

*Analysis of the Impacts of the Projected  
Natural Gas Curtailments for the Winter  
1975-76*

November 1975

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Impacts of the Projected  
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for the Winter 1975-76**

November 1975



UNITED STATES CONGRESS  
Office of Technology Assessment

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DEPUTY DIRECTOR

November 4, 1975

The Honorable Jack Brooks  
Chairman, Committee on  
Government Operations  
U.S. House of Representatives  
Washington, D. C. 20515

Dear Mr. Chairman:

On behalf of the Board of the Office of Technology  
Assessment, we are pleased to forward a report:  
An Analysis of the Impacts of the Projected Natural  
Gas Curtailments for the Winter 1975-76.

The report was prepared by the Office of Technology  
Assessment with the assistance of a task force of  
experts conversant with the problems facing the major  
consumers of natural gas and the gas utilities this  
winter as a result of the projected curtailments. In  
addition, it was reviewed by a panel representing public  
agencies and interest groups and their comments incor-  
porated.

This report is being made available to your Committee in  
accordance with Public Law 92-484.

Sincerely,

  
OLIN E. TEAGUE  
Chairman  
of the Board

Sincerely,

  
CLIFFORD P. CASE  
Vice Chairman  
of the Board

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November 4, 1975

The Honorable Olin E. Teague  
Chairman of the Board  
Office of Technology Assessment  
Congress of the United States  
Washington, D. C. 20515

Dear Mr. Chairman:

In response to the request of the Chairman of the House Committee on Government Operations, I am pleased to submit a report entitled: An Analysis of the Impacts of the Projected Natural Gas Curtailments for the Winter 1975-76.

This report was prepared by the staff of the Office of Technology Assessment with the assistance of a task force of experts conversant with the problems facing the major consumers of natural gas and the gas utilities this winter as a result of the forecast natural gas shortage. In addition, the draft report was reviewed by a panel of representatives of public agencies and institutions and their comments incorporated in the report.

It is anticipated that this analysis, which identifies major impacts, determines important problem areas, analyzes short-term options for solution, and provides background data, will be of use to Congressional committees concerned with the problems associated with the projected natural gas shortage.

Sincerely,



EMILIO Q. DADDARIO  
Director

# PREFACE

On June 24, 1975, the Conservation, Energy, and Natural Resources Subcommittee of the House Committee on Government Operations requested from the Office of Technology Assessment (OTA) an analysis of the impacts of the projected natural gas shortage for this coming winter of 1975-76. At the time, OTA was performing a detailed assessment of the Plans and Programs of the Energy Research and Development Administration. The study of the natural gas problem complemented the ERDA effort by providing input to staff on near-term energy problems as part of the overall energy program of OTA. This report presents the results of the natural gas study.

Natural gas curtailments have been a continuing and growing phenomenon since 1970. Projections published by the Federal Power Commission for the winter period, November 1, 1975 to March 31, 1976, show that the supply of natural gas will be more than 18 percent below firm contract requirements. <sup>1</sup>Expressed another way, this curtailment represents about 40 percent of the estimated demand for natural gas by the industrial and electric utility sectors, in the interstate market, for this coming winter. <sup>2</sup> Therefore, if these projected curtailments are a true measure of the deficiency facing the Nation this winter, it seems unlikely that, at a minimum, severe constraints on economic activity can be avoided.

The objectives of this study are to determine the extent to which these projected curtailments reflect the actual situation and what the impacts and potential danger points might be as a result of the natural gas shortage. In this connection a list of important issues are presented which are intimately related to the overall problem of natural gas shortages and need be addressed in determining their solutions.

This study was carried out in two steps. In phase I, a task force composed of representatives from the trade associations of the major industrial consumers of natural gas and from the gas utilities was formed to provide data and information for the study. There were 13 industries represented which collectively consume over 75 percent of total natural gas use by industry and electric utilities. <sup>3</sup>There were four gas utilities represented which were selected from different geographical regions of the country. The task force was chaired by Mr. Jack O'Leary, Director of Energy and Environment of the MITRE Corporation. A meeting of this task force was held on August 28 and 29, 1975, and focused on the following:

**Note:** Footnotes appear on last page of this Report.

- An overall view of the impacts of the gas shortage.
- An analysis of interaction among the industries and between the industries and gas utilities.
- The ways in which industry and the gas utilities are attempting to deal with the problems caused by the natural gas shortage.

Written analyses were also received from the task force members as well as from an additional 37 gas utilities. The latter were located in regions which are projected to be hardest hit by the curtailments. In addition, they represented a wide range in company size with varying degrees of resources at their disposal to deal with the shortage.

Phase II of the study consisted of a review of the draft report carried out by a panel of representatives of various public institutions and public interest groups. This meeting was held on October 29, 1975, also chaired by Mr. O'Leary. This panel was requested to judge the effectiveness of the report, whether it had fairly represented and analyzed the problems, and whether there were issues missing from the analyses that needed to be addressed. The modifications and additions resulting from the deliberations of this panel are incorporated principally in the sections dealing with the issues related to the gas shortages and with the options proposed for short-term relief. Other comments are covered in the remainder of the report where appropriate.

The panels expressed the opinion that this report presented a fair and accurate forecast of the situation this coming winter. However, the review panel was concerned that the limited scope of the study as set by the Committee request, prevented a more complete discussion of several important points concerned with the entire natural gas problem. For this reason a list of issues which address those concerns is presented on pages 19-20 to make interested parties aware of the principal issues raised by the panel.

OTA is indebted to Dr. James Stekert, presently with the Energy Research and Development Administration, and Mr. James Jensen and Dr. Carl Swanson of Jensen Associates who served as consultants to OTA on this study.

The OTA staff on this study are Dr. Richard E. Rowberg, gas curtailment project manager, Mr. Lionel S. Johns, Ms. Joanne M. Seder, and Ms. Linda M. Parker.

While the resulting report contains input from many task force and panel members, the findings should not be construed to be the opinion of any one individual. An effort has been made to present both sides of any controversial subject.

## GLOSSARY

**Firm Requirements**—Volumes of gas which make up the contractual obligations of interstate pipelines for sale to direct consumers and to gas utilities for resale. These requirements are determined from an historical base period, usually between 1968 and 1973 and are adjusted each year for load growth. The firm requirements do not reflect changes in the demand for natural gas by the ultimate customers which are not incorporated in contract changes. These include year-to-year variations in weather and economic conditions, and immediate conversions to alternate fuels.

**Curtailement**—The difference between the volume of gas the interstate pipelines will actually deliver to their customers (i.e., the supply) and the firm requirements (i.e., contractual obligations) of these pipelines. These are the values reported by the Federal Power Commission for the period of April 1 of one year to March 31 of the next and for the heating season of November 1 to March 31.

**Shortfall**—The difference between the estimated real demand of the ultimate consumers of natural gas delivered by interstate pipelines and the gas supplied by those pipelines. Since this demand is less than the firm requirements (by about two trillion cubic feet) the shortfall will be correspondingly less than the curtailment.

**Interruptible Natural Gas**—Volumes of gas sold to some ultimate consumers under a contract which allows the supplier to cutoff the supply whenever the demand of the non-interruptible customers exceeds a certain value (usually as a result of severe cold weather). About 20 percent of the gas which is sold by interstate pipelines to gas utilities under firm requirements (i.e., non-interruptible) is resold by these gas utilities as interruptible gas. The deepening curtailments have manifested themselves in this instance in the form of longer periods during which the gas utilities' interruptible customers are cutoff.

**Supplemental Gas**—Gas from sources other than the flowing or stored natural gas delivered by interstate pipelines. These sources include imported liquefied natural gas (LNG), synthetic natural gas (SNG) derived from liquid hydrocarbons, and propane-air mixture injected into the gas utilities delivery system.

**Alternate fuels (and energy)**—Fuel oil (distillate and residual), coal, direct use of propane or butane, and electricity used in place of natural gas.

**Units**—For gas volumes the following symbols are used: Mcf, MMcf, Bcf, and Tcf for thousand, million, billion, and trillion cubic feet respectively.