline.

There is no evidence available from which it can be conclusively stated that decontrol will or will not influence prices for unleaded gasoline and/or the leaded/unleaded price differential at the retail level. Nor is it likely that such conclusive evidence could be obtained in a controlled market. However, information that is currently available suggests that market factors other than price regulations are controlling unleaded gasoline prices at the retail level and that the differential will not likely increase after decontrol:

- Given that refiners have substantial banked costs, it is clear that refiners are not being constrained

by price controls. If retailers' margins were at maximum allowable levels so that they could not raise prices to market clearing levels, one of two phenomena would occur: (1) shortages would develop, as demand would be greater than supply at the constrained price; or (2) to optimize profits, refiners would raise prices to bring supplies in line with demand. Since supplies are adequate, and refiners have not been constrained from raising prices, DOE believes an equilibrium at both the refiner and retailer level currently exists.

- The average maximum allowable margin for all gasoline is estimated to be 10.3 cents per gallon (determined by adding the 7.3 cents per gallon estimated to be the average dealer's May 15, 1973 margin, based on Platt's Oilgram price data, and the additional 3 cents per gallon maximum allowed by the regulations to cover increased non-product costs). The average actual margin in 1977 for full serve unleaded gasoline at the retail level is estimated to have been 9.8 cents per gallon (Table IV-25), and for self serve is estimated to be about 5.8 cents per gallon. Thus, the best available data on average dealer margins show unleaded gasoline to be selling from 0.5 to 4.5 cents below the maximums allowed by the regulations.
- The average dealer margin of 9.8 cents for full-serve unleaded gasoline has decreased from 10.3

cents per gallon in the latter half of 1975 and 10.0 cents in 1976 (Table IV-25). Thus, the data show that the differential between actual full serve unleaded gasoline margins and allowable margins is increasing.

- In February 1977 refiners were given greater flexibility to shift costs from leaded to unleaded gasoline and responded by increasing the dealer tankwagon price differential by 1.4 cents per gallon. Retail prices increased only 1.2 cents indicating inability, because of market constraints, for retailers to pass through the entire amount.

These facts suggest there is no market opportunity to increase unleaded gasoline prices in comparison to leaded gasoline prices.

Even if retail full serve unleaded gasoline margins were at or near regulatory allowable maximums (which would mean that retailers would be restrained from passing through all non-product cost increases and from increasing their full serve unleaded gasoline margins), upward pressure on full serve unleaded gasoline prices could be reduced to the extent that lower-priced self-serve unleaded gasoline is available and exerts downward competitive pressure. Latest available

data (January 1978) indicate that self serve unleaded prices are about four cents per gallon lower than full serve unleaded prices.

There is no provision in the current pricing regulations that prescribes a maximum price differential between leaded and unleaded gasoline prices. This fact, coupled with the apparent fact that unleaded gasoline is generally not selling at maximum allowable prices, would suggest that the market is currently establishing the leaded/unleaded differential and the differential should not change significantly because of decontrol. Furthermore, a relationship between fuel switching and the price differential has not yet been established. And, even if it is established that the price differential is a motivating factor to cause fuel switching in violation of EPA regulations, it is not clear whether DOE should use its regulatory authority, such as it may be, to address the leaded/unleaded differential or whether EPA should attempt to address the fuel switching situation in some other manner.

Currently, a joint EPA/DOE study is under way to determine the extent of fuel switching and whether price is a motivating factor. It is not expected that the study will shed much additional light on the issue of whether the differential will increase after decontrol. However, if it is determined that current differentials are a motivating factor in substantial fuel switching, DOE will consider with EPA the appropriate remedy to prevent violations of EPA regulations.

At the refiner level, between the second half of 1975 and 1977, the average margin for unleaded gasoline increased 1.2 cents per gallon relative to the margin for leaded regular gasoline (Table IV-26). This 1.2 cents increase, however, can be attributed to a regulatory change designed to enable refiners to recover the higher costs of refining unleaded gasoline. In February 1977, refiners were granted flexibility to allocate cost increases freely within their

total gasoline pool. Although refiners shifted 1.4 cents of costs on the average to unleaded gasoline after this change, they still did not, in general, increase unleaded gasoline prices to ceiling levels, as most refiners still have substantial unrecovered or "banked" costs attributable to gasoline that would presumably have been passed through on unleaded gasoline if competitive conditions would have allowed.

Banked cost data submitted by refiners to DOE indicates that two large refiners had no banked costs in January 1978. These two refiners account for 13 percent of gasoline sales by the top 30 refiners. Gasoline banks for the other top 30 refiners were almost \$1 billion in January 1978, which is approximately \$100 million higher than banks in January 1977. Substantial banked costs held by refiners which supply most of the gasoline market indicate that refiners in general are not being constrained by the pricing regulations.

#### Effect on Supplies of Gasoline and Other Products

With respect to the projected future supply of unleaded gasoline, our revised analysis incorporates the impact of the EPA's waivers to the lead phasedown schedule. The gasoline supply analysis presented in the September Report was based on the assumption that the usage of lead in the production of gasoline in 1978 and 1979 would be reduced

to 0.8 grams per gallon on the average for a refiner's total gasoline pool on the basis that the EPA would grant no waivers to its lead phasedown schedule. However, the 0.8 grams per gallon requirement now has been waived for refiners whose refineries produce about two-thirds of the domestic motor gasoline supply.

Currently the average lead level is about 1.30 grams per gallon. In DOE's updated analysis, in an attempt to arrive at a realistic "worst case" projection of motor gasoline supply, the average lead level in 1978 and 1979 is estimated at 1.20 grams per gallon. An evaluation of gasoline supply using a 1.20 grams per-gallon assumption results in a projected possible shortfall of 30,000 barrels per day in catalytic reforming capacity or about a total gasoline shortfall of 50,000 to 60,000 barrels per day during the peak driving period of 1979. However, DOE also projects that stocks of motor gasoline will be adequate through 1979 (about 275 million barrels during the 1979 peak driving season; see Table IV-27) to ensure that total gasoline supply meets projected demand. A stock drawdown in the summer of 1979 to cover the motor gasoline production shortfall should

not constrain petroleum industry marketing activities. Moreover, a shortfall of this magnitude could also be met through product imports. At present, approximately 60,000 barrels per day of unleaded gasoline can be produced for U.S. consumption in refineries located in several European countries.

Our revised analysis also indicates that projected 1979 demand for products other than gasoline will be about 200,000 barrels per day higher than estimated in the September Report. To meet this increased demand, an additional 200,000 barrels per day of residual fuel oil will have to be imported. Excess foreign refining capacity to produce heavy fuel oils is more than adequate to meet this projected increase in import requirements. Our update of FEA's petroleum product supply analysis indicates that refinery yields will remain within historically demonstrated ranges for all products. We have also reviewed actual trends in the growth of demand for petroleum products other than motor gasoline in revising its projection of total product demand. The results of this review do not alter the conclusions of this motor gasoline decontrol analysis.

It should be noted that the shortfalls projected above in domestic supplies of gasoline and residual fuel oil would not be the result of decontrol but will occur with or without controls. The purpose of the analysis is to determine whether there might be shortages of supply serious enough to require the continuation of controls. As noted, the availability of imported products to meet any project shortfall -- which imports would be required with or without controls -- will be adequate to maintain a supply/demand balance at price levels approximately equal to what they would be under controls.

#### Effect on Increased Refinery Investments

Finally, we continue to support the conclusion reached in the September Report that decontrol could result in some increased investment in refinery expansion and improvements and that this could result in price increases of up to one-half to one cent per gallon. (See, e.g., September Report at 82, 138.) However, we believe the point requires elaboration and clarification.

At the present time, refiner price regulations allow refiners to pass through their increased depreciation costs incurred since May 1973. This allows them, in effect, to pass through over time the value of capital improvements made to plant and equipment. However, it does not allow refiners to include in their cost passthrough computation an amount representing a rate of return on capital investment.

The effect of the decontrol of products other than gasoline was to allow refiners to recover as much of a return as the marketplace would allow on about 40 percent of their investment. However, about 60 percent of their investment costs were probably allocated to gasoline and other controlled products, to which the prohibition on a return on investment applied. With the decontrol of gasoline, only about 10 percent of the product derived from a barrel of crude oil will remain subject to controls; thus, refiners will be allowed to recover as much of a return as the marketplace will allow on 90 percent of their increased investment costs. We believe that this enhanced ability of refiners to pass through a return on investment will result in some additional refinery modification and expansion that would not occur absent decontrol, although the amount of such increased investment is impossible to quantify.

Although the banks of most refiners allow them currently the flexibility, if competitive conditions permit, to raise their prices to recover, in effect, a return on investment, we believe that the removal of regulatory restrictions on the passthrough of a return on investment should provide an improved climate for refinery investments. This is because investors will have greater assurance that, if general market conditions tighten in the future

or if, for a variety of competitive reasons, the bank of unrecovered costs of the refiner in question is reduced to zero (which, as noted, is currently the case with two major refiners), they will nevertheless be able to pass through all of their investment costs. Thus, we believe the removal of controls will cause some marginal refinery investment opportunities to be taken when they otherwise would not.

It should also be made clear that the types of refinery investments we expect to be made as a direct result of decontrol do not include those that will have to be made over the next two years to produce the volumes of unleaded and low lead gasoline that will be required under the EPA's lead phasedown schedule. These investments are in effect mandated by current environmental regulations and will be made whether or not decontrol occurs. We do, however, expect the decontrol of gasoline to encourage investment in discretionary refinery modifications and improvements, such as the addition of desulfurization and coking and cracking equipment necessary for American refiners to meet the world-wide trend toward the production of relatively more of the heavy, high sulfur crude oils.

In the September Report, FEA concluded that the investments made as a result of decontrol could result in prices one-half to one cent per gallon higher than they would be under

continued controls. It should be pointed out that this figure is a maximum, and that it would represent a major increase over current levels of investment. Moreover, notwithstanding one misstatement to the contrary on page 182 of the September Report, the maximum price increase of one-half to one-cent would be above the actual price levels that could be expected if price controls continued in effect, not an increase over levels that would be permitted if controls were in effect. As noted above, actual price levels currently are well below the prices allowed by current regulations and are expected to remain so at least through 1979. Therefore, even with substantial new refinery investment as a result of decontrol, motor gasoline prices could in the foreseeable future still remain below the ceiling levels imposed by regulation.

TABLE IV-1

PROJECTED DOMESTIC PETROLEUM PRODUCT  
DEMAND ASSUMING NO PRICE INCREASE DUE TO EXEMPTION  
(Thousands of barrels per day)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979*</u>
Motor Gasoline	6,978	7,178	7,300	7,500
Leaded	5,617	5,319	4,700	4,300
Unleaded	1,361	1,859	2,600	3,200
Middle Distillates (excluding kerosene)	3,130	3,345	3,500	3,700
Residual Fuel	2,786	3,048	3,500	3,800
Jet Fuel	987	1,037	1,100	1,100
Other Products	3,562	3,814	4,100	4,400
Total Domestic Demand	17,443	18,422	19,500	20,500
Exports & Crude Oil Losses	224	230	200	200
Total Demand	17,667	18,652	19,700	20,700

\* Projections are rounded to the nearest 100,000.

NOTE: Numbers may not sum to totals because of rounding.

SOURCE: Data for 1976 and 1977 are actual demands as reported in the Monthly Energy Review. Demand projections for 1978 and 1979 are derived from EIA's Short-term Petroleum Demand Model, based on macroeconomic forecasts by Data Resources, Inc. which approximate the most recent forecasts of overall economic activity by the Council of Economic Advisers (DRI's OPTIMO325 macroeconomic simulation). Jet fuel demand projections are prepared by the Economic Regulatory Administration, based on forecasts by the Federal Aviation Administration and the Air Transport Assoc. of America. Product prices are assumed to remain constant in real terms. This price assumption differs from the higher prices used in the September 1977 Final Report, since the impact of the President's proposed crude oil equalization tax has been excluded from this Supplement. The lower prices used here result in an increase in projected product demand. Gasoline demand estimates for 1978 and 1979 include 3,000 and 15,000 barrel per day downward adjustments, respectively, for dieselization. Distillate demand includes a corresponding upward adjustment. Gasoline demand projections also include a 317,000 and 525,000 barrel per day downward adjustment for increased fuel efficiency in 1978 and 1979, respectively.

TABLE IV-2  
U.S. PETROLEUM SUPPLY ANALYSIS  
(Thousands of barrels per day)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Refinery Capacity*	15,692	16,755	17,200	17,400
Percent Utilization**	85.5%	87.2%	87.7%	90.8%
Anticipated Utilization	13,416	14,612	15,100	15,800
Domestic Crude ***	8,119	8,217	8,900	8,900
Foreign Crude ****	5,287	6,395	6,200	6,900
Product Imports	2,007	2,143	2,500	2,700
Residual Fuel	1,398	1,349	1,700	1,900
Other Imports	609	794	800	800
Natural Gas Liquids	1,604	1,617	1,500	1,500
Other*****	<u>640</u>	<u>655</u>	<u>650</u>	<u>650</u>
Total Supply	17,667	18,652	19,700	20,700

\*EIA estimates do not include Puerto Rico and Virgin Islands, which contribute approximately 1 million barrels per day additional capacity but whose product shipments to the U.S. are considered as imports. These estimates revised in July 1977 from those provided in the January 14, 1977 "Findings."

\*\*Based on crude inputs only.

\*\*\*Revised April 1978 to take into account latest available data.

\*\*\*\*Estimated to exclude imports for the Strategic Petroleum Reserve and stock buildups.

\*\*\*\*\*Includes processing gain and other hydrocarbon inputs.

NOTE: Numbers may not sum to totals because of rounding.  
Percentages based on unrounded numbers.

Source: DOE

TABLE IV-3

DOMESTIC REFINERY CAPACITY UTILIZATION

<u>Year</u>	<u>Percent Crude Input to Capacity</u>	<u>Year</u>	<u>Percent Crude Input to Capacity</u>
1968	90.6	1974	83.9
1969	90.6	1975	84.2
1970	88.6	1976	85.5
1971	87.2	1977	87.2*
1972	88.4	1978	87.7 projected
1973	89.8	1979	90.8 projected

---

\*Revised from September 1977 Final Report to include actual data.

SOURCE: U.S. Bureau of Mines, 1968-1976.  
EIA Estimates, 1977-1979.

TABLE IV-5

ANALYSIS OF U.S. GASOLINE SUPPLY  
(Thousand of barrels per day)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Refinery Capacity	15,692	16,755	17,200	17,400
Percent Utilization	85.5%	87.2%	87.7%	90.8%
Crude Oil Demand	13,416	14,612	15,100	15,800
Domestic	8,119	8,217	8,900	8,900
Import	5,287	6,395	6,200	6,900
Gasoline Yields from Crude Oil	6,121	6,374	6,500	6,700
Percent Gasoline Yield	45.6%	43.6%	43.4%	42.2%
NGL's Used at Refineries	725	659	600	600
Gasoline Imports	<u>131</u>	<u>215</u>	<u>200</u>	<u>200</u>
Total Gasoline Supply	6,977	7,248	7,300	7,500

NOTE: Numbers may not sum to totals because of rounding.  
Percentages based on unrounded numbers.

Source: DOE

TABLE IV-6

PERCENTAGE INCREASES IN REFINING CAPACITY  
AND REFINED PRODUCT DEMAND

	<u>1976 to 1977</u>	<u>1977 to 1978</u>	<u>1978 to 1979</u>
Refinery Capacity	6.8	2.4	1.6
Total Product Demand:	5.6	5.9	4.6
Gasoline	2.9	2.0	2.1
Middle Distillates	6.9	5.6	5.3
Residual Fuel	9.4	14.8	7.5
Jet Fuel	5.1	3.6	4.1
Other Products	7.1	8.0	6.5

NOTE: Percentage based on numbers presented in Table IV-1 and IV-2 before rounding.

Source: DOE

TABLE IV-7

PROJECTED PEAK PERIOD DEMAND FOR MOTOR GASOLINE  
(Thousands of barrels per day)

	<u>Total Peak Demand</u>	<u>Unleaded Demand (% of Total)</u>	<u>Leaded Demand</u>
June-Aug. 77	7,473	2,003 (26.8%)	5,470
June-Aug. 78	7,800	2,800 (36.0%)	5,000
June-Aug. 79	7,950	3,400 (43.0%)	4,550

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SOURCE: Unrounded total gasoline demand estimates are multiplied by percentage factors for unleaded demand in order to estimate unleaded and leaded gasoline demands. The 1977 total gasoline demand is from the Bureau of Mines. The 1977 unleaded gasoline percentage of total demand is derived from EIA's Survey of Refiners' Sales of Petroleum Products. The 1978-1979 projected unleaded percentages of total demand were provided by the Environmental Protection Agency.

TABLE IV-8  
 PROJECTED U.S. PETROLEUM REFINING CAPACITY,  
 1976-79  
 (Thousands of barrels per day)

Year	PAD DISTRIBUTION					TOTAL
	I	II	III	IV	V	
1976	1,790	4,180	6,550	550	2,620	15,700
1977	1,910	4,220	7,140	570	2,910	16,800
1978	1,910	4,240	7,440	590	2,980	17,200
1979	1,930	4,330	7,570	590	3,010	17,400
Percent Growth 1979 over 1976	7.8	3.6	15.6	7.3	14.9	11.2

SOURCE: FEA Trends in Refinery Capacity and Utilization, June, 1977, and DOE updates to projections.

TABLE IV-9

CATALYTIC REFORMING CAPACITY NEEDED TO MEET PROJECTED  
PEAK PERIOD AND ANNUAL AVERAGE DEMANDS FOR GASOLINE\*  
(Million barrels per day)

	Projected Reforming Capacity**	Necessary Reforming Capacity for Motor Gasoline Average Lead Level 1.20 g/gal	Estimated Reforming Capacity Necessary for Petrochemical Industry	Total Reforming Capacity Requirement Average Lead Level 1.20 g/gal	Excess Capacity or (Shortfall) Average Lead Level 1.20 g/gal
<u>1978</u>					
Peak Period***	3.48	3.04	.31	3.35	0.13
Annual Average	3.48	2.84	.31	3.15	0.32
<u>1979</u>					
Peak Period***	3.57	3.26	.34	3.60	(0.03)
Annual Average	3.57	3.00	.34	3.34	0.22

\* Assumes waivers by the Environmental Protection Agency of September, 1978 phasedown of average refinery lead pool to 0.8 grams per gallon of gasoline for about two-thirds of domestic refining capability. Use of manganese in unleaded gasoline is 0.0625 g/gal. in 1978 and 0.0 g/gal. in 1979.

\*\* Capacity used, assuming reformers are operated at 92% utilization rate. Reforming capacity projections are from the 1978 Oil and Gas Journal refining survey/construction survey.

\*\*\* Peak period defined as months of June, July and August.

SOURCE: Study conducted by the Energy Information Administration using comprehensive refinery model.

TABLE IV-10

REFINERY YIELDS FOR THE UNITED STATES  
(Annual Percent)

	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978*</u>	<u>1979*</u>
Gasoline	43.9	44.8	45.3	46.2	46.4	45.8	46.2	46.5	45.6	43.6	43.4	42.2
Jet Fuel	8.3	8.2	7.5	7.3	7.1	6.8	6.8	7.0	6.8	6.7	6.7	6.6
Distillates (including kerosene)	24.8	24.3	24.7	24.0	24.0	24.1	23.0	22.5	22.3	23.5	22.8	22.9
Residual Fuel Oil	7.2	6.8	6.4	6.6	6.7	7.7	8.7	9.9	10.3	11.9	11.9	11.9
Other	18.8	19.0	19.3	19.2	19.0	19.2	19.2	17.8	18.7	17.8	18.7	19.9
Shortages	-3.0	-3.1	-3.2	-3.3	-3.2	-3.6	-3.9	-3.7	-3.7	-3.5	-3.5	-3.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\* Projections based on crude oil inputs only.

SOURCE: U.S. Bureau of Mines, 1968-1977.  
EIA estimates, 1978-1979

TABLE IV-14

PROJECTED UNRECOUPED COSTS FOR  
GASOLINE: 30 LARGEST REFINERS, 1978

Gasoline Bank  
(Million \$)

January	1,000
February	1,000
March	900
April	750
May	750
June	800
July	850
August	850
September	800
October	850
November	800
December	800

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SOURCE: EIA Short-term Petroleum Cost Distribution Model  
(4-4-78).

TABLE IV-15

PROJECTED COMPOSITE CRUDE COSTS AND  
NON-PRODUCT COST INCREASES WITH CONTROLS  
(Cents per gallon)

<u>Year and Qtr.</u>	<u>Cumulative Crude Oil Increase Over 4rd Qtr. 1977 Cost</u>	<u>Cumulative Increase In Refiner Nonproduct Costs</u>	<u>Total Cumulative Increase</u>
<u>1978</u>			
1st	.1	.2	.3
2nd	.6	.4	1.0
3rd	.7	.6	1.3
4th	1.0	.8	1.8
<u>1979</u>			
1st	2.3	1.0	3.3
2nd	2.8	1.2	4.0
3rd	2.9	1.4	4.3
4th	3.2	1.6	4.8

NOTE: These forecasts of crude oil costs increases do not include increases that could result from the President's National Energy Plan. Preliminary projections indicated that average crude costs would have been about one and one-half to two cents higher in 1978 and three and one-half to four cents higher in 1979 if the crude oil equalization tax had been implemented as originally proposed. Nonproduct cost increases are derived by inflating historical refiners' gross margins by the projected GNP implicit price deflator from the Data Resources, Inc. OPTIMO325 macroeconomic simulation. Costs of increased refining capacity are not included.

SOURCE: EIA Short-term Petroleum Cost Distribution Model (4-4-78).

TABLE IV-16

PROJECTED CUMULATIVE GASOLINE  
PRICE INCREASE WITH CONTROLS  
(Cents per gallon)

Year and Qtr.	Cumulative Increase Over 4th Qtr. 1977
<u>1978</u>	
1st	-.2
2nd	.9
3rd	1.6
4th	1.5
<u>1979</u>	
1st	2.4
2nd	4.0
3rd	4.7
4th	4.6

---

NOTE: The assumption is made that imports of gasoline remain at their 1977 level, and the price of imported gasoline rises by the same amount as foreign crude oil. There would be normal seasonal variations on the order of three percent of the total price. These seasonal variations result in higher prices during the peak demand summer driving months. The decrease in the first quarter of 1978 from the fourth quarter of 1977 is due to a normal seasonal decline in demand. The price of foreign crude oil is assumed to increase in January 1979 by the same percent as the US GNP price deflator.

SOURCE: EIA Short-term Petroleum Cost Distribution Model (4-4-78)

TABLE IV-24

COMPARISON OF RETAIL PRICE FOR LEADED  
AND UNLEADED REGULAR GASOLINE  
(Cents per gallon)

	<u>Leaded</u>	<u>Unleaded</u>	<u>Difference</u>
<u>1975</u>			
Jan.	52.4	N.A.	N.A.
Feb.	52.5	56.1	3.6
Mar.	52.6	56.2	3.6
Apr.	53.5	57.1	3.6
May	54.3	57.9	3.6
June	55.6	58.8	3.2
July	58.7	61.5	2.8
Aug.	59.2	62.0	2.8
Sept.	59.3	62.1	2.8
Oct.	58.9	62.1	3.2
Nov.	58.4	62.0	3.6
Dec.	58.0	61.4	3.4
Average*	56.4	59.7	3.3
<u>1976</u>			
Jan.	57.7	61.2	3.5
Feb.	57.1	60.6	3.5
Mar.	56.6	60.1	3.5
Apr.	56.6	60.4	3.8
May	57.4	61.1	3.7
June	59.0	62.9	3.9
July	59.6	63.2	3.6
Aug.	60.1	63.9	3.8
Sept.	60.2	64.0	3.8
Oct.	60.2	64.0	3.8
Nov.	60.0	63.9	3.9
Dec.	59.9	63.9	4.0
Average	58.7	62.4	3.7

N.A. = not available

\* Based on February - December 1975 data.

TABLE IV-24 (cont.)

COMPARISON OF RETAIL PRICE FOR LEADED  
AND UNLEADED REGULAR GASOLINE  
(Cents per gallon)

	<u>Leaded</u>	<u>Unleaded</u>	<u>Difference</u>
<u>1977</u>			
Jan.	59.9	64.0	4.1
Feb.	60.7	65.0	4.3
Mar.	61.3	65.4	4.1
Apr.	62.2	66.1	3.9
May	62.9	66.7	3.8
June	63.4	67.2	3.8
July	63.4	67.3	3.9
Aug.	63.4	67.0	3.6
Sept.	63.3	67.0	3.7
Oct.	63.2	67.0	3.8
Nov.	63.1	67.0	3.9
Dec.	63.3	67.2	3.9
Average	62.5	66.4	3.9

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NOTE: Prices at full service retail pumps, including tax.

SOURCE: Lundberg Survey, Inc.

TABLE IV-25

COMPARISON OF RETAIL DEALER MARGINS FOR  
LEADED AND UNLEADED REGULAR GASOLINE\*  
(cents per gallon)

Year	Leaded Margin	Unleaded Margin	Difference
1975**	8.4	10.3	1.9
1976	7.6	10.0	2.4
1977	8.3	9.8	1.5

\* Difference between retail prices at full service pumps and refiners' dealers tank wagon prices reported to the EIA, excluding taxes.

\*\* Based on July - December 1975 data.

SOURCE: Energy Information Administration, using FEA Form P302-M-1 and Lundberg Survey, Inc.

TABLE IV-26

COMPARISON OF REFINING AND DISTRIBUTION  
MARGINS OVER CRUDE COST FOR LEADED  
AND UNLEADED REGULAR GASOLINE\*  
(Cents per gallon)

Year	Leaded Margin	Unleaded Margin	Difference
1975**	12.4	13.6	1.2
1976	12.7	14.0	1.3
1977	13.2	15.6	2.4

\* Difference between refiners' dealer tank wagon prices, excluding tax, and average refiner acquisition cost of crude oil.

\*\* Based on July - December 1975 data.

SOURCE: Energy Information Administration, using FEA Form P302-M-1.

TABLE IV-27

ANALYSIS OF IMPACT OF SUPPLY/DEMAND  
BALANCE ON MOTOR GASOLINE STOCKS

<u>Year/Qtr.</u>	<u>Domestic Demand</u> (Thousands	<u>Production</u> of barrels	<u>Imports</u> per day)	<u>Stocks</u> (thousands barrels)	<u>Percent Demand o Stocks</u>
1975 1st	6209	6285	194	248,685	2.5
2nd	6888	6280	151	207,114	3.3
3rd	6926	6899	237	226,447	3.1
4th	6659	6599	155	234,925	2.8
1976 1st	6517	6470	100	239,049	2.7
2nd	7165	6880	133	225,365	3.2
3rd	7187	7067	167	229,751	3.1
4th	7035	6931	123	231,387	3.0
1977 1st	6754	6872	217	262,118	2.6
2nd	7326	7021	239	256,389	2.9
3rd	7392	7167	219	255,848	2.9
4th	7238	7066	185	256,864	2.8
1978 1st	6750	6850	200	276,000	2.4
2nd	7550	7200	200	272,000	2.8
3rd	7650	7450	200	279,000	2.7
4th	7350	7050	200	268,000	2.7
1979 1st	6900	6950	200	286,000	2.4
2nd	7700	7300	200	279,000	2.8
3rd	7800	7500	200	272,000	2.9
4th	7500	7250	200	260,000	2.9

NOTE: Quarterly data are derived from unrounded monthly projections. Percentages are based on unrounded data.

SOURCE: 1975-1977 data are based on monthly data reported in the Monthly Energy Review. Demand projections are from EIA's Short-Term Petroleum Demand Model, based on the Data Resources, Inc. OPTIMO325 macroeconomic simulation. Gasoline production and imports data are consistent with the yearly supply balance presented in Table IV-5, adjusted for normal seasonal variation, except that summer, 1979 production levels have been constrained to simulate the 30 thousand barrel per day catalytic reforming capacity shortfall projected in Table IV-9. Gasoline stocks are derived by adding cumulative monthly excess (or shortfall) or projected gasoline supply over demand to end of 1977 total stocks.

## CHAPTER V

### IMPACT OF EXEMPTION OF MOTOR GASOLINE ON THE ECONOMY

There are no changes to the analysis in Chapter V of the September Report. The first section of this analysis discusses the economic impacts associated with the forecasts and analysis in Chapter IV. Because the update of Chapter IV in this Supplement did not alter our basic conclusions that (1) supply will be adequate to meet demand through 1979, and (2) the price increase associated with decontrol will be small, amounting to about one cent per gallon to recover investment in additional refining capacity needed to meet EPA standards, the differences between the base and test cases in Chapter V remain the same. The relationship between the macroeconomic impacts of a case in which controls are maintained, and one in which they are removed, remains the same.

The analysis in the remainder of Chapter V of the September Report is not affected by the updated projections in Chapter IV of the Supplement.

CHAPTER VI

FINDINGS AND CONCLUSIONS

There are no changes to the September Report.

FORECAST OVERVIEW

FORECASTING MODEL  
(date of run)

OPTIM 0325  
(3/78)

COUNCIL OF ECON. ADVISERS  
(1/78)

General  
Description

A short-term simulation of the U.S. economy based on the 3/78 run of DRI's quarterly TRENDLONG model. This model assumes success of the President's anti-inflation program and increase in business investment spending. Approximates CEA's most recent projections of overall economic activity. Real growth in GNP is less than that projected in the CEASPIRIT simulation.

A short-term simulation of the economy presented annually in the Economic Report of the President. Evaluates the President's economic program. Fiscal and monetary policy are designed to combat projected high inflation and a slowdown in the economy through 1979.

Key activities

1) Fiscal  
Policy

- a) Federal purchases of goods and services will increase 3.2% in 1978 and 2.9% in 1979.
- b) Federal deficit is reduced \$5.1 billion between 1977 and 1979 (current dollars).
- c) \$24 billion general tax cut in 10/78. Compromise version of National Energy Plan is passed by Congress in late 1978.

- a) Federal purchases increase between 3.75 and 4.25% in 1978, and less than 2% in 1979 (constant dollars).
- b) Federal deficit will increase \$5 billion between 1978 and 1979 (current dollars).
- c) \$25 billion tax cut (personal, business, and payroll) in 10/78. Includes National Energy Plan tax plan.

FORECAST OVERVIEW

FORECASTING MODEL  
(date of run)

CEASPIRIT  
(6/77)

General  
Description

A short-term simulation of the U.S. economy based on the 3/77 run of DRI's quarterly TRENDLONG model. This model assumes no major cyclical movements in the economy. The 6/77 simulation was constrained to meet CEA's 1977-1982 targets for economic growth and inflation, presented in early 1977. Assumes successful recovery from the recent recession.

Key assumptions

1) Fiscal  
Policy

- a) Federal purchases of goods and services increase 5.3% billion in 1978 and 3.3% billion in 1979 (constant dollars).
- b) Federal deficit is reduced \$21.2 billion between 1977 and 1979 (current dollars).
- c) No general tax stimulus before 1980. Includes impact of National Energy Plan crude oil equalization tax.

FORECASTING MODEL (date of run)	OPTIM 0325 (3/78)	COUNCIL OF ECON. ADVISERS (1/78)
2) Monetary policy	Reflects government's commitment to support the dollar in international markets and combat domestic inflation. Money supply grows at 5.4% in 1978 and 1979.	Designed to foster stable economic growth and an increased rate of investment. Short-term interest rates increase in 1978. Long-term rates are stable.
3) Economic growth	GNP (1972 dollars) increases 4.8% in 1978 and in 1979. This is consistent with the CEA's target annual growth of 4.9% in 1977-1980.	GNP (1972 dollars) increases between 4.5 and 5.0% in both 1978 and 1979.
4) Domestic prices	Consumer Price index increases 5.5% in 1978 and 5.3% in 1979.	Consumer Price Index increases between 5.75 and 6.25% in both 1978 and 1979.
5) Foreign Trade	Exports increase 5.5% in 1978 and 6.7% in 1979 in real terms.	U. S. exports increase 4-5% in real terms in 1978.

FORECASTING MODEL (date of run)	CEASPIRIT (6/77)
2) Monetary policy	Restrictive through early 1978 to control inflation, but eases up in late 1978 and 1979 to deal with unemployment. Money supply grows at the relatively high rate of 7.5% in 1978 and 7.1% in 1979.
3) Economic growth	GNP (1972 dollars) increases 5.8% in 1978 and 5.4% in 1979. This is consistent with the CEA's target annual growth of 4.9% in 1977-1982.
4) Domestic prices	Consumer Price index increases 5.6% in 1978 and 6.0% in 1979. This is consistent with the CEA's 1977 announced target annual inflation of 5.3% in 1977-1982.
5) Foreign Trade	Slow real growth (3.1% per year) for OECD countries is associated with small increase in exports.

F O R E C A S T   S U M M A R Y

	Actual <u>1977*</u>	OPTIM O325		COUNCIL OF ECON. ADVISERS	
		<u>1978*</u>	<u>1979*</u>	<u>1978**</u>	<u>1979**</u>
<u>RATES OF CHANGE</u>					
GNP - Current \$	10.7	11.0	10.6	11.0	NA
- Constant \$	4.9	4.2	4.4	4.5-5.0	4.5-5.0
GNP Deflator	5.5	5.9	5.5	NA	NA
CPI	6.5	5.5	5.3	5.75-6.25	6.0+
WPI	6.2	6.2	5.7	NA	NA
Hourly Earnings (non-farm)	7.3	7.1	6.4	7.25	higher than 1978
<u>SHARE OF REAL DEMAND (%)</u>					
Consumption/GNP	64.1	63.4	62.9	64.3	NA
Business Fixed Investment/GNP	9.8	10.2	10.6	9.7	NA
Residential Construction/GNP	4.8	5.0	4.9	4.3	NA
Government Purchases/GNP	20.9	20.8	20.8	20.3	NA
<u>KEY INDICATORS OF ACTIVITY</u>					
Unemployment Rate (%)	7.0	5.9	5.5	6.3	5.5-6.0
Retail Car Sales (Millions)	11.2	10.8	11.5	NA	NA
Housing Starts (Millions)	1.97	1.91	1.96	NA	NA
Savings Rate (%)	5.1	5.8	6.2	NA	NA
Federal Funds Rate	5.54	6.57	5.94	NA	NA
Prime Rate	6.82	7.88	7.47	NA	NA
High-Grade Corp. Bond Rate	8.06	8.54	8.38	NA	NA

NA = information not available in 1978 Economic Report of the President.

\* Rates of change based on average annual data.

\*\* Rates of changes based on fourth quarter data.

F O R E C A S T      S U M M A R Y

	CEASPERIT*		
	<u>1977</u>	<u>1978</u>	<u>1979</u>
<u>RATES OF CHANGE</u>			
GNP - Current \$	11.1	12.0	11.1
- Constant \$	4.9	5.8	5.4
GNP Deflator	5.8	5.9	5.4
CPI	6.4	5.6	5.1
WPI	6.3	6.1	5.6
Hourly Earnings (non-farm)	7.1	7.1	6.8
<u>SHARE OF REAL DEMAND (%)</u>			
Consumption/GNP	64.5	64.1	63.8
Business Fixed Investment/GNP	9.3	9.4	9.7
Residential Construction/GNP	4.0	4.1	4.1
Government Purchases/GNP	20.4	20.1	19.8
<u>KEY INDICATORS OF ACTIVITY</u>			
Unemployment Rate (%)	7.4	6.3	5.6
Retail Car Sales (Millions)	11.1	11.5	11.9
Housing Starts (Millions)	1.80	1.88	1.96
Savings Rate (%)	6.4	6.1	6.1
Federal Funds Rate	5.48	6.07	5.70
Prime Rate	6.57	7.01	6.47
High-Grade Corp. Bond Rate	8.25	8.30	8.00

\* Rates of change based on average annual data.