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### The Natural Gas Industry in Transition

Ruth A. Maurer

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The Natural Gas Industry in Transition

presented by

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based on research supported by

IntraWest Bank of Denver - Energy Banking Group

# NATURAL GAS PRICES AND THE ECONOMIC PROBLEMS OF DEREGULATION

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Fall 1982

By  
**Dr. Ruth Maurer**  
Assistant Professor of Mineral Economics  
Colorado School of Mines

Project Sponsored By



IntraWest Bank of Denver  
Energy Banking Group

Full report available from  
IntraWest Bank of Denver  
Energy Banking Group  
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Denver, CO 80270  
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## INTRODUCTION

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President Reagan promised, during his campaign for the Presidency, that he would push for early total deregulation of natural gas. During the fall of 1981, further discussion of the possibility of deregulation surfaced. In fact, Rep. Gramm (D-Texas) has introduced into Congress several bills which define a comprehensive natural gas decontrol process. The question of price behavior under decontrol must be considered as part of the financial analysis of any natural gas related project. This report is intended to be a comprehensive, detailed survey of available literature on gas deregulation, emphasizing the price effects of various schemes.

The first section of this report deals with economic theory, providing a background for discussion of price deregulation. Included in this section are brief discussions of profit maximization as a goal for the firm, the marginal cost/marginal revenue nexus, income transfers, and the equity problem.

A short history of the regulation of natural gas is covered in the second section of the report. Included are historical reasons for regulation, a discussion of the Natural Gas Act of 1938, and a brief analysis of interstate/intrastate problems. This section closes with a brief discussion of the background of the Natural Gas Policy Act of 1978 (NGPA).

The fourth section is a major part of this report. The main provisions of the NGPA are discussed here, with emphasis on wellhead price controls since those prices most directly affect decisions made by the sponsor of this project, the IntraWest Bank of Denver - Energy Banking Group. Incremental pricing and other provisions of interest to the sponsor will be briefly discussed. This section is included in order that the reader be familiar with current policy so that proposed changes may be better understood.

After examining the major provisions of NGPA, the report reviews the evident effects of NGPA as of the spring of 1982. Both price effects and supply effects are considered. This discussion is based on secondary, published data.

Since the objective of the study is determination of price and supply effects of total deregulation of natural gas, it is important to know what the experts are predicting. Section six is a summary of published discussion of the effects of total deregulation.

Finally, the last section summarizes this report and lists the conclusions which are drawn from the literature search.

## OUTLINE

### I. Introduction--economics and history

#### A. Economics of (natural gas) regulation

##### 1. Definitions (see diagrams on next pages)

a. Consumer surplus

b. Producer surplus

c. Welfare

$$\text{Welfare} = \text{Producer Surplus} + \text{Consumer Surplus} + \text{Govt. Revenue} + \text{External Effects}$$

##### 2. Effects of regulation on welfare

a. Price ceiling

1) Consumer effect

2) Producer effect

b. Price floor

1) Consumer effect

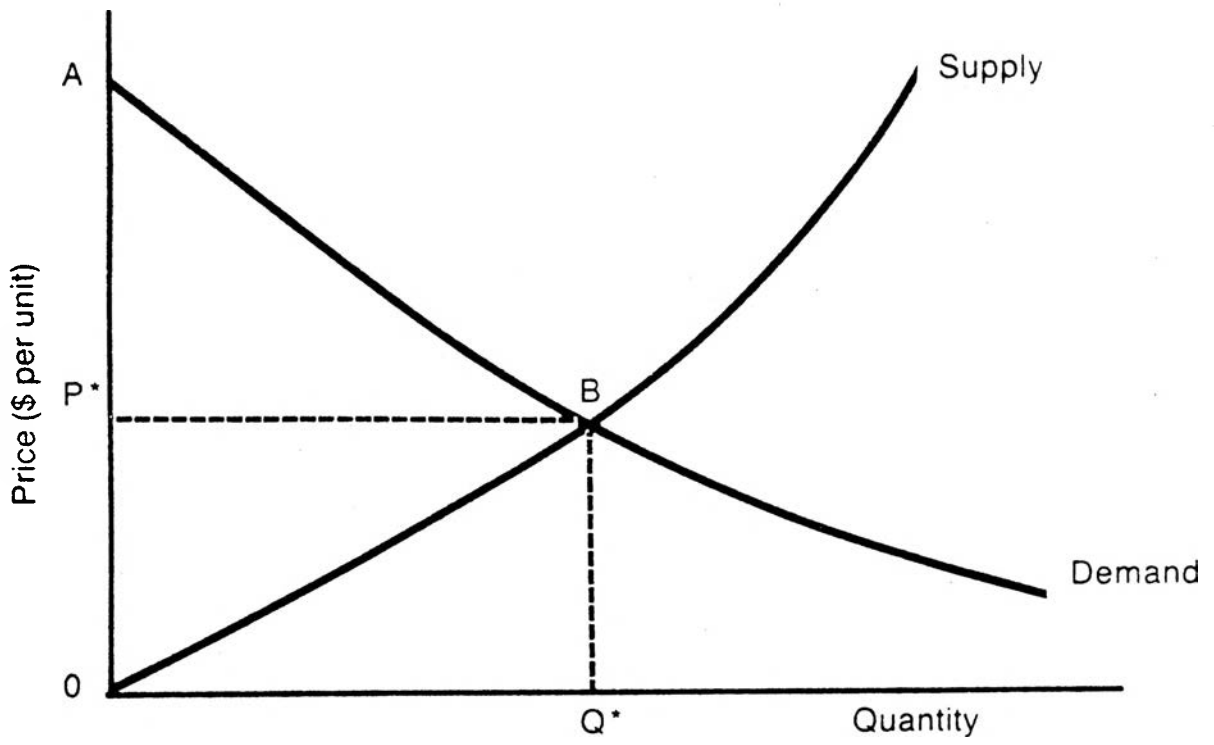
2) Producer effect

c. Unit tax

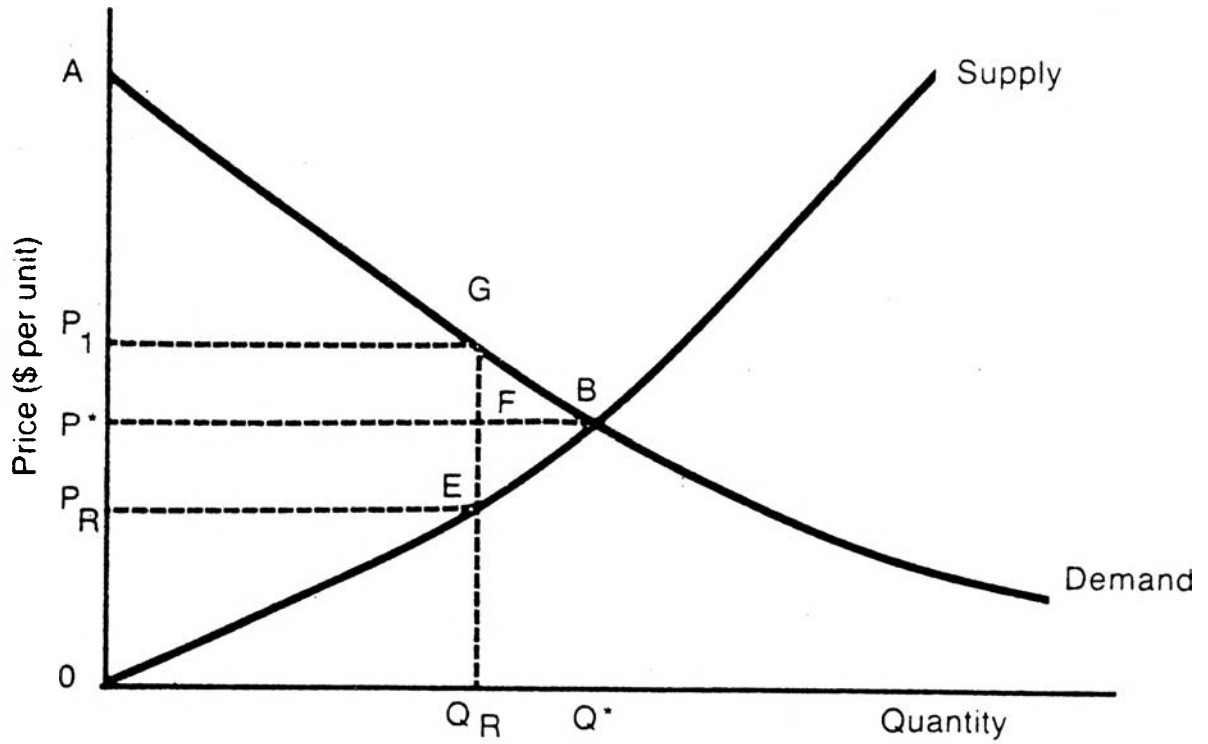
1) Consumer effect

2) Producer effect

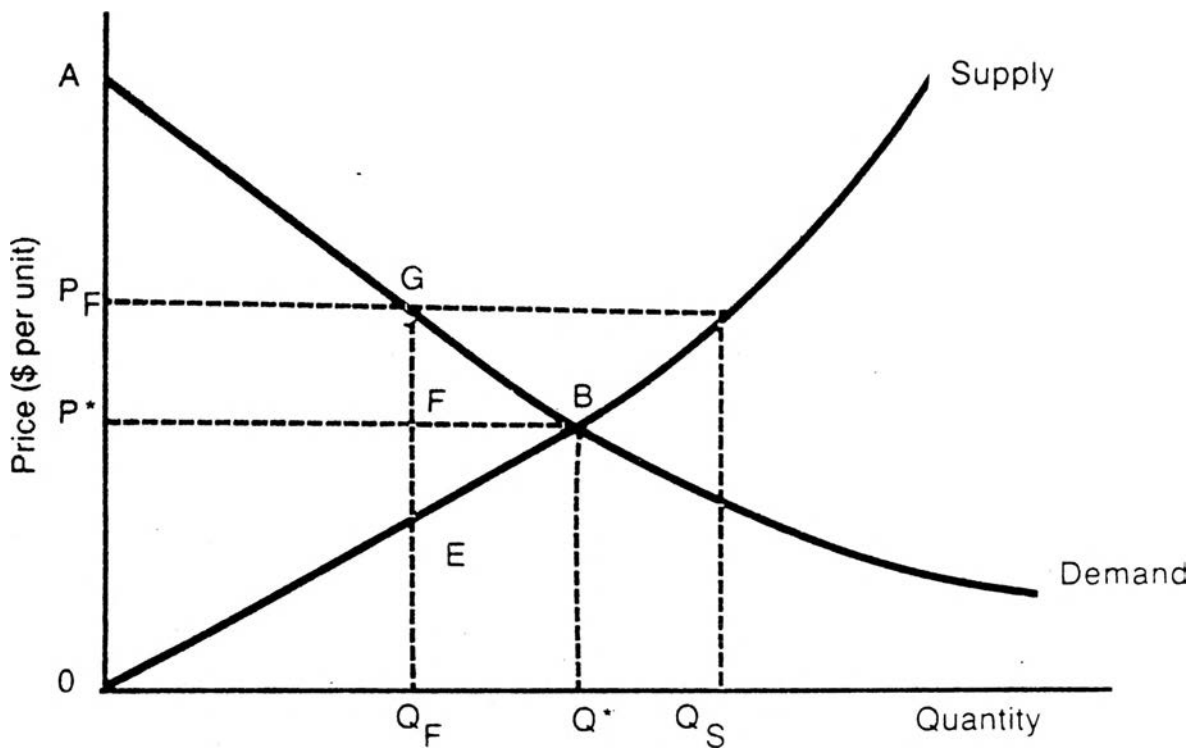
3) Government revenue



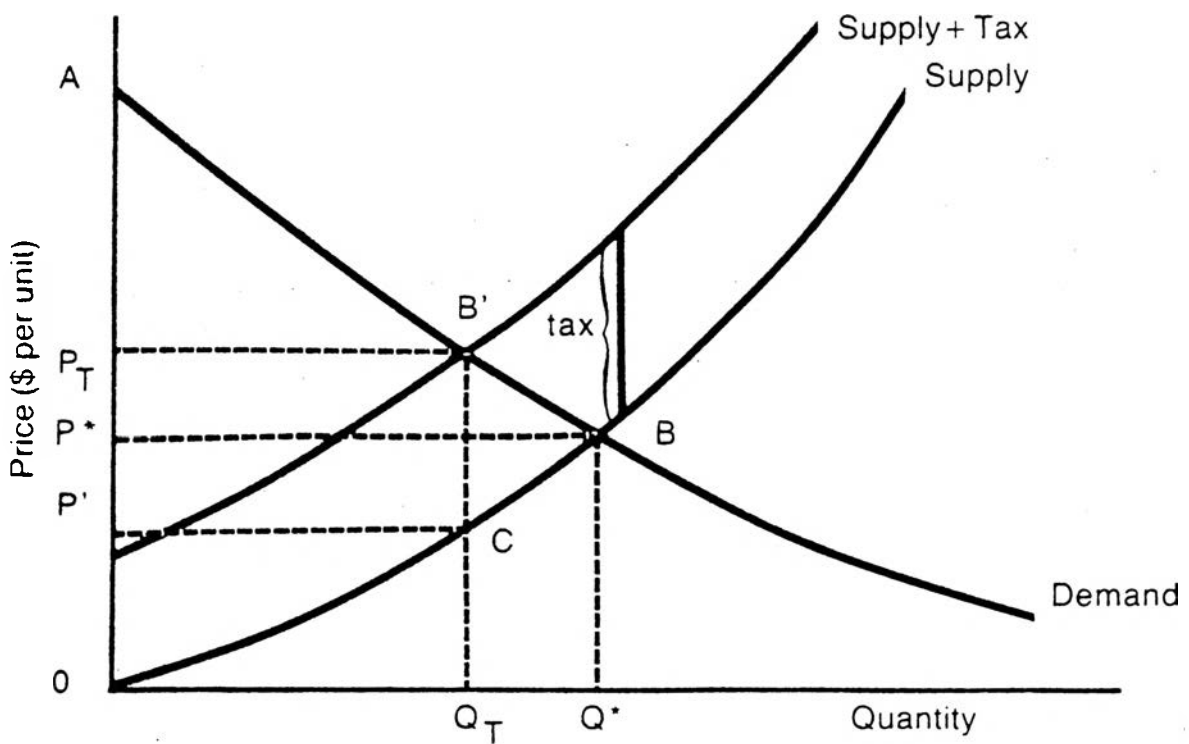
Welfare



Welfare Effect of Price Ceiling



**Welfare Effect of Price Floor**



**Welfare Effect of Unit Tax**

B. Brief history of natural gas regulation in the U.S.

1. Natural Gas Act (1938) (PL 75-688)

2. Phillips Petroleum vs. Wisconsin (1954)

3. Natural Gas Policy Act of 1978 (PL 95-621)

a. Title I - see diagram next page

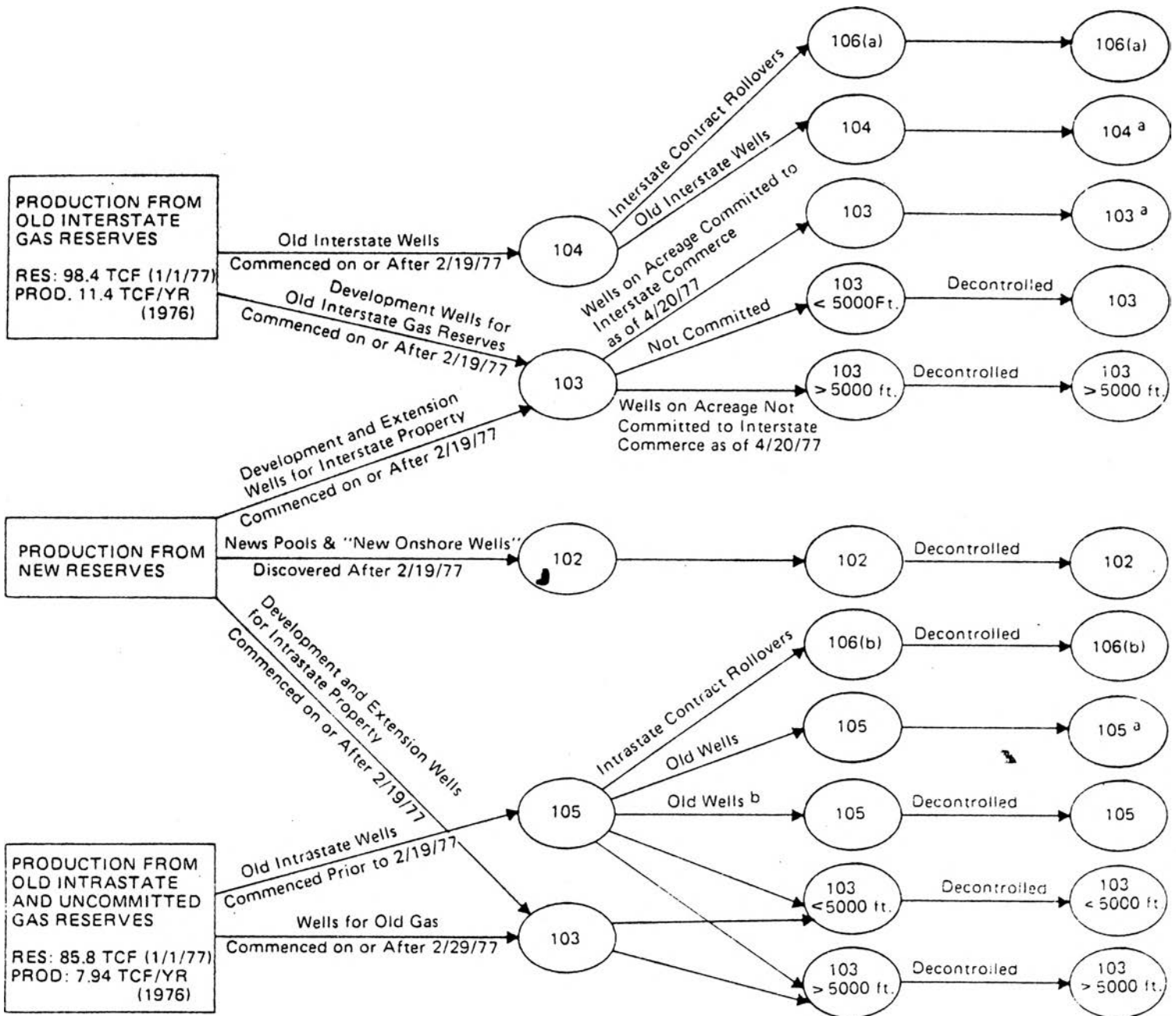
b. Title II



# Title I Maximum Ceiling Price Categories For Onshore Lower-48 Natural Gas Above 15,000 Feet

NGPA ENACTED  
11/9/78

1/1/85 7/1/87



Note: Stripper wells and high cost gas omitted.

<sup>a</sup> Not decontrolled.

<sup>b</sup> Price greater than \$1.00 per million Btu under a definite escalator clause.

Source: Carlson, Mary, O'Neill, Richard, Shambaugh, Phil, and Trapman, William, 1981, Intrastate and interstate supply markets under the Natural Gas Policy Act: Energy Information Administration, Office of Oil and Gas, U.S. Dept. of Energy, Washington, D.C., 47 + vii pages.

II. The role of natural gas in the United States energy mix

A. The current energy mix

1. Quantities consumed

2. Relative quantities consumed (gas compared to total consumption)

B. Trends in the energy mix

1. Total energy consumption trends

2. Gas consumption trends relative to total consumption

C. The current situation in the gas market

1. Supply trends

2. Demand trends

3. Issues raised by the change from shortages and curtailments to a buyers' market

III. Nature of the future gas market

A. Supply estimates

1. Reserves

2. Resources

B. Demand estimates

C. Alternative sources of gas

1. Unconventional sources

2. Synthetic gas

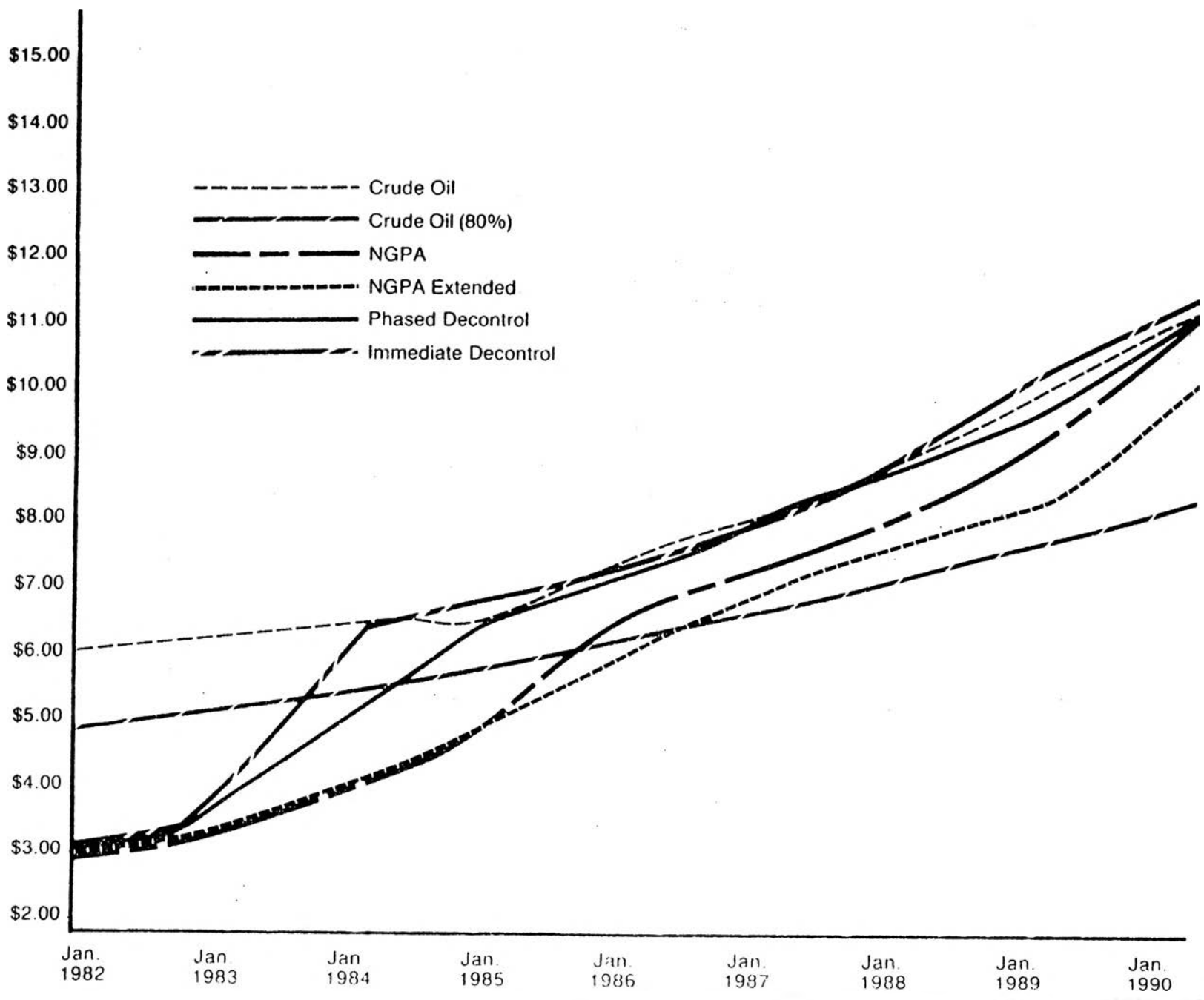
3. LNG imports

D. Price estimates under various scenarios  
(see diagram on next page)

E. Implications of forecasts on affected groups

1. Producers
2. Pipeline companies
3. Consumers
4. Federal Budget

## Crude Oil vs. Natural Gas Alternatives (\$ per million Btu)



Source: Rotan Mosle Oil and Gas Research, 1982, Natural gas pricing, and overview: Rotan Mosle, Inc., Houston, Texas, March 11, 1982, p.68.