
II. Introduction

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The Natural Gas Situation

Since 1970, the United States has consumed natural gas faster than it has discovered new reserves (table 1 and figure 1). Annual production has declined steadily from a peak of 22.6 trillion cubic feet (Tcf) in 1973 to a 1976 level of 19.5 Tcf; the decline is projected to continue in the future unless new gas is discovered and added to the Nation's reserves (figure 2). Producers are currently delivering 20 percent less natural gas to

interstate pipelines than is called for in firm contracts (table 2). The shortages of gas for industrial use are the most serious, but supplies for residences and small businesses have also been curtailed in some areas.

Three general changes in policy have been proposed by industry, Government, and independent analysts as ways to stem the decline in

Table 1
Proved Reserves of Natural Gas in
the United States, 1959-76

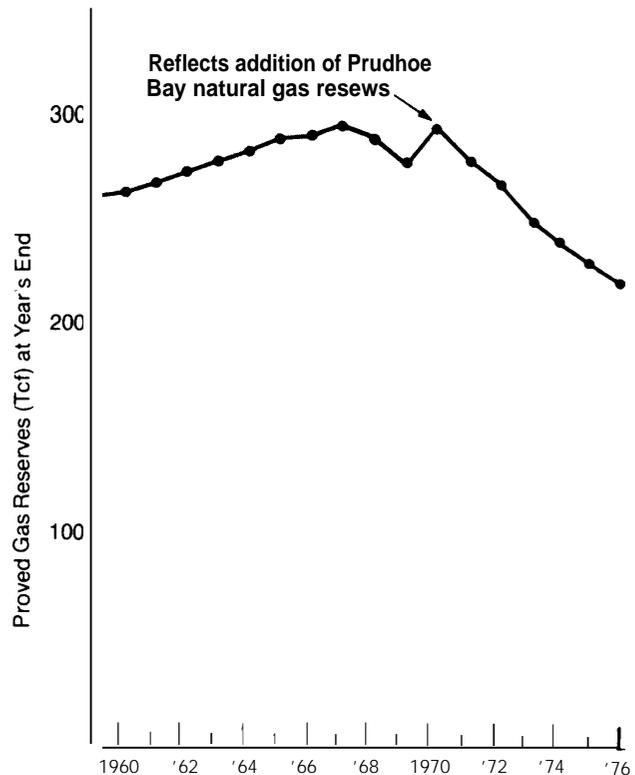
(Trillions of cubic feet; 14.73 PSIA at 60°F)

Year	Proved Reserves at Beginning of Year	Proved Reserves at End of Year	Net Change From Previous Year
1959	252.8	261.2	+8.4
1960	261.2	262.3	+1.1
1961	262.3	266.3	+4.0
1962	266.3	272.3	+6.0
1963	272.3	276.2	+3.9
1964	276.2	281.3	+5.1
1965	281.3	286.5	+5.2
1966	286.5	289.3	+2.8
1967	289.3	292.9	+3.6
1968	292.9	287.4	-5.5
1969	287.4	275.1	-12.3
1970	275.1	290.8	+15.7
1971	290.8	278.8	-12.0
1972	278.8	266.1	-12.7
1973	266.1	250.0	-16.1
1974	250.0	237.1	-12.9
1975	237.1	228.2	-8.9
1976	228.2	216.0	-12.2

Note: 1970 figures reflect the addition of Prudhoe Bay, Alaska reserves.

Source: Reserves of crude oil, natural gas liquids, and natural gas in the United States and Canada as of December 31, 1976. Joint publication by the American Gas Association, American Petroleum Institute, and Canadian Petroleum Association Vol. 31, May 1977

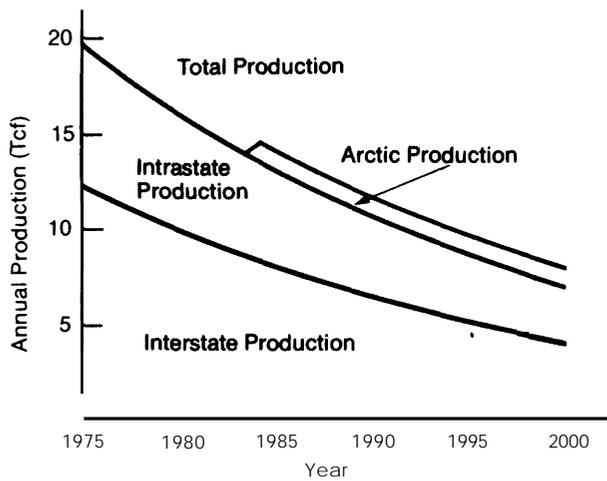
Figure 1. Proved Reserves of Natural Gas in the United States, 1959-76



Source: Reserves of crude oil, natural gas liquids, and natural gas in the United States and Canada as of December 31, 1976. Joint publication of the American Gas Association, American Petroleum Institute, and Canadian Petroleum Association Vol 31, May 1977

Figure 2. Projected U. S. Natural Gas Production, 1975-2000

(assuming 8.0 Tcf reserve additions per year)



Source Federal Power Commission.

**Table 2
U.S. Production of Natural Gas and
Curtailments of Firm Customers, 1959-76**

Year	Production (Trillions of cubic feet)	Interstate Pipeline Curtailments (Trillions of cubic feet)
1959	12.4	-0-
1960	13.0	-0-
1961	13.4	-0-
1962	13.6	-0-
1963	14.6	-0-
1964	15.4	-0-
1965	16.3	-0-
1966	17.5	-0-
1967	18.4	-0-
1968	19.4	-0-
1969	20.7	-0-
1970	22.0	0.0
1971	22.1	0.3
1972	22.5	0.7
1973	22.6	1.1
1974	21.3	1.7
1975	19.7	2.6
1976	19.5	4.0

Source: Federal Power Commission and American Gas Association.

production and narrow the gap between supply and demand for natural gas. They are:

1. Decontrol natural gas prices so that increased costs would encourage consumers to use less fuel and increased wellhead prices would encourage producers to intensify their efforts to locate new reserves.
2. Permit price increases under regulation to achieve some, but not all, of the stimulus of production that is anticipated as a result of deregulation.
3. Accelerate efforts to produce natural gas from unconventional geologic formations, such as the tight sands of the Western Basins, coal seams in the Eastern United States, geopressurized zones off the gulf

coast, and Devonian shales of the Appalachian region of the Eastern United States.

This report examines the gas-productive potential of the last of these unconventional sources, the Devonian shales, which contain many hundreds of Tcf of natural gas, located in an area of the Nation where natural gas is in short supply. The report assesses the potential for producing natural gas from the Devonian shales of the Appalachian region and the impact on this production potential of various policy options available to Congress. Among all unconventional sources, the Devonian shales have the advantage of being productive, at least locally, in the Appalachian Basin without the development of completely new and novel techniques for gas recovery.