GAS RATE FUNDAMENTALS

Fourth Edition
1987

American Gas Association Rate Committee
1515 Wilson Boulevard, Arlington, VA 22209

GAS RATE FUNDAMENTALS
Fourth Edition

Foreword

GAS RATE FUNDAMENTALS—Fourth Edition

Gas Rate Fundamentals first appeared in 1960. The book was sponsored by the Rate Committee of the American Gas Association as a reference work on gas rate fundamentals and practices. That edition was "a collection of papers especially proposed by rate men in various segments of the gas industry." A revised edition was issued in 1969, then a Third Edition was published in 1978. Like its predecessors, this Fourth Edition reflects some modest revisions as well as some rather extensive editing of particular chapters. During this latest rewriting effort, the gas industry was changing rapidly. Thus, some chapters may not fully describe important but very recent developments.

Each chapter in this edition was revised by a member of the Rate Committee as well as by the editor. The chapters then were reviewed by other members of the committee. Therefore, the book reflects the work and views of many individual rate professionals. Some members of the Rate Committee may hold views that differ from those presented in this work. Similarly, the publication of *Gas Rate Fundamentals* by the American Gas Association does not imply that the thoughts, viewpoints, and positions expressed are necessarily those of the Association or its member companies.

Because ratemaking is a dynamic art, readers must judge the principles set forth here in the light of their own particular circumstances. They must look beyond the scope of this reference work to determine which ideas are relevant and appropriate to them. In any case, the Fourth Edition of *Gas Rate Fundamentals* continues a tradition begun more than 25 years ago. The book describes principles and practices that will help gas industry rate men and women do their jobs in a technically competent way.

The Fourth Edition of

GAS RATE FUNDAMENTALS

has been sponsored and prepared by the

A.G.A. RATE COMMITTEE

Chairmen

Samuel R. Clammer, Chairman 1982–1984
Lone Star Gas Company

G. Gerald Turner, Chairman 1984–1986
Alabama Gas Corporation

Richard Hare, Chairman 1986–1988
National Fuel Gas Distribution Corporation

Editor of the Fourth Edition

Robert G. Uhler
National Economic Research Associates, Inc.

Contributing Authors for the Fourth Edition

Charles F. Belknap, Jr., Consumers Power Company
Joseph A. Bettinger, National Fuel Gas Distribution Corporation
James P. Bolduc, Connecticut Natural Gas Corporation
Janice Coleman, Arizona Public Service Company
Jay A. Copan, American Gas Association
Joseph R. Crespo, Coopers & Lybrand
Russell A. Feingold, Price Waterhouse
Richard A. Garner, Washington Gas Light Company
Robert J. Hobday, Rochester Gas & Electric Corporation
Ronald J. Hull, Price Waterhouse
Kenneth B. Johnson, H. Zinder & Associates, Incorporated
Steven L. Kagle, National Fuel Gas Distribution Corporation
Frank J. Kemeny, Equitable Gas Company
John Neri, H. Zinder & Associates, Incorporated
Alan Propper, Arizona Public Service Company

Stephen P. Reynolds, Pacific Gas and Electric Company
Robert H. Sarikas, Foster Associates, Incorporated
Edmund W. Smallwood, Washington Gas Light Company
Kenneth R. Smathers, National Fuel Gas Supply Corporation
Thomas E. Smith, Elizabethtown Gas Company
Richard D. Treich, Peat, Marwick and Mitchell
Robert F. Valiga, Public Service Electric & Gas Company
Herbert J. VanderVeen, Ernst & Whinney
James H. Yates, The Dayton Power & Light Company

Coordinator & Compiler

Lillian M. Rutherford, American Gas Association

Rate Training Subcommittee Chairmen

Russell A. Feingold, Price Waterhouse
H. Edwin Overcast, Northeast Utilities Service Co.
Alan Propper, Arizona Public Service Company

Final Review Group

Richard Hare, National Fuel Gas Distribution Corporation
H. Edwin Overcast, Northeast Utilities Service Company
Ann S. Rasnic, Virginia Natural Gas, Incorporated

Contents

Tables and Figures

TABLES

FIGURES

Introduction

Ratemaking for public utilities involves the application of the principles of economics, engineering, accounting, statistics, law, and public relations. While this is true of ratemaking for all types of public utility enterprises – railroad, telephone, water, electric, and gas – *Gas Rate Fundamentals* applies particularly to gas utilities. Two types of gas companies are described in this reference work:

- A gas *distribution* company is an enterprise that furnishes gas service within its own service area, principally to end-use consumers. Such a utility may also produce and transport part of the gas that it supplies to its customers.
- A gas *transmission* company (i.e., pipeline company) is an enterprise that transports gas from production areas to distribution service areas. Its customers are primarily gas distribution utilities. A pipeline may also produce a part or all of the gas that it transports and it may have some distribution operations.

While gas production companies are mentioned, their operations are not described in any detail in this book.

A proper understanding of ratemaking requires a general knowledge of the history of the gas industry as well as an appreciation of the economics of gas production, transmission, and distribution. Present rate structures reflect historical considerations as well as economic factors. Today, it is impossible for a rate person of a pipeline or distribution company to carry out his or her duties without a general knowledge of other aspects of the gas industry. Moreover, the rate analyst must recognize the mutual responsibilities of each segment of the industry (i.e., production, pipeline transmission, and local distribution). A listing of abbreviations used in the gas industry and a numerical conversion table can be found at the back of the book. A useful companion reference, published separately, is A.G.A.'s Glossary for the Gas Industry.[1]

[1]American Gas Association, *Glossary for The Gas Industry,* 1986.

GAS UTILITIES IN THE UNITED STATES

In 1985, gas utilities in the United States transported and distributed 132 million therms (a therm equals 100,000 Btus) of energy to 50 million customers. The utilities' total revenues were $63.3 billion. To provide this amount of service, the utilities required plant and equipment having a book cost of $87 billion. To furnish future service, the industry invested an additional $5.7 billion in 1984 for new construction and to maintain deliverability.

This giant industry began with the Gas Light Company of Baltimore in 1816, followed by the Boston Gas Light Company in 1822 and the New York Gas Light Company in 1825, to name only the first three enterprises. These early utilities distributed *manufactured* gas. It was used principally for lighting. Gas ranges for cooking came later – in 1851.

Natural gas was first distributed in 1821 in Fredonia, New York. It was, however, 1858 before the first recorded corporation to offer natural gas service was organized, also in Fredonia. For many years thereafter, natural gas was distributed on a small scale in communities near gas fields. As more and more gas fields were discovered, the distribution of natural gas expanded. In the early 1930s, improvements in the manufacture of pipe made long distance pipelines possible. These brought natural gas from the southwest producing areas to the midwest. This caused manufactured gas companies to convert to natural gas or mixed gas operations. After 1945, manufactured gas was supplanted by natural gas because of its economic advantages to utilities and customers alike.

WHAT IS A PUBLIC UTILITY?

A public utility is an entity that furnishes an essential service and operates under grants of public privilege. In brief, it is a business affected with the public interest that operates under a franchise or license issued by a governmental agency. Generally, a utility has a monopoly or partial monopoly on its particular service within a clearly defined area. The firm, however, is not protected from the competition posed by other forms of energy or service. A utility is subject to public regulation – the open scrutiny of its accounting, financing, earnings, pricing, and service policies.

CHARACTERISTICS OF GAS PUBLIC UTILITIES

The unique characteristics of gas public utilities include: