



Project Summary

Projections of Regional Fuel Oil and Natural Gas Prices

Tim Hogan

This report presents delivered regional oil and natural gas price forecasts for the industrial and electric utility sectors. Delivered energy price projections by Federal region through the year 2045 are provided for distillate fuel oil, residual fuel oil and natural gas. Methodology and major assumptions are also described.

This Project Summary was developed by EPA's Air and Energy Engineering Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Scope and Objectives

This report presents oil and natural gas price forecasts prepared during the summer of 1986. The focus is on projections of delivered regional prices to industrial and electric utility sector energy users. Specifically the report provides delivered energy price projections by Federal region through the year 2045 for distillate fuel oil, residual fuel oil, and natural gas.

The need to prepare these price forecasts occurs in a period of unusually high uncertainty in oil and natural gas markets. Although oil and gas markets have been notoriously difficult to predict in the last 15 years, the present environment is unusually unstable due to:

- The sharp drop in crude oil prices from \$26-27 per barrel in 1985 to \$12-15 in early 1986.
 - The evolution of a more market-oriented institutional environment in natural gas markets combined with sharply declining prices during 1983-1986.
- This report addresses these uncertainties by generating alternative scenarios to reflect the potential impact of these issues on the range of future oil and gas prices. With respect to oil prices, the scenarios reflect:
- High, middle and low scenarios for world crude oil prices.
 - That no attempt was made to prepare a "best guess" scenario due to current uncertainty.
 - That an attempt was made to generate "plausible" (but not extreme) scenarios with the high and low oil price forecasts expected to bracket future outcomes.
- The middle oil price scenario is not an EPA, National Acid Precipitation Assessment Program (NAPAP), or contractor best guess; it is only a projection which is halfway between the low and high oil price forecasts.
- With respect to delivered natural gas prices, the scenarios reflect estimates of the price for gas sold in the new transport (or carriage) market. It should be emphasized that not all natural gas customers will have ready access to carriage market gas.

Projected Crude Oil Prices

Table 1 summarizes the projected crude oil prices. Since these high and low scenarios are intended to provide plausible bounding cases for future oil price trends, the themes or underlying

characteristics of the two scenarios should be highlighted. The low oil price scenario could be characterized by:

- Continued high Organization of Petroleum Exporting Countries (OPEC) crude oil production caused from revenue needs and lack of agreement among key countries.
- Moderate economic growth rate reflecting poorer performance than historical experience.
- Minimal response of oil demand and supply elements to lower crude oil prices.

In contrast, the high oil price scenario could be characterized by:

- A stronger economic growth rate.
- A greater response of supply and demand for oil to lower crude oil prices.
- A return to historic OPEC behavior patterns.

The development of projections of crude oil prices considered a wide variety of factors. For this study the emphasis was placed on the following issues:

- Assumptions regarding economic growth.
- Impact of world crude oil price on oil and gas production outside OPEC especially U.S., the North Sea and Canada.
- Degree of fuel switching in U.S. industrial and electric utility sectors.
- Degree of energy demand response to lower fuel prices.
- Potential utilization of gas and coal in less developed countries.
- Efficiency gains in the transportation sector.
- Outlook for nuclear power.

Table 1. Crude Oil Price Projections^a (1985 \$/bbl^b)

Year	Low	Middle ^c	High
1985 (actual)	26.76	26.76	26.76
1988	13.34	17.25	21.16
1990	14.47	19.17	23.87
1995	20.08	23.55	27.02
2000	24.61	27.61	30.61
2010	33.37	38.73	44.08
2020	40.68	49.29	59.24
2030	49.59	62.89	79.61
2040	60.45	80.42	106.99

^a Average U.S. refiner acquisition cost of crude oil. Energy and Environmental Analysis, Inc. Summer 1986.

^b 1 bbl = 159L

^c Halfway between the low and high oil price scenarios; not an EPA, NAPAP, or contractor best guess.

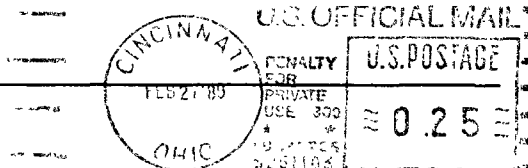
Tim Hogan is with Energy and Environmental Analysis, Inc., Arlington, VA 22209.
Larry G. Jones is the EPA Project Officer (see below).
The complete report, entitled, "Projections of Regional Fuel Oil and Natural Gas Prices," (Order No. PB 89-127 476/AS; Cost: \$15.95, subject to change) will be available only from:
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650
The EPA Project Officer can be contacted at:
Air and Energy Engineering Research Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

United States
Environmental Protection
Agency

Center for Environmental Research
Information
Cincinnati OH 45268

Official Business
Penalty for Private Use \$300

EPA/600/S8-88/104



0000329 PS
U S ENVIR PROTECTION AGENCY
REGION 5 LIBRARY
230 S DEARBORN STREET
CHICAGO IL 60604