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PUBLIC CONSERVATION EDUCATION PLAN

FOR THE

NATURAL GAS SHORTFALL

WINTER, 1975-76

FEA - ENERGY CONSERVATION AND ENVIRONMENT



PUBLIC CONSERVATION EDUCATION PLAN
FOR THE
NATURAL GAS SHORTFALL
WINTER, 1975-76

PREPARED FOR
GOVERNORS
AND
STATE ENERGY OFFICIALS

BY
OFFICE OF MARKETING & EDUCATION
ENERGY CONSERVATION & ENVIRONMENT
FEDERAL ENERGY ADMINISTRATION

FOREWORD

The enclosed materials have been prepared for your use. It is our belief that the key elected and appointed officials of each State are in one of the most advantageous positions from which to enlist citizen support of energy conservation. While there may not yet be agreement on all of the solutions to our current natural gas situation, we strongly believe that providing information about how to conserve natural gas is supported by all elements of society.

The purpose of this plan is to give you an outline for action. Included in this package is

- a plan for your conservation public education efforts.
- a listing of what we can and will provide to assist you if you so request.
- copies of material available and designed for current distribution, particularly to the press.
- a listing of sources.
- a description of how to obtain FEA support.

We are confident that our joint efforts to help the public understand that conservation of natural gas is important and will result in significant savings this winter.

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CONSERVATION
EDUCATION PLAN

PUBLIC CONSERVATION EDUCATION PLAN

NATURAL GAS SHORTFALL

WINTER 1975-76

INTRODUCTION

This Public Education Plan has been prepared for the use of Governors, State Energy Officials, and Local Officials to help them enlist public cooperation to conserve natural gas during the winter months.

The materials that are available for state use deal primarily with residential natural gas conservation. They are:

- Action oriented
- Targeted to primary uses in the home
- Simple and easy to understand
- Easy for states and/or local organizations to use

CONTENTS

This Public Conservation Education Plan includes:

- Key facts important to obtaining consumer conservation
- A recommended conservation education plan
- What FEA will provide and who to call
- Examples of material
- How to obtain public service space and time
- Glossary of advertising terms

RECOMMENDED CONSERVATION EDUCATION PLAN

We believe a natural gas conservation education campaign can achieve significant conservation if it:

- is oriented to each state's needs and situation
- has the active involvement and support of the Governor and other key state officials
- sets a goal by directly asking citizens to save at least 10% of their winter natural gas use
- relates the benefits of that saving to the economy and employment of the state
- shows citizens how and where they can conserve natural gas and what the effect of that saving will be on their costs

KEY FACTS IMPORTANT TO OBTAINING CONSUMER CONSERVATION

- About 30% of all natural gas consumed in the U. S. is used in homes.
- But over 90% of U. S. natural gas customers are residential.
- The Federal Power Commission priority classification system acts to protect residential uses from curtailment, focusing such cutbacks on large industrial users.
- The current estimate of natural gas shortfall is about 1.3 trillion cubic feet for the winter heating season.

- This is the equivalent of about 16% of the U.S. winter heating season use.
- If all residential and commercial users would save 10% of their annual gas consumption, about .75 TCF would be available for other uses.
- Residential savings are possible to obtain
 - 1973 winter (during the embargo) showed reduction of 10-12%
 - This reduction has gradually slipped away to 6-8% in 1974-75 winter.
 - Generally residential and commercial structures are thermally inefficient because of historically low gas prices.
 - Moderate savings are obtained from simple, non-costly actions, e.g., each 1 degree thermostat setback saves about 3%.
- Consumers are confused and potentially angry. Conservation education -- if factual -- can help eliminate confusion by identifying alternative ways of conserving energy and explaining the immediate need for conservation.

FIVE ELEMENTS OF THE PLAN

The basic natural gas conservation education plan includes five key elements:

- (1) Announcement and press briefing by the Governor with FEA support.
- (2) Establishment of a place or places for consumers to obtain conservation information.
- (3) Distribution -- primarily through public service advertisements -- of detailed "How To Save" information. The ads will be primarily television and newspaper materials.
- (4) Enlisting the cooperation of major employers to help distribute the information to their employees.
- (5) Monthly progress reports as the winter continues.

WHAT FEA WILL PROVIDE

Because the potential shortfall varies significantly by state, some part of the content of education messages is also likely to vary. Consequently, a "national" campaign is neither warranted or likely to be credible.

Responsibility for beginning a conservation education campaign must be the Governor's. FEA's national and regional offices will provide a high degree of professional, low profile support if requested.

The main elements of this support include:

- (This) Natural Gas Conservation Education Plan
- Background material
- Detailed briefings by FEA personnel on the natural gas situation in key states, if requested
- Public service advertisements, customized to each state, including:
 - Television
 - Newspaper
 - Radio
- Consulting and education advice for key state personnel, if requested
- "How to Conserve" information for consumers, commercial establishments, and industry.
- Presentation materials to aid in enlisting employer support.

HOW TO OBTAIN FEA SUPPORT

Certain information will automatically be sent to the Governor's Office and the State Energy Office.

- Background material
 - Energy backgrounder
 - Natural gas backgrounder
 - State by state data collection system
- Planning materials
 - Like this plan

Other material will be customized to each state or sent only upon request. Most of this material will be provided free:

- Detailed briefing materials (slides and script)(free)
- Public Service "How to Conserve" announcements and layouts (free)
 - Television
 - Newspaper
 - Radio
- Consumer Information (see tab)
 - Printed material (some free, some at cost)
 - Reproduction plates for state customizing (free)
- Detailed information and assistance on how to implement a successful conservation education campaign.

To obtain part or all of this assistance, call or write -

Jim Rubin
Natural Gas Task Force
202-961-6025

or

Lee James
Marketing & Education
Energy Conservation and Environment
202-961-8487

Federal Energy Administration
12th and Pennsylvania Avenue, N. W.
Washington, D. C. 20461

PRESS
INFORMATION

THE NATURAL GAS SHORTAGE

Introduction

In May, President Ford directed the Energy Resources Council to assess the magnitude and possible impacts of this winter's natural gas shortage and to recommend policy actions to deal with the shortage.

This report, coordinated by the FFA, is a preliminary assessment of the natural gas problem and its impacts. Final policy recommendations will be issued shortly and a complete monitoring, forecasting, and data system will be operational before the start of the heating season.

Natural Gas Trends

The natural gas shortage has been growing at a rapid rate in recent years. Demand for natural gas has steadily increased because of its clean-burning properties, low-cost, and until recently, accessibility. After World War II, the availability of abundant supplies of natural gas -- most of it found in the search for oil -- and improved quality of pipe for high-pressure, long-distance delivery enabled the gas utility industry to expand rapidly and widely. Marketed gas production increased from four trillion cubic feet (Tcf), in 1946, to eight Tcf by 1952 and continued to grow at a 6.5 percent average annual rate in the 1950's and 1960's (see Figure 1 for natural gas trends).

Natural gas production peaked in 1973 at 22.5 Tcf and declined significantly for the first time in 1974 to 21.2 Tcf, a decline of almost 6 percent. Last year's production decline is equivalent to over 230 million barrels of crude oil. Reserve additions failed to equal or exceed production for the seventh straight year and gas reserves in the lower 48 states are now at their lowest level since 1952. The only major reserve additions in recent years has been the Alaskan reserves of 26 Tcf added in 1970 (see Figure 2 for reserve and production trends).

The U.S. natural gas system is composed of producers, interstate and intrastate pipelines, distributors, and end-users (see Figure 3). Interstate pipelines supply about two-thirds of the approximately 20 trillion cubic feet (Tcf) consumed annually in the U.S. Domestic production is concentrated in six states (Texas, Louisiana, Oklahoma, California, New Mexico, and Kansas), with most of this production in Texas and Louisiana. Consequently, most of the intrastate pipelines are found in these states.

Growth in U.S. Natural Gas Consumption 1920 - 1974

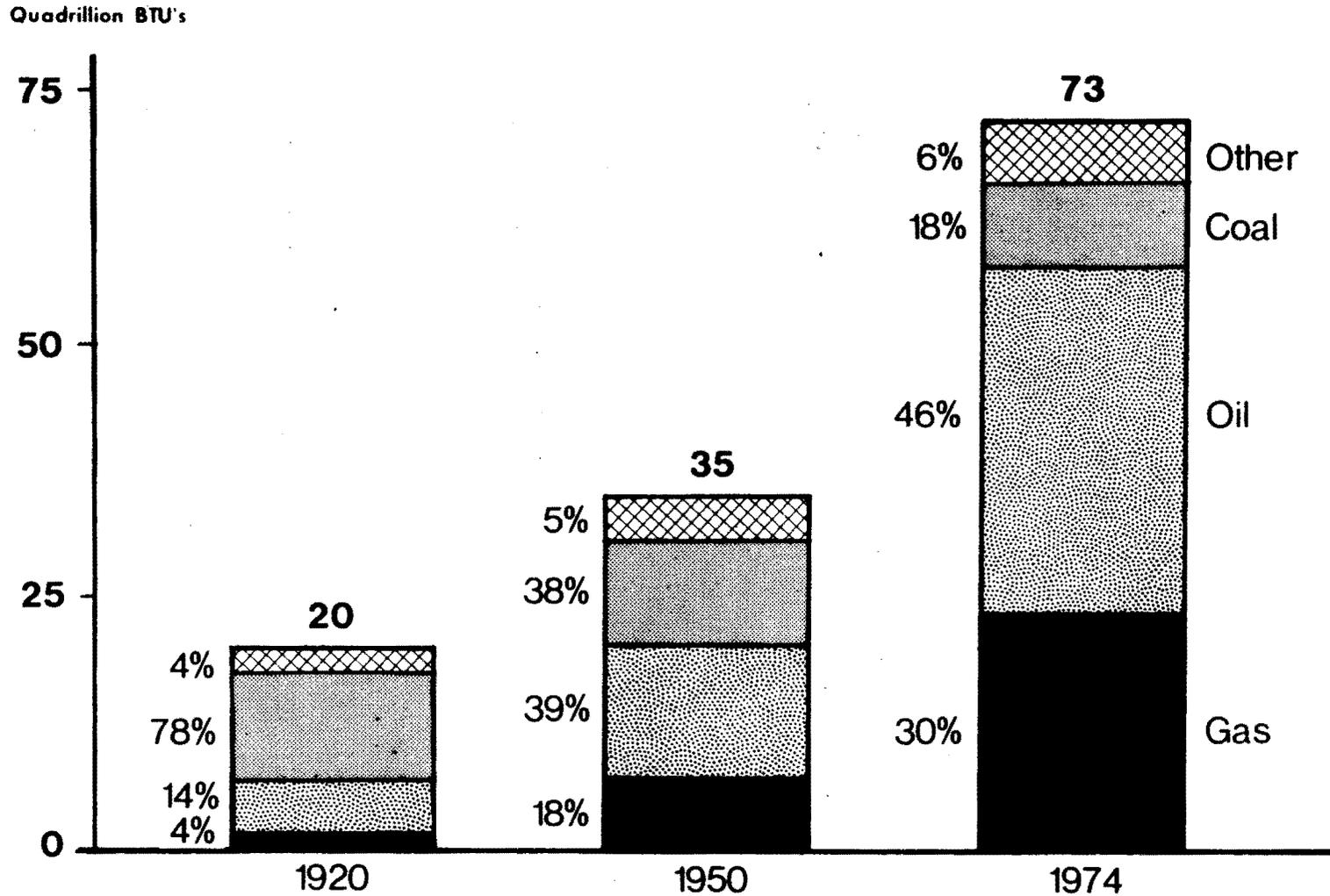


FIGURE 1

U.S. Natural Gas Reserves (Excluding Alaska)

Trillion Cubic Feet

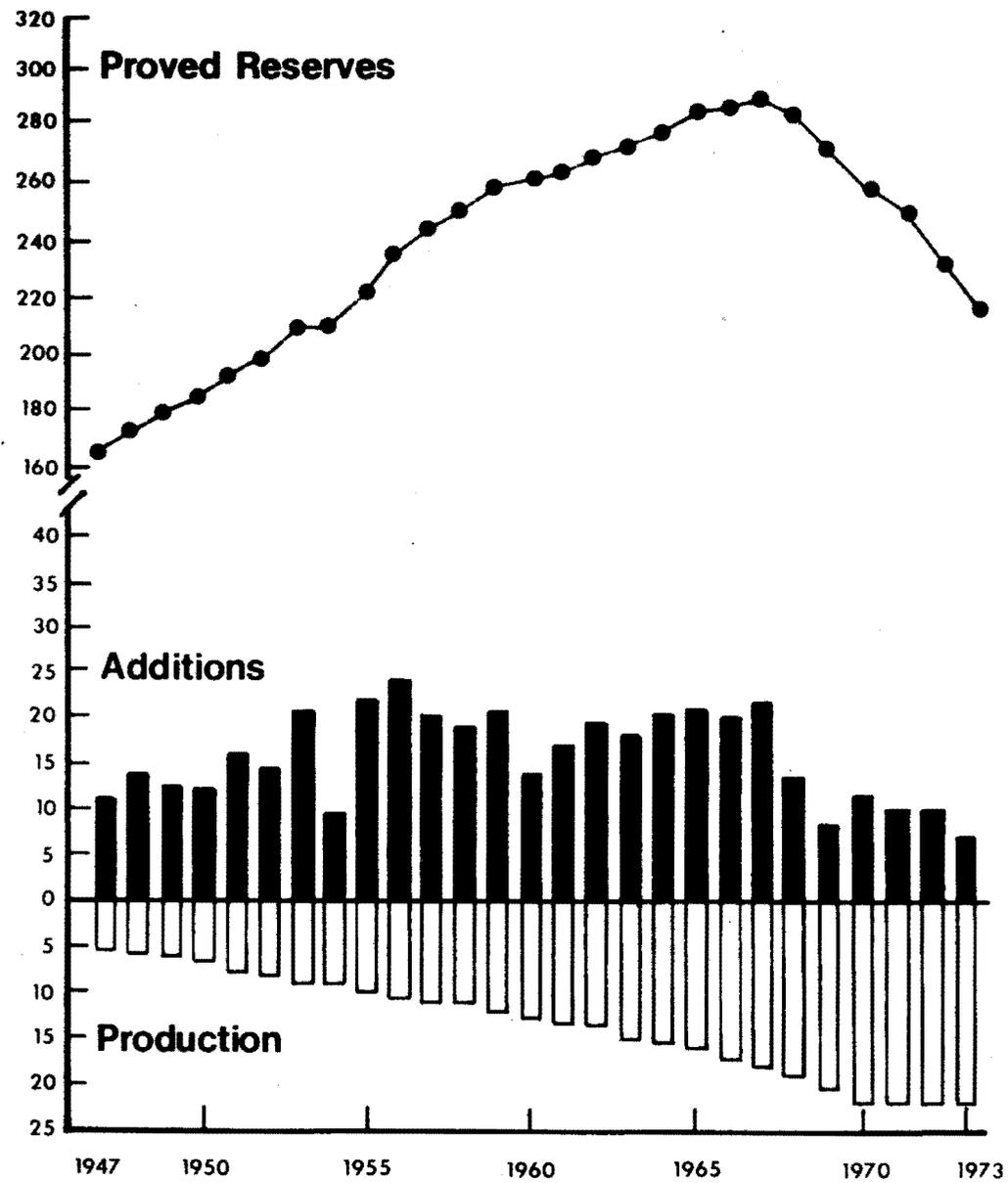


FIGURE 2

Overview — U.S. Natural Gas System [Bcf]

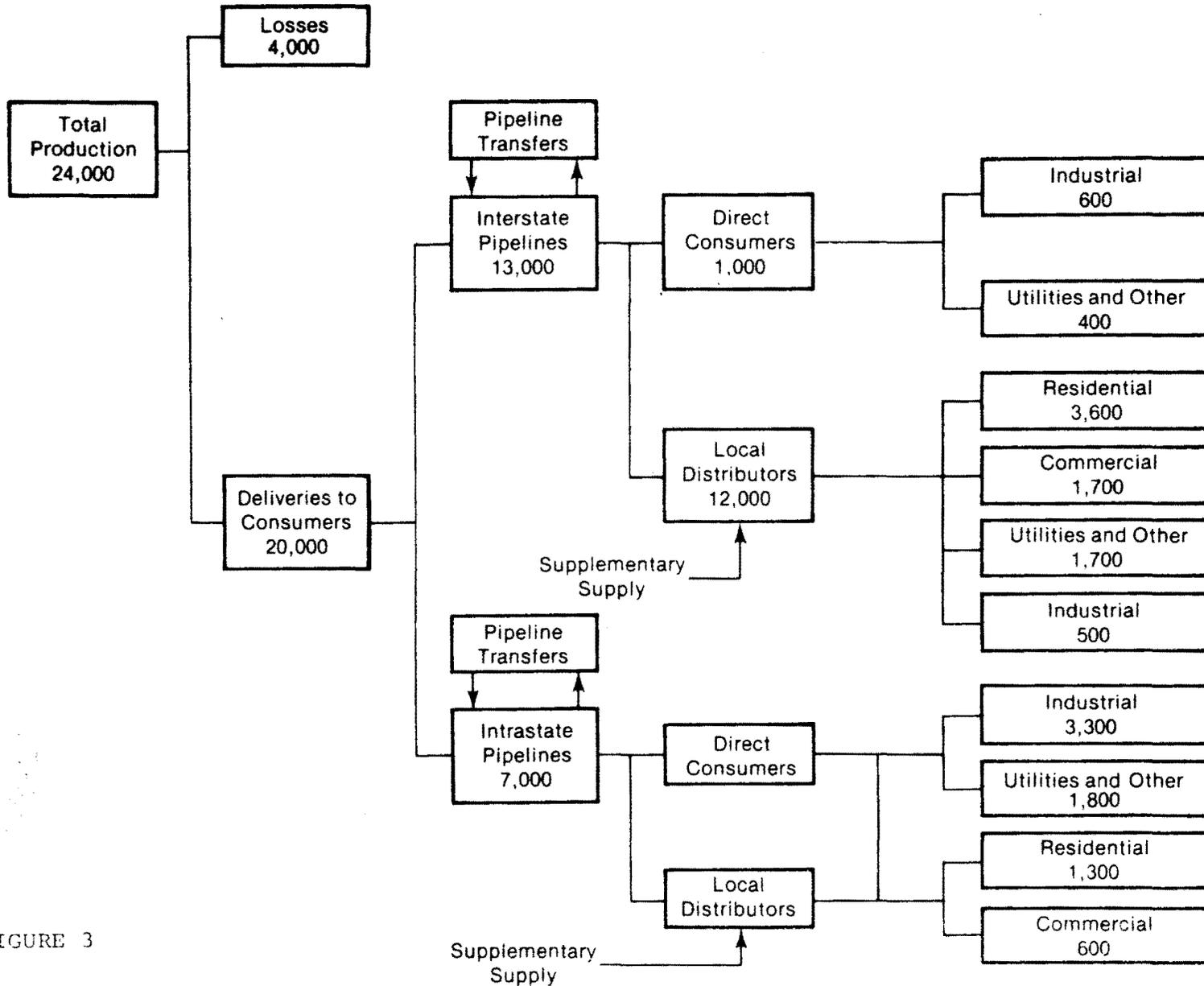


FIGURE 3

Natural gas now represents about one-third of the total energy consumed by the Nation and almost one-half of the non-transportation uses -- an amount twice that supplied by either oil or coal. It is consumed by over 40 million residences, 3.4 million commercial establishments, and over 200,000 industrial users.

Natural gas is predominantly consumed by industry, as indicated below:

residential use	24.5%
commercial use	11.6%
industrial use	46.2%
electric power	16.5%
other	1.2%

Most of the residential use of natural gas is for space heating (over 70 percent) and water heaters (about 20 percent). The largest industrial gas users are chemical and allied products (about 24 percent), petroleum and coal products (16 percent), and primary metal industries (about 13 percent). Almost 40 percent (about 3.5 Tcf) of the industrial gas use is as a boiler fuel in the chemical, petroleum, food, and paper industries. Gas consumption plays an important role as a feedstock and process fuel in the manufacture of ammonia, fertilizer, and methanol.

The greatest percentage of natural gas use occurs in the West South Central census region (Texas, Louisiana, Oklahoma, and Arkansas), which consumes over 30 percent of the natural gas used and which also accounts for more than 50 percent of gas used in electric utilities. The smallest use of natural gas occurs in New England, which uses less than 2 percent of the gas. Boiler fuel gas use remains over 1/3 of the gas market and is substantial in the West South Central and Mountain States where intrastate gas is more plentiful. (See Figure 4 for the distribution of natural gas consumption in each region.)

Regional Distribution of Natural Gas Consumption, 1974

Trillion Cubic Feet

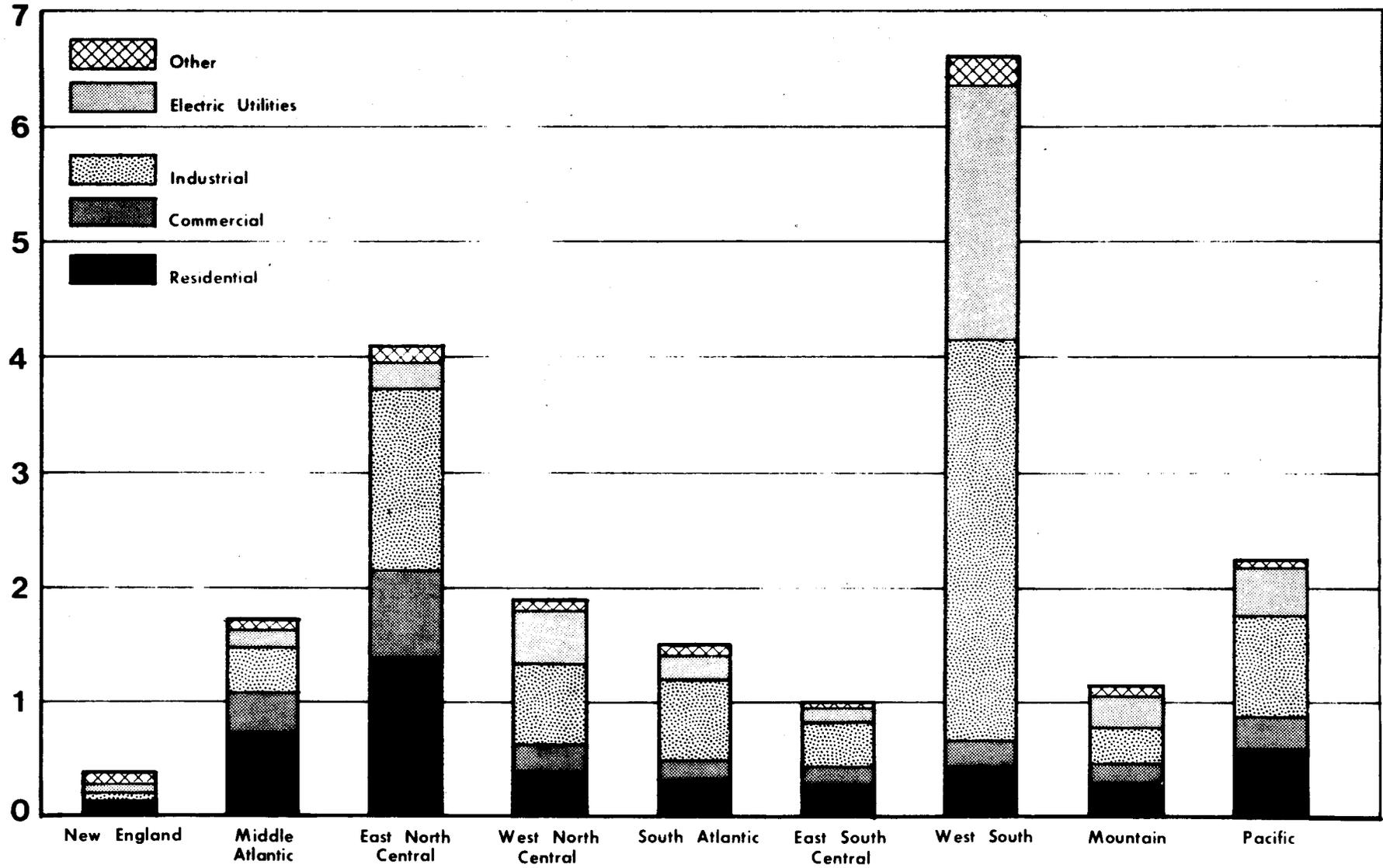


FIGURE 4

The Growing Shortage

In the 1970's, the demand for gas has exceeded its supply. Many gas distribution companies have found it necessary to deny gas service to new customers and to curtail some customers. Additionally, the Federal Power Commission has set priorities on gas use (see Table 1 for priority list). The highest priority users -- residential and small commercial customers and industrial use for plant protection, feedstock, and process needs -- are the last to be curtailed in times of shortage.

Curtailments (generally defined as requirements less deliveries) grew from 0.1 trillion cubic feet (Tcf) in the 1970/71 season (April-March) to 2.0 Tcf in 1974/75, as shown below:

TABLE 2
CURTAILMENT TRENDS

<u>Year</u> <u>(April-March)</u>	<u>Annual Firm 1/</u> <u>Curtailments (Tcf)</u>	<u>Heating Season (Nov.-Mar.)</u> <u>Curtailments (Tcf)</u>
1970/71	0.1	0.1
1971/72	0.5	0.2
1972/73	1.1	0.5
1973/74	1.6	0.6
1974/75	2.0	1.0
1975/76 (expected)	2.9	1.3
1976/77 (forecast)	4.0	about 1.9

1/ Pipeline to pipeline curtailments not included in 1974-1976 data.

While firm natural gas requirements of 9.0 Tcf are projected for the winter heating season (November 1975 to March 1976), the firm curtailments of 1.3 Tcf exceed last year's curtailments during the same period by 30%. Corresponding figures for the year (April - March) indicate curtailments of 2.9 Tcf, which is 45 percent worse than last year.

For many years, interstate and intrastate gas sold at about the same price. Within the last ten years, intrastate prices have increased more quickly than the regulated interstate prices and this has led to a change in the share of the market held by interstate and intrastate distributors (market share has shifted about 5 percent since 1970). Since the intrastate gas can be sold at higher prices, more exploration has been occurring in the intrastate area. In fact, in the last five years over 90 percent of the reserve additions have been in the intrastate area; whereas in the preceding five years only one-third of reserve additions were intrastate (see Figure 5).

TABLE 1

**Federal Power Commission
Natural Gas Curtailment Priorities**

- 1. Residential, small commercial (less than 50 MCF on a peak day) .**
- 2. Large commercial requirements (50 MCF or more on a peak day), firm industrial requirements for plant protection, feedstock and process needs, and pipeline customer storage injection requirements.**
- 3. All industrial requirements not specified in 2, 4, 5, 6, 7, 8, or 9.**
- 4-5. Firm industrial requirements for boiler fuel use where alternate fuel capabilities can meet such requirements.**
- 6-9. Interruptible requirements where alternate fuel capabilities can meet such requirements.**

Average Annual Net Reserve Additions to Interstate and Intrastate Pipelines

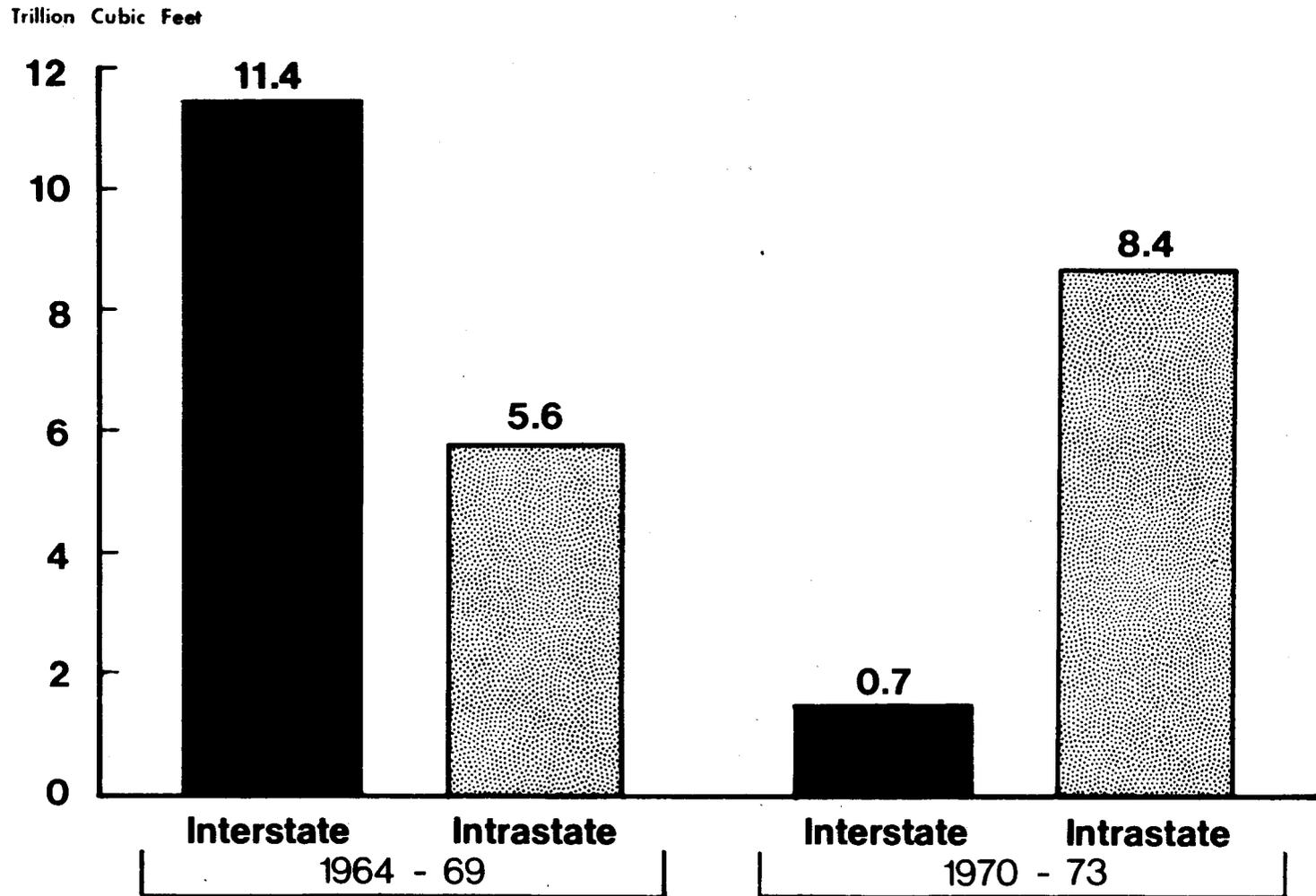


FIGURE 5

Pipelines are not only linked to specific fields, but are linked to specific distribution areas as well. Of the 48 interstate pipeline companies reporting, five major interstate pipelines represent nearly 80% of the volume of projected curtailments and less than half the total requirements. These pipelines are: Columbia Gas Transmission Corp.; El Paso Natural Gas Co.; Texas Eastern Transmission Co.; United Gas Pipeline Co.; and Transcontinental Gas Pipeline Corp. As indicated in Table 3, each of these pipelines projects curtailments to exceed firm requirements by more than 20 percent; but others such as Consolidated Gas Supply, Michigan-Wisconsin Pipeline, and Natural Gas Pipeline have very small curtailments. The map shown in Figure 6 indicates that a few key pipelines experiencing substantial curtailments serve the most affected states.

Thus, natural gas shortages are distributed unevenly. Within one region or state, some areas may have adequate supplies while other areas are being severely curtailed, because the shortage depends upon a particular pipeline's supply situation.

While natural gas deregulation is a major remedy for the problem, shortages are expected to grow in each succeeding winter for the next several years, although at a much slower rate than without deregulation.

Last year's shortage was also felt in the intrastate market and curtailments were experienced in several producing states (e.g., Louisiana). In the last year, however, the increase in intrastate prices, economic slowdown, reduced refinery runs (many refineries use natural gas as fuel) and conservation have relieved the intrastate shortage and probably resulted in a temporary surplus.

While curtailments are normally used to measure the shortage, the most appropriate and consistent measure of the problem we face this year is the reduction in deliveries this year over last, plus any increase in demand. Curtailments, which are generally requirements less delivery, are defined differently by different pipelines and thus there may not be a uniform description of the problem within the same state. Deliveries are expected to decline this winter by about 350 billion cubic feet (Bcf), but demand is also expected to decline. Even assuming a normal winter the economic recovery will not be rapid enough to increase natural gas demand over last winter. With a normal winter, demand will be about 125 Bcf less than last winter; with a cold winter, it will be about level. Thus, the incremental shortage in this heating season over last year will be between 225-375 Bcf.

TABLE 3

Firm Requirements and Deficiencies for Ten Largest Interstate Pipelines

	'75 - '76 Projected			'74 - '75 Actual
	Firm Requirements [Bcf]	Deficiency	Percent Deficient	Percent Deficient
Columbia	849	235	28	21
United	710	320	45	39
El Paso	606	148	24	17
Tenneco	592	70	12	14
Natural Gas Pipeline	527	0	0	0
Michigan-Wisconsin	505	17	3	0
Transco	497	180	36	26
Texas Eastern	501	117	23	20
Consolidated	432	19	4	3
Panhandle Eastern	361	86	24	16

Major Natural Gas Producing Regions And Pipelines With Significant Curtailments

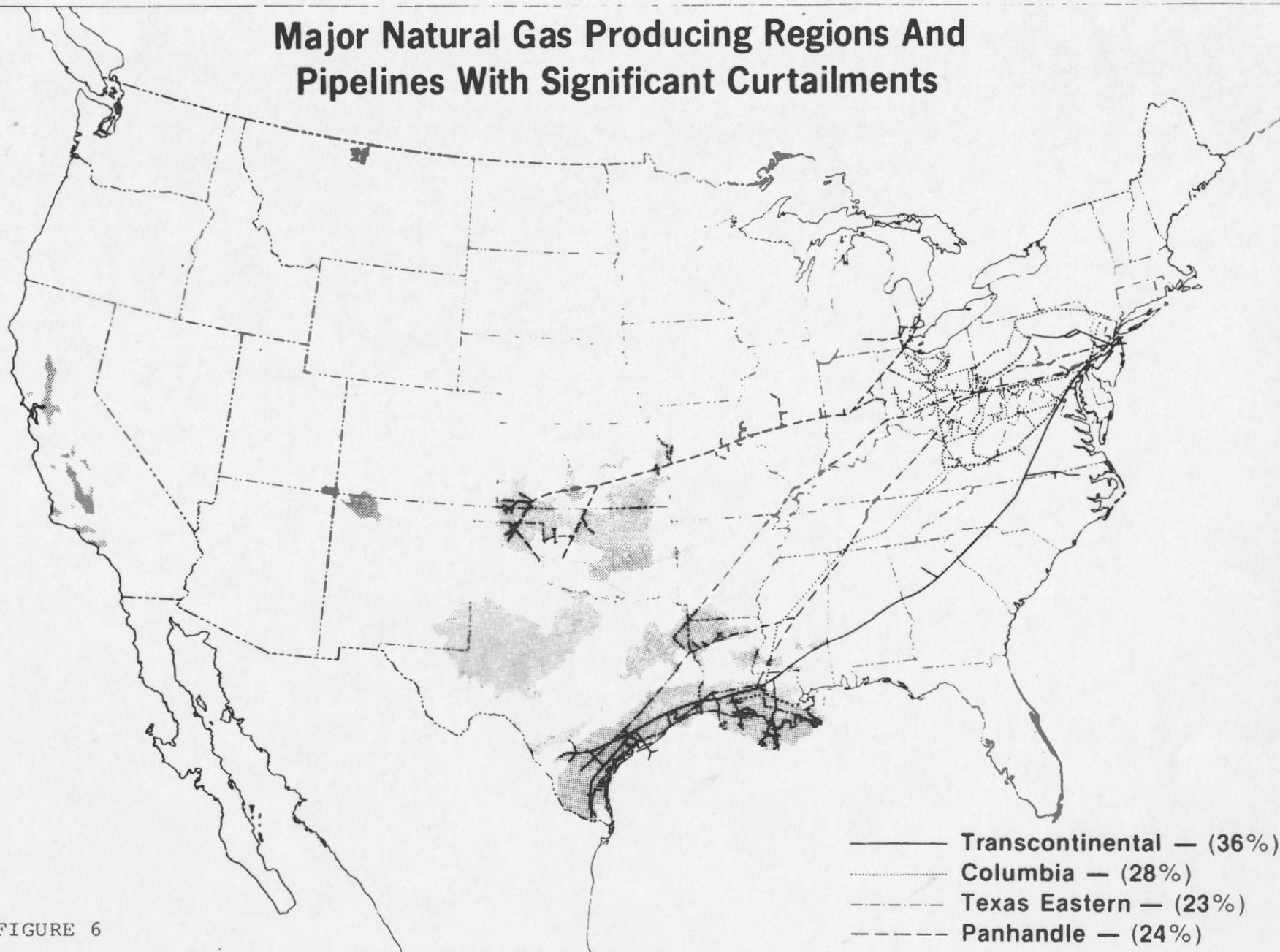


FIGURE 6

Economic Impact

Last year, very little unemployment and few plant shutdowns occurred as a result of natural gas unavailability. Most plant closings occurred because of the recession and many shutdowns were avoided by availability of alternate fuels (propane, butane, distillate or residual oil), emergency diversion of natural gas, mild weather or conservation. There were scattered examples of plant closings during the heating season in Virginia, North Carolina, New Jersey and other states, but in general, almost everybody was able to squeak through.

This year's economic impact of natural gas curtailments will depend upon several major factors: the heating demand by residential and commercial customers which is a function of the temperature; the extent to which industrial activity for natural gas has recovered from the economic downturn; the ability of industry to use alternate fuels and remain competitive despite higher energy costs; the availability and cost of alternate fuels; and the extent of the supply deficits.

The areas likely to experience the greatest economic impact this winter are the mid-Atlantic states stretching from southern New York to South Carolina and several midwestern states, such as Ohio, West Virginia, and Kentucky. Others such as Missouri and Iowa could have spot shortage problems and California, which used over 1.5 Tcf last year could also experience some impacts.

In North Carolina, which is probably the most severely impacted state and is served primarily by the heavily curtailed Transcontinental Pipeline Co. (Transco), it is estimated that about 96 percent of total industrial demand will not be met. Almost 20 percent of these firms have no capability to convert to alternate fuels and others cannot afford to do so. The textile, chemical, and glass industries are particularly large users of natural gas and need gas to maintain the quality of their products. In New Jersey, which is also heavily curtailed by Transco, the northern part of the state is relatively free of curtailments, while southern New Jersey's chemical industries may be affected. Ohio's industrial curtailments could reach 60 percent, but most impacts will be experienced by smaller stone, clay, and glass industries in the central part of the state. Even in states that are not as short of gas, such as Indiana, a utility serving 50 small towns each with only one industry may have to shut down one-third of these plants. In New York, the Southern part of the State will experience considerably reduced deliveries, while the Northern and Western areas will see increased or level deliveries (see Figure 7).

New York

0 10 20 30 40 MILES

Natural Gas Pipelines

- CG Consolidated
 - AQ Algonquin
 - CL Columbia
 - TN Tennessee Gas
 - TE Texas Eastern
 - TR Transcontinental
 - NF National Fuel
 - NM Niagra Mohawk
- INCREASE
 - ▨ DECREASE
 - MIXED
- ▲ COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)

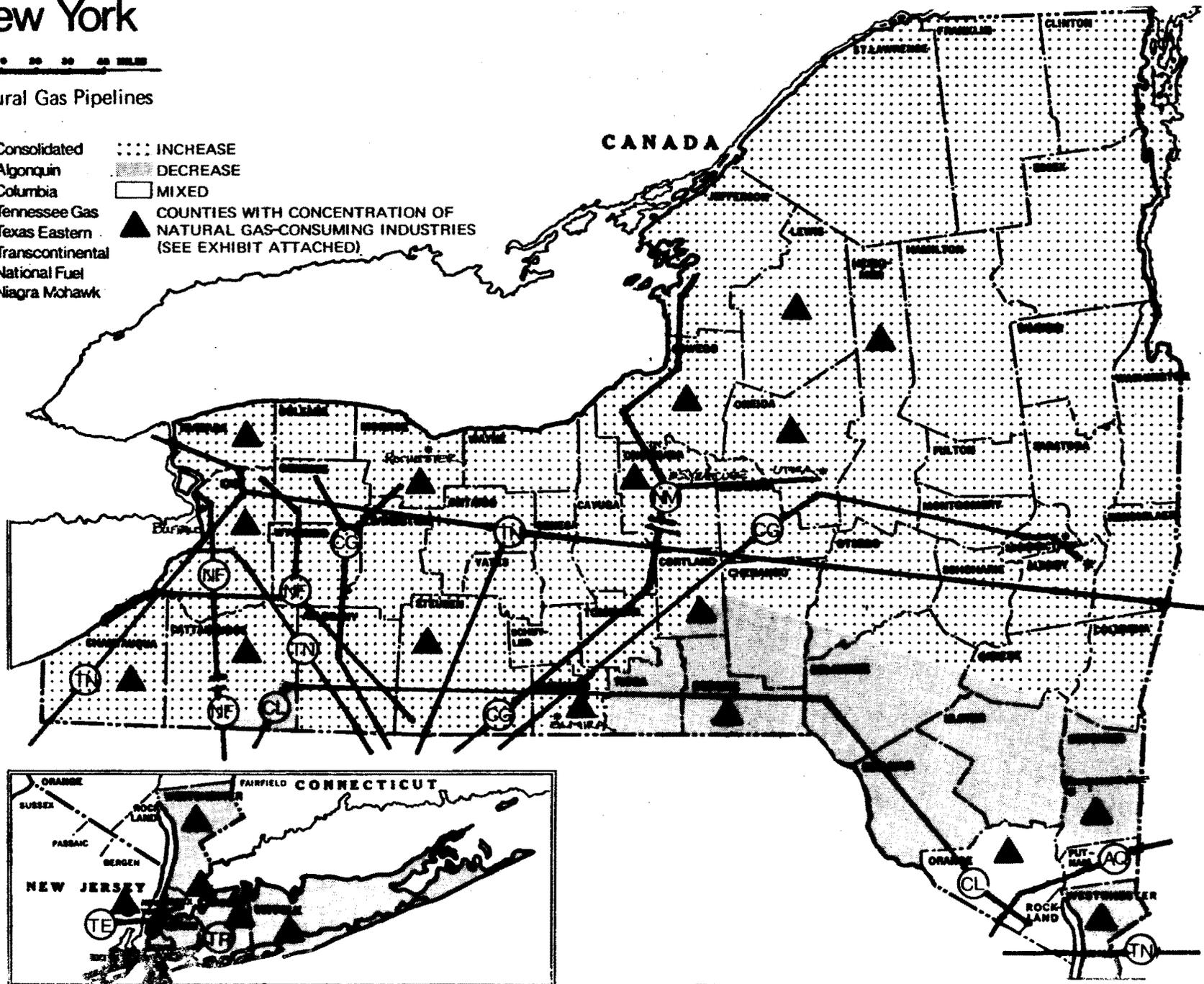


FIGURE 7

In some communities the impacts could be especially severe. In Danville, Virginia last year, concerted action by local government officials, industry, and residential gas users avoided the shutdown of four major manufacturing plants (Dan River Textiles, Corning Glass Works, Goodyear Tire and Rubber's largest truck and airplane tire facility, and U.S. Gypsum) employing over 10,000 of the area's 50,000 residents. A massive public education media campaign and conversions to alternate fuels by a local hospital saved almost 15 percent of the city's heating requirements in about half the winter.

Since residential and commercial users receive first priority under Federal Power Commission guidelines, natural gas curtailments generally affect industry most. In particular, industries which cannot switch to alternate fuels or are not prepared to switch (such as chemicals, motor vehicle parts, textiles, fertilizer, and glass) may experience considerable impacts. Even when alternate fuels are available, their use will increase costs and will put some companies at a competitive disadvantage with companies in other states that are not experiencing curtailments.

To evaluate the impact for each state, FEA examined the data supplied to the FPC by the major pipelines to determine their levels of shortage and to ascertain the specific areas to which they delivered gas. As indicated in Table 4, the reductions in deliveries are concentrated in about 14 states. In some of these states, the reduction in deliveries will be more than half the 1973 industrial gas consumption. Also, in some states, about one-third of industrial employment is in industries that use natural gas. Nevertheless, it should be recognized that availability of alternate fuels can substantially reduce the unemployment effects, but the accompanying higher priced fuel may result in economic problems. (See Tab 2 for a more detailed discussion of each of these states. A map showing the pipelines serving these states and counties where gas deliveries will increase or decrease is also attached.)

Next Steps

In the next several weeks, there will be the following key milestones:

- Within a few weeks, the President will announce his recommended administrative and legislative program to mitigate this year's shortage.

TABLE 4

Economic Impact in Most Affected States

State	Projected Reduction As % of 1974/75 Deliveries	Reduction As % of 1973 Industrial Gas- Consumption	State Employment In Gas Using Industry	
			As % of Total Employment	In Thousands
New Jersey	8%	41%	32%	717
Maryland	19	60	20	202
Virginia	20	50	9	116
North Carolina	29	41	33	552
South Carolina	12	20	29	227
Pennsylvania	8	17	23	854
Ohio	9	22	29	996
New York	(1)	(3)	21	1,249
Kentucky	4	11	28	196
West Virginia	16	26	19	77
Delaware	16	33	7	11
Missouri	10	31	18	249
Iowa	5	11	14	101
California	4	10	18	972

[] Indicates an increase

- By about the end of September, the permanent data and forecasting systems developed by FEA will be completed and operational. The data system will be updated quarterly and will contain a survey of over 1600 distributors and hundreds of thousands of end users of natural gas and will analyze the shortage and the ability to use alternate fuels.

The forecasting system will forecast quarterly natural gas supply and demand on a state by state basis and will be sensitive to changes in weather and economic activity.

NATURAL GAS

CONVERSION FACTORS

Natural gas is usually measured in either therms or cubic feet. One therm is equal to 100,000 Btu's. One cubic foot of natural gas is equal to 1,031 Btu's. One therm is equal to about 97 cubic feet of natural gas.

FOLLOWING ARE THE MOST OFTEN

USED ENERGY MEASUREMENTS:

barrels (bbls) -- 1 barrel equals 42 gallons.

British thermal unit (Btu) -- The energy required to increase the temperature of one pound of water by one degree Fahrenheit.

Watt -- The amount of power available from an electric current of 1 ampere (Amp) at a potential of 1 volt.

Kilowatt (kW) -- 1,000 watts. One kilowatt is the equivalent of about 1-1/3 horsepower.

Kilowatt-hour (kWh) -- 1,000 watt-hours. A unit of electrical energy equal to the energy delivered by the flow of one kilowatt of electrical power for one hour. (A 100-watt bulb burning for 10 hours will consume one kilowatt-hour of energy, or enough to lift a 150-pound person 20,000 feet into the air.) One barrel of oil equals 500 kWh.

Megawatt (Mw) -- One million watts, or 1,00 kilowatts.

Mcf -- 1,000 cubic feet (of natural gas).

therm -- A unit of heat equal to 100,000 Btu's.

Frequently energy measurements are expressed in millions, billions, and quadrillions of units, requiring the use of many zeros. A numerical shorthand formula has been devised which indicates multiples of 10. For example, 10^3 represents $10 \times 10 \times 10$, or 1,000. 10^6 equals $10 \times 10 \times 10 \times 10 \times 10 \times 10$, or 1,000,000. 10^9 equals 1,000,000,000 (1 billion).

Energy Units Translated Into Btu's

1 kilowatt-hour = 3,413 Btu's.

1 ton of coal = 25,000,000 Btu's.

1 bbl crude oil = 5,800,000 Btu's.

1 gallon of gasoline = 125,000 Btu's.

1 gallon of No. 2 fuel oil = 140,000 Btu's.

1 cubic foot of natural gas = 1,031 Btu's.

1 Mcf natural gas = 1,031,000 Btu's.

1 therm of gas (or other fuel) = 100,000 Btu's.

CONSUMER
INFORMATION

CONSUMER INFORMATION

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TIPS FOR NATURAL GAS SAVINGS

More than 70 percent of the natural gas we use in our homes goes into heating. Heating water takes about 20 percent. Cooking and operating appliances account for the rest. To save natural gas, you should concentrate on heating uses. What appear to be small savings in the average household can add up to sizeable savings for the Nation if every family in the country takes part in the effort.

Conserving energy is a relatively new idea for most of us, but today it is as timely for the average family as getting higher interest from the bank -- and, in a way, even more rewarding.

By the judicious use of energy at home, you can save money for yourself and help avert uncomfortable shortages in natural gas in the years ahead as we develop new technologies to meet our goal of energy self-sufficiency in the next decade.

The money-saving potentials mentioned in this brochure are percentages of current energy costs. They translate into savings at 1975 prices, and should not be confused with reductions in energy bills, which may be higher than they have been in the past.

To save on heating energy and heating costs:

- Lower thermostats to 68 degrees during the day and 60 degrees at night. If these settings reduce the temperature an average of 6 degrees, heating costs should run about 15 percent less.

If every household in the United States lowered heating temperatures 6 degrees, the demand for fuel would drop by enough to heat over 9 million homes during the winter season.

- Setting nighttime temperatures back can reduce heating costs significantly. Consider the advantages of a clock thermostat which will automatically turn the heat down at a regular hour before you retire and turn it up just before you awake.
- Have your furnace serviced once a year, preferably each fall. Adjustment could mean a saving of 10 percent in family fuel consumption.

- When buying a new furnace, select one that incorporates an automatic flue gas damper, a device which reduces loss of heat when the furnace is not in operation.
- Clean or replace the filter in forced-air heating systems every month.
- Dust or vacuum radiator surfaces frequently.
- Keep draperies and shades open in sunny windows; close them at night.
- For comfort in cooler indoor temperatures use the best insulation of all -- warm clothing.

INSULATION -- Self-protection against heat and cold

Proper insulation can reduce natural gas consumption for heating by as much as 20 to 30 percent by reducing the load on both heating and cooling equipment.

Spring, summer, and fall are the best times to insulate and effective improvements need not be expensive.

- Caulk and weatherstrip doors and windows.

This inexpensive measure, which can be an easy project for the do-it-yourselfer, would reduce the family's energy costs by 10 percent or more.

If every household were caulked and weatherstripped, the equivalent of 580,000 barrels of home heating fuel could be saved each winter day, thus reducing chances of shortages in cold weather areas of the country.

- Install storm windows and doors.

Combination screen and storm windows are the most convenient because they do not have to be removed when temperatures are moderate and open windows are desirable. Conventional storm windows cost about \$30 each, and storm doors about \$75 each. But a sheet of clear plastic film tightly taped to the inside of the frames can be equally effective; and the entire cost for the average home would be around \$10. (Renters might prefer this low-cost method.) Either type of protection could reduce individual fuel costs by about 15 percent and make the home more comfortable all year.

If the estimated 18 million single-family homes lacking this protection were so equipped, the Nation's fuel demand would drop the equivalent of 200,000 barrels each day of the winter season (enough to heat 1.6 million homes).

- Insulate the attic and the walls.

Install mineral wool, glass fiber, or cellulose insulation to a depth of 6 inches in the attic. Heating costs should drop about 20 percent.

If 15 million homes with inadequate attic insulation were upgraded, about 400,000 barrels of heating oil would be saved each winter day -- reducing the Nation's demand for residential heating fuels by 4 percent. Installation of insulation in the walls also yields a large energy saving but requires special equipment and professional help in existing homes.

WATER HEATING TIPS

- Check the temperature setting on your water heater. Reducing the setting from 150 degrees to 140 degrees

can save over 6 percent of the energy consumed by the water heater; lowering the temperature setting from 150 degrees to 120 degrees can still provide all the hot water needed and can save over 18 percent of the energy used. Also, turn down the temperature control when you plan to be away for an extended period.

- Repair leaky faucets promptly. One drop a second can waste from 70 to 200 gallons of hot water a month.
- Letting hot water run continuously while shaving or washing dishes needlessly wastes large amounts of hot water.
- When practical, use the "short wash" cycle for your dishwasher and wait until it is full before using it.

LAUNDRY TIPS

- Wash clothes in warm or cold water, rinse in cold.
- Wash and dry a full load of clothes each time but avoid overloading. Dry clothes in consecutive loads.

- Keep the lint filter and the dryer vent clean.
- Use the automatic drying controls.

COOKING TIPS

- Keep oven preheating down to 10 minutes and pre-heat only when necessary for baking and broiling.
- Keep top burners clean.
- The color of the flame should be clear blue. A yellowish flame indicates adjustments may be needed.
- Keep lids on pots and pans while cooking.
- Avoid rapid boiling unless the recipe calls for it.
- Plan your meals so your oven is filled every time you use it.

NATURAL GAS

CONSUMER INFORMATION

Tips for Homeowners: Buying Insulation

Adding insulation to your home is neither difficult nor very costly. By improving the thermal efficiency of your home, you will reduce your heating and cooling bills significantly while you help to save our valuable energy supply.

Whether you plan to do the installation yourself or hire a contractor, you will need to know several things:

- What is the R Value?
 - What types of insulation are available? Where do they do the most good?
 - How much insulation is needed to make your home energy efficient?
1. The Resistance Value (R Value) measures insulation's resistance to heat transfer. The greater the R Value, the less heat will pass through the insulating material. While various insulation brands may vary in thickness, the same R Value will insure equal insulation efficiency. R Values are clearly marked on packages.

2. There are four basic types of insulation:

- Batt and blanket
- Loose fill
- Rigid foam plastic
- Foamed-in place plastic

Descriptions of each and the places where they are used follow:

Batt and Blanket Insulation

This is the most common type of insulating material and is easily installed by the do-it-yourselfer. It is made from fiberglass or rock wool.

Batts are cut into 4-foot or 8-foot lengths and sold in prepackaged bundles. They vary in thickness from 2 to 6 inches and come in standard widths to fit between joist or rafter spaces of 16" or 24". Batts are easy to handle because of their relatively small size.

Blankets are sold in rolls 15" or 23" wide in varying lengths with a thickness range of 1" to 7". Such insulation is best suited for standard joist or rafter spacing (16" or 24").

Batts and blankets are available with and without a vapor barrier, a facing of foil, kraft paper, polyethylene film, or other such protection. Wall, ceiling and floor insulation for new homes should have an effective vapor barrier applied to the warm side of the insulation. Without such facing, moisture from the house air will penetrate the insulating material, where it will condense and cause damage.

If you are adding more insulation to your home, it is important that the new insulation not have a vapor barrier. If unfaced material is unavailable, remove the vapor barrier or slash it with a knife. The slashed surface should be installed face down.

Loose Fill

Loose fill is sold by the bag and is made from glass fiber, rock wool, cellulosic fiber, vermiculite, or perlite. It can be poured or blown in (by a contractor) to finished and unfinished attic floors, finished frame walls, and the underside of floors. It leaves few air gaps when installed properly and forms an effective heat barrier. Cellulosic fiber has 30 percent more insulation value than rock wool for the same installed thickness but when it is poured into wall cavities, it settles with time and leaves a gap at the top.

It is necessary to buy a separate vapor barrier to protect loose fill insulation from moisture.

Blown-in loose fill insulation is best applied by a contractor. The poured-in varieties are all easy to install.

Rigid Foam Plastic Insulation

Polystyrene and urethane rigid board insulation are sold in 24" and 48" wide panels and vary in thickness from 3/4" to 4". They are best used in basement walls and should only be installed by a contractor. They provide a high insulation value with minimum thickness and weight, rigidity and sound absorption. They act as their own vapor barriers.

Foam-In Place Plastic Insulation

Foam insulation is contractor-installed in wall cavities and unfinished attic floors. It is important to select a qualified contractor who will guarantee his work. While such insulation is more expensive than blown-in materials, it has a higher insulating value.

There are several foam insulation products on the market, such as urea-formaldehyde, polyurethane

and polystyrene. Urea-formaldehyde is the only one that has low flammability and does not emit poisonous gases under fire conditions. Both polyurethane and polystyrene produce explosive and poisonous gases under fire conditions. Therefore, such foams should only be used in the following circumstances: on inside house walls if covered by plastic or gypsum board; inside masonry cavity walls which are properly fire protected; outside concrete, masonry or wood frame walls; and, under concrete floor slabs.

3. How much insulation do you need?

An R value of 19 or 22 is recommended for most areas of the country to reduce heating and cooling bills. If you are adding to existing insulation in your home, you will first want to measure your current supply.

The following table will help you to determine the thickness of the insulation you purchase:

<u>R Value</u>	<u>Batt or Blanket</u>		<u>Loose Fill</u>		
	<u>Glass Fiber</u>	<u>Rock Wool</u>	<u>Glass Fiber</u>	<u>Rock Wool</u>	<u>Cellulosic Fiber</u>
R-11	3-1/2" - 4"	3"	5"	4"	3"
R-19	6" - 6 1/2"	5-1/4"	8" - 9"	6" - 7"	5"
R-22	6-1/2"	6"	10"	7" - 8"	6"

NATURAL GAS

HOW TO SELECT A CONTRACTOR TO INSULATE YOUR HOME

If you decide that a particular home improvement you want to make should be done by a contractor, there are some things you should know about finding the right person for the job. The large majority of contractors take pride in their business, are conscientious, and honest. But you should still spend some time and effort in making your choice, and once the choice is made, in clearly defining the job.

1. Where to start looking.

Yellow Pages under "Insulation Contractors - Cold and Heat." Don't be suspicious of the small operation - even just a carpenter and his helper. You're doing a relatively small project and often the small businessman will give you an excellent job.

Local Chapter of the National Association of Home Builders or Home Builders Association. They will be very helpful in recommending contractors.

Your banker. It's in his interest to recommend a man who will do a good job if he's loaning you the money to do the work.

Local government offices for government funded or nonprofit operated home improvement assistance centers. They don't exist everywhere but the ones that do are interested in helping, and maintain files on contractors that they recommend.

From these sources, establish a list of three or four contractors from which to select.

2. How to select from your list.

Ask each contractor for a list of past customers, and check their satisfaction with his work.

See how long each contractor has been in business -- in general, the longer, the better.

Call your local Better Business Bureau and ask if there have been any complaints against each of the contractors on your list.

Get estimates from each.

3. Once you've selected a contractor -- put it IN WRITING.

Have him write up a specific contract for your job.

Check the contract carefully for work content. The best way to do this is to make a list of all the things

you feel he should do in the course of the job. Then check what you know should be included against what's in the contract.

Sign the contract only when you are fully satisfied that it details everything you want done, including drawings or sketches, if necessary. Insisting on a detailed contract doesn't mean that you don't trust your contractor. But once you have a contract, each of you knows his limit of responsibility before the job begins.

PLANNING MATERIALS

PLANNING MATERIALS

- o Coordinator's Checklist 1
- o How to Obtain Public Service Advertising 5
- o Glossary of Advertising Terms 7



COORDINATOR'S CHECKLIST

Often it is most effective to assign one person to begin a public education campaign. This person's job is:

- o to develop a detailed plan and time table
- o to generate support and press coverage
- o to obtain cooperation from groups who can be of assistance.

The checklist that follows is a beginning outline for that coordinator.

COORDINATOR'S CHECKLIST

Data Gathering/Planning

- o State statistical and natural gas data
- o Key media people list
- o Key Government people list
- o Key industry leaders list
- o Key community/civic leaders list
- o Key educational leader list
- o Volunteer organizations
- o Key gas utility personnel

Support Generating

- o Governor's approval
- o Letter/contact Mayor(s)
- o Contact local energy office personnel
- o Letter to state legislative leaders
- o Letter to key industry leaders
- o Letter to key community/civic leaders
- o Letter to key educational leaders
- o Solicit support from volunteer groups
- o Establish business/industry employees programs
- o Contact and inform Insulation Association and other related organizations and provide program kit

Public Relations

- o Order appropriate quantity of press material
- o Plan kick-off press conference
- o Draft press conference speaker's material

- o Send invitations to press
- o Follow-up phone calls to press
- o Hold pre-press conference with spokespersons
- o Distribute press kits at conference
- o Send press kits to non-attendees
- o Have photographer at press conference
- o Arrange personal interviews with Task Force chairperson and key editorial people
- o Contact talk show producers
- o Arrange speaking engagements when and where possible

Task Force (if desired)

- o Make selection list
- o Send letter to each of those selected from Governor
- o Set up first meeting
- o Distribute agenda prior to meeting
- o Distribute program kit at meeting
- o Select Chairperson
- o Select information Chairperson and Committee
- o Select industry coordinator and Committee
- o Select education community coordinator
- o Establish future meeting schedule
- o Discuss community education methods, procedures and support needs
- o Obtain commitments

Public Service Advertising

- o Gather newspaper distribution data
- o Gather TV/radio/billboard "reach" data

- o Prepare plan/budget/time table
- o Request FEA assistance and materials
- o Have ads prepared or use supplied ad mats
- o Distribute TV/radio spots to media
- o Solicit large advertiser in area or ad agency to assist
- o Prepare a final schedule/time table and costs
- o Place announcement ads
- o Place reminder ads
- o Arrange participation in home shows, county fairs, etc.

Business/Industry Contacts

- o Contact all major businesses
- o Distribute information kits
- o Publicity on companies participation

HOW TO OBTAIN PUBLIC SERVICE
ADVERTISING

All TV, radio, newspaper and billboards provide "public service" space to charities, Government agencies, etc.

However, this time and space is often restricted to late evening, small space, etc.

The media also is quite divergent on how the "ruler is applied." Some have public service rates.

Your objective is to obtain as much exposure as possible for the program with no budget.

Timing is the key problem. The media will want to place or view your material at their convenience. You will want to have the ads placed during one key implementation phase of your program.

Therefore, you must obtain first, an understanding of how the different media views "public service" advertising and consider ways of "going around" this problem.

The following suggestions are given on ways you might approach this problem:

(1) Ask the media for free time and space. Make a presentation on the program, its goals and objectives to one publisher, the owner, etc.

(2) Obtain sponsors. Large, local businesses (retailers) buy yearly schedules with the local media at frequency discounts. Such businesses may:

- a) donate a portion of their space and time during the program
- b) buy the space and time for you at considerable discount
- c) help you negotiate with the media

(3) Discuss editorial coverage of the program. This should be done with the news or editorial personnel of the media and not the sales department. There is a strict restriction of "Church and State," (advertising and editorial) with most media.

GLOSSARY OF ADVERTISING TERMS

- Average Frequency - Refers to the average number of times people reached by a media schedule are potentially exposed to the advertiser's ads or commercials.
- Cost per Thousand (CPM)- Is the advertising cost of reaching 1,000 units of audience with a particular media vehicle. CPM is calculated by dividing advertising unit cost by audience (in thousands). This dollar efficiency standard is often used to compare ad units or media vehicles which vary in audience delivery and cost structure.
- Cume - The number of different people who listen to a station during a defined time period.
- Cume Rating - The expression of "Cume" as a percentage of the target population.
- Demographics - As used in media, refers specifically to descriptions of audience such as age, income, sex, family size, etc. The term is interchangeable.
- Dominant Area - Is a term used in television-coverage analyses to define the geographic area where one market's stations account for a greater share of viewing than those from any other area.

Gross Rating Points (GRP)- Is a summation of the ratings of the various media vehicles employed by the advertiser.

Local Rate - Is a special rate offered only to local advertisers by newspapers and broadcast media, ostensibly because they do not benefit from coverage which extends beyond the central market area. The difference between local and national rates varies by market and medium but can be either substantially lower or higher.

Make-Good - Refers to a broadcast announcement accepted by an advertiser as a replacement for a commercial which did not appear as scheduled, was transmitted improperly or was placed too close to a competitive producer's ad message.

Prime Time - Covers the hours 8:00 to 11:00 p.m. (EST) when TV viewing is at its peak and all 3 networks telecast their regular nighttime programming. On an overall basis, almost 70% of the population views one or more prime-time programs nightly, and 90% are reached during a typical week.

Publisher's Statement-

Refers to a semi-annual circulation report prepared by the publisher and distributed by the Audit Bureau of Circulation. Among items included are average issue paid - circulation data for subscription and newsstand or store copies, along with breakdowns of circulation by city size, state, regions, etc.

Rating -

Is a survey estimate of the size of an audience, expressed as a percentage of the total group sampled. Ratings describe the average-minute a broadcast-reach level for television, and average-issue audiences for print.

Reach -

Refers to the number of different people or households exposed to one or more media vehicles used in an advertiser's schedule.

Run-of-Paper(ROP) -

Refers to newspaper ads which can be run anywhere in the edition at the paper's discretion. "Run-of-station" is the broadcast equivalent of "run-of-paper". Generally these broadcast commercials are offered at reduced rates.

Showing -

Refers to the number of outdoor advertising posters (or locations) needed to reach a given proportion of people in the market during a 30-day period.

Drive Time - Refers to the "commuting" hours 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m. on weekdays when total radio listening is at its peak.

Fixed Position -
Announcement - Is a commercial on either a radio or television station which is broadcast at a specified time for the length of the agreement. Often, these are high-rated spots and carry a premium price.

Fringe Time - Refers to the early and late evening periods before and after prime-time programming. Generally, these are 5:00 to 8:00 p.m. on weekdays and 11:00 p.m. to sign-off all evenings (EST).

Average Quarter Hour - The average number of radio listeners at any given moment for a defined time period.

Frequency - The number of times an individual is exposed to a schedule.

Agate Line - A unit measurement of newspaper advertising space, one column wide (no matter what the column width) and one-fourteenth of an inch deep.

Column Inch -

A unit measurement of newspaper advertising space, one column wide (no matter what the column width) and one inch deep. (14 agate lines = 1 column inch).

Closing Date;
Closing Hour

The day or hour when all copy and materials must be in the publisher's hands if the advertisement is to appear in a given issue. The closing time is specified by the publisher. If proof is to be seen, all material has to be in when first form close.

Combination Rate -

A special space rate for two papers, such as a morning paper and an evening paper, owned by the same publisher.

Representative -

Space or time salesman from a local radio, TV station or newspaper.

Arbitron (ARB) -

Service which submits rating reports on local markets' television or radio stations' estimated listening audiences.

Nielson -

A service which submits rating reports on local market's television stations' estimated listening audience.

Share -

The percentage of total Households Using Television (HUT) reached by a station during a specified time.

Rate Card -

A card giving the space rates of a station and data on mechanical requirements and closing dates.

NATURAL GAS ASSESSMENT

SOURCES OF INFORMATION

PUBLICATIONS

For GPO Documents, write:

Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402

For FEA Documents, write:

Federal Energy Administration
Publications Distribution Office
Office of Communications and Public Affairs
Washington, D. C. 20461

FOR THE CONSUMER --

COMO ECONOMIZAR ENERGIA Y DINERO EN SU HOGAR. 16 pages.
How to save energy and money in your home; in Spanish.
FEA Stock Number 031-A. Free.

CONSERVATION -- SAVE ENERGY AND MONEY WITH HOME INSULATION. 1-page picture story. Illustrates the savings that can be achieved by adding insulation to existing homes. FEA Stock Number 251-A. Free.

ENERGY REPORTER. 8 pages. Newsletter for general public; published monthly. FEA Stock Number 250-A. Free.

TIPS FOR ENERGY SAVERS. 32 pages. Recommends practical and simple ways of conserving energy in the kitchen, workshop, yard and garden, during both hot and cold weather, and while driving and vacationing. Gives hints about buying energy-efficient merchandise. FEA Stock Number: 006-D. Free.

TWENTY WAYS TO SAVE ELECTRICITY. 2 pages. Lists brief hints for saving electricity. FEA Stock Number 191-D. Free

IN THE BANK OR UP THE CHIMNEY -- A Dollars and Cents Guide to Energy Saving Home Improvements. Department of Housing & Urban Development publication, designed to help you make the right choices for energy conservation improvements in the home, for do-it-yourselfers or with the help of a contractor. Describes energy conservation options for your house, and cost/saving estimates for the first year. Also includes step-by-step installation methods. 69 pages. \$1.70 from GPO.

MAKING THE MOST OF YOUR ENERGY DOLLARS In Home Heating and Cooling. U.S. Department of Commerce, National Bureau of Standards. 17 pages. 70¢ from GPO. Catalog Number B 13.53:8. A "how much" guide to energy conservation investments. Tells what combination of energy conservation improvements to invest in for your house in order to get the largest, long-run net savings in your heating and cooling bills.

CITIZEN ACTION GUIDE TO ENERGY CONSERVATION by Citizens' Advisory Committee on Environmental Quality. 64 pages. \$1.75, GPO. Stock No. 4000-00300. 25% discount on orders of 100 or more delivered to 1 address. Covers background of energy problems and suggestions for individual or group citizen actions.

FOR BUSINESS AND INDUSTRY --

AN ENERGY HANDBOOK FOR SMALL BUSINESSES -- HANDLING FUEL AND FUEL PROBLEMS. 12 pages. Assists the small businessman who is having problems obtaining a fuel supply. GPO Stock Number: 041-018-0052. 35¢.

LIGHTING AND THERMAL OPERATIONS: ENERGY MANAGEMENT ACTION PROGRAM FOR COMMERCIAL, PUBLIC, INDUSTRIAL BUILDINGS. Two booklets: (1) "Building Energy Report -- Case Studies," 24 pages. Discusses energy savings achieved in 19 specific buildings by implementing energy conservation programs; and (2) "Guidelines." 16 pages. Explains how energy can be saved in commercial and industrial buildings. FEA Stock Number 136-D. Free.

NATURAL GAS. PROJECT INDEPENDENCE TASK FORCE REPORT. GPO Stock Number: 4118-00014. \$3.10.

FILMS

TITLE

SUBJECT

AVAILABLE FROM

"When the Circuit Breaks:
America's Energy Crisis

A 27-minute 16mm color film having important things to say about our energy problems. Solutions lie in our ability to fully develop our coal, oil and natural gas resources, develop alternative resources, and our willingness to conserve. Available on a free loan basis from FEA regional offices and local Modern Talking Picture Service.

Modern Talking Picture Service
2323 New Hyde Park Road
New Hyde Park, NY 11040
(Film #30770)

"Energy: Critical Choices
Ahead"

A 18-minute 16mm color film demonstrating the dimension, orders of magnitude and efforts needed to meet our future energy needs. \$125. Also available in 27-minute version - \$175.

Department of Commerce
Office of Energy Programs
Washington, D. C. 20230
Telephone: (202) 967-3040
(Available on loan basis
from DOC field offices.)

"Energy Management:
The Vital Difference

A 20-minute, 16mm color motion-picture film depicting the critical need for energy conservation in business and industry. \$250.

Department of Commerce
Office of Energy Programs
Washington, D. C. 20230
Telephone: (202) 967-3040
Available on loan basis
from DOC field offices.

"The World Behind Your
Light Switch"

A 27 1/2 minute film which tells how the Bonneville Power Administration worked around the clock to insure a steady supply of electric power to Pacific Northwest customers including dramatic action scenes in adverse weather. Loan.

Bonneville Power Administration
Department of Interior-Rm. 5600
Washington, D. C. 20240
Telephone: (202) 343-6955

TITLESUBJECTAVAILABLE FROM

"National Savenergy Quiz"

A 27-minute film featuring Jonathan Winters. Questions and answers on how to conserve energy and save money. Loan.

Owens-Corning Fiberglas
900 17th Street, N. W.
Washington, D. C. 20006
Telephone: (202) 296-3296

"The Energy Crisis"

13-minute color. Included in this film are projections showing the depletion times of present reserves in gas, oil, uranium, coal, and electricity, as well as dramatization of several solutions which today's scientists are now considering. \$155. Also available on a rental basis from University Extension Libraries for approximately \$8.00.

Journal Films, Inc.
909 West Diversey Parkway
Chicago, Illinois 60614
Telephone: (312) 525-6561

"Joey's World" is it in trouble"

Joey's World is a new film that shows a fast moving society that devours energy, reveals the hard facts that there may not be enough energy left to keep our society going; poses the issue that today we must start thinking about tomorrow; suggests new energy sources of the future. Winner of Five International Awards. 16 mm, color, 23 minutes. \$300.00. Rental-\$25.00. Available only through the end of 1975.

Pyramid Films
Box 1048
Santa Monica, California 90406
Telephone: (213) 828-7577

TITLESUBJECTAVAILABLE FROM

"Energy: The Dilemma"

20 minute color. Energy growth patterns, past, present and future. Explores problems of supply and demand, depletion of fossil fuels, our dependency, and economic and social problems. Rental - \$10.60.

Krasker Memorial Film Library
Boston University
School of Education
765 Commonwealth Avenue
Boston, Mass. 02215
Telephone: (617) 353-3272

"Energy: Less Is More"

An investigation of the need for slowing the growth of energy consumption and ways in which this can be done. Rental - \$10.60.

Krasker Memorial Film Library
Boston University
School of Education
765 Commonwealth Avenue
Boston, Mass. 02215
Telephone: (617) 353-3272

ADDITIONAL
SOURCES OF INFORMATION AND MATERIALS

Federal Energy Administration
Washington, D.C. 20461

Regional Offices:

Natural Gas Coordinator

Region I
150 Causeway Street
Boston, Massachusetts 02114
(617) 223-3701

Linda Mansfield
617-223-5287

Region II
26 Federal Plaza
New York, New York 10007
(212) 264-1021

James La Plac
212-264-0008

Region III
1421 Cherry Street
Philadelphia, Pennsylvania 19102
(215) 597-3890

Joe DiVaise
215-597-3922

Region IV
1655 Peachtree Street, N.E.
Atlanta, Georgia 30309
(404) 526-4884

Otis Phillips
404-526-2722

Region V
Federal Office Building
175 West Jackson Boulevard
Chicago, Illinois 60604
(312) 353-0540

Mike Vandaveer
312-353-1596

Region VI
P.O. Box 35228
2626 West Mockingbird Lane
Dallas, Texas 75235
(214) 749-7345

Al Sweeney
214-749-7726

Region VII
Federal Office Building
P.O. Box 2208
112 East 12th Street
Kansas City, Missouri 64142
(816) 374-2061

Bob Walker
816-374-2981

Regional Offices - (continued)

Region VIII
P.O. Box 26247 - Belmar Branch
1075 South Yukon Street
Lakewood, Colorado 80226
(303) 234-2420

Ed Heisel
303-234-2596

Region IX
111 Pine Street
San Francisco, California 94111
(415) 556-216

Louise Banta
415-556-4640

Region X
1992 Federal Building
915 Second Avenue
Seattle, Washington 98174
(206) 442-7280

Loren Cabe
206-442-1746

U.S. Energy Research and Development Administration
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37902

U.S. Government Printing Office
Superintendent of Documents
Washington, D.C. 20402

Federal Power Commission
825 North Capitol Street, N.E.
Washington, D.C. 20426

Department of Commerce
Office of Energy Programs
Washington, D. C. 20230
Attn: Jack Gaines
202-967-3031