The original documents are located in Box 13, folder "Natural Gas Shortage (2)" of the Robert T. Hartmann Files at the Gerald R. Ford Presidential Library.

MISSOURI

Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Cities Service	173	-10
Michigan-Wisconsin Gas	5	2
Mississippi River Trans.	142	- 2
Panhandle Eastern	41	-20
Texas Eastern	12	-17
Total Interstate Pipelines	374	-10

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	153	38
Commercial	74	19
Industrial	110	27
Utilities	48	12
Other	16	4
Total	401	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Stone, Clay, & Glass	24	12.3	0.9
Food	20	40.8	3.0
Chemicals	13	21.6	1.6

Supply Situation

A 10 percent reduction in deliveries of natural gas is anticipated in Missouri this year. The southwest corner of Missouri, which is supplied by Cities Service Gas Company, and an area in the West Central and Northeast sections of the state, served by Cities Service Gas Company and Panhandle Eastern Pipeline, are expected to be most affected by the natural gas shortage.

Virtually no impacts are expected in the southeastern part of the state and St. Louis which are served by the Mississippi River Transmission Company. Texas Eastern also serves the southeastern part of the state and will curtail deliveries; however, most of the curtailments are expected to be absorbed (as in the past year) by the electric utility sector and other large users without serious effects. Michigan-Wisconsin Pipeline, serving the northwest corner of the state, expects to deliver as much or more gas than a year ago.

Industrial Impact

Since the electric utility and industrial sectors normally use less than one-half of total gas consumed, the real shortfall to these sectors may be expected to be in the range of 20 to 25 percent.

In Missouri, natural gas is allocated according to the FPC classification of priorities and few, if any, firm contracts are expected to be curtailed. All residential and commercial requirements will be met, and next winter's shortfalls in natural gas deliveries will be absorbed by the electric utility and industrial sectors.

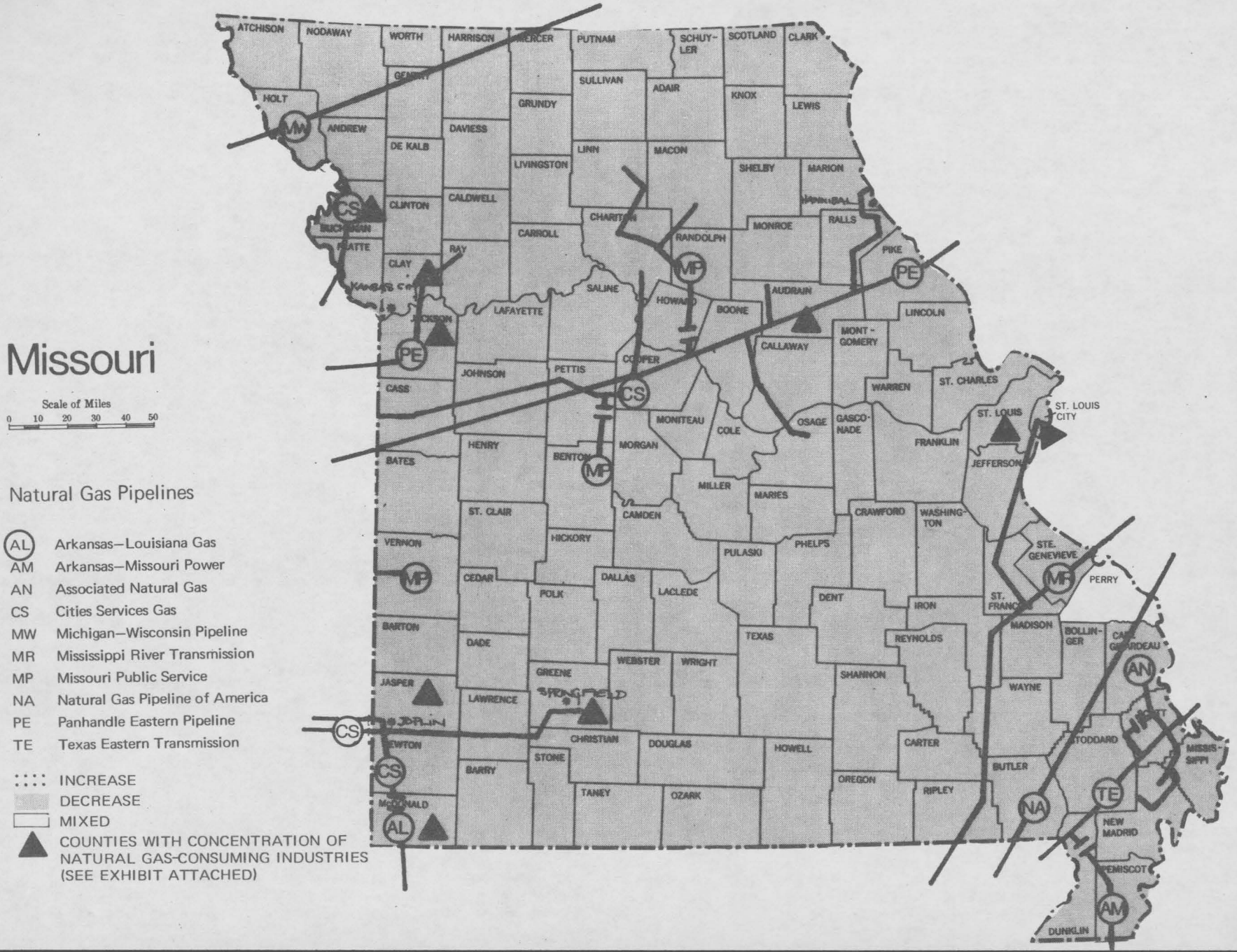
There are about 1,100 industrial customers in Missouri with interruptible natural gas contracts and these may be expected to bear the brunt of the curtailment program. Preliminary reports indicate that most large industrial users have alternative fuel-using capabilities and that, in Missouri, potential adverse impacts of gas shortfalls will be limited to the industrial users with interruptible contracts who have not previously been curtailed and may not have prepared themselves to switch to alternative fuels.

The major industrial gas consumers in Missouri are found in the stone, clay and glass industries (24 percent of total industrial gas consumption), the food industries (20 percent) and the chemicals industry (13 percent). These industries are not labor intensive, accounting for less than 6 percent of state employment while consuming 60 percent of Missouri's industrial gas.

Alternate Capability

A considerable amount of natural gas is used for process fuels and feedstocks, precluding the substitution of alternative fuels for a substantial percentage of its gas requirements, particularly in the manufacture of bricks and fertilizers.

In summary, Missouri's natural gas supply problem is of manageable proportions, with potential impacts limited to small purchasers of interruptible gas from the Cities Service and Panhandle Systems, and some process and feedstock users such as brick, and fertilizer plants.


Missouri
Scale of Miles
0 10 20 30 40 50
Natural Gas Pipelines
AL Arkansas—Louisiana Gas
AM Arkansas—Missouri Power
AN Associated Natural Gas
CS Cities Services Gas
MW Michigan—Wisconsin Pipeline
MR Mississippi River Transmission
MP Missouri Public Service
NA Natural Gas Pipeline of America
PE Panhandle Eastern Pipeline
TE Texas Eastern Transmission
INCREASE
DECREASE
MIXED
COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)
ATCHISON
NODAWAY
WORTH
HARRISON
MERCER
PUTNAM
SCHUYLER
SCOTLAND
CLARK
HOLT
GENTRY
ANDREW
DAVIESS
GRUNDY
SULLIVAN
ADAIR
KNOX
LEWIS
DE KALB
LIVINGSTON
LINN
MACON
SHELBY
MARION
CLINTON
CALDWELL
CARROLL
CHARITON
RANDOLPH
MONROE
RALLS
PIKE
BUCHANAN
PLATTE
CLAY
RAY
SALINE
HOWARD
AUDRAIN
JACKSON
LAFAYETTE
BOONE
CALLAWAY
MONTGOMERY
LINCOLN
JOHNSON
PETTIS
COOPER
WARREN
ST. CHARLES
CASS
MONITEAU
COLE
OSAGE
GASCONADE
ST. LOUIS
ST. LOUIS CITY
FRANKLIN
HENRY
BENTON
MORGAN
BATES
JEFFERSON
MILLER
MARIES
ST. CLAIR
CAMDEN
CRAWFORD
WASHINGTON
HICKORY
PULASKI
PHELPS
STE. GENEVIEVE
VERNON
CEDAR
DALLAS
POLK
LACLEDE
DENT
PERRY
IRON
ST. FRANCOIS
BARTON
DADE
TEXAS
REYNOLDS
MADISON
BOLLINGER
CAPE GIRARDEAU
WEBSTER
WRIGHT
GREENE
SHANNON
JASPER
LAWRENCE
WAYNE
NEWTON
CHRISTIAN
DOUGLAS
HOWELL
CARTER
STODDARD
MISSISSIPPI
STONE
BARRY
OREGON
BUTLER
TANEY
OZARK
RIPLEY
McDONALD
NEW MADRID
PEMISCOT
DUNKLIN

NEW JERSEY

Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Tennessee Gas	9	15
Texas Eastern	90	- 9
Transcontinental	160	- 9
Columbia Gas	2	-17
Algonquin	2	-38
Consolidated	2	
Total Interstate Pipelines	263	-8

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	136	49
Commercial	57	21
Industrial	65	24
Utilities	15	5
Other	1	1
Total	274	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Stone, Clay & Glass	24	35.3	1.7
Chemicals	21	103.4	4.9
Primary Metals	11	30.7	1.4

Supply Situation

The state of New Jersey receives its natural gas deliveries from six major pipelines (Transco, Texas Eastern, Algonquin, Columbia, Consolidated, and Tennessee Gas) serving four utility companies (New Jersey Natural Gas Company, South Jersey Gas Company, Public Service Electric and Gas Company, and Elizabethtown Gas Company). Four of these pipelines are projecting significant curtailments for the upcoming heating season. However, New Jersey's major natural gas problems appear to be in the Southern part of the state which is serviced by the South Jersey Gas Company. South Jersey's sole supplier is the Transcontinental Pipeline Company which is predicting curtailments of up to 52 percent for the coming winter.

Industrial Impact

Southern New Jersey is faced with potential economic disruption. Transco is its main supplier, and is projecting the highest curtailments of all the pipelines serving the entire state. In addition, South Jersey Gas Company supplies a large percentage of industrial end-users; 40 percent of their customers are industrial users, as compared with New Jersey Natural Gas Company which supplies 95 percent of its gas to residential users. Because of existing FPC curtailment priority schedules, much of the gas in the Transco pipeline will have to be diverted away from Southern New Jersey to Northern New Jersey, in order to meet the needs of the residential end-users.

Major problems were averted last winter by a combination of factors which included Transco's ability to locate additional supplies. At present, South Jersey Gas Company is expecting curtailments of 5.7 Bcf, or 33 percent of normal winter demand for this winter. This will result in a shortfall for firm requirements of 2.5 Bcf, or 65 percent of the total firm industrial requirements. South Jersey has so far been able to negotiate with other companies to receive 2.5 Bcf of synthetic natural gas and liquefied natural gas. Although the costs of utilizing these alternate fuels will be significant (South Jersey is proposing to buy SNG at $5/Mcf), with a conscientious conservation program and a normal winter, none of the utilities in New Jersey should have serious problems supplying their customers. However, should a cold winter occur, the utilities in Northern New Jersey may not be able to supply South Jersey with the entire 2.5 Bcf of alternate fuels, which could have a serious effect on the industrial area of the state.

Alternate Capability

The problem in New Jersey is further complicated by the fact that the major industrial gas consumers, the glass and chemical industries, are both located in Southern New Jersey and both have limited capability to switch to alternate fuels. In the glass industry, 23 percent of the total gas consumption is for use as a process fuel for which no alternate fuel capabilities exist. The same is true in the chemical industry, in which 21 percent of the total gas consumption is as a process fuel and feedstock.

State Program

The State Energy Office, Public Utilities Commission, and the Department of Labor & Industry played a role in setting up the negotiations between utility companies to arrange for company transfers in order to supply South Jersey with the alternate fuels it will need to make it through this winter. The State Energy Office is currently conducting a survey of all interruptible customers to determine if there will be any difficulty in obtaining alternate fuel supplies.

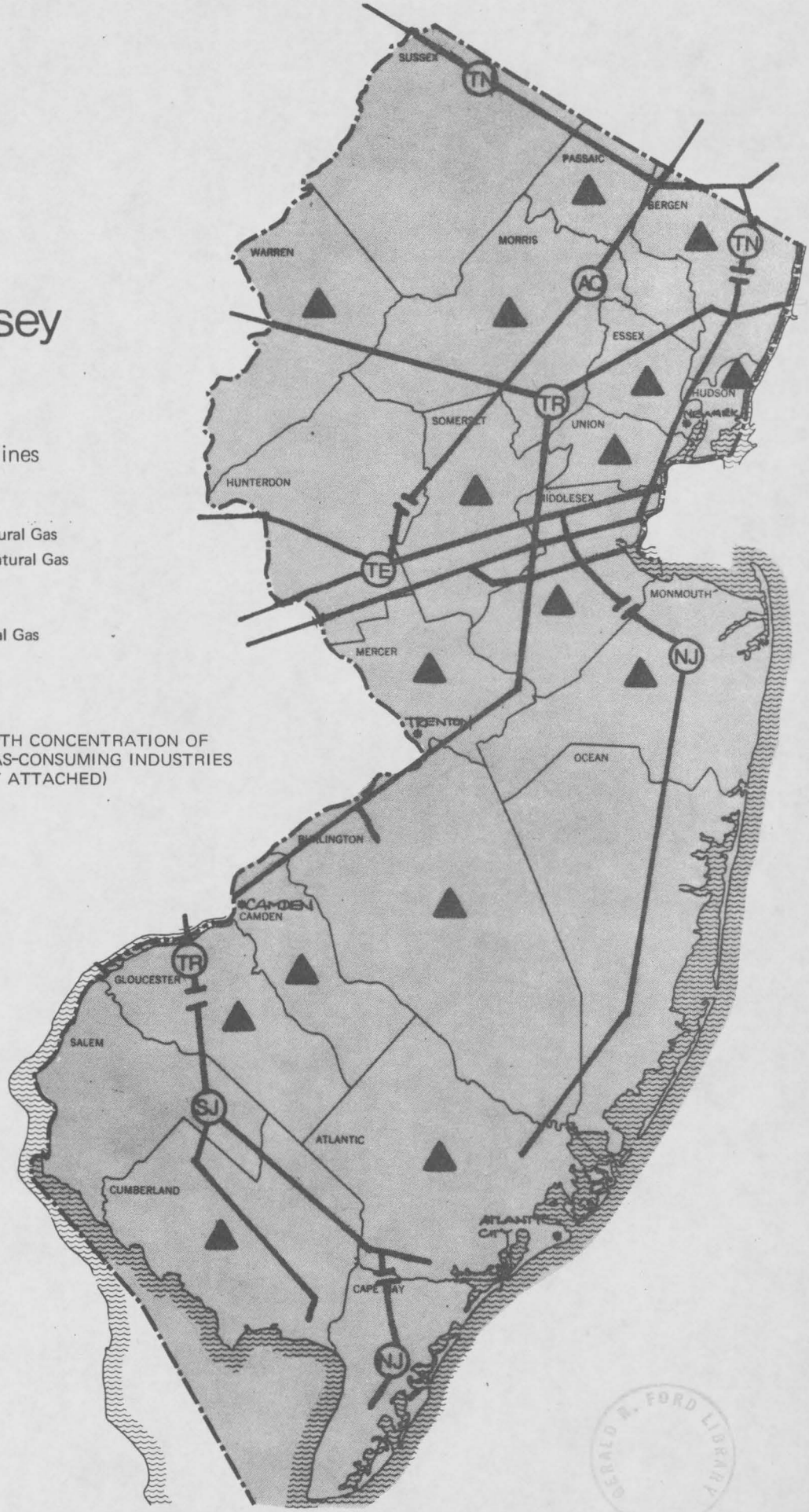
New Jersey

Scale of Miles
0 5 10 15 20

Natural Gas Pipelines

- AQ — Algonquin Gas
- NJ — New Jersey Natural Gas
- SJ — South Jersey Natural Gas
- TN — Tennessee Gas
- TE — Texas Eastern
- TR — Transcontinental Gas

:::: INCREASE
DECREASE
MIXED
▲ COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)



Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Algonquin Gas Transmission	6	-13
Columbia Gas Transmission	37	-19
Consolidated Gas	199	3
National Fuel Gas Supply	90	41
Tennessee Gas Pipeline	107	2
Texas Eastern	37	-2
Transco	192	-18
Total Interstate Pipelines	668	1

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	341	55
Commercial	119	19
Industrial	108	17
Utilities	38	6
Other	18	3
Total	624	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Primary Metal	24	99.8	1.7
Stone, Clay, & Glass	14	64.6	1.1
Food	11	33.9	0.6

Supply Situation

Overall, New York is expected to get slightly more gas this year than last year; however, the New York City Metropolitan Area and southeastern New York will be getting substantially less volume than last year.

New York is served by seven interstate pipelines. Transco which serves the New York Metropolitan Area and Long Island (about 29 percent of total deliveries) will have an 18 percent reduction. Columbia Gas Transmission Company which serves the Olean and Binghamton industrial areas and southeastern upstate New York above New York City is projecting a 19 percent reduction. The remaining pipelines serving this area are Algonquin which is projecting a 13 percent decrease and Texas Eastern which is projecting a 2 percent decrease.

The principal supplier for northern and western upstate New York, Consolidated Gas Supply (about 30 percent of total deliveries), is projecting a 3 percent increase. The two smaller volume pipelines serving the area, National Fuel Gas Supply, and Tennessee Gas Pipeline are also projecting increases.

Thus, the gas shortage problems in New York will concentrate in a few small areas served by Columbia Gas along the southern border of the state and in the southeastern and New York Metropolitan Area served by Transco and Columbia Gas.

Industrial Impact

About 70 percent of New York's natural gas is consumed by residential/commercial users, and 30 percent by utilities and industry. The three largest industrial group consumers of New York's gas-food, stone-clay-glass, and primary metals account for 50 percent of all industrial use. The employment impacts of industrial gas curtailments in New York are not likely to be large because these three industry groups are estimated to have only about 3.4 percent of total employment.

The parts of the state served by Transcontinental and Columbia Gas Transmission could be significantly affected, however, because these systems are projecting large curtailments.

Columbia Gas which serves the Olean and Binghamton areas has projected 100 percent curtailment of industrial customers.

Transco which serves the New York City distribution system (consolidated Edison, Brooklyn Union Gas, and Long Island Lighting) will have to curtail its interruptibles; however, the scale of curtailment will depend upon the severity of the weather.

Information supplied by the Public Service Corporation (PSC) of New York indicates that a high percentage of industrial gas use is for various boiler fuel, space heating and process heating purposes for which there are potential alternative fuels. Thus, the impact on industrial employment should not be severe since most establishments are likely to stay in operation at least on a reduced production basis rather than close down completely for a long period due to the unavailability of gas.

Alternate Capability

One hundred percent of the total energy consumed (1.1 Bcf) in ferrous metal large combustion, and 69 percent of the .8 Bcf used in the food industry is gas. Of this, about 33 percent of the ferrous metal consumption is convertible, and practically all of the food processing usage is convertible.

Most New York interruptible industrial customers appear to have some level of alternate fuel burning capability based on information supplied to the New York PSC. However, the problem of assessing the practical level of alternate fuel use is complex depending upon the degree and length of interruption, price of alternate fuel, etc. New York has only one big gas feedstock consumer (a fertilizer plant in Olean). Most of the industrial gas consumed in New York is used for process and space heat for which there are at least technically feasible alternatives.

The New York PSC permitted Niagara Mohawk Power Corporation to initiate an innovative alternative fuels concept in the winter of 1974-1975. Under this new plan, effective February 1, 1975, Niagara Mohawk will contract with some of its largest industrial customers who can use an alternate fuel to switch to oil or propane and give up a matching amount of gas for distribution among the utility's other customers. Niagara Mohawk would eliminate the economic penalty of the fuel change by paying the higher cost of the oil or propane. The company would recover the amount it pays such customers through the operation of its Gas Adjustment Clause, which would spread the cost equally over all the gas sold by Niagara Mohawk.

The plan is expected to add about three cents per 1,000 cubic feet to Niagara Mohawk's rates, but since all the receipts will be paid out to the cooperating industrial customers, there will be no increase in the utility's income. The additional cost is expected to average about $6 a year for a residential customer who heats with gas.

With this plan, Niagara Mohawk was able to "buy back" substantial quantities of gas from customers with alternate fuel capability for sale to those who did not have such facilities. The unique feature was assessing all gas customers for the cost incurred by the fuel switchers.

New York

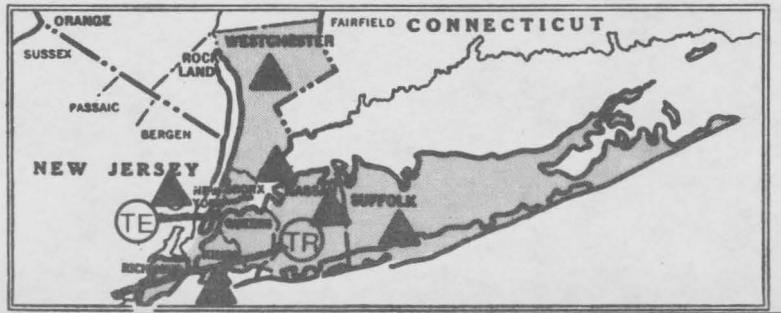
0 5 10 20 30 40 MILES

Natural Gas Pipelines

CG Consolidated
AQ Algonquin
CL Columbia
TN Tennessee Gas
TE Texas Eastern
TR Transcontinental
NF National Fuel
NM Niagra Mohawk

INCREASE
DECREASE
MIXED

COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)



Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Transco	133	-29
Total Interstate Pipelines	133	-29

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	27	20
Commercial	17	12
Industrial	87	64
Utilities	1	1
Other	4	3
Total	136	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Textiles	33	267.0	17.9
Chemicals	25	23.6	1.5
Stone, Clay & Glass	13	13.4	0.8

Supply Situation

The State of North Carolina, which consumed 136 Bcf of gas in 1974, is supplied by Transcontinental Pipeline Company which is projecting system-wide curtailments of 43 percent for the upcoming 1975-76 winter heating period. North Carolina is in a unique position in that it is served by only one interstate pipeline and that pipeline is heavily curtailed. Also, because a high proportion of natural gas use in North Carolina is for industrial purposes -- generally of a low priority classification -- the curtailment for the state is expected to reach 60 percent during the 1975-76 heating season.

State energy officials have compiled data from five natural gas utilities operating in North Carolina, which show the projected supply of gas by source and projected sale of this supply to the end-user. The data indicate that at a 60 percent state curtailment level, 96 percent of all industrial use would be curtailed. In addition, of the 1,486 plants in North Carolina which use natural gas, 283 plants did not have alternate fuel capabilities as of June 1975. Approximately 190 of the 283 plants are industrial customers employing 71,000 people. The remaining 93 installations without alternate fuel capability include schools, universities, hospitals, grocery stores, motels, and public buildings.

For the heating season, natural gas demand has been estimated to be 86 Bcf of which 62 percent is industrial and 38 percent is residential and commercial. It is estimated that of the 53 Bcf of gas (62 percent) for industrial requirements, 60.5 percent will be used as boiler fuels and 39.5 percent for "process" use (direct flame, feedstock, plant protection). While less than 4 percent of industrial demand will be met, all residential and small-volume commercial requirements should be met, assuming a normal winter.

Industrial Impact

Since North Carolina is solely dependent on the Transcontinental Interstate Pipeline for its natural gas supply, the entire state will suffer from a natural gas shortage. The greatest economic consequences will fall in the central (Piedmont) area, coincident with industrial and population concentration. The textile, chemical, and stone, clay and glass industries will be most severely affected. In particular, industries which use natural gas as a process fuel will experience some difficulty switching to propane and even then the industries' competitive position could be affected because of the higher costs of the alternate

fuel and the lower quality product that results from using propane. Many small customers do not have alternate fuel capability and the state now estimates that it is 20 Bcf short of gas needed for process use. Last winter the natural gas shortage impacted the fertilizer industry. In Tunis, North Carolina, a fertilizer plant was forced to stop production for about three weeks because of the unavailability of natural gas. However, no unemployment resulted because workers performed plant maintenance and other housekeeping functions.

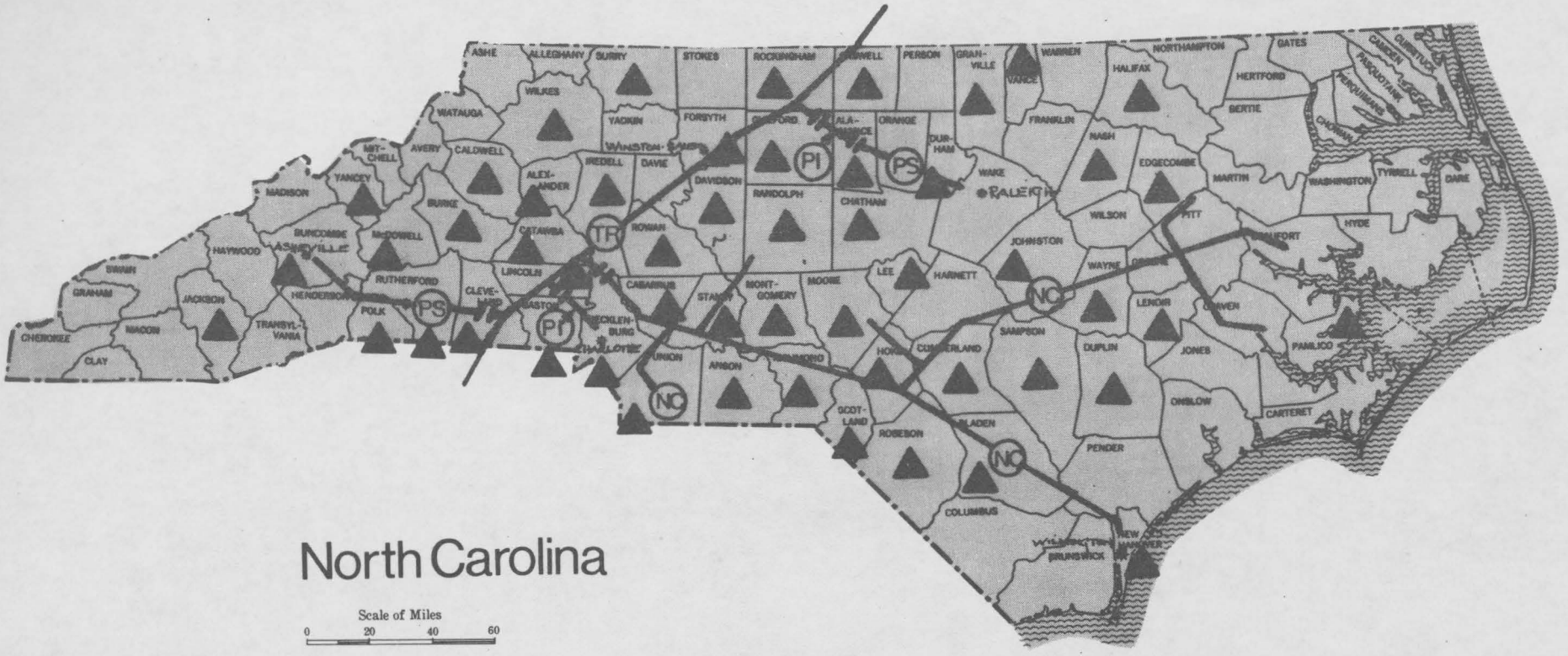
Alternate Capability

The expected use of alternate fuels this winter (including about 145 million gallons of residual oil, 118 million gallons of No. 2 oil, and 73 million gallons of propane) would mean a significant increase to the users in the price paid for fuels. State officials believe that these volumes must be contracted for now in order to assure adequate supplies this winter.

Assessment

Last winter, 1974-75, the statewide curtailment was about 43 percent. At that time, the low level of economic activity in conjuction with a mild winter substantially lessened the demand for natural gas -- industries were operating below capacity and unemployment was higher than the national average. Current indications are that the economy of North Carolina is recovering at a more rapid pace than the U S. economy as a whole because the textile and furniture industries tend to feel the negative effects of recession first and the positive benefits of recovery sooner than other industries.

Hence, in light of the expected curtailments of 60 percent this coming winter, some industries may not be able to achieve potential levels of production and employment. State officials also believe that a number of potential industrial firms have decided not to locate in North Carolina because of fuel supply problems.



North Carolina

Scale of Miles
0 20 40 60

Natural Gas Pipelines

(NC) North Carolina Natural Gas
PI Piedmont Natural Gas
PS Public Service Co. of North Carolina
TR Transcontinental Gas

:::: INCREASE
DECREASE
MIXED
▲ COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)

Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Columbia Gas	577	-15
Consolidated Gas Supply	290	3
Panhandle Eastern Pipeline	72	-11
Tennessee Gas	3	8
Texas Eastern Gas Trans.	121	- 7
Texas Gas Trans.	8	15
Total Interstate Pipelines	1,072	- 9

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	436	40
Commercial	183	17
Industrial	424	40
Utilities	21	2
Other	10	1
Total	1,074	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Primary Metals	38	157.7	5.0
Stone, Clay, & Glass	17	57.2	1.8

Supply Situation

Ohio received 1,072 Bcf of natural gas from interstate pipelines in the April 1974 to March 1975 period; projections for 1975-76 are 974.9 Bcf, a reduction of 9 percent. Columbia Gas Transmission Company, which provides over half of the state's natural gas, and serves nearly every part of the state, is projected to have 15 percent less volume available this year. The areas of Ohio expected to be most impacted by the projected curtailments are the northwest (Toledo), central (Columbus), and the southwest (Dayton, and to a lesser extent Cincinnati).

Industrial Impact

About 10 percent of Ohio's industrial requirements are expected to be curtailed this winter. The two major gas consuming industries in Ohio -- the primary metal and the stone, clay, and glass industries -- represent significant employers of the state's labor force. The primary metal industry accounts for 5.0 percent of total state employment; while the stone, clay, and glass industry employs 1.8 percent of the total. More specifically, the glass refractory and brick industries, many of which are small, will be most severely hit by natural gas curtailments. The severity of a natural gas shortage will be especially acute for these industries since:

- They receive their natural gas under firm contracts and in most cases have not experienced curtailments in recent years.

- The ability of these industries to switch to alternative fuels is limited, since natural gas is used as a unique process fuel. (Where capabilities exist for alternative fuels it would require 1307.7 million gallons of oil and 2.5 million tons of coal, assuming a 75 percent oil/25 percent coal mixture to meet the requirements).

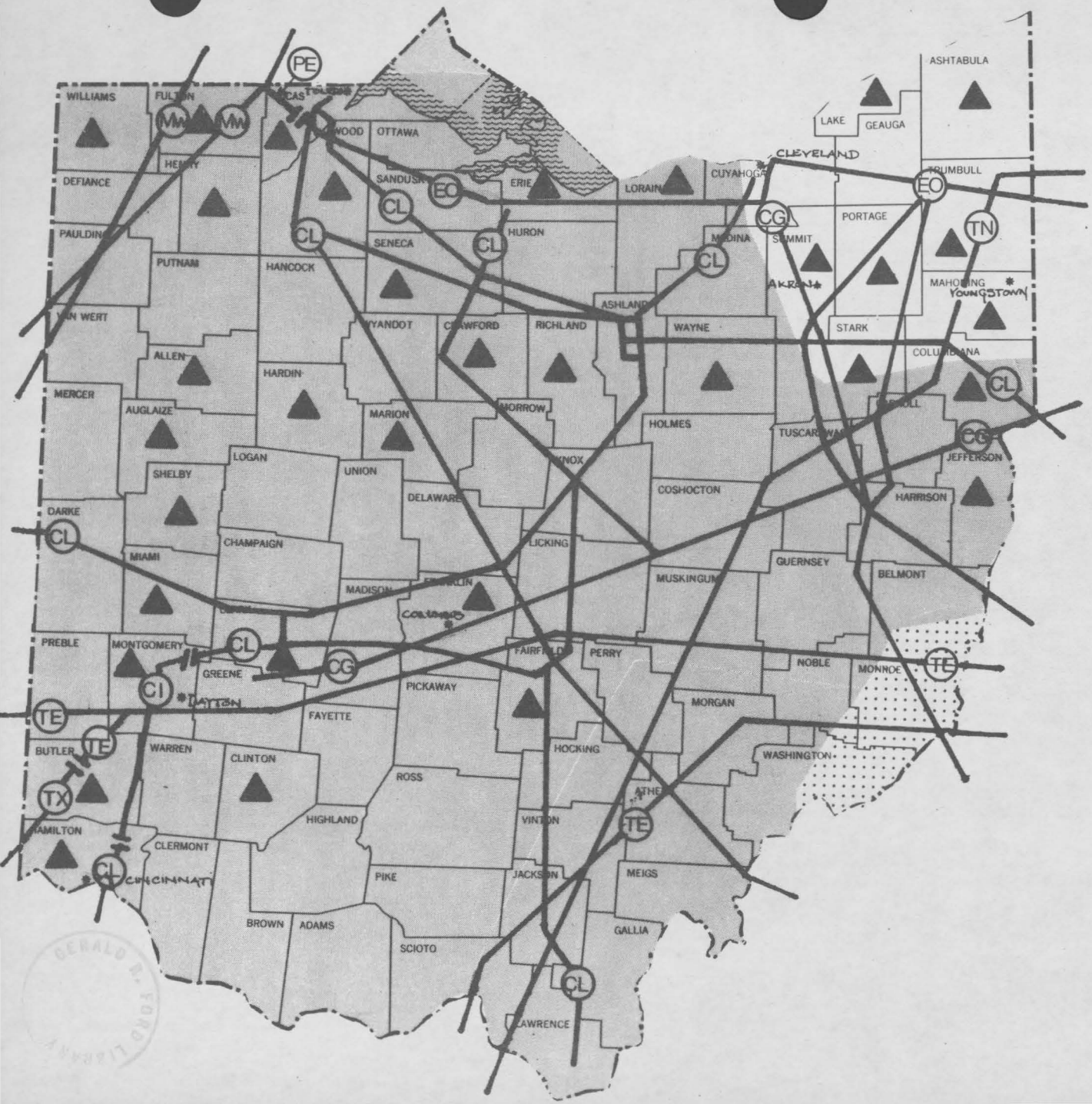
Alternate Capability

The decreased supply of natural gas presents a serious problem for the industrial sector of the State of Ohio. While most customers with interruptible contracts have adjusted to the use of alternative fuels, the shortage now affects firm contract customers as well. The ability

of the latter group to use alternative fuels is less certain--and in some cases impossible. Still, by local area adjustments in gas distribution (and assuming normal weather conditions) the state will be able to manage the gas shortage through next winter with only minor direct economic impacts.

State Program

The Energy Group of the Ohio Department of Economic and Community Development has underway an "Industrial Energy Alert" program of meetings around the state. The purpose of the program is to alert gas users about the curtailment problem, and to aid them in planning for alternate fuel use capability.



Ohio

Scale of Miles

0 10 20 30 40

Natural Gas Pipelines

- (CI) Cincinnati Gas
- CL Columbia Gas
- CG Consolidated Gas
- EO East Ohio Gas
- Mw Michigan—Wisconsin Pipeline
- PE Panhandle Eastern Pipeline
- TN Tennessee Gas Pipeline
- TE Texas Eastern
- TX Texas Gas Transmission

INCREASE

DECREASE

MIXED

▲ COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)

PENNSYLVANIA

Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Columbia Gas	206	-18
Consolidated Gas Supply	95	1
National Fuel Gas	78	- 1
Tennessee Gas P/L	72	- 6
Texas Eastern	140	- 8
Transco	130	- 6
Total Interstate Pipelines	723	- 8

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	272	39
Commercial	94	14
Industrial	311	45
Utilities	8	1
Other	8	1
Total	693	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Primary Metals	57	211.3	6.0
Stone, Clay, & Glass	12	51.0	1.4

Supply Situation

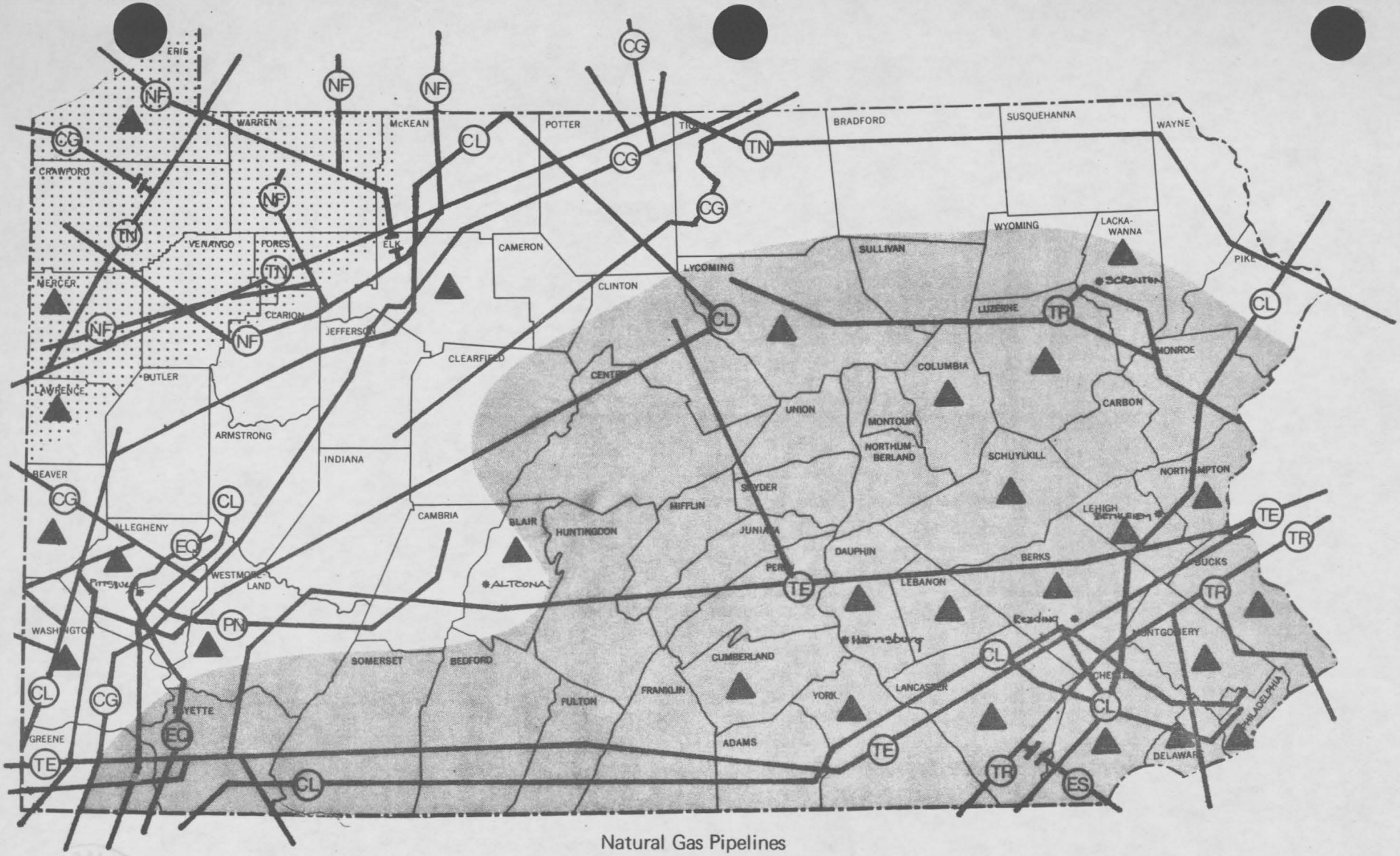
Pennsylvania received deliveries of 723 Bcf of natural gas for the year April 1974 through March 1975; this year a reduction in deliveries of about 60 Bcf is expected (about 8 percent). Pennsylvania receives more than it consumes because it transports some gas to Delaware. Assuming a normal winter, virtually all residential and commercial needs will be met. Thus, nearly the entire impact of reductions in deliveries will fall on the industrial and electric utility sectors -- a reduction of an additional 15 to 20 percent from their estimated requirements. The area of the state hardest hit by natural gas curtailments is the southern portion, extending from Pittsburgh in the west to Philadelphia in the east, and the east-central, and northeastern sections. These areas are served by Columbia Gas Transmission Company, Transcontinental Gas Company, and Texas Eastern Gas Transmission Company -- the pipelines bringing the greatest volumes of gas to Pennsylvania and also imposing the greatest curtailments.

Industrial Impact

As noted above, Pennsylvania's industrial sector will absorb virtually all of the projected gas shortage in the winter ahead. In the past winter, while most interruptible contracts for natural gas were curtailed, firm contracts were largely unaffected; in the winter of 1975-76, a large number of firm industrial contracts will be curtailed for the first time.

While the state has a very diversified industrial base, the largest consumers of natural gas are the primary metals industry (57 percent) and the stone, clay and glass industry (12 percent). The primary metals industry can substitute alternate fuels for many purposes, but still requires substantial amounts of gas for process fuel. The stone, clay and glass industry is even less able to substitute for natural gas because a high proportion is used as a process fuel in unique production techniques. The manufacture of glass, ceramics, and bricks is particularly dependent on the use of natural gas. Other industries which require substantial amounts of natural gas as a process fuel and may be significantly affected by reduction in supply are food processing, agriculture, and chemicals (where natural gas is used as a feedstock).

Most industrial users of natural gas in Pennsylvania will substitute alternate fuels for boiler fuel and space heating needs. There is, however, a distinct possibility that there will not be sufficient gas to satisfy the essential process requirements of the industrial sector. Should the economy recover more quickly than expected, the natural gas shortage could become a critical constraint.



Natural Gas Pipelines

Pennsylvania

Scale of Miles
0 10 20 30 40

- (CL) Columbia Gas
- CG Consolidated Gas
- ES Eastern Shore
- EQ Equitable Gas
- PN People's Natural Gas
- TN Tennessee Gas
- TE Texas Eastern
- TR Transcontinental Gas
- NF National Fuel

- :::: INCREASE
- DECREASE
- MIXED
- ▲ COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)

Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Southern Natural Gas	98	-11
Transco	25	-25
Total Interstate Pipelines	123	-12

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	20	16
Commercial	14	10
Industrial	73	56
Utilities	22	17
Other	1	1
Total	130	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Textiles	33	132.9	20.0
Chemicals	20	23.0	3.4
Stone, Clay, & Glass	20	9.6	1.4

Supply Situation

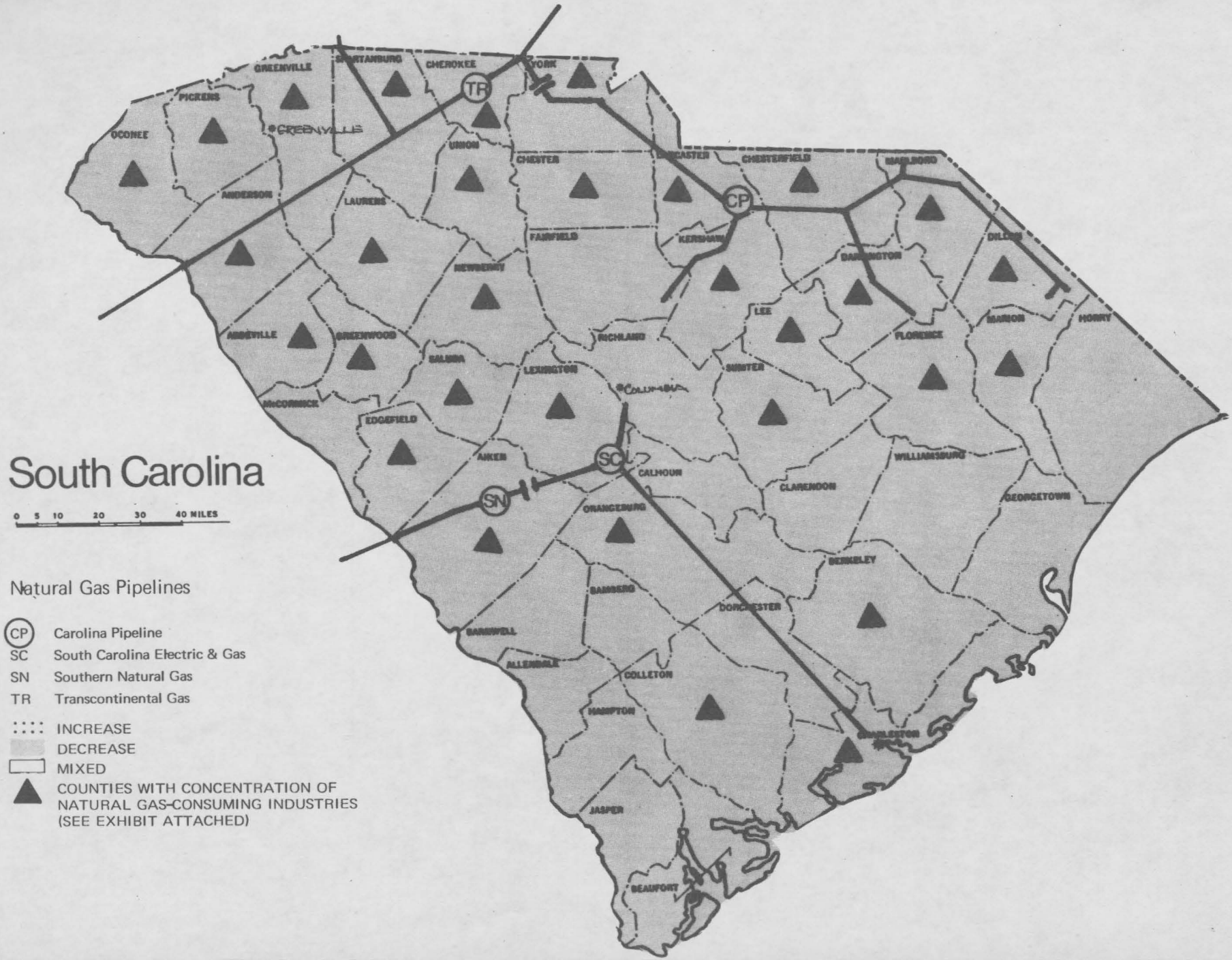
The two major pipelines serving South Carolina are Southern Natural Gas Company and Transcontinental Gas Pipeline. They are projecting gas deliveries of 102 Bcf for 1975-76 (April through March). This is 12 percent less gas than was supplied to South Carolina in 1974-75 (123 Bcf). While Southern is projecting 1975-76 deliveries to be 11 percent below 1974-75, Transcontinental is projecting a 25 percent decrease.

Industrial Impact

A 12 percent reduction in deliveries for the state will result in about a 25 percent shortfall for the industrial sector. The textile, chemicals, and stone, clay and glass industries are the major gas consuming industries in the state. In addition, they are significant employers of the state's workforce accounting for one of every four jobs and one of every two manufacturing jobs. In particular, the textile industry accounts for one of every five jobs in the state.

The northwest portion of South Carolina serviced by Transco, is expected to be severely affected. The textile industry is concentrated in this area employing almost 80,000 people. The chemical industry and the stone, clay, and glass industries also employ a substantial work force (7,000) in northwest South Carolina. The northwest area accounts for about 40 percent of total state employment.

Last year's curtailments did not have a major effect on the state's industries because economic activity was reduced. Since these industries were operating at 40 to 60 percent of capacity and resources were not fully utilized, very little unemployment could be attributed to the natural gas shortage. With the economic recovery, these particular industries are expecting to operate near capacity. Another important economic impact is the inability to attract new industry to the state.


South Carolina
0 5 10 20 30 40 MILES
Natural Gas Pipelines
CP Carolina Pipeline
SC South Carolina Electric & Gas
SN Southern Natural Gas
TR Transcontinental Gas
INCREASE
DECREASE
MIXED
COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)
GREENVILLE
SPARTANBURG
CHEROKEE
YORK
PICKENS
OCONEE
ANDERSON
LAURENS
UNION
CHESTER
LANCASTER
CHESTERFIELD
MARLBORO
FAIRFIELD
KERSHAW
DARLINGTON
DILLON
NEWBERRY
ABBEVILLE
GREENWOOD
SALUDA
RICHLAND
LEE
FLORENCE
MARION
HORRY
LEXINGTON
SUMTER
MCCORMICK
EDGEFIELD
AIKEN
CALHOUN
CLARENDON
WILLIAMSBURG
GEORGETOWN
ORANGEBURG
BERKELEY
BAMBERG
DORCHESTER
BARNWELL
ALLENDALE
COLLETON
HAMPTON
CHARLESTON
JASPER
BEAUFORT
TR
CP
SC
SN

Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Columbia Gas	96	-20
Transco	37	-16
Total Interstate Pipelines	133	-20

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	48	35
Commercial	27	19
Industrial	51	37
Utilities	5	3
Other	8	6
Total	139	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Stone, Clay & Glass	24	10.7	1.0
Paper	13	13.9	1.2
Textiles	13	41.2	3.7

Supply Situation

Virginia was supplied with 133 Bcf of natural gas in 1974-75 from Columbia Gas and Transco. Transco serves the Virginia-North Carolina border area and Columbia Gas serves most of the rest of the state including the Washington, D.C. Metropolitan area. Both lines are projecting 15-20 percent decreases in available gas for 1975-76.

Industrial Impact

The natural gas curtailments will impact heavily on the industrial sector. The major users of natural gas in Virginia, the stone, clay, and glass industry, the paper industry and the textile industry account for 50 percent of total industrial gas consumption. These industries are not major employers within the state on an aggregate basis; however, on a regional and local basis, such as textiles in the Danville area, the industries are often major employers. The stone, clay, and glass industry accounts for only 1.8 percent of total state employment, the paper industry for 1.2 percent, and the textile industry 3.7 percent. The state has a few industries with a need for natural gas as a unique process fuel (some kinds of textile finishing, glassware manufacture, metal annealing, automated baking lines, and specialty brick manufacture). These industries either must find propane-air replacement or obtain emergency gas supplies.

Nevertheless, the employment impacts of gas curtailments are not expected to be severe because a small percentage of total state employment is affected.

Alternate Capability

Except for the few plants noted above, gas is used for process and space heating for which oil, coal, or propane can be substituted. The Virginia Energy Office reports that all large interruptible customers know they will have no gas for the winter and have converted to alternate fuels. There is expected to be enough gas in Virginia to honor firm contracts.

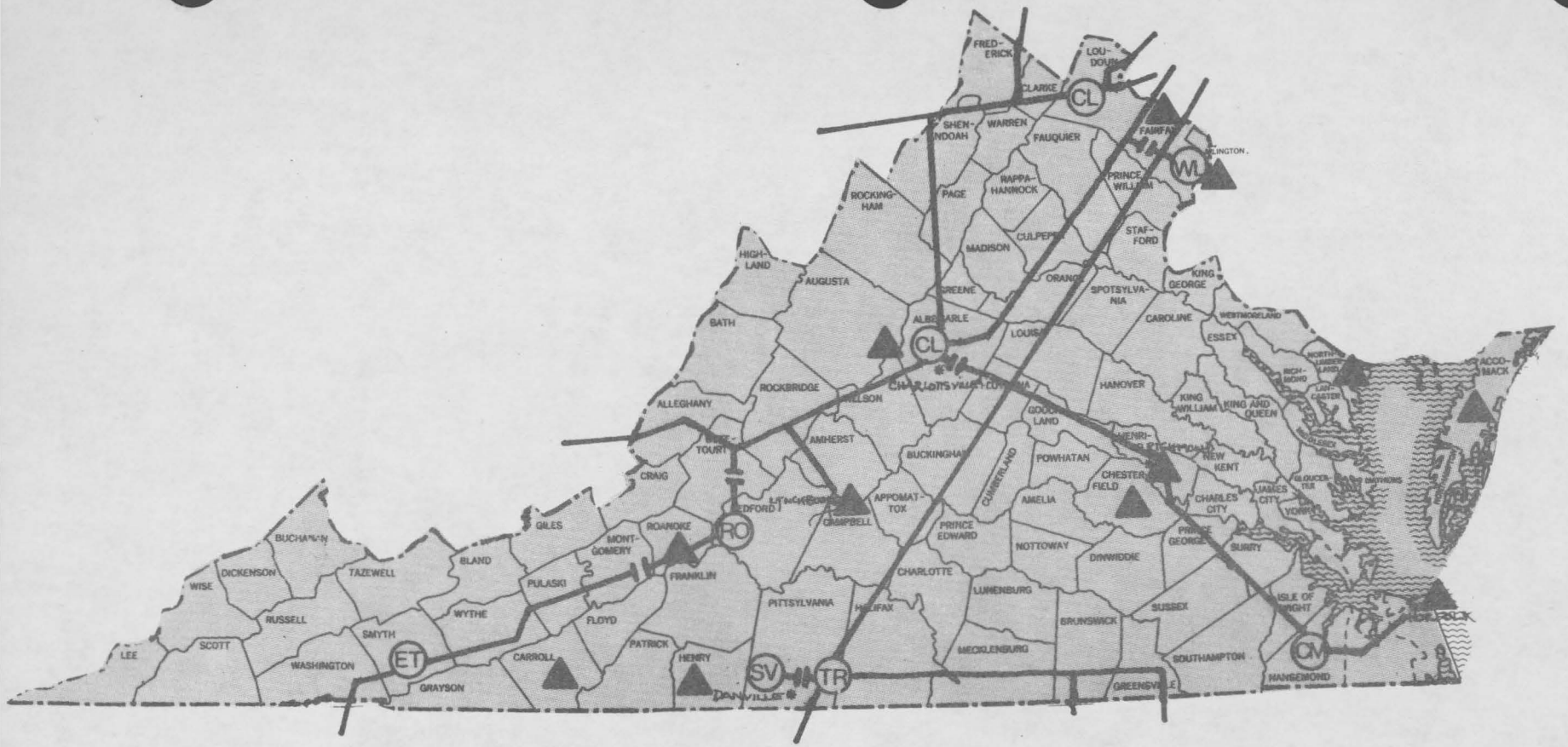
There are 950-1,000 small and medium commercial and industrial customers who could be subject to curtailment if natural gas supplies do not meet projected volumes. Many of these customers do not have alternate fuel capability and may risk shut-downs rather than incurring the expense of converting.

Those brick producers who do not have firm contracts are at an economic disadvantage with those which do have such contracts because of the much higher costs of alternate fuels.

Some of the largest gas consumers are in the process of arranging to purchase propane or intrastate gas. The State Energy Office reports that a number of industries which must have some limited gas to stay in operation have purchased and stored propane for this winter.

Assessment

Virginia will have considerably less natural gas available for use this winter than in the past; however, the effect on employment should not be serious because gas consuming industries do not account for a major share of state employment, the conversion of interruptible customers is already accomplished and alternate fuels are expected to be available.



Virginia

Scale of Miles

0 10 20 30 40 50

Natural Gas Pipelines

- CL — Columbia Gas
- CM — Commonwealth Gas
- ET — East Tennessee Natural Gas
- RO — Roanoke Gas
- SV — Southwestern Virginia Gas
- TR — Transcontinental Gas
- WL — Washington Gas Light

:::: INCREASE

DECREASE

MIXED

▲ COUNTIES WITH CONCENTRATION OF NATURAL GAS-CONSUMING INDUSTRIES (SEE EXHIBIT ATTACHED)

Situation at a Glance, Major Suppliers

Supplier	Natural Gas Deliveries 1974-75 Volume (Bcf)	Projected Change 1975-76 From 1974-75 (percent)
Columbia Gas	85	-22
Consolidated Gas	49	- 7
Tennessee Gas	4	6
Total Interstate Pipelines	138	-16

Natural Gas Consumption by Sector, 1974

Sector	Billion Cubic Feet	Percent of Total
Residential	53	33
Commercial	23	14
Industrial	86	52
Utilities	-	-
Other	2	1
Total	164	100

Estimated Gas Consumption and Employment in Major Gas Consuming Industry Groups

Industry	Percent of Total Industrial Gas Use (percent)	Employment (000)	Percent of Total State Employment (percent)
Stone, Clay and Glass	38	19.2	4.8
Chemicals	29	23.8	6.0
Primary Metals	24	21.8	5.4

Supply Situation

The State of West Virginia is a major producer-exporter of natural gas. In addition to a substantial quantity of gas produced from its own reserves, the State also received 138 Bcf from the interstate market last year. Only 164 Bcf of these total gas supplies were consumed in the State itself. The remaining supplies were exported for sale or resale on the interstate market.

West Virginia's interstate supplies are delivered through three interstate pipelines, Columbia, Consolidated, and Tennessee Pipeline, which serve five distributors - Bluefield, Cabot, Columbia, Equitable, and Hope. The interstate gas which has been available to West Virginia will be curtailed to some extent during the coming winter, however, which could cause a shortage problem in spite of the state's production capabilities.

Industrial Impact

Over 50 percent of the natural gas consumed in West Virginia is utilized in the industrial sector. This is an extremely high percentage for industrial gas consumption and indicates that the state could be adversely affected by natural gas shortages, as industrial and utility end-users are the first to be curtailed when a shortage arises.

The major gas consuming industries are the stone, clay and glass, chemical, and primary metals industries. These three groups account for a total of 91 percent of all industrial gas consumption in the state. These industries, in addition to being major gas consumers, are also major industrial employers within the state. Of the state's total employment, 4.8 percent is in the stone, clay and glass industry, 5.9 percent in the chemical industry, and 5.4 percent in the primary metals industry.

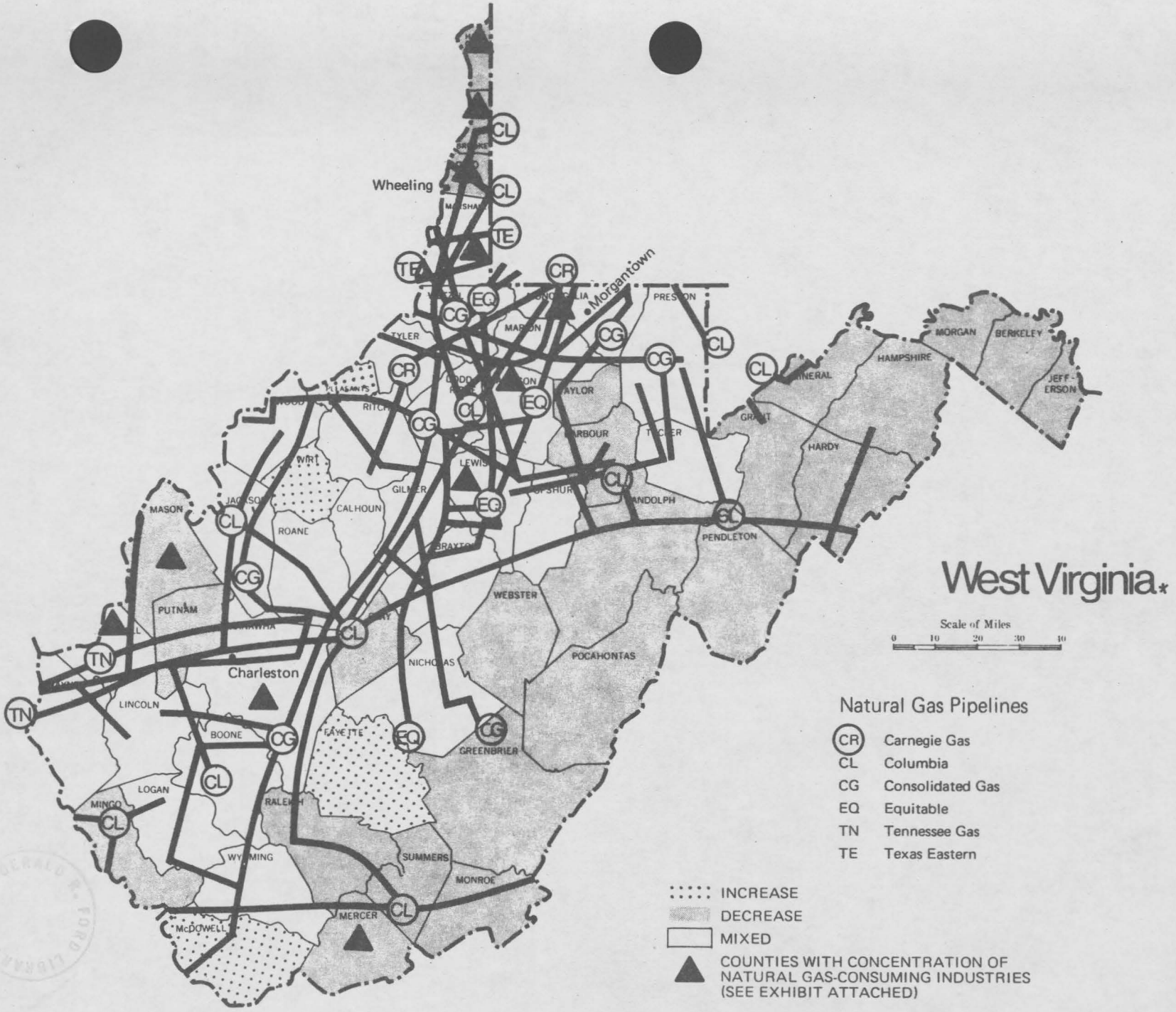
The industrial sector in West Virginia is supplied primarily by three gas distributors - Columbia Gas of West Virginia, Cabot Corporation, and Hope Natural Gas Company. Columbia Gas received its supplies from Columbia Gas Transmission Corporation, which projects considerable curtailments, and Hope is supplied by Consolidated Supply Corporation which is projecting little, if any, curtailments. Cabot is a producing distributor, and will, therefore, be able to meet its requirements through its own supply.

Alternate Capability

A large part of the gas which is consumed in the glass and chemical industries is used as a feedstock or industrial process fuel and, therefore, cannot be replaced by alternate fuels. However, some of the gas consumed in these industries and much of the gas consumed in the primary metals industry and the utility sector can be replaced by alternate fuels.

State Program

The State Fuel and Energy Office is conducting a public education program to alert the public to the possibility of a natural gas shortage, and to point out measures that will help conserve the gas which is available.



***NOTE:** On this map increases and decreases have been shown ONLY for interstate deliveries, and that approximately 23% of West Virginia's deliveries are intrastate.

NATURAL GAS DATA SYSTEM

The Federal Energy Administration and the Federal Power Commission are currently developing a new data system to assess projected natural gas shortages for the 1975-76 heating season and the demand that such shortages would produce for other fuels. Data are being collected from approximately 2,000 pipelines and distribution companies, who were to obtain and report curtailment impact information for approximately 5,000 of their large end users and aggregated data for hundreds of thousands of their smaller customers. Most of the data forms have been subminted to FEA and a first report is expected in about a month. The objectives of this effort are to provide the first comprehensive and continuing monitoring system for natural gas and to provide tabular or graphic reports for use in evaluating the economic impact as well as the demand for alternative fuel engendered by gas shortages. The system will be updated periodically to keep the data current.

The primary data collection form is designed to provide end-use data for customers of natural gas interstate and intrastate pipelines, distribution companies and municipalities. Using a base year of April 1974 thru March 1975, the changing natural gas shortage is estimated for the next year. The information being collected is described below:

(1) General information about the reporting company including identification of the type of operation, supplier's names and percent of curtailment by interstate, intrastate and foreign companies during base and current years, as well as a summary of customer curtailments by type of service during base and current years.

(2) Natural gas deliveries to non-curtailed direct end-use customers by type of service during base and current years.

(3) Large end users (100 MMcf in base year) during base and current years:

    (a) market sector, geographic area, type of service, priority assignment, historical worker-days lost;

(b) deliveries and curtailments;

(c) alternative fuel requirements.

(4) Curtailed small end-users (aggregated) during base and current year:

(a) market sector (gross), geographic area, type of service, worker-days lost;

(b) deliveries and curtailments;

(c) alternate fuel requirements.

Another data base in this system will provide data on underground gas storage including withdrawals from and injections to reservoirs and reservoir identification data.

Once the data have been entered into the system and validated, a series of reports will be produced as a basis for analysis, problem solving and decision making. The reports described below will be produced for the following levels of aggregation: Entire United States, FEA Regions, FPC Regions, Petroleum Allocation Districts (PAD), Individual States (and portions of states) and by end-user category -- residential, commercial, industrial and utilities -- for each geographical aggregate:

(1) Total Deliveries and Curtailments for the base year and/or the current year.

(2) Alternate Fuel Requirements for the base year and/or the current year for companies that do not currently have an alternate fuel capability.

(3) Alternate Fuel Requirements for the base year and the current year and identification of level of curtailments for customers who have no alternate fuel capability.

(4) Workers days lost during past Quarter and base year due to curtailments.

Detailed information on underground storage will be available after November 1, 1975.