THE EMERGENCY PURCHASE, TRANSFER, AND SELF-HELP PROGRAMS

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EXECUTIVE SUMMARY

Ohio was one of the states most severely affected by the natural gas shortage during the winter of 1976-77. Large industries, commercial establishments and schools were heavily curtailed in order to insure adequate gas supplies for homes. Having foreseen the possibility of such curtailments, the Public Utilities Commission of Ohio (PUCO) held a hearing to develop ways of providing additional gas to curtailed customers. In the Order and Opinion resulting from the hearing (Case No. 75-901 GA-COI) the PUCO initiated or modified three programs to provide gas for curtailed customers. The programs are the emergency gas purchase, transfer, and self-help programs.

This study evaluates the programs to determine whether they are sufficiently useful to curtailed customers to be offered in the future. The evaluation was made by surveying the 2400 curtailed customers in the Columbia Gas of Ohio service area. Columbia's service area was chosen because Columbia serves 58 of Ohio's 88 counties, and it was the only company offering the transfer program.

Two questionnaires, one at the beginning and one at the end of the heating season, were mailed to each curtailed customer. About one fourth of the questionnaires were returned. Each completed questionnaire was assigned to one of three categories,"industrial", "commercial", and "school."

Respondents to the first questionnaire indicated how they intended to deal with gas shortages. Their first choice was to conserve as much gas as possible. Second, many had converted at least part of their plants to an alternate fuel. Eighty-two percent of industrial customers have acquired some alternate fuel capability, while 59% of commercial customers and 36% of schools have done so. Those who have converted prefer use of alternate fuels to the special programs whenever possible.

Most curtailed gas users require additional gas even after adopting conservation and using alternate fuels. They prefer using the special programs to cutting production or buying costly propane. The surveys showed that the number of curtailed customers planning to use the special programs next winter is much larger than the number that planned to use them at the beginning of the past winter. A majority of those surveyed recommended that the three programs be continued next year.

Each of the three programs is most strongly recommended by a particular customer category. Large industries plan to use the self-help program. Smaller industries and commercials prefer the emergency purchase program. Schools like the transfer program. It appears that each of the programs can help supply the gas needs of a particular group of curtailed customers and that each of the programs is therefore worth continuing in the future. Furthermore, this package of programs would appear to be effective in any other state facing heavy gas curtailments.

While the three programs are basically sound as they stand now, two minor changes may improve the programs' effectiveness. First, we suggest that the emergency purchase contracts be designed to give the customer the option of contracting for either a fixed maximum volume of emergency purchase gas or a maximum volume which increases automatically as curtailment levels are increased. Second, we suggest that the PUCO give assurance that customers will be able to use their self-help gas even if utilities have adequate supplies in future years.

In view of the substantial support for these three programs among curtailed customers and the relatively low administrative costs, it is recommended that:

1) pending the resolution of its legality, the transfer program be offered next year by all Ohio gas distribution companies that curtailed customers;

2) all three special programs be continued in Ohio in the future; and

3) the programs be promoted in other states facing severe gas curtailments.

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CHAPTER 1

INTRODUCTION

The Public Utilities Commission of Ohio (PUCO) has initiated three programs designed to help curtailed gas customers obtain additional volumes of natural gas. These are the emergency gas purchase program, the natural gas transfer program, and the self-help program. This report evaluates these programs.

The emergency gas purchase program requires that gas distribution companies which make purchases of emergency gas give curtailed customers an opportunity to contract to buy a specified volume of that gas. The gas must be incrementally priced so that the full cost of the gas is borne by those customers who contract for it.

A second program initiated by the PUCO is a pilot transfer program being carried out by Columbia Gas of Ohio. Customers who need more gas because of curtailments and those who have more gas than they need because of alternate fuel availability may inform the gas company of their willingness to trade. The gas company puts buyers in contact with sellers so that they may draw up a transfer contract at an agreed upon price.

The self-help program is designed to encourage a gas customer to develop his own gas supply, either on his own property or by directly contracting with a natural gas

producer. One feature of the current program is removal of a previous requirement that the customer take all gas available from the gas distribution company before taking self-help gas.

While the self-help program had been in operation for three years, the other two programs and the first-through-the-meter feature of self-help gas resulted from an Opinion and Order issued by the PUCO in September 1976 in Case No. 75-901-GA-COI, In the Matter of the Development of Programs for Efficiently Distributing Short Term or Non-Firm Sources of Natural or Synthetic Gas. Development of these programs was jointly sponsored by the PUCO and the Federal Energy Administration (FEA). The original agreement with the FEA requires that these programs be evaluated for effectiveness in promoting conservation and efficient end-use of natural gas.

This evaluation was conducted by surveying the energy needs of curtailed customers of Columbia Gas of Ohio at the start of the 1976-77 heating season and again at the end of the season. The survey was limited to Columbia customers because the pilot transfer program was limited to these customers, because at the start of the season only Columbia had initiated an emergency purchase program, and because Columbia serves roughly half of Ohio, a large enough sample to satisfy the needs of the survey.

This evaluation serves several purposes. It provides the PUCO with information on the gas needs, alternate fuel capabilities, and opinions of an important cross-section of curtailed customers. It examines the success of the programs in meeting the gas needs of curtailed customers during the

past, unusually severe, winter and suggests program changes which could make the programs more effective in Ohio. It considers whether the transfer program should be continued and extended to other Ohio distribution companies. Also, this evaluation is designed to assist the FEA in deciding whether to encourage and perhaps financially support the development of these programs in other states facing natural gas curtailments.

Organization of the Report

Chapter 2 provides background information on the structure of the gas supply industry as it pertains to Ohio, an overview of the regulatory scene with emphasis on curtailment plans, and a brief history of factors affecting Ohio's natural gas supply in recent years. Chapter 3 describes the Emergency Gas Purchase Program, the Natural Gas Transfer Program, and the Self-Help Program as implemented by Columbia Gas of Ohio. The data derived from two survey questionnaires are presented in Chapter 4; and in Chapter 5 these data are discussed, and conclusions about the value of these programs are drawn. Chapter 6 gives a summary of the findings.

CHAPTER 2

NATURAL GAS SUPPLY AND REGULATION

Ohio consumes 5% of all natural gas produced in the United States, and 92% of the gas consumed comes from outside of Ohio. As a result, Ohio is one of the states most severely affected by the curtailment of interstate supplies. The programs which this report evaluates were developed at the state level to alleviate the effects of curtailments. Both state and federal level policies should be considered in order to understand why curtailments occur and what restrictions are placed on developing the state level programs.

This chapter is intended to provide background information on the structure of the gas supply industry as it pertains to Ohio and the authority of regulatory agencies, especially in the area of curtailment. It is not meant to be an exhaustive treatment of these topics,but instead is meant to give a brief overview to the reader unfamiliar with them.

The Gas Industry

Customers receive natural gas from gas distribution companies. Around the turn of the century, most distribution companies piped gas from nearby wells and distributed it among customers concentrated in areas such as cities. Because distribution companies monopolize business in the area served,

they are regulated by the state. The PUCO has regulated distribution companies in Ohio since 1911 when it was known as the Public Service Commission.

At present Ohio is divided into 35 service areas served by 35 distribution companies. Five of these are owned by municipalities and are exempt from PUCO regulation under the Ohio Constitution. Of the remaining thirty, eight are considered major in that each serves over 10,000 customers. The largest service area is that of Columbia Gas of Ohio, shown in Figure 2-1.

During the 1930's, gas production in Ohio and other eastern states declined while the demand for gas was increasing. At the same time huge quantities of gas were being flared at the new, vast oil and gas fields in the West and South. As a result large interstate pipeline companies were established to transmit gas from southwestern producers to eastern distribution companies. Gas would be carried by a series of pipeline companies as it moved from producer to distribution company. Because the pipeline companies, or transmission companies, were virtual monopolies, Congress passed the Natural Gas Act of 1938 placing these interstate companies under the regulatory authority of the Federal Power Commission (FPC). Up to the present, the FPC has interpreted federal regulations as applying to all gas carried by interstate pipelines, including gas purchased and delivered within a state without crossing state lines. This latter jurisdiction is under reconsideration at the FPC.

Figure 2-1: Service area of Columbia Gas of Ohio. Columbia serves the unshaded area stretching through the center of the state from north to south.

Currently Ohio is served by nine interstate transmission companies which pipe gas between states as well as within the state. These are federally regulated. Gas is also transported within the state by a few Ohio distribution companies; their pipelines do not cross state lines, and they are not subject to FPC regulation. The three major pipeline companies serving Ohio are Columbia Gas Transmission Corporation (carrying about half of Ohio's supply), Consolidated Gas Supply Corporation (about one-third of Ohio's supply), and Panhandle Eastern Pipeline Company (less than 10%). Each of these transmission companies serves several distribution companies. Some distribution companies receive gas from several transmission companies, but others depend solely on one transmission company. Columbia Gas Transmission is the sole supplier of Columbia Gas of Ohio. Both companies are subsidiaries of the Columbia Gas System.

Gas wells produce gas at a relatively constant rate the year round, but gas use is greatest during the winter months. Consequently, transmission companies (and some distribution companies) build gas storage facilities to receive summer gas for winter use. The storage facilities are generally constructed near the point of delivery so that pipelines of minimum size can carry a constant, average volume of gas all year. Otherwise, larger and more costly pipelines would have to be built to handle the winter load.

Producers of natural gas were unregulated for most of this century. There were several thousand independent gas producers selling to the interstate market up to the early 1950's, and the monopoly characteristic which necessitated regulation of pipeline and distribution companies appeared to be lacking for gas producers.

Regulation and Curtailments

A series of federal level decisions, combined with a diminishing supply of easily accessible natural gas, has resulted in the current need for curtailments. In 1954, the Supreme Court ruled that natural gas producers who sell to the interstate market are to be considered "natural gas companies" under the Natural Gas Act of 1938, and that the FPC must regulate the prices they charge. The FPC at first attempted to regulate several thousand producers according to the traditional method of determining the cost of service and the price required for a fair return on each producer's investment. By 1960 an overwhelming backlog of cases existed.

Thereafter, the FPC turned to price ceilings on interstate gas sales. Prices below the ceiling were frozen at the current level, and prices above the ceiling were reduced to the ceiling level.

For 15 years prior to 1960 the real price of gas (i.e. price adjusted for inflation) had been rising, and producers had an incentive to develop reserves for future sale. With a price ceiling, the real price declined after 1960, and

producers then had an incentive to use up current reserves rather than sell them in the future at a lower real price. Less incentive existed to explore for new reserves for the interstate market. The FPC introduced higher price ceilings for "new" gas dedicated to interstate commerce after a certain date in order to encourage development of new reserves. There are several "vintages" of new gas corresponding to successively higher ceilings. The current ceiling is $1.46 per mcf. (One mcf is a thousand cubic feet of gas.) Nevertheless, new reserves were often dedicated to intrastate markets where the price was unregulated and consequently higher than the interstate price. The gas reserves available for interstate sales declined during the 1960's.

During the same period, the demand for gas increased enormously. Because the price of gas was held down, gas had a competitive advantage over other fuels such as oil and coal. Also, by the end of the 1960's environmental requirements resulted in conversion from oil and coal to clean burning natural gas.

By the early 1970's, the demand for interstate gas exceeded the supply.

There was relatively little that state regulators could do to alleviate a condition brought about in part by federal regulation. The initial response of the PUCO was to impose restrictions on new service to limit the growth in demand and protect supplies for old customers.

In the winter of 1972, new industrial and commercial hook-ups were stopped for Columbia Gas of Ohio, and by the summer new residential hook-ups were also halted.

Soon pipeline companies were unable to meet the gas needs of the distribution companies they supplied, even in the absence of demand growth. For example, Columbia Transmission Corporation had its first gas supply shortfall of 66 million mcf in 1974, and this supply curtailment increased to 344 million in 1975. The curtailment is measured against the amount supplied in the base period, 1970 to 1972. The FPC, which regulates the transmission company, has the authority to determine how this curtailment burden should be distributed among the many distribution companies served by the transmission company. In 1973, the FPC decided to approve transmission company curtailment plans based on "end-use." In effect, the transmission company must survey the gas needs of the various customers of each distribution company with respect to category of use: residential use, small commercial and industrial use, feedstock for manufacturing and other uses for which no alternate fuel will do, uses for which an alternate fuel can be substituted, and use in large boilers. Those distribution companies which had a higher proportion of gas needs in the higher priority categories during the base period receive a greater fraction of their base period gas needs. Subsequent changes in customer needs do not affect the gas entitlement

of the company.

Contracts between the transmission company and the distribution company specify gas deliveries on a seasonal rather than an annual basis. Hence, curtailments are determined seasonally. For example, Columbia Gas of Ohio has two seasonal allotments of gas: one for the heating season, November 1 through March 31, and another for the remainder of the year.

During the warmer months pipelines carry gas for recharging the storage fields needed for winter deliveries. Consequently, curtailments may be imposed on deliveries during the non-heating season to assure an adequate supply in storage.

Because various distribution companies are served by a different combination of transmission companies and because the distribution companies may have different patterns of customer end-use, two neighboring distribution companies may face vastly different levels of curtailment.

The state regulatory agency has no control over the amount of gas received from the transmission company by the distribution company. It does have authority over how that gas is allocated to customers. While the FPC may use one curtailment plan to determine how much gas the distribution company receives, the PUCO is free to approve different curtailment plans for the actual distribution of the gas received. Each distribution company proposes its own plan

for PUCO approval. Therefore, Ohio has a variety of curtailment plans tailored to the needs of each company. The majority of plans follow some version of the end-use formula.

While the federal allocation of gas among distribution companies is fixed for each heating or non-heating season, the state level allocation of gas among customers must be adjusted in the course of the heating season to account for abnormal weather. As more (or less) gas is used for space heating by high priority customers, less (or more) gas is available for low priority use. Hence, curtailment levels for low priority use may change several times during the winter as weather fluctuates from unseasonably cold to unseasonably warm.

In conclusion, the structure of the gas supply industry and the separation of regulatory authority between the federal and state levels severely limit the ability of a state regulatory agency, such as the PUCO, to increase the historical supply of gas available to the distribution companies it regulates and even to smooth out the availability of historical supplies to make gas available when it is most needed.

CHAPTER 3

DESCRIPTION OF THE PROGRAMS

The PUCO has virtually no ability to take actions that would increase the normal supply of gas available to distribution companies from transmission companies. However, it does have some measure of control over actions to secure supplies from non-historic sources and over the reallocation of both normal and non-historic supplies. As a complement to curtailment plans, three programs have been established to provide an efficient allocation of gas to curtailed customers. These are the emergency gas purchase program, the natural gas transfer program, and the self-help program. These were established, or modified, in the course of a hearing before the PUCO, referred to as the 901 hearing, introduced in Chapter 1. The present chapter describes these programs.

The Emergency Gas Purchase Program

In case of severe curtailments, the FPC ruled that distribution companies may purchase emergency supplies of gas which are exempt from well-head price regulation governing sales in the interstate market. The emergency gas purchases must be made under special contracts extending over periods up to sixty days. Emergency purchases differ from normal purchases in two significant ways. First, the price of gas is roughly double the price of historic supplies.

Second, when offers of gas are received the distribution company has a limited time to take the gas or lose the opportunity.

The availability of emergency purchase raised the question how the cost of the gas should be passed along to consumers. At the time the emergency purchases were made for the 1975-76 heating season, the PUCO followed historical precedent and allowed the cost of the new gas to be "rolled-in", or averaged with the costs of gas from all other sources, thus increasing the rates for all customers. At the same time the PUCO commissioned a study of alternative pricing policies for emergency gas,[1] and opened the 901 hearings which considered, among other things, pricing policy for the new gas. However during the course of these hearings, Ohio enacted a law[2] prohibiting roll-in to all customers of the cost of gas purchased to meet the needs of curtailed customers.

The Commission had the option remaining of either rolling the cost into the rates charged to all curtailed customers, each of whom would have his curtailment reduced, or charging the full cost of the gas to those curtailed customers willing to buy it. The latter alternative, known as incremental pricing, was chosen.

As it is currently implemented, the PUCO's incremental

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[1] Alternative Policies for Pricing Non-Historic Gas, prepared for the PUCO by The Ohio State University, October 1975.

[2] Am. Sub. H.B. 1213 which became Section 4905.302 of the Ohio Revised Code, referred to as the Stinziano Bill.

pricing plan allows curtailed customers, if they desire, to enter into a contract with their supplying gas utility prior to each season for various amounts of gas at various prices. The utility is under no obligation to obtain the extra gas, but the customer is required to purchase all gas obtained by the utility up to the maximum amount, not exceeding the ceiling price, specified in the contract. The utility should circulate a survey-contract among curtailed customers twice each year, prior to the winter season and prior to the summer season. No customer is allowed to contract for an amount of gas greater than his anticipated curtailed non-boiler volume. The contract form must be approved by the PUCO prior to its circulation, and completed contracts must be approved by and filed with the Commission.

In order to guarantee that the utility will be able to sell all the emergency gas purchased, the Commission allows the utility to consider the emergency gas to be the first gas delivered to the customer, before normal gas allotments are delivered in each billing period.

The announcement of this plan by Columbia Gas of Ohio and its survey-contract form are included in the documents presented in Appendix A.

The Natural Gas Transfer Program

The natural gas transfer approach to curtailments was discussed in detail in a previous report to the PUCO.[3] That report outlines the history of the concept and the

[3] Alternative Policies for Pricing Non-Historic Gas, op.cit., pp. 59-90.

advantages and disadvantages of various alternative methods of implementation, which need not be repeated here. The basic concept is as follows. Some customers have alternate fuel capability but choose to consume gas because of its lower price, whereas other curtailed customers cannot use alternate fuels and must suffer production cuts or other hardships. The first kind of customer would be willing to temporarily give up a portion of his gas entitlement if he were adequately compensated by a customer of the second kind who would receive the entitlement.

In the 901 Opinion and Order, the PUCO expressed reservations about the concept based on (1) a possible legal conflict with the intent of the Commission's curtailment order, (2) the uncertain legal right of a customer to sell his entitlement, and (3) the possible administrative impracticality of the program. Nevertheless, it was suggested that a voluntary pilot trading program be established to test the feasibility of the program.

Columbia Gas of Ohio agreed to run a pilot program. Columbia's transfer program is similar to a "Buddy Swap" program it established in 1974. In the prior program, only transactions between industrial customers or between commercial customers were allowed, whereas in the transfer program transactions between any curtailed customers are allowed.

There are two significant restrictions however. The seller can transfer only gas that has been replaced by an alternate fuel, and the buyer cannot receive more than his authorized

non-boiler allotment. Of course, the seller cannot transfer more than his authorized volume, and if the seller faces greater curtailment than expected he may not have any gas to transfer.

Columbia Gas does not act as a clearinghouse; it neither buys gas from sellers nor sells gas to buyers. Its role is limited to notifying potential buyers and sellers of gas needs and availability. Compensation for transferred volumes is determined by negotiation between buyer and seller, each of whom must inform Columbia of their agreement. Columbia's charge for the gas is the higher of the two charges obtained by calculating the cost on the rate schedules of both parties, and the transferred volumes are the last volumes through the meter during the billing period.

The announcement of the program by Columbia and the required information form are included in the documents presented in Appendix A.

The Self-Help Program

The self-help program was first instituted in Ohio in 1973 (Case no. 73-761-G) as a vehicle for a gas utility customer to develop an independent, privately owned source of natural or synthetic gas. The program permits the customer to use the pipelines of Ohio gas utilities to transport the gas. Almost two years later, a federal self-help program was instituted by FPC Order 533 allowing customers to develop their own gas sources anywhere in the United States and use interstate pipelines for transmission.

Self-help gas is obtained from wells drilled either by the

customer, for the customer by a geological contractor, or by a gas producer.

If the well is on the user's property and utility pipelines need not be used, the customer can have a private pipeline laid from the well to the point of consumption. In most cases, gas must be transmitted through utility pipelines, which requires approval by the PUCO. If interstate pipelines are used, FPC approval must also be obtained even though the gas moves between two points within a state. Different criteria are applied for PUCO and FPC approval.

Under PUCO guidelines, the utilities may require that as much as 25 percent of the self-help gas produced be sold to them. The remainder is transported to the customer at a charge based on the amount of gas delivered. Under this program, unlike the other two special programs, the customer may obtain gas in excess of his base period allocation. However, the gas cannot be used as boiler fuel without special Commission approval.

Self-help gas is assigned to the second highest priority category, the highest being residential use. As such, it is subject to curtailment only when necessary to guarantee residential supplies, which occurred to a limited extent during the past winter. The self-help customer is obligated to maintain gas production during the period when his own use of the gas is curtailed, but he is entitled to an equal amount of gas in return from the utility at any time during the same annual period. Gas not returned during that period must be paid for

by the utility.

Complete guidelines for the Ohio self-help program, as revised on March 30, 1976, are given in Appendix A.

Under these guidelines some Ohio utilities had been treating self-help gas as "last through the meter." This policy tended to discourage drilling because a customer could use his own gas only after he had exhausted his normal curtailed entitlement. One result of the 901 hearings, completed in September 1976, was a Commission Order that customers be given the option of receiving self-help gas either first or last through the meter. The Order was contested, and the issue was finally resolved in the self-help customers' favor in May 1977.

Prior to 1977, Ohio customers made little use of the federal self-help program. Ninety-six customers sought approval for self-help from Ohio sources, but only four applied for participation in the federal program. Chairman C. Luther Heckman of the PUCO believes that limited participation in the federal program is due to[4] (1) a lack of incentive for participation by transmission companies, (2) federal restrictions on gas use, (3) FPC ceiling prices on self-help gas, and (4) delay in receiving federal approval.

FPC limitations have a substantial impact on Ohio's self-help program because Ohio is crisscrossed with interstate pipelines which in many cases are the only lines available for transportation from the gas producing areas of Ohio to needy customers.

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[4] C. Luther Heckman, presentation before the Ohio House Energy and Environment Committee; February 23, 1977.

CHAPTER 4

RESULTS OF THE SURVEYS

Evaluation of the effectiveness of the emergency purchase, transfer, and self-help programs is based in part on a survey of the curtailed customers of Columbia Gas of Ohio to whom the programs were available during the 1976-77 heating season. Two questionnaires, one at the beginning and one at the end of the season, were designed to collect the necessary information. This chapter describes the questionnaires and presents the data collected.

Description of the Questionnaires

The first questionnaire, mailed on November 17, 1976, is reproduced in Figure 4-1. It asked how the customers intended to respond to anticipated gas shortages and what the cost of some of those responses would be. Several questions dealt specifically with the emergency purchase and transfer programs. Customers were asked whether or not they understood the programs, whether or not they were participating in them or planned to do so in the future, and what criteria they used to decide whether or not to participate. Evaluation of the self-help program was not originally included in the study and is not specifically mentioned on the first questionnaire.

The second questionnaire was a two page questionnaire reproduced in Figure 4-2(a) and (b). It was mailed on

STATE OF OHIO

PUBLIC UTILITIES COMMISSION

This questionnaire will be used by the PUCO to evaluate the transfer and short term emergency gas purchase programs. If the space provided for a response is not sufficient, please use the back of the sheet to finish your answer. Please return the questionnaire by December 3, 1976.

Name of Company _____ Address _____ Date _____

Company official to contact for further information _____ Telephone Number _____

1. Were the explanations of the short term emergency gas purchase program and the natural gas transfer program presented in letters from Columbia Gas of Ohio (mailed in June 1976 and November 1976 respectively) sufficiently clear to give your company's officials the information they needed to decide whether or not to participate in the programs?

_____

If not, what additional information was needed?

_____

_____

2. Is your company now participating in the transfer program?

_____

If so, as a buyer or seller?

_____

3. Do you anticipate that, given the opportunity, your company will take advantage of either of these programs later in this heating season? (If so, please indicate which program.)

_____

If the company participates in the transfer program, will it act as a buyer or seller?

_____

4. What criteria is your company using to decide whether or not it will participate in the transfer program?

_____

_____

in the short term emergency purchase program?

_____

_____

5. What is your company's authorized volume of gas?

_____

6. What would be your company's forecasted gas requirement (in MCF) for the present heating season (November 1, 1976, to March 31, 1977) if there had been no curtailment and if existing economic conditions prevail throughout the heating season?

_____

7. If your company's authorized volume of gas does not meet its requirements, please provide the following information: In the first column indicate the order in which your company would use the methods listed on the left to compensate for the shortage of gas. If, for example, you would first make an effort to conserve gas and then, if a shortage still existed, contract for emergency purchase gas, you would label those methods one and two, respectively. In the second column indicate the percentage of your gas shortage that you hope to alleviate with each method.

	Rank of Usage	% of Shortage Alleviated
Conservation	_____	_____
Cut production	_____	_____
Short term emergency gas	_____	_____
Transfer gas	_____	_____
Alternate fuels	_____	_____
Propane	_____	_____
Other _____	_____	_____
		Total 100%

8. What percent of your company's authorized volume of gas can be replaced by an alternate fuel or propane?

_____

What is the alternate fuel?

_____

What is the delivered unit price of that fuel?

_____

9. If you have converted your plant to allow the use of an alternate fuel, what was the cost of that conversion?

_____

What volume of natural gas has been saved annually by that conversion?

_____

10. In what price range would your company be willing to buy natural gas under the transfer program?

_____

11. In what price range would your company be willing to sell natural gas under the transfer program?

_____

12. Given the current prices of alternate fuels, what volumes of short term emergency gas would you contract for at ceiling prices of:

$2.20/MCF _____	$3.20/MCF _____
$2.40/MCF _____	$3.40/MCF _____
$2.60/MCF _____	$3.60/MCF _____
$2.80/MCF _____	$3.80/MCF _____
$3.00/MCF _____	$4.00/MCF _____

FIGURE 4-1 The First Questionnaire

STATE OF OHIO

PUBLIC UTILITIES COMMISSION

FIGURE 4-2(a) The Second Questionnaire (page 1)

Name of establishment (as it appears on your gas bill) _____

Address _____ City _____ Columbia account number _____

Person to call for further information _____ Telephone number _____

1. When volumes of gas are needed as answers to questions, will you give the volumes in MCF or CCF? MCF ___ CCF ___

2. What volume of gas did you receive from Columbia Gas of Ohio during the November 1976 through March 1977 billing period, excluding any emergency, transfer, or self help gas purchased under a special agreement? If possible, please indicate the volume of gas received in each group.

Total _____ Group I (Non-substitutable) _____ Group II (Substitutable) _____ Group III (Boiler Fuel) _____

3. During the 1976-77 heating season, customers of Columbia Gas of Ohio may have obtained gas through the emergency purchase or self help programs or may have participated in the gas transfer program as either a buyer or seller. Please indicate below whether or not you contracted to buy or sell gas in each program this winter, and, if so, the maximum volume of gas you originally contracted to buy or sell; the date upon which the agreement was finalized; the amount of gas you actually received or sold; and the price per MCF that was paid for the gas.

	Contracted to Buy or Sell	Maximum Contract Volume	Date of Contract	Volume Sold or Received	Price Per MCF
Emergency purchase gas	YES ___ NO ___	_____	_____	_____	_____
Self-help gas	YES ___ NO ___	_____	_____	_____	_____
Buyer of transfer gas	YES ___ NO ___	_____	_____	_____	_____
Seller of transfer gas	YES ___ NO ___	_____	_____	_____	_____

4. Please indicate below what per cent of your energy requirement has been converted since 1970 from gas to each alternate fuel listed below; the capital cost of conversion to each fuel; and the volume of gas actually saved by each alternate fuel this winter (November-March).

	% Converted	Cost of Conversion	Volume Saved (Nov.-Mar.)
Oil	_____	_____	_____
Propane	_____	_____	_____
Coal	_____	_____	_____
Electricity	_____	_____	_____
Other (please specify)	_____	_____	_____

5. After using <u>all</u> the natural gas and alternate fuels available to you, what additional volume of gas would you have needed during the 1976-77 heating season to operate your plant optimally using all normal conservation measures.

_____

6. What volume of this difference between the total energy received and the energy needed was absorbed in each of the following ways?

Additional Conservation _____ Cuts in Production _____ Other (please specify) _____ _____

(OVER)

7. If you wanted, but were unable, to participate in any of the following programs, please circle those programs and explain why you were unable to participate.

Emergency purchase Transfer (buyer) Transfer (seller) Self-help

8. How many man-hours were lost by your employees during the November through March billing periods as a result of the natural gas shortage? _____

9. If you had to cut production, did this result in the temporary and/or permanent layoff of employees? YES ___ NO ___

If your answer was yes, please indicate below the number of employees temporarily layed off or permanently dropped. If groups of employees were layed off over different time periods, please use a separate line for each of these groups.

First day of layoff		Last day of layoff		Number of workers
month	day	month	day	
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

10. How many people did you employ on November 1, 1976? _____ On April 1, 1977? _____

11. Do you recommend that the emergency purchase, transfer, and/or self-help programs be offered next year?

Emergency purchase YES ___ NO ___ Transfer YES ___ NO ___ Self-help YES ___ NO ___

12. In your opinion, can the emergency purchase, transfer, and self-help programs make a significant contribution in meeting your company's energy needs?

Emergency purchase YES ___ NO ___ Transfer YES ___ NO ___ Self-help YES ___ NO ___

13. Please indicate whether or not you anticipate that your company will take advantage of the programs listed below during the 1977-78 heating season, and indicate the price range in which you would be willing to buy or sell gas.

	Future Participation	Price range		Future Participation	Price range
Emergency purchase	YES ___ NO ___	_____	Transfer (buyer)	YES ___ NO ___	_____
Self-help	YES ___ NO ___	_____	Transfer (seller)	YES ___ NO ___	_____

14. Please describe the changes you believe would make these programs more effective. If insufficient space is provided, please attach another sheet.

FIGURE 4-2(b) The Second Questionnaire (page 2)

March 31, 1977, the last day of the heating season. The winter of 1977 was one of the coldest winters on record, and curtailment levels were severe. Consequently, the second questionnaire asked curtailed customers to list the methods they did, in fact, use to respond to the severe gas shortage. They were asked to report the cost of converting to alternate fuels and of purchasing extra gas under one of the three special programs. Questions about man-hours lost and cuts in production were included to gather additional information on the economic impact of the hard winter.

In the last section of this questionnaire curtailed customers were asked to evaluate the emergency purchase, transfer, and self-help programs. More specifically, they were asked whether each of the three programs should be offered next year, whether the programs could be of use to their companies, and whether or not they intended to participate in any of the programs next year. Finally, the customers were asked to suggest changes which would make the programs more effective.

Composition of the Sample

These questionnaires were mailed to approximately 2,400 large industrial and commercial customers of Columbia Gas of Ohio. These were customers consuming over 1,000 mcf in any month during the base period, and were the only Columbia Gas customers subject to curtailment at the beginning of the winter.

The survey was conducted with Columbia since it serves 58 of the state's 88 counties and is the only company offering the transfer program.

Completed questionnaires were divided into three categories, industrial, commercial, and schools. Columbia Gas classifies its large customers as either "industrial" or "commercial," and we used Columbia's listings to assign completed questionnaires to these categories. Columbia includes schools in the "commercial" group. We chose to consider schools separately because schools were a readily identifiable and major subgroup whose responses had a unique character. Often school responses were difficult to interpret. For example, some school systems completed a questionnaire for each building; but others returned one questionnaire for the entire school system, and there was often no indication of the number of buildings represented by the completed questionnaire. Table 4.1 shows the number of responses in each category to each questionnaire. About one fifth of

TABLE 4.1 Number of Responses

	Industrial	Commercial	Schools
Questionnaire #1	309	105	109
Questionnaire #2	353	154	130

the curtailed customers responded to the first questionnaire and one fourth responded to the second. Those customers who responded to the second questionnaire receive approximately 40% of all of the gas sold to the 2,400 curtailed customers surveyed.

Results

The customers were first asked whether or not they understood the emergency purchase and transfer programs. Only 6% indicated that they did not. These customers commented that they needed more detailed information on the procedure for participating, the alternate fuel requirement for trading gas, and the nature of the contract for emergency purchase gas.

Since the majority of those surveyed indicated they did understand the emergency purchase and transfer programs they probably considered those programs as a possible way to deal with curtailments during the winter. Those surveyed were asked to rank seven methods of dealing with gas shortages in the order in which they would be employed. The number of respondents ranking each method first, second, and so on, is shown in Table 4.2.

Reading down the first column of Table 4-2 indicates, for example, that 148 industrial respondents would first employ conservation in the face of curtailments, 51 would first use alternate fuels before employing conservation or other methods, 5 would first purchase emergency gas, and so on. Reading across the first row shows that 26 industrial respondents would employ additional conservation as their second choice of means for dealing with curtailments, 2 would use it as their third choice, and so on; and 127 of those industrial customers who completed the first

TABLE 4.2 Rank of Anticipated Methods of Responding to Curtailment

INDUSTRIAL							
Method	1st	2nd	3rd	4th	5th	6th	no rank
Conservation	148	26	2	5	1	0	127
Alternate Fuels	51	102	16	4	3	1	132
Emergency Gas	5	30	35	19	9	0	211
Transfer Gas	4	10	28	28	3	1	235
Cut Production	3	10	22	15	27	18	214
Propane	13	17	31	4	7	9	228
Other	10	15	8	4	1	2	269
COMMERCIAL							
Method	1st	2nd	3rd	4th	5th	6th	no rank
Conservation	72	0	0	0	0	0	33
Alternate Fuels	4	26	3	4	2	1	65
Emergency Gas	1	16	8	5	0	0	75
Transfer Gas	1	8	9	4	0	0	83
Cut Production	1	6	3	5	4	1	85
Propane	0	4	2	1	3	1	94
Other	0	3	1	1	1	3	96
SCHOOLS							
Method	1st	2nd	3rd	4th	5th	6th	no rank
Conservation	67	2	0	0	0	0	40
Alternate Fuels	2	19	3	4	1	0	80
Emergency Gas	1	13	12	2	1	0	80
Transfer Gas	2	10	11	1	1	0	84
Cut Production	1	15	1	3	1	1	87
Other	0	4	4	3	0	0	98
Propane	0	1	0	1	1	2	104

questionnaire either did not answer this question (no. 7) or did not rank additional conservation as a method they would or could apply. The methods for each customer group are listed in the order that group as a whole ranked the methods.

The table shows that the order is the same for all three groups with one exception: propane is the last choice for schools. Among those who would use a method not listed (denoted "other" in question 7), self-help gas was a nearly unanimous choice.

In each of the three categories conservation ranked highest as a method of dealing with a gas shortage. Such a result was to be expected since many means of conservation are less expensive than obtaining alternate fuel. The second choice of each customer category was "alternate fuels." Industrial customers, by far the largest users of gas, heavily favor alternate fuels. The second choice of commercial users and schools is not as clearly defined. Propane is not included in the "alternate fuels" category. Technically, propane is not considered an alternate fuel because its use does not require the installation of new burners, and, when burned, it has many of the same characteristics as natural gas.

The third and fourth choices of all categories of customers are the emergency purchase and transfer programs, respectively. Cutting production was ranked fifth, above "other" and "propane." However, several industries listed "other" (usually meaning self-help gas) or "propane" as their first choice, while only three named "cut production" first.

In addition to ranking the methods they anticipated using to ease gas shortages, curtailed customers were asked questions about steps they had already taken toward dealing with possible heavy curtailments. These steps verified their preference for alternate fuels. Table 4.3 shows the number of customers in each category who had at least partially converted their plants to an alternate fuel as of November 1976.

TABLE 4.3 Number of Respondents Reporting at Least Partial Conversion to Alternate Fuels as of November 1976

Category	Number of Respondents	Number Reporting At Least Partial Conversion	% of Respondents Reporting at Least Partial Conversion
Industrial	309	253	82%
Commercial	105	62	59%
Schools	109	39	36%

Although the emergency purchase and transfer programs were ranked third and fourth, respectively, as anticipated methods of dealing with gas shortages, in November 1976 very few respondents were actually participating in the transfer program, and only 78 of Columbia's curtailed customers had signed contracts for emergency purchase gas. (A sample contract is contained in Appendix A. A profile of participants in the emergency purchase and transfer programs is in Appendix D.) Several other customers, however, anticipated participating in one or both of the programs later in the winter. Table 4.4 indicates the number of customers in each

category who were participating in the transfer program in November, and the number who were interested in particiapting later.

TABLE 4.4 Participation in Transfer and Emergency Purchase Programs

November 1976	Industrial	Commercial	School
# Buying Transfer Gas	11	4	3
# Selling Transfer Gas	6	1	0
Anticipated Future Participation	**Industrial**	**Commercial**	**School**
Emergency Purchase Only	19	4	2
Buyer of Transfer Gas Only	82	22	19
Seller of Transfer Gas	17	7	3
Emergency Purchase & Transfer Buyer	20	6	6

On the first questionnaire curtailed customers were asked what criteria they used in determining whether to participate in the emergency purchase or transfer program. The most frequently listed criteria were:

1. the curtailment level and the need for gas;
2. the cost of the programs as compared to the cost of alternate fuels or cutting production; and
3. alternate fuel capability.

The need for gas was the criterion cited most often. Because of the subsequent harsh winter, the need for gas

increased. Industrial customers in the sample received only 35% of their base period allocation while commercial customers received 63%. (It was not possible to determine the percentage that the schools received.) One might expect that participation in the special gas programs would increase as a result. On the second questionnaire customers were asked to indicate whether or not they had participated in the emergency purchase, transfer, or self-help program and whether they had wanted to participate but were unable to do so. The responses to those questions are shown in Table 4.5.

TABLE 4.5 Number of Participants in Special Programs

Program	Number Participating	Number Wanting to Participate But Unable	Total
Industrial			
Emergency Purchase	19	40	59
Self-Help	26	30	46
Transfer (Buyer)	17	30	47
Transfer (Seller)	17	5	22
Commercial			
Emergency Purchase	15	18	33
Self-Help	4	22	26
Transfer (Buyer)	9	18	27
Transfer (Seller)	2	7	9
Schools			
Emergency Purchase	15	19	34
Self-Help	14	13	27
Transfer (Buyer)	38	25	63
Transfer (Seller)	0	1	1

A comparison of Table 4.5 with Table 4.4 indicates that more customers were using the emergency purchase and transfer programs at the end of the harsh winter than at the beginning.

The percentages of respondents participating in each program in November and at the end of last winter are shown in Table 4.6. In addition, Table 4.6 shows the percentage of respondents who, in November, anticipated using the special programs later in the 1976-77 winter and the percentage of respondents to the second questionnaire who anticipated using them next winter.

It is interesting to note that schools, the customers with the least alternate fuel capability, relied most heavily on the special programs. Apparently the need for gas, caused by the weather-induced curtailments, was an important consideration for gas customers deciding whether to use the special gas programs.

The second criterion customers used to evaluate the emergency purchase, transfer, and self-help programs was cost. On the first questionnaire customers were asked to give the price at which they would be willing to buy emergency purchase or transfer gas and the price at which they would sell transfer gas. There were very few responses to those questions. Customers who did respond indicated that the price of the emergency or transfer gas would depend on the price of alternate fuels or the current price of natural gas.

TABLE 4.6 Percentage of Respondents Participating in and Anticipating Participation in the Special Programs

Program	% Participating In November	% Wanting To Participate Later In 1976-77 Winter	% Participating During the 1976-77 Winter	% Wanting to Participate In 1977-78 Winter
INDUSTRIAL				
Emergency Purchase	*	12.6	5.4	31
Self-Help	*	*	7.4	27
Transfer (Buyer)	3.6	33.0	4.8	25
Transfer (Seller)	1.9	5.5	4.8	9
COMMERCIAL				
Emergency Purchase	*	9.5	9.7	30
Self-Help	*	*	2.6	19
Transfer (Buyer)	3.8	26.7	5.8	21
Transfer (Seller)	1.0	6.7	1.3	6
SCHOOLS				
Emergency Purchase	*	7.3	11.5	32
Self-Help	*	*	10.8	25
Transfer (Buyer)	2.8	22.9	29.0	38
Transfer (Seller)	0	2.8	0	2

* Data Unavailable

As a result of gas customers' understandable reluctance to answer such questions, we have little information on the maximum price they would be willing to pay for gas.

However, some facts concerning the effect of price on the emergency purchase program are known. During the winter of 1975-76, Columbia Gas of Ohio bought 11 billion cubic feet of emergency purchase gas, and rolled in the cost to all Columbia customers. During the winter of 1976-77 emergency purchase gas was priced incrementally. The ceiling price of the gas was successively $3.00, $3.20, and $3.40 per mcf. Curtailed customers contracted to buy two tenths of a billion cubic feet of emergency gas at those prices, but only one tenth of a billion cubic feet was delivered -- less than 1% of the amount of gas purchased when the cost of the gas was rolled in.

On the second questionnaire gas customers who participated in any of the programs were asked to record the amount of gas for which they contracted, the date of that contract, the volume of gas actually delivered, and the price per mcf. Table 4.7 shows the total volume of gas for which customers contracted and, in parentheses, the volume which they received. Only those customers who indicated both the volume ordered and the volume received are included in the totals, so that a fair comparison between the two numbers can be made.

The average reported cost per mcf of emergency purchase gas for industries was $3.20, and for commercial customers the cost was $3.18. Some of the costs reported for

TABLE 4.7 Volume of Gas Ordered (Received)
Under Each Special Program

Program	Industrial	Commercial	Schools
Number Answering	16	12	12
Emergency Purchase	1,296,000 (97,000)	31,000 (23,000)	14,000 (9,000)
Number Answering	19		7
Self-Help	* (429,000)	*	98,000 (48,000)
Number Answering	12	4	15
Transfer (Buyer)	37,000 (28,000)	6,000 (4,000)	34,500 (22,200)
Number Answering	11	2	0
Transfer (Seller)	68,000 (65,000)	12,000 (12,000)	*

* Meaningful Data Unavailable

self-help gas included transportation costs and some did not, so it was not possible to determine an average cost. Costs of transfer gas were also reported in various ways making the calculation of an average cost impossible.

Complete information provided by all respondents who participated in the special programs is presented in Appendix B.

The third criterion cited for participation in one of the three programs was the customer's alternate fuel capability. Table 4.8 shows the number of respondents to the second questionnaire who converted at least part of their plant to an alternate fuel. Comparing Table 4.8 to Table 4.3 shows that the percentage of gas customers who

TABLE 4.8 Number of Respondents Reporting at Least Partial Conversion to Alternate Fuels as of March 31, 1977

Category	Number of Respondents	Number Reporting at Least Partial Conversion	% of Respondents Reporting at Least Partial Conversion
Industrial	353	281	80%
Commercial	154	86	56%
Schools	130	52	40%

have at least partially converted to an alternate fuel remained relatively constant during the winter, although the percent of each customer's plant converted may have increased. The differences between the two tables could easily be attributed to the fact that the two samples were not composed of exactly the same gas customers, although most customers were in both samples. It is not surprising that few conversions to alternate fuel were completed during the winter since conversion is more convenient during the warmer months.

To obtain information on costs associated with the gas shortage, the second questionnaire asked curtailed customers who had converted to an alternate fuel to indicate which fuel they used, the percentage of their gas needs converted, the cost of conversion, and the resulting volume of gas saved. The responses to these questions are presented in Table 4.9 for those respondents who gave a complete set of replies to these questions. Averages based on all replies

including those giving partial responses to these questions differ only slightly from the results reported in Table 4.9.

TABLE 4.9 Percent of Respondents' Plant Converted to Alternate Fuel (March 31, 1977)

Alternate Fuel	Oil	Propane	Coal	Electricity
Industrial				
Number of Respondents	140	65	10	33
Average % Converted	62%	49%	44%	14%
Average Cost ($)	144,000	54,000	223,000	135,000
Average Gas Saved (mcf)	69,000	14,000	62,000	7,700
Commercial				
Number of Respondents	30	8	1	8
Average % Converted	60%	46%	70%	24%
Average Cost ($)	16,000	17,000	3,500	16,000
Average Gas Saved (mcf)	5,200	1,800	3,800	1,400
Schools				
Number of Respondents	34	3	5	3
Average % Converted	54%	17%	29%	1%
Average Cost ($)	30,000	14,000	6,000	87,000
Average Gas Saved (mcf)	3,800	2,200	900	800

Another cost that the winter imposed on large gas customers was the cost of cutting production due to a lack of fuel. By cutting production industrial customers reported that they saved 3,127,107 mcf, about 8.1% of their total winter base period allocation.

But not all gas customers were forced to cut production. In fact, several customers did not experience a fuel, as opposed to a gas, shortage. On the second questionnaire curtailed customers were asked, "After using all the natural gas and alternate fuels available to you, what additional volume of gas would you have needed during the

1976-77 heating season to operate your plant optimally using all normal conservation measures?" Of the 353 industrial respondents, 72 did not answer the question, 99 said they needed no additional gas, and 182 indicated they needed more gas. The average volume of additional gas needed was 16,700 mcf. (The average volume of gas allocated to each industrial respondent this winter was 109,800 mcf, and the average volume received was 38,400 mcf.) Of the 154 commercial respondents, 27 did not answer, 41 needed no additional gas, and 86 indicated a need for an average of 5,000 additional mcf. (The average volume of gas allocated to each commercial respondent was 12,400 mcf, and the average volume received was 7,500 mcf.)

The total number of man-hours lost due to the gas shortage was the final cost we investigated. Industrial customers in the sample reported 1,711,946.9 man-hours lost while commercial customers reported only 147,763. Technically, no man-hours were lost by school personnel since teachers were paid for the days that schools were closed.

It may be useful to compare the number of man-hours lost to the number of man-hours worked during the winter of 1976-77. The number of man-hours worked was calculated as follows. The 353 industrial respondents indicated they employed 123,145 people as of November 1, 1976, and 125,438 people as of April 1, 1977. We determined the average of the November 1 and April 1 employment figures, multiplied that average by 21.8 weeks in the heating season, multiplied by 40 hours per week, and then subtracted the number of

man-hours lost. The result was 106,670,241.1 man-hours worked during the winter. The number of man-hours worked by commercial employees was 20,054,733. Therefore, the man-hours lost by industrial and commercial employees represent 1.6% and .7% respectively, of the man-hours worked.

Further evaluation of the usefulness of the emergency purchase, transfer, and self-help programs was conducted by asking curtailed customers for their opinions of these programs. In the second questionnaire the customers were asked:

1. whether they recommend that the programs be offered next year,
2. whether the programs could be of use to them; and,
3. whether they plan to participate in any of the programs next year.

In addition they were asked to comment on the strengths and weaknesses of the programs and make suggestions for improvements.

The comments and suggestions are in Appendix C. The responses to the first three questions were tabulated in two different ways: first by "straight percentage" and second by a "weighted percentage." To see the difference, consider that there are three possible responses to each question, yes, no, and no answer. To calculate the straight percentage for a particular question we first counted how many respondents voted "yes," how many voted "no," and how many didn't answer. We then divided each number by the total number of responses. In this calculation each respondent

got one vote. To calculate the weighted percentage we gave each respondent a number of votes equal to his winter base period allocation in mcf. Therefore, the vote of a large gas user was more influential than a vote by a smaller company.

Curtailed customers' opinions of the emergency purchase, transfer, and self-help programs are shown in Table 4.10 for industrials and Table 4.11 for commercial customers.

A weighted percentage was not calculated for responses from schools. It was not possible to find the base period allocation to associate with each questionnaire because it was not clear which school buildings or even how many buildings were represented by each questionnaire. The opinions of the three programs expressed by customers in the "school" category are in Table 4.12.

At the end of the winter, customers who wanted to participate in any of the special programs, but were unable to do so were asked to explain their difficulty. A majority of respondents either left this question unanswered or noted that the question did not apply because they did not want to participate in any of the programs. Because so many responses were similar, we have paraphrased the answers and presented them in order of frequency. Unique answers are quoted directly. Reasons given for being unable to participate were:

1. The programs cannot be used to fill a need for boiler fuel.
2. The need to participate was based on curtailment increases which came too late to initiate entry into

TABLE 4.10 Industrial Customers' Opinions of Special Programs

Recommend that the programs be offered next year			
	yes	no	no answer
Emergency Purchase			
straight percentage	63	9	28
weighted percentage	66	3	30
Transfer			
straight percentage	59	8	33
weighted percentage	68	4	28
Self-Help			
straight percentage	56	9	35
weighted percentage	79	3	17
Programs can be helpful to them			
	yes	no	no answer
Emergency Purchase			
straight percentage	44	29	27
weighted percentage	55	17	29
Transfer			
straight percentage	35	29	35
weighted percentage	23	48	29
Self-Help			
straight percentage	37	30	33
weighted percentage	66	18	16
Will participate next year			
	yes	no	no answer
Emergency Purchase			
straight percentage	31	33	36
weighted percentage	49	23	28
Self-Help			
straight percentage	27	34	39
weighted percentage	63	20	16
Transfer (Buyer)			
straight percentage	25	32	43
weighted percentage	16	54	30
Transfer (Seller)			
straight percentage	9	37	53
weighted percentage	6	58	36

TABLE 4.11 Commercial Customers' Opinions of Special Programs

Recommend that the programs be offered next year			
	yes	no	no answer
Emergency Purchase			
straight percentage	63	7	30
weighted percentage	64	11	25
Transfer			
straight percentage	49	8	43
weighted percentage	53	8	39
Self-Help			
straight percentage	51	10	40
weighted percentage	55	8	36
Programs can be helpful to them			
	yes	no	no answer
Emergency Purchase			
straight percentage	47	18	35
weighted percentage	43	27	31
Transfer			
straight percentage	34	19	47
weighted percentage	35	24	41
Self-Help			
straight percentage	34	19	47
weighted percentage	38	22	40
Will participate next year			
	yes	no	no answer
Emergency Purchase			
straight percentage	30	31	40
weighted percentage	25	38	37
Self-Help			
straight percentage	19	30	51
weighted percentage	20	28	52
Transfer (Buyer)			
straight percentage	21	30	49
weighted percentage	19	31	50
Transfer (Seller)			
straight percentage	6	32	62
weighted percentage	9	33	58

TABLE 4.12 Schools' Opinions of Special Programs

Recommend that programs be offered next year			
	yes	no	no answer
Emergency Purchase	67	8	25
Transfer	71	7	22
Self-Help	62	7	32
Programs can be helpful to them			
	yes	no	no answer
Emergency Purchase	54	13	33
Transfer	55	15	31
Self-Help	38	21	41
Will participate next year			
	yes	no	no answer
Emergency Purchase	32	15	54
Self-Help	25	15	61
Transfer (Buyer)	38	13	49
Transfer (Seller)	2	18	81

these programs. No gas was available under these programs.

3. The price of gas under these programs was uneconomical, higher than the cost of available alternate fuels.

4. The responding company considers itself too small to afford the administrative costs of participating in these programs.

Unique answers were:

"Gas could be purchased, but not transported during peak day curtailment."

"We chose not to participate because of all the hassle. Several years ago we put in oil and propane systems and can get by without natural gas. The price of the

programs was not sufficiently less than oil and propane to induce us to participate."

"We understand the PUCO will allow us to transfer through regulated pipelines up to 100% of our allocation. As food processors, we have received 100% of allocation, and hence are ineligible for these alternative programs."

Replies pertaining to the emergency purchase program were:

1. No gas was available under the program at the time we found we needed it.
2. The price of the gas was too high and/or alternate fuel cost less.
3. The emergency purchase gas could not be used as boiler fuel.
4. Only 50% of contract amount was delivered in February and none in March.
5. Our plant is too small to participate.
6. The cost of gas was unknown.

A unique answer was:

"Incremental pricing of emergency purchases makes them economically unattractive especially since wildly fluctuating curtailment levels ordered frequently by the utility render forward planning virtually useless in estimating quantities of emergency gas needed."

Those unable to participate in the transfer program as buyers replied:

1. We were unable to locate a seller during the heating season.
2. We were unable to locate a seller willing to deal in the small volumes required.
3. It was too late in the heating season when we tried to find a seller.
4. The program does not allow purchase of boiler fuel.

5. We refuse to pay more for gas then Columbia's selling price.

6. No other company plant in Ohio.*

7. We could not find anyone with gas to sell at a reasonable price.

Three respondents were unable to participate in the transfer program as sellers:

> "Were going to help other customers who did not have alternate fuel capacity. When curtailment was increased to 85%, we did not have any gas left to transfer."
>
> We "offered a portion of our allocated gas to (a local) school district. This "buddy swap" was turned down by Columbia Gas on the basis that 'we weren't going to use the gas anyway' (Columbia Gas Quote)!"
>
> "The supply and curtailment situation was constantly changing so we never knew how much we had available."

Those unable to participate in the self-help program answered as follows:

1. No gas available in the short time after the increase in curtailment.

2. Too many regulations/restrictions on the program.

3. No gas available at a reasonable price until the spring when new wells are drilled.

4. "Take-or-pay" provision was objectionable.

5. Advance payment requirements are too large.

6. The changing self-help policies have made planning difficult.

7. Self-help requires a guaranteed "must-take" volume.

8. Cost of buying a gas line is too great.

9. Lack of capital.

10. The gas cannot be used for boiler fuel.

---

* A few customers believed the transfer program referred to transfers between plants owned by a single company.

11. A limitation is imposed of only replacing curtailed volumes when moving self-help gas through public utility lines.
12. Volume needed is too small to allow participation.
13. Not economically feasible.
14. Unavailable through mutual gates.
15. FPC was no longer giving 3-day telegram approvals.
16. Vague instructions on how to proceed.

At the end of the second questionnaire, curtailed customers were asked to describe changes they believed would make these programs more effective. Because many answers were thoughtful and unique, we have included all answers received in this report in Appendix C. Discussion of these replies is contained in the next chapter.

CHAPTER 5
DISCUSSION OF THE RESULTS

The surveys provide a picture of the natural gas needs of Ohio's curtailed customers and an evaluation of the usefulness of the three special programs to these customers. Perhaps the most striking feature of the results is that these customers are not a homogenous group, and the gas needs of various subgroups differ greatly.

All surveyed customers are "large" gas users in that they consume more than 1000 mcf per month. But their gas needs range from about 1000 mcf to millions of mcf. As a rough rule of thumb, industrial customers are the largest users, commercial customers are intermediate sized, and schools are small users. This classification is rough because, for example, a significant fraction of commercial establishments will use considerably more gas than many smaller curtailed industries. About a third of the industrial customers surveyed returned the questionnaires, but only about 22% of commercial customers (including schools) responded.

Industrial respondents indicated that they received an average of 35% of their total allocation during the past heating season, whereas the percentage for the commercial group was 63%. This implies that commercial

customers need gas for higher curtailment priority uses, on the average, than industrial customers.

The initial response to curtailments by each group of curtailed customers, industrial, commercial and schools, is conservation.

After reasonable conservation measures have been employed each group prefers to use alternate fuels if possible. A considerable amount of plant conversion to alternate fuels has already taken place, especially among the larger customers. Among industrial respondents, 82% have converted at least part of their plant to alternate fuels, while 59% of commercial customers and 36% of schools have done so. Twenty-eight percent of industrial respondents said that after using all the gas and alternate fuels available, they needed no additional special program gas to operate their plants.[1] The same reply was made by 27% of commercial customers and 16% of schools. Generally, the cost of special programs gas is greater than, or at least equal to, the cost of alternate fuels. Hence, a significant fraction of curtailed customers prefer to use alternate fuels when faced with curtailments rather than to obtain gas from one of the three special programs.

Of the remaining customers who have not converted, many cannot convert to alternate fuels. Some cannot afford the capital cost of conversion. Others require

1. A comment on the percentages reported here and elsewhere is in order. This figure represents 28% of all who returned the questionnaire. Not all repondents answered every question. Of those who answered this particular question, 35% indicated they had all the gas and fuel required. We prefer to report the more conservative figure.

a clean burning fuel for their processing. Still others use gas, not as a fuel, but as raw material (feedstock) for manufacturing a product such as fertilizer.

After conservation and alternate fuels customers in each group ranked special program gas ahead of cutting production for dealing with curtailments, as shown in Table 4.2. On the average, each group preferred cutting production to using propane which costs about three times as much as regular gas. Among the special programs, self-help gas (listed under "Other") was preferred by industrial customers, then emergency purchase gas, followed closely by transfer gas. Commercial customers and schools preferred emergency purchase and transfer gas. These rankings were made at the beginning of the heating season.

As curtailed customers felt the effects of the harsh winter of 1976-77, their attitudes toward the three special programs changed. A measure of the change can be seen from Table 4.6. In November 1976 approximately 10% of the customers sampled indicated an interest in participating in the emergency purchase program later in the year. At the end of the heating season, March 31, 1977, about 30% of those sampled indicated that they would participate in the emergency purchase program next year.

In November 33% of the industrial respondents, 27% of the commercials, and 23% of the schools indicated a future interest in the transfer program. Because the winter was very severe, little gas was available for transfer. Curtailed customers decided that the transfer program will provide

only small volumes of gas. As a result, only 25% of the industrials and 21% of the commercials want to buy transfer gas next year. However, the small volumes of transfer gas meet the needs of schools. Furthermore, many industries are willing to sell gas to schools as a public service. Thirty-eight percent of the respondents in this category want to participate next year.

The self-help program was not originally included in the study, so we do not know how many customers anticipated using that program in November. However, about one fourth of the respondents intend to use the self-help program next year. The customers most frequently expressing interest in the self-help program are the very large gas consumers.

It appears that as a result of this year's experience with curtailments customers are more interested in participating in the special programs than before. Furthermore, many have decided which program or combination of programs can best meet their needs.

On the second questionnaire some curtailed customers indicated that they wanted to participate in a special program during the 1976-77 heating season, but were unable to do so. One of the reasons given most frequently for not participating was that the need for additional gas was not realized until so late in the season that timely entry into the program was not possible or that program gas was no longer available.

Perhaps the most valuable data on customer interest in the three special programs is contained in Tables 4.10, 4.11, and 4.12. Customers were asked (1) if they recommend that each program be offered next year, (2) if each program can make a significant contribution to the customer's energy needs, and (3) if the customer anticipates taking advantage of each program next winter. Not surprisingly, each group of customers gave the highest percentage of affirmative replies to the first question, the next highest percentage to the second, and the least to the third.

The tables indicate that the first choice of industrial customers for dealing with curtailments is the self-help program, the first choice of commercial customers is the emergency purchase program, and the first choice of schools is the transfer program. Furthermore, the large users within the industrial and commercial groups favor the self-help program and the smaller users favor the emergency purchase program.

Consider Table 4.10 giving industrial customers' opinions. On the basis of straight percentages, 63%, 59% and 56% favor offering next year the emergency purchase, transfer and self-help programs respectively. On the other hand, using the weighted percentages, 79% recommend continuing the self-help program and only 3% recommend that it not be offered next year. On the same basis, 66% recommend the emergency purchase program and 68% recommend the transfer program. A weighted average of 66% believe the self-help program would be helpful

to them, compared to 55% and 23% for the emergency purchase and transfer programs. More significantly, while only a straight 27% plan to use self-help gas next year, a weighted 63% plan to use it. This shows that the larger industrial customers plan to depend primarily on self-help to obtain gas. A weighted 49% and 16% plan to use the emergency purchase and transfer programs, respectively.

In terms of obtaining gas to minimize the economic impact of future curtailments in Ohio, we believe the weighted percentage provides a better yardstick regarding the usefulness of the programs.

Commercial customers prefer the emergency purchase programs, as shown in Table 4.11. Both in terms of straight and weighted percentages, more commercial customers plan to participate in this program than either of the other two. However, the larger commercial establishments favor the self-help program: the weighted percentage is greater than the straight percentage for self-help, but is less for the other two programs.

Schools favor the transfer program.[2] Of those responding, 71% recommend that it be offered next year, 55% believe it may be useful to them, and 38% plan to buy transfer gas next year. Each percentage is higher than for either of the other two programs.

Administrative costs and problems associated with implementing all three special programs are relatively small. Concern about administrative and legal problems with the

[2] There is no weighted average for schools, as explained in Chapter 4.

transfer program led, in part, to the decision to offer only a pilot program in the Columbia service area. We have not investigated the legal questions, but a Columbia Gas official has said that the cost of the transfer program is small and that no major problems have been encountered. The official also indicated that Columbia endorses all three programs.

In view of the relatively minor costs of administering the special programs, we believe that even if only a small percentage of customers receive gas through the programs, the benefits can outweigh the costs. Data from the questionnaires show that 27% of the industrial respondents plan to use the self-help program next year; about 30% of the industrials and commercials plan to use the emergency purchase program; and 38% of the schools plan to use the transfer program. We believe that these data justify extending the transfer program to all curtailed customers and continuing all three special programs in Ohio.

Although, the three special programs are basically sound, two minor changes could be made to improve them. First, the emergency purchase contracts could be designed to give the customer the option of contracting for either a fixed maximum volume of emergency purchase gas or a maximum volume which increases automatically as curtailment levels are increased. Such an option could be useful to customers who must contract for emergency purchase gas months before they know what the exact curtailment levels will be. As with current contracts, the utility is under no obligation to supply the maximum contract volume.

Second, the PUCO could give assurance that customers will be able to use their self-help gas even if utilities have adequate supplies in future years. In the past a gas customer could use his self-help supplies only after using all of his allocation from the distribution company. That restriction was lifted in May 1977. But more companies may be willing to commit large sums of money to developing self-help gas if they are assured that the restriction will not be reimposed.

Even without these changes, we believe that the three special programs make a significant contribution to the gas needs of Ohio's curtailed customers and could be effective if adopted by other states facing curtailments.

CHAPTER 6

SUMMARY

The curtailed gas customers of Columbia Gas of Ohio were surveyed twice, once at the beginning and once at the end of the 1976-77 heating season. The purpose of the survey was (1) to determine the gas needs of Ohio's curtailed customers, and (2) to evaluate the effectiveness of three special programs initiated by the PUCO to meet those needs. These are the emergency gas purchase program, the natural gas transfer program, and the self-help program.

The surveys show that the average customer responded to curtailments first by adopting conservation measures, and second by converting at least part of his plant to alternate fuels. In general the larger customers have converted more than the smaller customers. Those who have converted prefer use of alternate fuels to the special programs whenever possible.

A majority of customers still have need of additional gas even after adopting conservation measures and using alternate fuels. They prefer using the special programs for obtaining gas to cutting production or buying costly propane. A majority of those surveyed recommended that the programs be continued next year.

Each program effectively serves a different type of customer. The largest users, primarily industrial customers

and a few large commercial customers, prefer the self-help program for obtaining additional gas. Many commercial customers and the smaller industrial customers find the emergency purchase program most useful. Schools plan to rely on the transfer program more than other customers.

Each of the three programs is administratively feasible, including the transfer program. The cost of administering the three programs is relatively small.

This package of programs can be effective in obtaining additional quantitites of gas for Ohio's curtailed customers. Furthermore, we believe that the programs can be equally effective in other states facing heavy curtailments.

Recommendations

As a result of this evaluation of the three special programs, it is recommended that:

(1) all three programs be continued in Ohio,

(2) pending the resolution of its legality, the transfer program be offered by all distribution companies that curtail customers; and,

(3) two changes be considered in these basically sound programs: first, that the emergency purchase contracts be designed to give customers the option of contracting for either a fixed maximum volume of emergency purchase gas or a maximum volume which increases automatically as curtailment levels are increased; and second, that customers be given assurance that they will be able to use their self-help gas even if utilities have adequate supplies in future years.

APPENDIX A

SPECIAL PROGRAM DOCUMENTS

Documents relating to the implementation of the three special programs by the PUCO and Columbia Gas of Ohio are presented here. These are the following:

Emergency Gas Purchase Program

a) a letter describing the program to curtailed customers,

b) the survey-contract form; and,

c) a letter to the PUCO detailing the status of the program.

Natural Gas Transfer Program

a) a letter describing the program to curtailed customers; and,

b) the buyer and seller information form.

Self-Help Program

a) PUCO's self-help guidelines.

EXHIBIT 1
PAGE 1 OF 2

COLUMBIA GAS OF OHIO, INC.

99 NORTH FRONT STREET COLUMBUS, OHIO 43215

June 25, 1976

TO ALL CURTAILED CUSTOMERS:

On June 16, 1976 Columbia Gas of Ohio, Inc. (Columbia) provided you with its best estimate of anticipated curtailment levels for the winter period commencing November 1976. In order to provide some relief to its curtailed customers during that period, Columbia will attempt to secure intrastate gas available on an emergency spot purchase basis. Availability of this gas to Columbia is made pursuant to emergency provisions of the Federal Power Commission. Recent legislation enacted in Ohio requires that any short-term emergency volumes secured by Columbia be sold to its curtailed customers incrementally. It will be necessary, therefore, that any curtailed customer desiring emergency gas indicate its intent to Columbia by entering into an agreement. Columbia's ability to provide volumes under such an agreement is subject to action of all state and federal authorities assuming jurisdiction.

In no event can Columbia furnish emergency volumes which exceed your curtailed non-boiler volumes for the winter period, as determined by the curtailment levels specified in our letter of June 16, 1976. Any changes which may be made in these curtailment levels will not affect your commitment. Columbia will, however, on a best efforts basis attempt to satisfy requests for redistribution of volumes and release commitments to the extent possible.

At the present time the estimated cost to you of any emergency volumes which Columbia might secure is in the range of $2.60 to $3.00 per Mcf. Actual cost data will be provided as it becomes available. Should you elect to purchase emergency gas, Columbia would bill you in equal amounts (one-fifth of the total) during each of your billing months November 1976 through March 1977. This gas would be billed as the first gas through your meter each month, prior to gas delivered under other rate schedules.

Enclosed is an agreement which should be completed, executed, and returned to us, if you wish Columbia to furnish emergency volumes to you. It is essential that this agreement be returned to my attention no later than July 21, 1976 so that Colubia can locate and contract for emergency volumes. We will assume that any customers not returning agreements to us by July 21, 1976 do not wish to purchase emergency volumes this winter.

Very truly yours,

Enc.

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APPLICATION AND AGREEMENT FOR SHORT TERM EMERGENCY SERVICE

The _____ of _____, Ohio,
(Name of Buyer) (Community)

hereinafter referred to as "Buyer", requests COLUMBIA GAS OF OHIO, INC., hereinafter referred to as "Seller", to supply gas under the following terms and conditions:

(1) Buyer agrees and guarantees to pay Seller at a rate not to exceed $3.00 per Mcf for delivery of up to _____ Mcf or Buyer's proportionate share, whichever is less, of any short term "spot purchase" emergency gas supply Seller is able to obtain, on a best efforts basis, for delivery during Buyer's November 1976 through March 1977 billing periods.

(2) The rate for such emergency gas shall include the cost of gas, transportation charges to Seller, a carrying charge, a delivery charge of 10¢ per Mcf, and applicable state and local taxes.

(3) Buyer shall pay for such emergency gas supply by equal monthly payments during the November 1976 through March 1977 billing periods. This gas would be billed as the first gas through your meter each month, prior to gas delivered under other rate schedules.

(4) Service under this Agreement shall in no way affect Buyer's obligation under any filed tariff rate schedule or provision.

(5) Gas service hereunder is to be furnished to Buyer at the following location:

_____, _____, Ohio.
(Number and Street) (Community)

(6) Neither Seller nor Buyer shall be liable in damages to the other for any act, omission or circumstance preventing the fulfillment of any obligation hereunder, occasioned by or in consequence of any act not within the control of either party hereto. In the event of any such circumstance, the parties hereto shall not be relieved of the responsibility of making prompt effort to again place themselves in position to carry out all obligations which they have assumed by the terms of this agreement.

(7) This application and agreement shall not be binding upon either party hereto until acceptance is signed by the authorized representative of SELLER, and when so accepted shall constitute a contract binding upon both parties, their heirs, successors or assigns. Seller's ability to provide volumes under such an agreement is subject to action of all state and federal authorities assuming jurisdiction.

Accepted by:

COLUMBIA GAS OF OHIO, INC. (Seller) _____ (Buyer)

By _____ By _____

Title _____ Title _____

Date Executed _____ Date Executed _____

COLUMBIA GAS OF OHIO, INC.
99 NORTH FRONT STREET COLUMBUS, OHIO 43215

October 8, 1976

Mr. John D. Borrows
Director of Utilities
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, Ohio 43215

Re: PUCO Docket Number 76-791-GA-AEC

Dear John:

Columbia Gas of Ohio, Inc. (Columbia) has recently filed with the Commission for its approval some 89 letter agreements with its curtailed customers under the terms of which such customers commit to purchase certain volumes of emergency purchase gas for use during the forthcoming winter supply season at a delivered price of not to exceed $3.00 per Mcf. Upon approval of such arrangements by the Commission, Columbia will make final commitments to buy such volumes.

Columbia has now determined that it will be unable to secure such volumes at the $3.00 per Mcf basis upon which the original survey was made. Columbia has therefore re-surveyed all of the 89 customers whose letter agreements form the subject matter of this Application, advising them that the price of such gas will not exceed $3.20 per Mcf.

As a result of the re-survey, 77 customers out of the original 89 are still interested in purchasing emergency supplies. The original 89 customers represented a total nominated volume of 328,891 Mcf. The remaining 77 customers have nominated a volume of 195,943 Mcf.

Based upon the re-survey, and assuming the Commission's approval of the arrangements, Columbia now anticipates filing 79* final contracts in this proceeding.

Very truly yours,

James L. Fullin, Senior Counsel

JLF:jml

* Two customers were late in filing their letter agreements. Columbia has advised such customers that by reason of their late filing, Columbia will first attempt to supply the volumes nominated by the 77 customers who timely filed. If volumes are available after such nominations are met, Columbia will then supply the two who filed late. This explains the fact that Columbia expects, ultimately, to file 79 instead of 77 contracts.

COLUMBIA GAS OF OHIO, INC.

November 10, 1976

TO ALL CURTAILED CUSTOMERS - OHIO

Columbia Gas of Ohio wishes to remind you that the Columbia Transfer Program is still available to assist customers in offsetting curtailments, if you wish to participate. This Program allows for the transfer of volumes from one customer to another provided certain conditions are met. The six essential requirements to the Program are as follows:

1) The donor can not transfer more than his authorized volume.

2) The receiver can not obtain more than his curtailed volumes.

3) An alternate fuel must be burned by the donor in an amount equivalent to the volumes being transferred.

4) Compensation for the transferred volumes is determined by negotiations between the two involved customers only.

5) Letters are required from the involved customers agreeing to the transfer and to Item 3 above.

6) The receiver will pay Columbia for the transferred volume the higher of the amount obtained by calculating the cost on the rate schedules of both the donor and receiver, and assuming the transferred volumes are the last volumes through the meter during the billing period.

It should be noted that an increase in curtailment levels after the transfer has begun will most likely cause the transferred volume to be reduced.

Columbia's involvement in this Program is strictly limited to assisting those customers who require additional volumes in finding a donor and to the necessary related administrative matters.

If during the curtailment period you wish to participate in this Plan, please feel free to call me or submit in writing the appropriate information shown on the attached sheet. We would like to have as many companies as possible participate as donors; however, supplying us the necessary information does not obligate you to become a donor as a transfer can not take place without your written approval.

Very truly yours,

Attach.

DONOR INFORMATION

I am willing to be considered as a donor plant in Columbia's Transfer Program

Company Name _____

Account Number _____

Person To Contact _____

Telephone _____

Approximate Volume Which Could Be Transferred

November _____

December _____

January _____

February _____

March _____

TOTAL _____

RECEIVER INFORMATION

I wish to purchase volumes of natural gas in addition to those authorized by Columbia Gas of Ohio

Company Name _____

Account Number _____

Person To Contact _____

Telephone _____

Approximate Volume Required _____

SELF-HELP GUIDELINES
Issued March 30, 1976

By

THE PUBLIC UTILITIES COMMISSION OF OHIO

Case No. 73-761-Y

The following standards and guidelines will be utilized to determine whether arrangements for furnishing natural or synthethic gas meet the reasonableness requirement of Section 4905.31, Revised Code. However, the guidelines, should not be understood nor interpreted as barring the submission or approval of any arrangement which has been agreed to between a Public Utility and a customer.

(1) Any Public Utility subject to the jurisdiction of the Commission may enter an arrangement for furnishing natural or synthetic gas with a customer who develops its own independent source of natural or synthetic gas but needs to utilize the facilities of one or more Utilities to transport, by displacement of otherwise, the gas from the point of production to the point of consumption.

(2) The customer or group of customers making available supplies of natural or synthetic gas should have the following rights and be subject to the following conditions:

(A) Consumers of natural gas wishing to make available supplies of natural or synthetic gas to the extent that their usage of gas obtained from all sources is greater than their base period allocation (the historic allocation upon which curtailment is calculated) or energy consumers, not presently a customer of an Ohio gas utility, wishing to make available supplies of natural or synthetic gas, may enter into a transportation arrangement with an Ohio gas utility provided that the gas consumer/developer sells at least 25 percent of the total gas to be transported to the transporting utility or utilities.

(B) To the extent that a customer makes supplies of natural or synthetic gas available in such amounts that total gas usage in any given month will not exceed the base period allocation for that month, the customer shall have a right to retain, pursuant

to an approved arrangement, between 75 percent and 100 percent of the gas delivered to the transporting utility or utilities.

(C) The volumes which the customer or group of customers are entitled to retain shall be subject to curtailment or interruption due to shortages in the supply of natural gas; however, for purposes of curtailment of the retainable volumes, the natural or synthetic gas made available because of the customers own efforts shall be considered as within the priority, class, subdivision, or category of the next priority below residential users or use. (Thereby, curtailable to the extent necessary to meet the gas needs of that category.) The retainable portion of the production volumes shall also be subject to curtailment or interruption during force majeure and peak day or weather associated conditions.

(D) During periods when the customer or group of customers experiences curtailment of the volumes it is entitled to retain, the customer shall be obligated to continue production and delivery of the production volumes to the Public Utility; however, the delivery may be limited to 50% of the production volume during the monthly period prior to the month in which curtailment occurs. The obligation to continue production shall not be subject to a right of the customer to terminate the contract because of a decrease or total failure in the delivery of the volumes that the customer is entitled to retain.

(E) During periods when the customer or group of customers is not receiving the volumes it is entitled to receive, because of force majeure, peak day or weather associated conditions, it shall be entitled to a credit equal to the difference between the amount it should be receiving less the actual amount received. The credits shall be available to the customer or group of customers at any time. However, no credits shall be available other than in the

annual period in which they accrue. Any credits which remain unused at the end of the annual period in which they arose shall be paid for by the Public Utility according to an agreed upon rate.

(F) The customer or group of customers shall be responsible, either directly or indirectly, for all costs and risks associated with the field or plant development, production, and delivery of the production volumes to the Public Utility.

(3) The customer's intended use of the natural or synthetic gas, delivered pursuant to an arrangement with a Public Utility, shall be specifically set out both in amount and type of use.

(4) If a customer intends to utilize some portion of the gas, which it causes to be produced; for boiler fuel, the Application shall contain a greater degree of justification due to the general inefficiency associated with the use of natural gas for boiler fuel. The Application shall indicate:

(A) Whether an alternate fuel could be utilized, whether or not the customer has the necessary equipment to burn such alternate fuel;

(B) The reasons for not utilizing an alternate fuel in those situations where one could be utilized;

(C) Any other facts which would tend to mitigate the general inefficiency associated with the use of natural gas for boiler fuel in the specific situation.

(5) It is not necessary for the customer or group of customers to own or have any interest in the land from which the production volumes are derived for purposes of an arrangement for furnishing natural gas. However, if the customer buys, uses, or otherwise takes advantage of any fields or property owned, leased, or on which a Public Utility had an option to obtain a legal interest on or after October 18, 1973, said customer or group of customers shall provide to the Public Utility replacement acreage agreeable to the Public Utility for the Public Utility's own development. Where replacement acreage is so provided, it shall be specifically set forth in the Application seeking Commission approval of an arrangement for furnishing gas.

(6) All equipment installed or property devoted to the production, collection, transmission, and delivery of natural or synthetic gas pursuant to an arrangement between the customer or group of customers and a Public Utility, shall be excluded from the rate base to the extent so utilized.

(7) Any application for the approval of an arrangement between a customer or a group of customers and a Public Utility shall specifically set forth the following:

(A) The manner in which the Public Utility's existing and pending restrictions relating to the curtailment of existing service or the extension of new service would be altered or modified if the proposed arrangements were approved by the Commission.

(B) The areas where the arrangement is at variance with the guidelines used to judge the reasonableness of such arrangements, and the reasons that the variance is deemed necessary.

(C) The name, address, and telephone number of the customer or groups of customers individually.

(D) The nature and extent of any interest which each party to the arrangement holds in any other party to the arrangement, or in any Public Utility subject to the jurisdiction of the Commission.

(E) The location from which the gas production will occur and the name, address, and phone number of the producer if different from that of the customer.

(F) The location of the intended points of comsumption.

(8) In the event that the customer or group of customers should for any reason no longer need the gas produced from the land in which it has the rights to production, the customer or group of customers shall provide the Public Utility with the first opportunity to purchase or otherwise assume the customer's right to said production.

(9) Each arrangement, entered into between a customer or group of customers and a Public Utility for furnishing natural or synthetic gas, shall provide that no alter-

ation, modification, assignment, or termination shall be made without specific approval of the Commission.

(10) The terms of the arrangement shall indicate that the arrangement for furnishing natural or synthetic gas will be of no force or effect upon that gas which the customer would receive absent such an arrangement.

APPENDIX B

DATA ON SPECIAL PROGRAM PARTICIPANTS

This appendix contains the data gathered from the questionnaires concerning those gas customers who actually participated in the emergency, self-help, and transfer programs. Each respondent was asked to list the maximum volume of gas for which he contracted, the date of the contract, the volume of gas he actually received (or sold), and the price per mcf of that gas. Many of the responses were not complete. Unanswered questions are indicated by a series of dashes.

Responses are divided into four categories, emergency purchase, self-help, transfer (buyer), and transfer (seller). In each category there are separate tables for industrials, commercials and schools.

TABLE B.1 Emergency Purchase Program
Industrial Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
1,200,000 MCF	2-10-77	30,000 MCF	$2.95
900 MCF	11- 8-76	180 MCF	3.17
3,400 MCF	11/77	2,380 MCF	3.17
112 MCF	10-6-76	78 MCF	3.20
9,569 MCF	10-27-76	6,696 MCF	3.17
2,000 MCF	12/76	1,400 MCF	3.20
6,000 MCF	12-1-76	0	3.40 EST.
5,000 MCF	7-14-76	3,500 MCF	3.17
0	------	None Available	----
4,375 MCF	7-12-76	3,063 MCF (70%)	3.17
4,000 MCF	2-15-77	4,000 MCF	$2.036 plus $1.50 Premium
3,500 MCF	11-3-76	2,450 MCF	3.17
21,000 MCF	11-3-76	14,700 MCF	3.17
100% Allocation	11-30-76	None	----
7,500 MCF	10-27-76	5,250 MCF	3.20
9,500 CCF	10-6-76	9,500 CCF	3.17
16,875 MCF	11-3-76	11,812 MCF	3.17
2,218 MCF	10-27-76	1,609 MCF	3.20

TABLE B.2 Emergency Purchase Program
Commercial Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
22,800 CCF	11-3-76	15,960 CCF	$3.17
1,087 MCF	10-27-76	870 MCF	3.20
2,000 MCF	10-27-76	2,000 MCF	3.20
7,952 MCF	11-3-76	5,568	3.17
----	----	None	----
3,620 CCF	11-3-76	2,520 CCF	3.17
10,000 MCF	7-20-76	7,000 MCF	3.17
----	----	37,489 CCF	?
881 MCF	10-6-76	881 MCF	3.20
12,640 CCF	10-7-76	10,112 CCF	3.17
1,700 MCF	11-3-76	1,700 MCF	3.17
6,110 CCF	10/76	6,110 CCF	3.17
10,000 CCF	10/76	7,000 CCF	3.15
1,658 MCF	11-3-76	1,159 MCF	3.17

TABLE B.3 Emergency Purchase Program
School Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
450,000 CCF	2-17-77	----	$2.50
2.5 CCF	2/77	- 0 -	never needed
5,000 CCF	3-11-77	2,161 CCF	2.25
All the Galion City Schools needed	1-17-77	23,074 CCF	Our cost + extra maintenance cost to hopsital
1,886 MCF	2-11-77	1,136 MCF	1.18
2,400 MCF	2-11-77	unable to secure this information	2.80
1,000 MCF	2/77	1,000 MCF	1.80
40,000 CCF	2-14-77	None	2.50
42 MCF	3-11-76	70%	3.20
16,000 CCF	----	----	----
20,000 CCF	2-15-77	unknown	2.50
20 MCF	11 -3-76	10 MCF	3.17
1,600 MCF 1,000 MCF	2/77 1/77	1,600 MCF 6,000 MCF	1.92 1.88
600 MCF	2/77	600 not complete	2.50
10,000 CCF	----	10,457 CCF	have not been billed as yet
2,527 MCF	3-2-77	2,527 MCF	1.54

TABLE B.4 Self-Help Program
Industrial Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
350 MCF/month	2-18-77	None	$2.35
Drilled own wells			
----	----	690 MCF	1.96
Own well	----	1,156 MCF	----
Local private well	----	----	----
----	----	41,500 CCF	1.83 Local well-head gas
----	----	803 MCF	1.96
1,460,000 MCF/Yr	3-30-76	191,700 MCF	Drilled own wells
----	----	Plant 1-30,653 MCF Plant 2- 2,608 MCF	----
Variable with wells	6/76	0	2.36
300 MCF/day	We control these wells	17,000 MCF	We own wells
30,300 MCF/year	11/75	4,199 MCF	----
60,000 MCF	3-9-76	4,000 MCF	2.02
None	11-1-74	10,700 MCF	----
Proprietary wells 384,000 MCF	---- 2-11-77	31,854 MCF 14,387 MCF	---- 2.55 4 year contract
12,000 MCF	7/75	3,518 MCF	1.70
72,917 MCF	5-13-76	39,052 MCF	Not Applicable, we own the wells
Corporate contract up to 1,000 MCF/day take or pay	9-16-75	15,200 MCF	1.95

TABLE B.4 (cont.)

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
Average 60 MCF/day	10-19-76	7,000 MCF (estimated)	$1.50
10,000 MCF	Not signed yet	----	2.25
730,000 MCF/Yr	1-27-76	45,355 MCF	1.60
4,910 MCF	1-1-77	4,910 MCF	3.02

TABLE B.5 Self-Help Program
Commercial Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
500 MCF	3-11-77	No report to date	$2.25 + transportation
14,000 MCF	3-23-77	None	----
Whatever volume used above authorized vol.	----	2,191 MCF	Unknown at this facility at pres.
27,870 CCF	1-26-77	27,870 CCF	1.175

TABLE B.6 Self-Help Program
School Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
76,000 MCF	2-2-77	25,000 MCF	$1.90
100,000 CCF	2-24-77	100,000 CCF	2.35
1,500 MCF	2-8-77	2,970 MCF	2.35
35,000 CCF	----	received	----
3,700 MCF	----	----	2.50
As needed	----	----	----
----	2-15-77	67,000 CCF	2.50
8,000 MCF	2-15-77	8,000 MCF	2.50
3,600 MCF	2-9-77	----	2.50
1,000 MCF	2-7-77	2,000 MCF	2.50
----	2-3-77	18,678 CCF	2.50
10,000 CCF	----	- 0 -	----
605 MCF	2/77	6.05 MCF	2.50

TABLE B.7 Transfer Program (Buyer)
Industrial Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
8,300 MCF	2-21-77	912 MCF	Std. Price
----	----	886 MCF	$3.38
1,000 MCF	3-1-77	0	----
1,300 MCF	1-21-77	1,300 MCF	1.04 above base cost
810 MCF	3/77	----	3.00 did not use came too late
1,500 MCF	2/77	1,500 MCF	1.00 above base cost
1,500 MCF	2-18-77	1,500 MCF	.86
1,500 MCF	2-18-77	1,500 MCF	3.50
11,800 MCF	2-15-77	11,800 MCF	1.50
3,000 MCF	2/77	3,000 MCF	1.00 above base cost
2,000 MCF	2-15-77	2,000 MCF	1.50 above base cost
----	----	2,000 MCF	2.50
400 MCF	3-1-77	400 MCF	----
3,015 MCF	2-22-77 - 500 3-2-77 - 615 3-7-77 -1,900	3,015 MCF	-0- agreed to return gas to lender
14,600 CCF	1-5-77 -8,400 2-11-77 -6,200	8,127 CCF	1.00 to transfer

TABLE B.8 Transfer Program (Buyer)
Commercial Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
550 MCF*	----	550 MCF	Reg. Rate
2,456 MCF	1-20-77	558 MCF	$2.18
1,380 MCF	2-2-77	1,380 MCF	1.00
2,000 MCF	----	----	----
1,000 MCF	3/77	----	1.00
2,000 MCF	2-21-77	2,000 MCF	----

TABLE B.9 Transfer Program (Buyer)
School Responses

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
4,000 MCF	----	----	----
10,000 CCF	----	10,000 CCF	$2.75
15,000 MCF	2/77	3,975 MCF	2.19
----	Jan & Feb	----	Buildings Pooled
7,600	3-3-77	7,600 CCF	.193
4,000 CCF	1-20-77	4,000 CCF	.96
16,000 CCF	3-4-77	16,000 CCF	$2,928 actual charge
25,000 CCF	1-20-77	----	----
As Needed	1-27-77	None came too late	
16,660 CCF	2/77	16,660 CCF	.69 premium
2,200 MCF	3/77	----	1,200MCF free 1,000MCF $1.30
4,000 CCF	2/77	- 0 -	additional cost of burning oil
2,000 MCF	----	2,000 MCF	$1,900.00
----	----	16,000 CCF	1.935
3,000 MCF	----	3,000 MCF	3.72
9,250 CCF	----	None	Never developed
10,000 CCF	1-24-77	10,000 CCF	1.18229
12,379 CCF 13,948 CCF	1-10-77 2-16-77	12,379 CCF 13,948 CCF	----
11,250 CCF	2-21-77	11,250 CCF	- 0 - regular price,with no additional cost

TABLE B.9 (cont.)

Maximum Contract Volume	Date Of Contract	Volume Received	Price Per MCF
30,000 CCF	1/77	30,000 CCF	Regular
----	Jan & Feb	4,299 MCF	$1.99 usual rate for regular service
7,500 CCF	Not authorized by Columbia Gas We never received the transfer gas		

TABLE B.10 Transfer Program (Seller)

Industrial Responses

Maximum Contract Volume	Date Of Contract	Volume Sold	Price Per MCF
5,500 MCF	1-31-77	5,500 MCF	$ .66.4
500 MCF	1-5-77	500 MCF	2.00
6,000 MCF	2-9/17-77	6,000 MCF	No Charge
1,200 MCF	2-17-77	1,200 MCF	1.20
----	----	1,755 MCF	----
5,000 CCF	2/77	5,000 CCF	out right release
11,000 MCF	1/77 2/77	----	----
3,000 MCF	2/77	- 0 -	- 0 -
1,000 MCF	3-14-77	1,000 MCF	Columbia
2,000 MCF	2-12-77	2,000 MCF	.75
7,200 MCF	----	7,200 MCF	1.00
2,400 MCF	2/77	2,400 MCF	----
38,300 MCF	various	38,300 MCF	- 0 -
848 MCF	Exchange of self-help gas for one transport load of propane.		

TABLE B.11 Transfer Program (Seller)

Commercial Responses

Maximum Contract Volume	Date Of Contract	Volume Sold	Price Per MCF
7,856 MCF	1-20-77	7,856 MCF	$2.18
4,000 MCF	2/77 3/77	4,000 MCF	Same as Columbia price

APPENDIX C

SUGGESTIONS FOR PROGRAM IMPROVEMENT

This appendix contains responses to item 14 on the second questionnaire. That item asks curtailed customers to "describe the changes you believe would make these programs more effective." The responses have been divided into three major categories, industrial, commercial and schools. The responses in each category were subdivided as indicated below.

Of those responding to this question (roughly one-quarter of industrial respondents), about half commented on changes which they believed would make the programs more effective for them, and the other half used the space provided for the answer to express their concern, desperation, anger or indifference regarding the severe natural gas curtailments during the 1976-77 heating season.

All replies are reproduced here. Replies pertaining directly to suggested program changes are given first and other replies follow. In each case, replies of a similar character are grouped together.

Changes That Would Make the Programs More Effective

The majority of replies were sufficiently general to apply to all of the programs. The following grouping of replies is based more on the nature of the comment than on the specific program addressed.

Information on the Programs

* Explain programs more clearly to all users affected.

* The presentation of the plans is quite complex and therefore difficult to understand.

* The programs set up were hard to keep up with. It seemed like every week something had changed and we really didn't know what was going on.

* Suggest a seminar sponsored by Columbia regarding these programs and their ramifications; such as-where to buy, producers available, interstate transfers, shrinkage, etc. In addition, invite to speak Pete Susey of the Ohio Energy & Resource Div. Agency--Gov. Rhodes answer to help industry.

* Our billing period runs from the 10th of one month thru the 9th of the following month. Several times during the energy crisis period our allocation was given to us on a calendar month basis. While we could convert this to a billing period allocation, it tended to add confusion to an already difficult situation. This plus constant changes in allocations made it difficult to evaluate accurately our position at any given time. We realize, however, that Columbia Gas was operating under very difficult conditions.

* Published information about what quantity of natural gas is available, where it is, and what price is asked for should be provided especially for industrial users who are dependent on this kind of energy.

  Transfer of gas from sources to final users should be made readily accessible at the loading point and/or during gas transport through existing pipeline system.

* Published list of where and when extra fuel is available monthly.

* Less confusion and clear guidelines, especially by the Federal Government.

Better Prediction of Curtailment Levels

* I believe that the effectiveness of these programs would be enhanced (if offered next year) if industry had a better idea of possible future curtailments in advance.

* Since our usage is primarily in the months of October, November, and December we have experienced no significant curtailment in the past. If curtailments during this period could be predicted further in advance we could be in a position to participate in the above programs.

* To know in advance exactly how much gas would be available to us for a fixed period of time instead of being on a day-to-day basis.

* Need better information on supplies. Example: purchased self-help based upon announced 70% reductions for March was increased so that purchase was unnecessary. Seems like someone is playing games. We are a custom shop and cannot take orders for three to four weeks delivery if we do not know what is happening.

* Reliable information now and dedicated volumes to consumers next winter.

* We need firm rules, regulations and allocations. Constantly changing the plan was one of our biggest problems.

* Through "Energy Conservation Programs" and a strong concern for the energy crisis, we had reduced the usage by 43.8% (1976 = 16,939 MCF versus 1976 = 30,138) as compared to the base year (1970), however, we still needed to invest $69,000 to ensure full production. The companies conserving energy should be justily rewarded with a definite guaranteed volume in order to properly schedule and plan production.

* We believe uniformity of treatment by suppliers is most necessary. We also believe small boiler load should be granted gas.

* The gas we use is for drying grain, brought in by farmers for sale to us. Our use depends on the amount of grain received and the amount of moisture that it carries, which makes it very hard to decide what we will need.

* Establish an allocation at the beginning of the winter period that we can count on. Changes on a day-to-day basis are unacceptable. We need time to plan for shortages.

* By having closer advance estimates of the amount of natural gas that will be available. This would be a determining factor for applying for added emergency gas if gas is to be taken on a take-or-pay basis. By eliminating utility company's policy of their gas first through the meter.

Pricing-Related Comments

* The one big point which discouraged us was that the emergency gas was the "first through the meter." This meant that even though you might not need it, you had to buy it first. Having sufficient alternate systems, we were not willing to commit any high priced natural gas even though it might have been somewhat cheaper than propane. Columbia Gas Company has not been very courageous. Its customers are the ones who take all the chances.

* I don't feel that Columbia should receive the higher rates for emergency gas until it is purchased. In other words, first out gas should be at normal billing and then emergency gas purchased and paid for at usage time.

* Columbia Gas of Ohio's transporation charges and clearly defining "first through the meter" charges. A self-help participant definitely should have the option.

* Under emergency purchases the gas should be billed after the original allocation has been used.

* "Emergency Purchase" was worded to guarantee gas supplier front loading of higher priced fuel plus no guarantee of protection in severe weather. We're not familiar with "Transfer" process, for example we could trade or sell gas during non winter months in exchange for November-March increase.

* Additional cost should be passed to all consumers directly for emergency purchase gas.

* Cost of emergency gas volumes needed to supply all customers should be paid by Columbia and prorated back to customers based on a simple "points" system charging customers less if they have practiced or taken specific conservation measures such as: storm windows, insulation, conversion to other fuel sources where possible, separating areas that don't need heating, and so on.

* Since our Federal government will not deregulate, but has allowed package purchases of Southwest gas, then I feel the PUCO should decide what level the various groups should be maintained. The price should then be rolled-in to all groups. Note: We don't know how much will be needed either!

  If the testimony against the Stinziano Bill† would be replayed and studied, it would show the descrimination features of this bill. This bill not only discriminates against industry, but against thousands who burn oil, coal, wood, and electric heat.

  I think the PUCO has done an excellent job, but our legislators don't see the big picture, they just like to grandstand to the voters. I even heard on the news last night that the Carter Administration is considering controls on the Intra-State gas.

* Only if gas purchased is at same price.

* If we knew that emergency gas would be available at a reasonable price. Feedback on those who were willing to transfer gas and quantities at a reasonable rate. This plant's posture has changed to usage increasing to point of allocation and alternates are required.

* Charge for emergency quantities used after authorized allotment is used each month.

* Establishment of first-thru-the-meter option for non-traditional gas supplies. Elimination of the city gate requirements. Require utilities to project estimated curtailment levels 60 days ahead.

* Emergency Purchases - price should be competitive and available on "as needed" basis.

  Self-Help - eliminate "take-or-pay" clauses

* Until now, the uncertain status of the "first through the meter" question has hindered development of further self-help reserves. Final resoulution of this question by the PUCO - hopefully in the form of a final and binding order requiring Columbia to offer a "first through the meter" option - should help remove the uncertainty.

* The option of taking self-help gas "first through the meter" would greatly enhance the effectiveness of the our company's program. Also, the movement of gas via Columbia Transmission and other interstate lines within Ohio without prior FPC approval would open areas of drilling that were previously unattractive.

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† See Chapter 3

* 1. Need list of companies who are willing to sell gas.
  2. Re: emergency gas - first gas purchased should be Columbia Gas' with emergency gas price taking effect after allocation is used.

Reliability of Gas Supply Under the Programs

* Emergency, transfer and self-help gas are helpful but this gas still cannot be used during "only minimum plant protection" gas periods. Adequate storage facilities of natural gas must be maintained by the gas companies to eliminate industrial plant shutdown.

* If you are using gas thru a self-help program, there should be no way that the gas company could curtail your usage of some, such as there was this last winter. Under the self-help program, the companies make a capital investment for this gas only to have it given to someone else who did not prepare for a shortage or had no investment in self-help (i.e. small companies).

* We are going to try to install propane as a back up. The reason is that Columbia tried twice to turn us off despite the fact we were well within allocation. We bake buns and inability to produce can close down 250 restaurants employing about 8000 people. We would like to use above programs but are afraid to rely on them.

* In the event a company purchases transfer gas from another company which can switch to an alternate fuel, that this company be permitted to use this additional supply of gas as it sees fit. For example, we purchased an additional supply of 1300 MCF for which we paid a premium of $1.04/MCF. We, however, did not use up the entire 1300 MCF and would like to carry the difference into the next winter period since our summer allocation is adequate. As I understand the way it is now we must use up this gas by October, 1977, or we will simply lose it.

* Have heard of cut-offs in both self-help and transfer, believe cut-offs should not be allowed.

* Self-help program could be more effective if such gas were not subject to curtailment.

* During the periods of 100% curtailment we had self-help gas in Columbia's lines but could not use it. Had we been able to use this self-help we would not have had to lay off any employees or lost any production.

* On self-help gas, if we would contract to buy from a producer, then no matter what Columbia's allocation is we should be able to buy and use all self-help gas without the possibility of any cut-off or requirement that we must use all their allocated gas before any self-help is used. If the shortage is real, then they should not care about self-help purchases. Industry suffers no matter what happens!

* Emergency purchase - should have better advance information on regular gas available for winter season.

  Self-help - Columbia has already modified its regulations. Further accomodation should be made to reduce transportation charges and allow for growth gas contract dedication.

  An additional large problem in this area is the "maintenance level curtailment" imposed twice during the past winter. This almost total cutback transcends emergency purchase, self-help, and transfer agreements. This kind of curtailment is disastrous for clay products manufacturers operating large tunnel kilns (i.e. our Ironton plant) which require 5 days to shut down and 5 days to reactivate without damaging the material being fired. An exemption or exception for this kind of equipment should be made.

* Self-help - 1. remove 25% public share requirement,
  2. allow the continuous delivery of self-help gas during periods of "forced majeure" curtailment.

* Regulatory approval of optional and unconditional use of self-help gas, without diminution of base or authorized volumes of utility gas.

  Effective planning, expansion of drilling activity and proper maintenance and operation of wells are directly related to the "first gas through the meter" concept.

Boiler Gas

* End use 3 gas would help us for small boiler usage, blind refusal to recognize boiler sizes is stupid, and is not applied uniformly by all gas utilities either as to gas availability or transfer through their lines.

* At this location the various programs would be helpful only under the following conditions:
  1. if Group I gas is curtailed 100%; and,
  2. if volumes obtained can be used as Group III, Boiler Fuel.

* When boilers were curtailed 100% in November of 1975, we were ready, willing and able to drill for gas in or out of Ohio, but we could not get PUCO cooperation. Now our company is too weak even to try.

Miscellaneous Suggestions

* Have the amount of gas contracted by the Emergency Purchase plan be adjustable by any change in curtailment rather than be limited by the known curtailment at the start of the November-March period. Better yet, don't limit the contract by the amount of curtailment.

* PUCO assurance of the following:
  1. That investments in self-help wells are protected by assuring industry that they will be able to use self-help gas in future years even if utilities have adequate supplies.
  2. Review and establish a transportation charge for self-help volumes that allows the utility to only recover expenses involved. Industries, that have drilled self-help gas wells, have invested large amounts of capital and risk. They should not be asked to cover profits lost by a utility for gas the utility is unable to supply nor for capital expansions that are not in their rate base. In reality during the past heating season Columbia Gas of Ohio was able to sell curtailed volumes from industrial customers to residential consumers at higher rates.

* The transfer of natural gas from one heating season to the next, if any was saved, would help to buffer the November-March period.

* Should allow open transfer between area customers.

* Allow transfers between plants: we have invested heavily in alternate fuels for our three (3) plants which are only two (2) miles apart and have two billing account numbers. However, we are not allowed to transfer more than we are curtailed. Example: Plant 1 curtailed 8,000 MCF/month, Plants 2 & 3 curtailed 12,000 MCF/month. We can only transfer 8,000 MCF even

though we would have more gas available by virtue of the burning of additional alternate fuels at Plant 1.

* I believe that the self-help program should be expanded even further in an effort to encourage industry to either drill their own wells or purchase gas from some of the already proven wells from within Ohio.

* Allow self-help gas during forced major shutdowns.

* Allow municipal self-help program as now being studied by city of Springfield.

* Better notification as to the location and prices of available gas sources.

* During the 1976-77 winter season our problem occurred during peak day curtailment. Self-help gas would have solved our problem, but transportation was impossible.

* 1. On self-help gas, the cost of transportation is excessive to Columbia's costs.

  2. Why should, on self-help gas, Columbia expect their customers to pay the cost of a meter house, then turn it over to Columbia?

  3. There should not be a mass of red tape on transportation of self-help gas--PUCO, FPC, etc.

* While not fully understanding the problems associated with the transmission of natural gas the whole system of acquiring access to city gates seems to be the biggest drawback to the self-help gas program.

* Provide for transfer of gas through Columbia transmission's interstate pipelines within Ohio to eliminate the need for depending on the availability of a city gate.

* Either the public utilities themselves, or a state office, should "pool" industrial customers large enough to be deeply curtailed but too small to have purchasing power. Such an arrangement would allow these smaller quantity users to benefit from large volumes of emergency, self-help, or transfer gas which may become available.

* More effective monitor of gas suppliers by PUCO.

* Increased credibility.

Other Replies Not Concerning Program Changes

The following replies were submitted in the space provided for answers to item 14 on the second questionnaire. Although these do not contain suggestions for improvements in the programs, they are reported here for completeness and to provide a forum for industrial views.

Prefer Alternate Fuels to Reliance on These Programs

* We are switching to alternate fuels.
* Unless price range were such that such special gas supplies were economically better than our alternate fuel capability.
* Whether or not we would take advantage of any of the above programs would be determined by the cost of any of the programs as opposed to the availability and cost of fuel oil.
* Do not plan to participate as long as oil can be obtained.
* Price is hard to quote when next years fuel oil prices are unknown. We are installing 2 more 20,000 gallon tanks to give us 46,500 storage for oil. Some of our annealing of wire is being switched to electric which will help reduce our need for gas somewhat.
* We would of course like gas to run our boilers but the likelihood of this happending in the future is very remote. The cost of fuel oil as a substitute puts one at a great disadvantage in competing with a competitor in Kentucky who burns coal with no pollution devices and other southern competitors whose space heating costs are much less.
* If oil is available would not require any more additional gas.
* We anticipate no problem in securing an adequate supply of fuel oil to meet our production requirements. The additional expense incurred as a result is a continuing problem, however.
* Under self-help we would probably go to propane if it was available.

* Last year I had no trouble staying within my allocation with the addition of the propane drier. If propane is available this year I think we will be able to operate with a normal crop.

* We are building a new plant using propane and electric for production and heating.

* Conservation efforts have allowed us to operate within our curtailed allocation. If next winter's curtailment doesn't exceed this past winter's, we should be able to continue normal operation. We cannot stand a complete shut down such as was experienced by most industry during the 1976-77 winter. We are planning the installation of a propane-air standby system.

* Since our recent conversion none of the above programs offer anything to our operation as long as some propane remains available. With some propane available we will be independent of gas requirements.

* Our experience in the above program is very low as we use our own inventory of propane to supplement natural gas during curtailments.

* We are a small manufacturing company and the nature of our business is such that we can exist with our methods of supplying heat--coal stores, for example.

* Our company installed a propane stand-by system in August of 1975 at an initial cost of $50,000. Additionally, we have leased storage space and purchased propane to be ready for such crises as occurred in January, 1977.

It is objectionable to us that our preplanning and considerable capital expenditure were rewarded by massive state and federal energy assistance to those companies who did not prepare as we did.

Net dollars out of pocket we would have been far ahead to not prepare and plead crisis when the inevitable occurred and avail ourselves of the gas emergency or self-help program.

Certainly, we do not want to see any industry closed or jobs lost, but isn't if unfair to penalize those who have conscientiously developed their own energy and have invested to meet potential crises by aiming all the help at those who did not?

Regulated Prices

* Relax control price or discontinue control at wellhead and permit interstate transfer.

* De-regulate gas prices.

* Did not participate in any of the programs - cannot comment. In general, I believe deregulation of the gas industry is the long term solution.

* I have read many reports from private research firms, governmental agencies and gas or oil companys on the availibility of natural gas. It would seem that if the price was right, gas would be available. What can we believe!

* It would seem to us that if the gas company could have an increase in price they could suddenly come up with a sufficient amount to service industry. We feel that this pressure act is a big RIP OFF. Good luck in your efforts to assist industry.

* FPC and PUCO should permit purchase of self-help beyond 100% of allocation, for companies which have grown in total requirements noticeably since 1972. PUCO and State of Ohio should request Congress to let prices of natural gas to gradually fully compete on open-market pricing with other energy sources such as oil products, coal, etc.

Regulated Monopoly Performance

* We are in an area of Ohio where Columbia Gas is a monopoly. We believe they should either service the area or you should see to it that another gas company is allowed to come in. Why protect Columbia Gas when it is very evident they cannot or will not service the area?

* Elimination of geographic monopolies in energy distribution, could render these programs unnecessary.

* Remove 10 counties from the Columbia system this year. If this doesn't help, remove more next year. They have a contract with their customers they cannot fulfill.

* I think the gas company has done a fine job under the circumstances.

* You have restricted us to only one supplier (what a monopoly) I personally can't see why people have to go out and drill wells on their own. (If this is all true why do we need utilities?) I personally feel that

if Columbia Gas is to small to handle the volume or the territory you have provided for them, why not reduce their territory, put it on the market for others that could help take care of some territory. If it is true that Columbia Gas cannot get gas because of price at wellhead why not temporarily take off regulations and see what happens (this is surely what it looks like to me that Columbia wants). They are greedy like all of us and can't make enough money, but they can waste a lot on TV ads.

* Make the self-help program a cooperative effort. The utility companies show little or no interest in this program.

* Better planning and forecasting by utility companies.

* Columbia Gas should be responsible for providing normal supplies of gas regardless of weather conditions. They should plan for adequate reserves for below normal weather conditions.

* Change in the attitude of Columbia Gas.

Miscellaneous Comments

* Basically, we feel these programs are unrealistic and impracticable and should be eliminated for these reasons:

  Emergency Purchase: Why pay 72% more for gas than alloted amount currently costs when oil is only 28% more?

  It is difficult making a commitment for supplemental volumes without knowing what the curtailment level will be--then be expected to pay for such supplies when a subsequent change in curtailment will not permit you to use it.

  Transfer Program: A) Seller - How or why? How can we participate in selling when we ourselves are severely curtailed? Why sell what little we get when the alternatives are more expensive?

  B) Buyer - Are not aware of anyone who would want to sell. Secondly, if we did, we would imagine that the price would have to be greater than oil to make it whorthwhile for anyone to sell.

  Self-help Program: At the moment, this seems to be the only program of value and substance to industry. We have a rigorous conservation program that has saved fuel, but not costs. We have been able to stay even at best.

I cannot offer suggestions on program refinements when I feel the programs are of little or no value. If I cannot use gas then I must get busy with economic alternatives. When gas is available and economical, we will use it.

* I feel that if there is gas available for the above mentioned programs, then there must be gas available to fulfill the allocated volumes without additional curtailments? Through conservation and alternate fuel we can operate unhampered with original allocations. I do not feel that gas saved through our conservation programs should be taken away which reduces the incentive.

* In our operation it would work out better if we could have all of our allocation at one time rather than a monthly quota.

* We use gas as an auxiliary fuel only in the event of a breakdown in our electric melting furnaces. We would rather do this than send our employees home for one month. When this happens we feel that Columbia Gas should give us our allotment without curtailments (i.e. we should not have to pay for transfer gas because of curtailment of our alloted gas).

* We did not receive any gas, due to shortage, even though we were willing to make purchase.

* Due to a very low productive requirement during November to March period we were not hurt too bad by Columbia Gas curtailments. We plan on self-help to cover our normal requirements if Columbia Gas can't supply our needs.

* Basically I just use gas for heating the plant. I am now sealing or walling off areas in the plant to conserve heat next season. I have converted my office from gas to power electric. I have purchased about four pot belly furnaces and will attempt to buy more to ease gas usage. The gas company was very cooperative during the ordeal and most sympathic, but I don't think they know what was happening. (I'm referring to the level of representative of Columbia Gas.)

* We have not as of this time finalized plans for the next winter season. Obtain enough gas for Ohio to eliminate 85-100% curtailments.

* We were fortunatly able to use alternate fuels during 75-76 without loss of jobs or production. However, in case of emergency for short periods we may have to use

gas to prevent freezing damage to production facilities (during 77-78 November-March period).

* Our business is seasonal. Our total consumption for the business is in October, November and December. In January, February and March we only use gas in the house. We kept our thermostat at 65° and froze. Our house is insulated, has storm windows and doors, plus we covered them with plastic.

* If the current exemption from curtailments for food processing industries is continued, our company will have sufficient supplies of gas to operate normally. The only lost time our company had this winter was for the short period of emergency curtailment during extremely cold weather.

* Changes in curtailment policy would be most beneficial to our company. Being a food processor, we use gas for two specific purposes; first, for process steam to produce our product and secondly, for steam space heaters for the factory and warehouses. By having our gas supply cut off as it has in the past two winters, our cost of energy has risen approximately 40%, thus, pushing the product cost up higher than necessary. I believe that commercial establishments could absorb some of the reductions as well as industry, thus, making for more uniform cuts and not making industry suffer alone. Because if people are out of work, they aren't able to buy goods at the commercial establishments.

* I feel the majority of gas needed for grain drying is used prior to cold weather, therefore, it would not be a problem for us to receive the gas needed for this food processing at a time the demand is not so great. We doubled our drying capacity! We will probably need about 20% more gas in 1977.

* If our base volume in authorized volume is restored or if wet grain volume is small we can get along.

* Our natural gas allocation is used for grain drying only. If we are unable to dry for the farmer, he will be forced to install his own drying units, using whatever fuel available. We normally can do it more economically due to volume than he can, and he will need more energy per bushel of grain using smaller drying units. We cannot affort to pay emergency purchase price that was offered to us early in the 1976 Fall grain season.

* I really don't know of any changes that would make any of your programs more effective in answer to question #14. We could use a lot more gas if the price stays

below or equal to oil prices. I'm sure that no one now knows what the price of gas or oil will be this coming winter. Gas is cleaner to burn and we have fewer troubles with our burners when using gas. As you know, we are wholesale growers of plants and vegetables and if the coming winters are very cold we need to add more unit heaters or boilers to maintain the temperatures we need. We have tried our best in the last ten years to conserve fuel by insulating our side walls and gables with bubble material. We have also gone 90% to fiberglass roofs and have closed down a part of our operation in order to conserve fuel. We have also built some completely insulated double poly houses in order to conserve fuel. We will lose money this year because of higher fuel costs. We just can't raise our prices enough and still be competitive with stock grown and shipped from the south including freight costs. We are looking into solar systems but the investment would be too much at this time. It is quite possible that, after looking over our books in July, we will shut the whole business down. Thank you.

* The Self-help Program will be improved if transportation of gas from eastern Ohio to western Ohio can be facilitated through interstate lines without FPC certification.

  The Emergency Purchase Program could be improved by allowing Columbia of Ohio to make the purcahses they believe are necessary and to "roll in" the cost of such gas to all customers.

* We participated in the Transfer (buyers) but it took 4 to 6 weeks to make the transfer effective and by that time the need was nearly past.

  In my opinion, none of these programs are very effective when everyone is on Maintenance level for gas usage. Secondly, the time frame for making a "buyer" transfer was so long that the emergency had almost completely passed before the transfer was made effective.

* Larger tax incentives for the self-help program.

* October, November, and December 1976 allotments which we did not use, could not be transferred per Columbia Gas Company in January or February of 1977.

  We transferred (seller) but it took a great amount of time and effort to consumate--mostly obtaning permission from the gas company to do so, also to phrase paperwork properly.

* 1) Use of interstate transmission lines for intrastate use of intrastate gas.

  2) First through the meter option.

* The ability to put self-help well gas directly into Columbia interstate lines for delivery in Ohio, thus, avoiding transfer station loading problems would help immediately.

* We feel that the large volumes needed to offset even a limited curtailment are best acquired from producers. Transfer volumes, if available, would be in such small quantities that it is impractical for us to pursue them. Permanent streamlining of emergency purchase and self help approvals need be made. During a curtailment period, simple notice to the PUCO and FPC should suffice. Serious production losses resulted in the 1976-77 winter due to time lost seeking regulatory approvals.

* PUCO jurisdiction over interstate pipelines. Ability to take Self-Help gas first through the meter without losing allocation.

* I believe all that is needed is reasonable curtailment from Columbia Gas to encourage conservation--we have developed alternate fuel systems with electricity and oil to operate up to 50% curtailment--again cost becomes major factor.

* State inspection of facilities to recommend ways of conserving heat from process operations either by:

  1. reduction of process exhaust air (usually over-designed),
  2. use of heat exchangers for heat recovery; and,
  3. improved insulation, etc.

* Would prefer to have gas utility company meet our gas needs. Have no desire to get into the gas production and distribution business. The emergency purchase, self-help, and transfer plans should be considered as temporary expedients and not a substitute for a part of a good long-range energy policy.

* We have not studied the content of these programs in depth but we feel that a relaxing of some controls in the programs would make them more effective.

* If we have a gas shortage I don't know of any changes that could help.

Comments on the Programs

The following comments were made by commercial customers who responded to item 14 on the second questionnaire.

Information on the Programs

* Disseminate more and clearer information about them.

  Show cost comparisons between gas and oil.

Better Prediction of Curtailment Levels

* The programs are fine if only one can get an answer as to how much would be available and at what cost when we need the gas. The real difficulty was paper work, getting answers and trying to find out if we could use the gas we had contracted for. We didn't get any answer until the crisis was over and we were back to 70% of our allotment, with which we can live.

* Since our allocation keeps changing, it is extremely difficult to make any decisions other than on a day-to-day basis. What we do next year depends on our allocation which is unknown.

* More accurate projections and realistic allotments. End vacillation.

Pricing-Related Comments

* Do not require a financial committment as far away as the summer prior to winter season.

* If gas is available, I would buy it at double the cost if it meant closing down otherwise. I would hope for more price decontrol so that capped gas wells could be uncapped and we could see what the natural gas situation really is.

* In the past those who conserved fuel seem to be penalized by being charged the current monthly rate. Those who are wasteful are not penalized and end up purchasing gas for a lower per unit cost (assuming price goes up monthly). Those who conserve should be reimbursed for their conservation efforts, not penalized by allowing them to use their future gas at a higher price.

* Programs operating under natural laws of supply and demand would be more efficient than those operating under politically oriented fiat.

Reliability of Gas Supply Under the Programs

* During the summer of 1976 we accepted the emergency purchase program, but the gas company did not honor the agreement.

* Transfer and self-help are of no value if gas is not available.

* We are presently looking at alternate heating methods that can be relied on to keep us in operation. We don't know what this will be as yet but something must be done if Columbia Gas can't keep us supplied. We will undoubtedly use something other than gas next heating season.

* As we interpret the "self-help" program where such "help" involves drilling our own well and transmitting the gas through Columbia's distribution system, under a severe shortage condition, we would not even be able to use such gas if Columbia chose to withhold it. If we (the users) had some guarantee we could use the gas we drill for and find, the program might be attractive. At this time we are considering drilling our own well on our property as a more desirable alternative.

* Remove 25% public share requirement.

  Allow the uninterrupted delivery of self-help gas during periods of "force majeure" curtailment.

* If Columbia would plan ahead and be allowed to store sufficient gas in underground storage areas in Ohio and have it used only in Ohio, I do believe there could be enough gas available without additional purchase or allotments; if everyone of Columbia's customers would conserve as they experienced this past year. Why not plan for the worst; then if it isn't all used, then they would not need to purchase as much the following year to fill all the storage areas available and used during the season.

* Change your archaic meters to approximate Honeywell water meters in terms of CCF. Move these meters (industrial only) inside for optimal scrutinization. Increase your storage capacity, significantly. Change the apartments who offer heating (gas) as a requisite for rent to individual billing. Explain transfer and self-help to residential customers.

Recommended Changes in Laws or Regulations

* I believe the Columbia Gas Company and all other gas companies should be allowed to make purchases wherever they can find supplies. I believe those suppliers should be made to sell to anyone wanting them with no restrictions as to conditions, price, or excuses, at a fair market price that people can afford. After all it is still a free enterprise system we live under.

* We in agriculture cannot pass our costs on to consumers like other industries can. I believe we in agriculture need an agriculture exemption for natural gas.

* If Congress had not repealed the depletion allowance our energy problem would not be as critical as it is today. They went in the wrong direction to stimulate exploration by eliminating the depletion allowance.

* Eliminate utility transmission end use restrictions on non-utility supplied natural gas.

* Tax incentives for the insulation, heat conservation, and installation of alternate fuel burners. Competition will eventually bring Columbia Gas Company back to reality.

* If we can purchase gas or alternate fuels from other areas then the gas companies should also be able to. Laws pertaining to this end should be adjusted to suit the need. If factories or individuals are to put in propane tanks or other means of fuel to meet their needs then the gas companies are not doing their job. Proper forecasting of the needs of the consumer is the gas companies' business and profession. They are the professionals and should be held accountable for the judgment calls they make.

  Insulation and conservation is the job of everyone--not purchasing gas.

Miscellaneous suggestions

* A Columbia Gas Representative visit each plant or service area - the purpose to educate personnel on the meter reading procedure. The need for secondary fuel (Back Up Natural Gas) that must be installed to offset gas shortages and keep their place of business operating. Companies must be made to realize that energy conservation is here to stay and is not going to be any better next winter season. A "secondary fuel supply" must be installed to assure job security.

* Columbia should buy enough gas to take care of its customers' needs and not sell off any volume to other buyers ahead of heating season.

* Make the PUCO responsible to the people and not work for the gas company.

* If there is another "emergency" next winter, and lessons weren't learned by utility and regulating agencies, existing companies ought to be removed from status as public utilities. If the private sector can't do the job of providing this essential service, regretfully a nationalization of the industry would have to come about. If the regulating agency doesn't have the means to carry out its job properly, those means should be given.

* This whole thing is very disturbing to my company and to me personally. It appears to me that Columbia Gas of Ohio is totally shirking its responsibility to supply its customers and laying the burden of acquiring supplies on the customers, the state government and even the federal government.

  We ourselves are not in the natural gas business. We don't have, and cannot afford, personnel to perform the work that should be done by Columbia. We have truly co-operated and certainly will continue in the various conservation methods, etc. But please don't ask me to fill out forms that tax my lack of intelligence of the subject.

* Columbia is a big company and should have an equal responsibility. They have been very lax in this area, poor storage, and evidently poor suppliers and a captive market. They have had increased sales and earnings over the last years and now they want to gouge their customers with these self-help programs at inflated prices. Let them go to East Ohio for some ideas on how to operate a company.

* I personally feel that gas companies are curtailing production of gas and oil to drive up prices intentionally. I think it is a big rip-off.

* It is my understanding that the current arrangements for self-help gas are complicated and restrictive. The locations at which you can enter the transmission line system are limited. More flexibility in obtaining transportation of self-help gas would greatly enhance this program. Finding a location with a reasonable chance of striking gas is a minor problem. Our major problem is transporting that gas to our plant once the well has been completed.

* Cutting out red tape. Publicizing pools available. Make rules clearer.

* Less paper work.

* Since we now have about 70% of our fuel requirements changed over so they may be operated either on natural gas or alternate fuel we probably could not benefit from transfer or emergency purchase. We are studying converting to the use of some coal.

* We were told that if we exceeded our 5-month allocation, we would be closed. However, I have since learned that few if any users were actually closed and/or charged a penalty.

  The closing during the first week in January and all of February cost our company a loss of approximately $17,000 in income in addition to a total of well over 2,000 lost man-hours.

* Our cost per CCF of gas averaged .192. One CCF of gas equals 100,000 BTU. It takes 3/4 gallon of oil to produce 100,000 BTU at .441 per gallon. This makes the oil cost .331 per 100,000 BTU compared to .191 for gas or 2.3 times as much. We spent $9,548.00 for heating oil due to curtailment of gas for the period November through March 31. Gas would have cost $4,151.00. This means we could not pay more than .331 per CCF for gas figured at present oil prices. We would prefer to use all gas as it means less maintenance on boilers.

* Do not concentrate your efforts only on the natural gas supply. Many companies such as ourselves prepared reasonably well for severe natural gas curtailment but were caught by alternate supply problems, namely fuel oil and propane. Many additional industries will option this summer to provide alternate capabilities, further increasing the supply problem next winter.

  Assuring alternate supply availability is one way of increasing natural gas availability. For example, in question 13 I cannot offer to sell (transfer) natural gas at any price without assurance of an alternate supply.

* We are really not aware of what these programs mean because we did not participate this past winter. We were on fuel oil after January 12 exclusively except for enough gas to burn the residue off burners. Reason, we were over our allotment. Luckily, we had a dual system. We are organized for next winter to do whatever is necessary to comply with allotment.

* More cooperation from Columbia Gas and Waterville Gas Companies. Have gas well on brother's property. Will develop and use ourselves but will not sell to another company and hope that they transfer some gas to us in return.

* Keep Ohio gas in Ohio -- do not sell surplus to other states.

Comments on the Programs

The following comments were made by school officials who responded to item 14 on the second questionnaire.

Reclassification of Schools

* Schools should be placed in a category between commercial and residential. All educational institutions in the Columbia Gas' northwest office used only 2.4% of the total gas burned. We should never, never be closed again for gas shortage.

* Reclassify schools.

* Change curtailment rates for schools. We could live within 30% reduction I believe.

* In school classification - permit pooling and/or Buddy Swap.

* Put schools in a different classification.

* Change the category of schools to human needs.

* We would like schools to be listed other than commercial with less than 85% curtailment.

Miscellaneous Suggestions

* I'd like to see state change entire school calendar. Consistency. Some in, some out, make up, reschedule, uncertainty. The educational process is destroyed. If we should not be in school -- so be it -- but let's do it in a rational and consistent manner.

* Our school system intends to reduce its dependence on Columbia Gas of Ohio by converting to coal at three of seven locations and standby oil at two others.

* We are putting up a levy to insulate our building in the hope we can conserve large amounts of fuel. We have not made school calendar changes to close during the winter months.

* Would like to be able to transfer gas saved in one facility to another facility on as needed basis, so the educational process need not be interrupted.

* Columbia Gas has mismanaged its business.

* With our ability to use alternate fuels it is not anticipated that we will need to take advantage of the programs listed above.

* We have converted to fuel oil. Schools will go on split sessions if necessary.

* This district with 5600 students lost 14 days due to energy problems and added a six-day vacation so that schools were closed down from 4:00 P.M. February 4th to Tuesday, March 1st.

  A modified program was established using our one electric building and all personnel continued to work except for the six-day vacation. Many efforts were made to purchase self-help -- all to no avail. I'm opposed to emergency purchase or self-help gas, but should be somewhat near existing price level.

* Some coordination by the PUCO as to available gas (and sources) for these programs. Could the PUCO develop lists of contacts and availability of supply rather than have hundreds of school districts and businesses seek their own.

* Private well owners need technical assistance in determining the capacity of their wells and transfer procedures. Columbia Gas is reluctant to assist on this.

APPENDIX D

EMERGENCY PURCHASE AND TRANSFER PARTICIPANTS

This appendix contains a list of all 78 emergency purchase participants and a profile of transfer participants. Lists of all participants in both programs were provided by Columbia Gas of Ohio.

TABLE D.1 Emergency Purchase Participants

Company Name	Maximum Contract Volume (in MCF)*
Commercial	
The Flxible Company (Rohr-Flxible)	7,952
New Carlisle-Bethel B. of Ed.	20
Surface Combustion-Div. Midland Ross	1,658
Athens High School	700
Taylor Woodcraft	2,500
Sears	881
Masco Corporation	2,000
Springfield Bd. of Ed. (Shawnee H.S.)	3,000
Tri-Valley Local School District	42
Cooper Greenhouse	1,350
Skyline Corporation	595
Gallia Local Schools (Kyger Creek H.S.)	725
Nelsonville - York Jr. High	1,500
Perfection Cobey	1,087
Perfection Cobey	2,000
First National Bank	2,280
Dick Masheter Ford	362
Buurma Brothers	1,000
Brighams Greenhouse	1,000
Latex Industries	1,264
Rotary Printing	1,800
Old Fort School	900
Cotter and Company	5,046
Faulhaber Company	2,000
YMCA of Sandusky County	1,700
Formetal, Inc.	1,000
Holiday Inn	1,000
Sears	611
Sawmill Creek	2,500
Williams and Company	700
SUBTOTAL	49,173

TABLE D.1 (cont.)

Company Name	Maximum Contract Volume (in MCF)*
Industrial	
National Latex Prod. (4th St.)	690
Norbalt Rubber	112
Woodville Lime & Chemical	16,875
Elyria Foundry (Chromalloy)	4,000
Spencer Mfg. Co.	7,500
Patterson Ind., Inc.	2,600
Chase Foundry	1,200
Asarco	5,000
James H. Beans Foundry Co.	1,000
Van Dyne Crotty Co.	900
Columbus Steel Drum	8,457
Foote Elevator	500
CVI Corporation	800
Wm. Bayley Company	2,000
American Crucible	5,000
Mansfield Brass & Aluminum	5,000
Corco, Inc.	324
Galion MFg. Plant #1	8,765
Zeigler Milling	536
Perfection Cobey	2,218
Ranco, Inc.	1,785
Alvin Miller	236
Continental Can Company	3,400
Osco Industries	2,500
Federal Mogul	9,569
Frick Gallager	4,375
Gulf Chemical	3,500
Union Chain	2,000
Toledo Spring	21,000
Continental, Inc.	1,100
Ranco	1,360
Ranco	412
Ranco	89
Tom W. Kaufman Co.	523
Modine Mfg.	580
Potters Supply Co.	965
Forest City Container	780
Ralston Purina	6,460
National Latex Prod. (7th St.)	3,000
Plabell Rubber Products	2,000
Van Dresser Corp.	1,368
Thurman Mfg. Company	1,200
Wm. Bayley Compamy	1,000
Rockwell International	1,500
Dolphin Sea Food	488

TABLE D.1 (cont.)

Company Name	Maximum Contract Volume (in MCF)*
Ohio Steel Fabricators Anomatic Corporation A. Schulman Company	950 453 2,000
SUBTOTAL	148,070
TOTAL	197,243

* Each participant received 54% of his maximum contract volume.

The volume of gas transferred and the number of transfers are shown in Tables D.2 and D.3, respectively. Here commercial customers include schools.

TABLE D.2 Volumes of Gas Transferred by Customer Category

Customer Category	Volume (in mcf)
from commercial sellers	125,493
from industrial sellers	256,047
to commercial buyers	239,318
to industrial buyers	142,222
Total Volume Transferred	381,540

TABLE D.3 Number of Transfers by Customer Category

Customer Category	Number of Transfers
industrial to industrial	52
commercial to commercial	63
industrial to commercial	68
commercial to industrial	17
Total Number of Transfers	200

The data in Tables D.2 and D.3 indicate that a large portion of transferred gas flowed from the industrial customers (large consumers) to the commercials (smaller consumers).

TABLE D.4 Number of Participants in the Transfer Program

	Sellers	Buyers
Commercial	58	118
Industrial	56	64
Total *	114	182

* Several sellers transferred gas to more than one buyer, and some buyers received gas from more than one seller. There were 200 transactions.

Thirteen of the commercial sellers were curtailed customers, and the remaining 45 were not found on the list of curtailed customers. Of these unlisted sellers, 27 were hospitals, 8 were schools, 2 were greenhouses and 8 were in various other categories.

Only 8 of the industrial sellers were not found on the list of curtailed customers. We did not further analyze this small number of participants. The remaining 48 industrial sellers are curtailed and are profiled in the tables below.

Eighty-eight of the 118 commercial buyers were schools. Of the remaining 30 commercial buyers, 13 were curtailed and 17 were not found on the list of curtailed customers.

The 17 unlisted customers were very diverse. A profile of the 13 curtailed customers is in the tables below.

Twelve of the 64 industrial buyers were not found on the list of curtailed customers. These 12 were not analyzed further. The remaining 52 industrial buyers are curtailed and are profiled below.

A profile of curtailed participants in the transfer program is in Tables D.5 and D.6.

TABLE D.5 Average Winter Base Period Allocations of Curtailed Sellers and Buyers, in mcf

	Seller	Buyer
COMMERCIAL		
Number of Curtailed Participants	13	13
Average Winter Allocation	25,383	13,163
Average Group I Allocation (non-substitutable)	3,078	8,225
Average Group II Allocation (substitutable)	125	944
Average Group III Allocation (boiler)	22,180	3,994
INDUSTRIAL		
Number of Curtailed Participants	48	52
Average Winter Allocation	138,425	37,428
Average Group I Allocation (non-substitutable)	68,680	14,341
Average Group II Allocation (substitutable)	25,222	16,431
Average Group III Allocation (boiler)	44,523	6,656

Table D.5 shows that the average winter base period allocation of curtailed sellers is much greater than that of curtailed buyers. In fact, the winter allocation for commercial sellers is 1.9 times as large as that of commercial buyers, and the winter allocation of industrial sellers is 3.7 times as large as that of industrial buyers. This difference is magnified in the boiler fuel allocations. The boiler allocations of sellers are 5.6 and 6.7 times larger than those of buyers for commercial and industrial customers, respectively.

Table D.6 gives the SIC codes of curtailed participants in the transfer program.

TABLE D.6 Standard Industrial Classification Codes of Curtailed Sellers and Buyers, Excluding Public Schools

SIC Code	Description of Classification	No. of Sellers	No. of Buyers
COMMERCIAL			
00	Unknown	0	1
01	Agricultural Production - Crops	3	1
27	Printing and Publishing	1	0
32	Stone, Clay, and Glass	1	0
36	Electric, Electronic Equipment	0	1
37	Transportation Equipment	0	1
42	Motor Freight Transportation and Warehousing	0	1
55	Automotive Dealers, Gasoline Service Stations	0	1
65	Real Estate	0	1
72	Personal Services	0	2
73	Business Services	2	0
82	Educational Services	0	1
84	Museums, Art Galleries	0	1
93	Public Finance, Taxation, and Monetary Policy	1	1

TABLE D.6 (cont.)

SIC Code	Description of Classification	No. of Sellers	No. of Buyers
INDUSTRIAL			
00	Unknown	6	7
01	Agricultural Production - Crops	0	2
14	Mining - Nometalic Minerals, Except Fuels	1	0
20	Food and Kindred Products	4	0
23	Apparel and Textile Products	0	1
25	Furniture and Fixtures	0	1
26	Paper and Allied Products	3	0
27	Printing and Publishing	0	1
28	Chemicals and Allied Products	3	1
29	Petroleum and Coal Products	0	1
30	Rubber and Plastics	2	1
32	Stone, Clay, and Glass	9	8
33	Primary Metal Industries	5	11
34	Fabricated Metal Products	3	5
35	Machinery, Except Electric	4	5
36	Electric, Electronic Equipment	1	1
37	Transportation Equipment	5	2
38	Instruments, Related Products	0	1
39	Miscellaneous Manufacturing Industries	1	1
49	Electric, Gas, and Sanitary Services	1	0
50	Wholesale Trade - Durable Goods	0	1
51	Wholesale Trade - Nondurable Goods	0	1
72	Personal Services	0	1