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THE WHITE HOUSE

WASHINGTON

January 2, 1976

MEMORANDUM FOR: MAX FRIEDERSDORF
VERN LOEN
CHARLIE LEPPERT

FROM: TOM LOEFFLER *TL.*

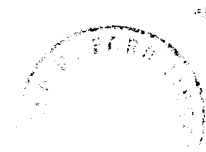
SUBJECT: Natural Gas Legislation

Attached is a whip check prepared by the outside and indicating Members' support or opposition to the Krueger natural gas proposal. Also attached is legislative background material on the Dingell, Brown, Krueger and the Senate passed Pearson-Bentsen (S. 2310) proposals.

Charlie Curtis indicates that the Subcommittee on Energy and Power may hold investigative hearings prior to the 19th of January. Charlie also stated that the Subcommittee on Energy and Power currently plans to hold legislative hearings during the week of January 19th to consider long-term remedies for natural gas shortages.

The Speaker has to date not announced a definite time for House floor consideration of the Dingell short-term legislation, HR-9464. Rules Committee consideration granted a rule for HR-9464 making in order the Krueger substitute (similar to the Pearson-Bentsen provision passed by the Senate), and if the Krueger substitute fails, the rule provides for consideration of the Brown substitute (a 7-year decontrol plan).

Attachment



FEDERAL ENERGY ADMINISTRATION

Five

Date: January 7, 1976

Reply to: Paul Cyr, Director for Congressional Affairs
Attn of:

Subject: Natural Gas

To: Distribution List A

The Energy and Power Subcommittee of the House Interstate and Foreign Commerce Committee conducted a hearing prior to the reconvening of the Congress for the new year. This meeting was called in order to initiate Congressional action towards comprehensive long-term natural gas legislation. The scheduled subject to be addressed was an overview of various models and procedures used to predict natural gas supply, demand and the effects of various legislative actions involving continued control or long-term decontrol.

The witnesses represented two research organizations who have developed economic models, and the Administration. Mr. Eric Zausner, Deputy Administrator of FEA presented an analysis of the primary model used by the Agency, known as the Project Independence Model. From this computer program, the FEA develops case studies of the estimated impact of various actions as they relate to the economy, the ecology, natural resource availability and the consumer. From these studies came the policy alternatives that the Administration will pursue.

Mr. Zausner also submitted a working memorandum dealing with the Natural Gas Supply and the Impact of Prices. This is a direct result of the Project Independence Computer Model. This paper projects impacts through the economy, and relates these estimates to various other accepted economic models used by industry, economists, and Congress. A discussion followed in which the central issue seemed to be whether an increase in the price of natural gas would produce a significant increase in natural gas proven reserves.

Mr. Zausner emphasized that the Project Independence Model shows that in the future, significant increases in drilling and thus discovery of new reserves would result from an increase in investment due to higher prices for new gas. Higher prices would also curtail consumption, thus reordering the use of the available supplies.

Dr. Ed Cazelett explained the computer model which he helped to develop for the Stanford Research Institute. Using graphs and slides, he explained various cases which were developed from this model. He presented pros and cons of decontrol, and suggested that a good analysis is needed which studies the economic impact of decontrol. His final conclusion was that deregulation would be in the national interest.

Dr. Dennis Meadows from the Thayer School of Engineering, Dartmouth College, furnished the Committee with an explanation of research he has done on the impacts of decontrol. He stated that by 1985, deregulation of the price of new gas is inevitable. Each witness had differing views of the immediate impact of decontrol, but it is interesting to note that all agreed that new natural gas should be decontrolled over the long-term in order to achieve the best possible mix of energy sources in the future. This is particularly significant because of the general feeling of the majority members of the Commerce Committee that current controls should be expanded and extended indefinitely. Witnesses who are friendly to the Committee, agree that decontrol is essential.

Subcommittee staff has announced that legislative hearings on Natural Gas will begin during the week of January 12. It is also significant that even though Congress is in adjournment, the following Members were present:

Mr. Dingell, Michigan
Mr. Sharp, Indiana
Mr. Ottinger, New York
Mr. Krueger, Texas
Mr. Moffett, Connecticut

For additional information, contact Larry Gallo, 961-7281.

FEDERAL ENERGY ADMINISTRATION

Date: January 14, 1976

Reply to
Attn of: Paul Cyr, Director for Congressional Affairs

Subject: Natural Gas

To: Distribution List A

The Energy and Power Subcommittee of the House Commerce Committee began two days of oversight hearings into the failure of the Federal Power Commission to effectively regulate the natural gas industry. These and other hearings will be used to educate the Subcommittee, and prepare the framework for legislative hearings into the deregulation of natural gas.

Congressman John Dingell, Chairman of the Subcommittee outlined in his opening statement the areas of investigation, and the alleged charges. He hoped to prove irregular activities on the part of FPC officials, continued refusal of the FPC to enforce gas production contracts violated by the major producers, and mishandling of the Transco investigation. To achieve this end, the Subcommittee called eight senior and mid-level FPC officials to testify. Each was sworn under oath, and presented with a copy of the Committee rules for reference. Then in over-dramatic, courtroom style examining, Subcommittee Members and counsel questioned the witnesses. Mr. Lundy Wright, Mr. Blair Stover, and Mr. Louis Engel represented the Pipeline and Producer Rates division. These men prepared a report on 1975 rate structures which, the Subcommittee attempted to prove, was undermined and discredited by higher FPC officials, and finally recalled from circulation. Mr. Frank C. Allen, Chief of the Bureau of Natural Gas later testified that this report did not take into account tax legislation passed by Congress after the initial work was done, and therefore could not truly represent to the FPC Commissioners the only arguments for revision of rate structures. Mr. Allen then explained his role in the preparation of a new report which advised higher area rates, but took into account substantial differences in expected income for the gas industry due to the removal by Congress of the depletion allowance. Mr. Allen was made to defend this undertaking, receiving harsh criticism and hostile questioning from the Subcommittee Chairman and his counsel.

Mr. Drexel Journey, General Counsel, and Mr. George Lewnes, Assistant General Counsel at FPC were then called to justify the Commissioner's actions in regard to the Gulf and Texas-Eastern

case. The Subcommittee believes that the FPC was intentionally delaying court action requiring Gulf to fulfill its contractual supply agreements for gas to Texas-Eastern Transmission Co. Mr. Journey explained the Commissioner's actions and argued that FPC was complying with its legal mandates.

As in many oversight and investigative hearings, the Subcommittee seemed very hostile towards the witnesses, and accomplished little. Oversight will continue January 15, and legislative hearings will begin the week of January 19.

Members present:

Mr. Dingell
Mr. Krueger
Mr. Brodhead

For additional information, contact Larry Gallo, 961-7281.



ENERGY AND ENERGY RELATED BILLS INTRODUCED IN THE HOUSE OF REPRESENTATIVES
ON DECEMBER 19, 1975.

- H.R. 11292 - (Devine & Skubitz 12/19/75) - A bill to amend the Regional Rail Reorganization Act of 1973; to the Committee on Interstate and Foreign Commerce.
- H.R. 11305 - (Minish 12/19/75) - A bill to regulate lobbying and related activities; jointly to the Committees on the Judiciary, and Standards of Official Conduct.
- H.R. 11319 - (Steelman for himself Fascell, Bennett, Drinan, Gibbons, LaFalce, Lent, McHugh, Mottl, Nix, Patterson of Calif., Scheuer and Weaver 12/19/75) - A bill to provide that meetings of Government agencies shall be open to the public, and for other purposes; to the Committee on Government Operations.
- H.R. 11329 - (Forsythe 12/19/75) - A bill to correct inequities in certain franchise practices, to provide franchisors and franchisees with even handed protection from unfair practices, to provide consumers with the benefits which accrue from a competitive and open market economy, and for other purposes; to the Committee on Interstate and Foreign Commerce.
- H.R. 11330 - (Harrington 12/19/75) - A bill to amend the Federal Power Act to provide greater authority in the Federal Power Commission to regulate interlocking officers and directorships between public utilities and financial organizations and suppliers, and for other purposes; to the Committee on Interstate and Foreign Commerce.
- H.R. 11332 - (Heinz for himself and Drinan, and Harkin 12/19/75) - A bill to establish a National Commission on Regulatory Reform; to the Committee on Interstate and Foreign Commerce.
- H.R. 11333 - (Hechler of W. Va. for himself, Bell, Blouin, Downing of Va., Flowers, Hayes of Indiana, Krueger, Lloyd of Tenn., Pressler, Thornton and Wirth 12/19/75). A bill to authorize a program of energy research, development, and demonstration to assist in the exploration and development of oil and gas on the Outer Continental Shelf, and for other purposes; jointly, to the Committees on Science and Technology, and Interior and Insular Affairs.
- H. Res. 951 - (Long of Md. 12/19/75) - A resolution creating the Select Committee on Nuclear Proliferation and Nuclear Export Policy; to the Committee on Rules.

ENERGY AND ENERGY RELATED BILLS INTRODUCED IN THE SENATE ON DECEMBER 19, 1975

- S. 2836 - (Metcalf 12/19/75) - A bill to amend the Federal Power Act to provide greater authority in the Federal Power Commission to regulate interlocking officers and directorships between public utilities and financial organizations and suppliers, and for other purposes. Referred to the Committee on Commerce.
- S. 2838 - (Hugh Scott 12/19/75) - A bill to reduce the risks to public health and safety from theft or diversion of special nuclear materials and from sabotage of nuclear facilities. Referred to the Joint Committee on Atomic Energy.

ENERGY AND ENERGY RELATED BILLS INTRODUCED IN THE SENATE ON DECEMBER 18, 1975

- S. 2817 - (Stevens 12/18/75) - A bill to authorize the Secretary of Commerce to assist in the construction of certain facilities. Referred to the Committee on Commerce and the Committee on Banking, Housing and Urban Affairs, jointly, by unanimous consent. (Small Community Hydroelectric Generating Facility Assistance Act)

ENERGY AND ENERGY RELATED BILLS INTRODUCED IN THE HOUSE ON DECEMBER 18, 1975

- H.R. 11232 - (Benitez 12/18/75) - A bill to authorize the payment of oil import license fees collected for imports into Puerto Rico; to the Committee on Appropriations.
- H.R. 11236 - (Carr for himself, Abzug, Blanchard, Burke of California, Conyers, Downey of N. Y., Edgar, Harkin, Harrington, Hawkins, Hechler of W. Va., Mottl, Ottinger, Studds, Waxman, and Wirth, 12/18/75) A bill to amend the Internal Revenue Code of 1954 to deny the business deduction for amounts paid or incurred for lobbying before Congress or other legislative bodies; to the Committee on Ways and Means.
- H.R. 11265 - (Krueger for himself, Anderson of Ill., Abdnor, Burleson of Texas, Casey, Chappell, Dickinson, Duncan of Tenn., Forsythe, Guyer, Hightower, Hyde, Jones of Okla., Ketchum, McClory, McCollister, Martin, Mollohan, Moorhead of Calif., Pettis, Pickle, Roberts, Robinson, Schneebeli, and J. William Stanton 12/18/75) - A bill to provide authority to institute emergency measures to minimize the adverse effects of natural gas shortages, to provide authority to allocate propane, to regulate commerce to assure increased supplies of natural gas at reasonable prices for consumers, and for other purposes; to the Committee on Interstate and Foreign Commerce.
- H.R. 11273 - (Ruppe for himself and Bergland 12/18/75) - To authorize the construction and operation of a natural gas pipeline from the North Slope of Alaska across Canada to domestic markets, and for other purposes; jointly to the Committees on Interstate and Foreign Commerce, and Interior and Insular Affairs, and Public Works and Transportation.
- H.R. 11280 - (Mikva for himself, Anderson of Ill., Baucus, Cornell, Morgan, Murphy of Ill., Rees, Riegle, St. Germain, Symington, Udall, Hall, Nix, Miller of Calif., Sarbanes, McKay and Evans of Colo. 12/18/75) - A bill to correct inequities in certain franchise practices to provide franchisors and franchisees with even-handed protection from unfair practices, to provide consumers with the benefits which accrue from a competitive and open-market economy, and for other purposes; to the Committee on Interstate and Foreign Commerce.

Résumé of Congressional Activity

FIRST SESSION OF NINETY-FOURTH CONGRESS

The first table gives a comprehensive résumé of all legislative business transacted by the Senate and House. The second table accounts for all nominations submitted to the Senate by the President for Senate confirmation.

DATA ON LEGISLATIVE ACTIVITY

January 14 through December 19, 1975

	Senate	House	Total
Days in session.....	178	173	..
Time in session.....	1, 177 hrs., 11'	941 hrs., 53'	..
Congressional Record:			
Pages of proceedings....
Extension of Remarks....
Public bills enacted into law....	55	102	157
Private bills enacted into law....	3	17	20
Bills in conference.....	4	9	13
Bills through conference....	13	46	59
Measures passed, total.....	682	754	1, 436
Senate bills.....	215	75	..
House bills.....	170	317	..
Senate joint resolutions....	35	13	..
House joint resolutions....	14	19	..
Senate concurrent resolutions	30	17	..
House concurrent resolutions	26	28	..
Simple resolutions.....	192	285	..
Measures reported, total....	*640	*682	1, 322
Senate bills.....	253	31	..
House bills.....	127	367	..
Senate joint resolutions....	26	2	..
House joint resolutions....	8	19	..
Senate concurrent resolutions	19	7	..
House concurrent resolutions	11	24	..
Simple resolutions.....	143	232	..
Special reports.....	28	18	..
Conference reports.....	25	69	..
Measures pending on calendar	32	42	..
Measures introduced, total....	3, 424	13, 591	17, 015
Bills.....	2, 840	11, 351	..
Joint resolutions.....	157	765	..
Concurrent resolutions.....	84	523	..
Simple resolutions.....	343	952	..
Quorum calls.....	92	216	..
Yea-and-nay votes.....	611	362	..
Recorded votes.....	..	250	..
Bills vetoed.....	2	14	16
Vetoës overridden.....	1	2	3

*These figures include all measures reported, even if there was no accompanying report. A total of 587 reports have been filed in the Senate, a total of 769 have been filed in the House.

DISPOSITION OF EXECUTIVE NOMINATIONS

January 14 through December 19, 1975

Army nominations, totaling, 15,738, disposed of as follows:

Confirmed	15, 737
Unconfirmed	1

Navy nominations, totaling 26,096, disposed of as follows:

Confirmed	23, 738
Unconfirmed	2, 358

Air Force nominations, totaling 23, 691, disposed of as follows:

Confirmed	22, 707
Unconfirmed	984

Marine Corps nominations, totaling 6,073, disposed of as follows:

Confirmed	6, 073
Unconfirmed	0

Civilian nominations, totaling 3,441, disposed of as follows:

Confirmed	3, 021
Unconfirmed	**412
Withdrawn	6
Returned	2

Summary

Total nominations received.....	67, 671
Total confirmed.....	59, 132
Total unconfirmed.....	8, 531
Total withdrawn.....	6
Total returned.....	2

**By the order of the Senate of Dec. 17, 1975, 234 of these unconfirmed nominations were returned to the President after sine die adjournment and 178 remain pending for the 94th Congress, 2d session.



THE WHITE HOUSE

WASHINGTON

January 16, 1976

MEMORANDUM FOR: MAX FRIEDERSDORF
BOB WOLTHUIS
VERN LOEN
CHARLIE LEPPERT
BILL KENDALL

FROM: TOM LOEFFLER *G.C.*

SUBJECT: Natural Gas Legislation

The House Interstate and Foreign Commerce Subcommittee on Energy and Power has scheduled legislative hearings to consider resolutions to long term natural gas shortages. These hearings are scheduled to occur on January 20, 21, 22, 26, 27, 28 and 29.

Prior to adjournment sine die of the First Session, the Speaker assured Chairman Dingell that the Chairman would have a "reasonable period of time" at the beginning of the Second Session to hold these hearings before the full House would take up the matter. However, the Speaker has indicated his strong desire that the House consider natural gas legislation early in the Second Session.

In visiting with the Speaker's office, Joel Jankowski indicates that it is the Speaker's intent to schedule floor consideration to begin during the January 28 - February 4 time period.

NINETY-FOURTH CONGRESS

JOHN D. DINGELL, MICH., CHAIRMAN

TIMOTHY E. WIRTH, COLO.
PHILIP M. SHARP, IND.
WILLIAM M. PRODHOM, MICH.
JOHN M. MURPHY, N.Y.
BOB FENHARDT, TEX.
RICHARD L. OTTINGER, N.Y.
ROBERT J. KRUGER, TEX.
ANTHONY TOBY MOFFETT, CONN.
ANDREW MACQUIRE, N.J.
HARLEY O. STAGGERS, W. VA.
(EX OFFICIO)

CLARENCE J. BROWN, OHIO
CARLOS J. MOORHEAD, CALIF.
JAMES T. BROYHILL, N.C.
M. JOHN HEINE III, PA.
SAMUEL L. DEVINE, OHIO
(EX OFFICIO)

ROOM 3204
HOUSE OFFICE BUILDING ANNEX NO. 2
PHONE (202) 223-1030

CONGRESS OF THE UNITED STATES
HOUSE OF REPRESENTATIVES
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE
SUBCOMMITTEE ON ENERGY AND POWER
WASHINGTON, D.C. 20515

January 9, 1975

S U B C O M M I T T E E N O T I C E

NATURAL GAS HEARINGS

Confirming the earlier notice of anticipated hearings on long-term natural gas issues, the Subcommittee has scheduled the following hearings:

Background and Oversight Hearings

January 14, 10:00 A. M. , 2123 Rayburn
(FPC regulation)

January 15, 10:00 A. M. , 2123 Rayburn
(FPC regulation)

January 15, 2:00 P. M., 2123 Rayburn
(GAO report on the effects of deregulation-tentative)

Legislative Hearings

January 20, 21, 22; 2:00 P. M., 2123 Rayburn

January 26, 27, 28, 29; 2:00 P. M., 2123 Rayburn

Members will be notified of witnesses and issues to be discussed at these hearings as this information becomes available.

By direction of the Chairman.

Jack H. ...





News from the

Subcommittee on Energy and Power

Committee on Interstate and Foreign Commerce
Washington, D.C. 20515

JOHN D. DINGELL, CHAIRMAN
D-MICHIGAN, 16TH DISTRICT

202-225-10

FOR RELEASE:

January 9, 1976

DINGELL ANNOUNCES OVERSIGHT HEARINGS ON NATURAL GAS

Congressman John D. Dingell, (D-Mich.), Chairman, Subcommittee on Energy and Power, today announced two days of Federal Power Commission oversight hearings, to be held on Wednesday, January 14, and Thursday, January 15, in 2123 Rayburn House Office Building, concerning the natural gas situation.

Congressman Dingell said, "In this continuing series of oversight hearings the Subcommittee will inquire into a number of activities of the Federal Power Commission concerning the current alleged natural gas shortage. Some of the issues to be considered by the Subcommittee include:

- irregular activities on the part of certain FPC officials;
- continued refusal of the FPC to enforce gas production contracts violated by the major producers;
- FPC bungling of the Transco investigation; and
- the possibility that significant quantities of offshore gas are being diverted, both legally and illegally, from the interstate pipeline system."

Dingell said, "Earlier hearings strongly indicate that one of the major reasons that regulation has not been effective and that we may be facing gas shortage is that the top officials of the Commission itself have been strongly in favor of deregulation. This central issue will be explored further at next week's hearings.

"Certainly, the Subcommittee must keep in mind the fact that effective regulation may require restructuring of the Natural Gas Act. To some extent, at least this issue is quite different from the question of a rational natural gas pricing policy. The regulatory latitude of the existing Natural Gas Act may well be responsible for the natural gas pricing and supply issues when you have a guiding Commission that does not believe in the regulatory process itself.

"The FPC's record in this regard has been disappointing."

with this information will the Subcommittee be prepared to address itself to the question of whether the Act needs to be amended, and if so, in what way."

Witnesses will include:

Louis J. Engel, Supervising Regulatory Gas Utility Specialist

Blair Stover, Head, Producer Rate Section

Lundy Wright, Chief, Pipeline and Producer Rates Division

Frank C. Allen, Chief, Bureau of Natural Gas

Russell Thorell, Deputy Chief, Bureau of Natural Gas

Hayden Bryan, Industry Economist, Bureau of Natural Gas

George Lewnes, Assistant General Counsel

Robert Aber, Trial Attorney, Office of the General Counsel

Robert Szekely, Head, Market Section, Bureau of Natural Gas

Leon Slavin, Chief, Analysis and Compliance Division, Bureau of Natural Gas

Joseph Solters, Case Manager, Bureau of Natural Gas

Drexel Journey, General Counsel



ALABAMA

Nichols 2
Bevill 3
Jones 4
Flowers 1

*Edwards 1
*Dickinson 1
*Buchanan 1

ALASKA

* Young 1

ARIZONA

Udall 5

*Rhodes 1
*Steiger 1
*Conlan 1

ARKANSAS

Alexander 1
Mills 2
Thorton 1

*Hammerschmidt 1

CALIFORNIA

Johnson 4
Moss 5
Leggett 5
Burton, J 5
Burton, P 5
Miller 5
Dellums 5
Stark 5
Edwards 4
Ryan 3
Mineta 5
McFall 5
Sisk 1
Krebs 3
Corman 4
Rees 5
Waxman 5
Roybal 5
Burke 5
Hawkins 4
Danielson 2
Wilson 1
Anderson 2
Hannaford 1
Lloyd 5
Brown 1
Patterson 5
KAN DEELIN - 5

CALIFORNIA (Contd)

*Clauser 1
*McCloskey 1
*Talcott 1
*Ketchum 1
*Lagomarsino 1
*Goldwater 1
*Moorhead 1
*Rousselot 1
*Bell 1
*Clawson 1
*Pettis 1
*Wiggins 1
*Hinshaw 1
*Wilson 1
*Burgener 1

COLORADO

Schroeder 2
Wirth 5
Evans 4

*Johnson 1
*Armstrong 1

CONNECTICUT

Cotter +2
Dodd 3
Giaimo 3
Moffett 5

*McKinney 1
*Sarasin 1

DELAWARE

*Du Pont +1

FLORIDA

Sikes 1
Fuqua 1
Bennett +1
Chappell 1
Gibbons 1
Haley 1
Rogers 4
Lehman 1
Pepper 1
Fascell +2

*Kelly 1
*Young 1

FLORIDA (Co itd)

*Bafalis 1
*Burke 1

GEORGIA

Ginn 1
Mathis 1
Brinkley 1
Levitas 1
Young 5
Flynt 1
McDonald 1
Stuckey 1
Landrum 1
Stephens 1

HAWAII

Matsunaga 5
Mink 5

IDAHO

*Symms 1
*Hansen 1

ILLINOIS

Metcalf 5
Murphy 4
Russo 4
Fary 5
Collins 5
Rostenkowski 4
Yates 5
Mikva 5
Annunzio 4
Hall 4
Shipley 1
Price 3
Simon 3

*Derwinski 1
*Hyde 1
*Crane 1
*McClory 1
*Erlenborn 1
*Anderson 1
*O'Brien 1
*Michel 1
*Railsback 1
*Findley 1
*Madigan 1



ALABAMANichols
RevillARKANSAS

Mills

CALIFORNIARyan
Sisk
Krebs
Danielson
Anderson
HannafordCOLORADOSchroeder
EvansCONNECTICUTCotter
Dodd ✓
Giaimo ✓FLORIDA

Fascell

ILLINOISPrice
SimonINDIANAHayes
JacobsIOWA

Grassley

KENTUCKYNatcher ✓
Mazzoli
PerkinsMASSACHUSETTSTsongas
O'Neill
ConteMICHIGANRiegle
RuppeMISSOURILitton
Ichord
HungateMONTANA

Baucus

NEVADA

Santini

NEW JERSEYRoe
FenwickNEW YORKDelaney
Biaggi
Zeferetti
McHugh
Stratton
Lent
Wydler
Fish
Gillman
Mitchel
WalshNORTH CAROLINAJones
Fountain
Henderson
Andrews
TaylorNORTH DAKOTA

Andrews

OHIOHays
Mosher
PegulaOREGONOREGON (CONT.)

Duncan

PENNSYLVANIAGreen
Yatron
Flood
Murtha
Gaydos
Dent
Morgan
Schulze
Elester
McDade
CoughlinSOUTH CAROLINADavis
JenretteSOUTH DAKOTAPressler
AbdnorTENNESSEE

Jones

TEXAS

Jordan ✓

VIRGINIADowning
ButlerWASHINGTONBonker
Foley

INDIANA

Madden 5
 Fithian 5
 Brademas 5
 Roush 3 4

Evans 5
 Hayes 1
 Hamilton 1
 Sharp 5 4
 Jacobs 1
 *Hillis 1
 *Myers 1

IOWA

Mezvinsky 5
 Blouin 5
 Smith 3
 Harkin 3
 Bedell 3
 *Grassley 1 2

KANSAS

Keys 5
 *Sebelius 1
 *Winn 1
 *Shriver 1
 *Skubitz 1

KENTUCKY

Hubbard 1 2
 Natcher 1 2
 Mazzoli 1 2
 Breckinridge 1 4
 Perkins 1 2
 *Snyder 1
 *Carter 1

LOUISIANA

Hebert 1
 Boggs 1
 Waggoner 1
 Passman 1
 Breaux 1
 Long 1
 *Treen 1
 *Moore 1

MAINE

*Emery 4
 *Cohen 4

MARYLAND

Long 1 2
 Sarbanes 5
 Spellman 4
 Byron 1
 Mitchell 4
 *Bauman 1
 *Holt 1
 *Gude 5

MASSACHUSETTS

Boland 3
 Early 3
 Drinan 5
 Tsongas 2
 Harrington 5
 Macdonald 5
 O'Neill 3
 Moakley 4
 Burke 4
 Studds 5
 *Conte 1
 *Heckler 1 2

MICHIGAN

Conyers 5
 Vander Veen 5
 Carr 5
 Riegle 1 3
 Traxler 5
 O'Hara 5
 Diggs 5
 Nedzi 1 4
 Ford 5
 Dingell 5
 Brodhead 5
 Blanchard 5
 *Esch 1
 *Brown 1
 *Hutchinson 1
 *Vander Jagt 1
 *Cederberg 1
 *Ruppe 1 2
 *Broomfield 1

MINNESOTA

Karth 5
 Fraser 5
 Nolan 5
 Bergland 1
 Oberstar 5
 *Quie 1
 *Hagedorn 1
 *Frenzel 1

MISSISSIPPI

Whitten 1 2
 Bowen 1
 Montgomery 1
 *Cochran 1
 *Lott 1

MISSOURI

Clay 4
 Symington 5
 Sullivan 3
 Randall NV
 Bolling 3
 Litton 1 1
 Ichord 1
 Hungate 2
 Burlison 4
 *Taylor 1

MONTANA

Baucus 2
 Melcher 1 1

NEBRASKA

*Thone 1
 *McCollister 1
 *Smith 1

NEVADA

Santini 2

NEW HAMPSHIRE

D'Amours 5
 *Cleveland 1



1/21/76

NEW JERSEY

NEW YORK (Contd)

OKLAHOMA

Florio	5
Hughes	5
Howard	5
Thompson	5
Maguire	5
Roe	2
Helstoski	4
Rodino	4
Minish	4
Meyner	4
Daniels	4
Patten	4
*Fenwick	1 2
*Forsythe	1
*Rinaldo	4

*Lent	1 2
*Wydlar	2
*Peyser	3
*Fish	1 2
*Gillman	3
*McEwen	1
*Mitchel	1 2
*Walsh	4
*Horton	1
*Conable	1
*Kemp	1
*Hastings	(resigning)

Jones	1
Risenhoover	1
Albert	1
Steed	1
English	1
*Jarmar	1

OREGON

AuCoin	3
Ullman	2
Duncan	3
Weaver	5

NEW MEXICO

NORTH CAROLINA

PENNSYLVANIA

Runnels	1
*Lujan	1

Jones	2
Fountain	2
Henderson	1 2
Andrews	1 3
Neal	2
Preyer	1
Rose	1
Hefner	2
Taylor	1 2

Barrett	6
Nix	5
Green	4
Eilberg	5
Yatron	1 2
Edgar	3
Flood	1 3
Murtha	1 2
Moorhead	4
Rooney	1
Gaydos	NV
Dent	1
Morgan	1
Vigorito	3

NEW YORK

NORTH DAKOTA

Pike	5
Downey	5
Ambro	5
Wolff	5
Addabbo	3
Rosenthal	5
Delaney	2
Biaggi	2

*Martin	1
*Broyhill	1

*Schulze	1 2
*Blester	1 3
*Shuster	1
*McDade	1 3
*Coughlin	1 3
*Eshleman	1
*Schneebeli	1
*Heinz	1
*Goodling, W	1
*Johnson	1
*Myers	1

OHIO

RHODE ISLAND

Scheuer	5
Chisholm	4
Solarz	4
Richmond	5
Zeferetti	4
Holtzman	5
Murphy	1
Koch	5
Rangel	5
Abzug	5
Badillo	5
Bingham	5
Ottinger	5
McHugh	2
Stratton	3
Pattison	4
Hanley	3
laFalce	2
Nowak	4

*Ashbrook	1
Ashley	4
Seiberling	4
Hays	2
Carney	5
Stanton	3
Stokes	5
Vanik	5
Mottl	3
*Gradison	1
*Clancy	1
*Whalen	1 4
*Guyer	1
*Latta	1
*Harsha	1 4
*Brown	1
*Kindness	1
*Miller	1
*Stanton	1
*Devine	1
*Mosher	1

St. Germain	5
Beard	5



SOUTH CAROLINA

Davis	1
Derrick	1
Mann	1
Holland	1
Jenrette	2
*Spence	1

SOUTH DAKOTA

*Pressler	2
*Abdnor	1

TENNESSEE

Lloyd	± 2
Evins	4
Allen	6 4
Jones	2
Ford	4
*Quillen	1
*Duncan	1
*Beard	1

TEXAS

Patman	1
Wilson	1
Roberts	1
Teague	1
Eckhardt	5
Brooks	1
Pickle	1
Poage	1
Wright	1
Hightower	1
Young	1
De La Garza	1
White	1
Burleson	1
Jordan	± 2
Mahon	1
Gonzalez	1
Krueger	1
Casey	1
Kazen	1
Milford	1
*Collins	1
*Steelman	1
*Archer	1

UTAH

McKay	1
Howe	1

VERMONT

*Jeffords	5
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VIRGINIA

Downing	± 2
Satterfield	1
Daniel	1
Harris	5
Fisher	4
*Whitehurst	1
*Daniel	1
*Butler	± 2
*Robinson	1
*Wampler	1

WASHINGTON

Meeds	4
Bonker	3
McCormack	1
Foley	4
Hicks	5
Adams	5
*Pritchard	1

WEST VIRGINIA

Mollohan	1
Staggers	5
Slack	1
Hechler	5

WISCONSIN

Aspin	5
Kastenmeier	5
Baldus	5
Zablocki	4
Reuss	5
Obey	5
Cornell	4
*Steiger	1
*Kasten	1

WYOMING

Roncalio	2
----------	---

#1's	212
#2's	26
#3's	40
#4's	54
#5's'	99
#6's	1
Not Voting . . .	2
Resigning. . . .	1
TOTAL	435

THE WHITE HOUSE

WASHINGTON

January 21, 1976

MEMORANDUM FOR: MAX FRIEDERSDORF
VERN LOEN
CHARLIE LEPPERT
BOB WOLTHUIS

FROM: TOM LOEFFLER *T.L.*

SUBJECT: Natural Gas Legislation

For your information, attached is a "Dear Colleague" letter sent by Congressman Bob Eckhardt.

The House Interstate and Foreign Commerce Subcommittee on Energy and Power is currently holding hearings on long term natural gas solutions. These hearings are scheduled through January 29.

The Speaker currently plans to schedule floor consideration of natural gas legislation during the first week in February.

Attach.

Rules Committee
on HR 9464

Dear Colleague:

Some time in the near future, probably the first week in February, the rule for H.R. 9464, the Emergency Natural Gas bill, will come up in the House. I urge you to vote against this rule because it is extremely unusual and unfair. The rule goes against the advice of the Interstate and Foreign Commerce Committee, which reported the bill, provides twice as much time for proponents of deregulation as opponents, and totally ignores the issue of continued regulation.

H.R. 9464 would allow intrastate natural gas to be sold at uncontrolled prices in the interstate market, traditionally a market in which price is regulated by the FPC, in order to alleviate projected gas curtailments. During the fall, the Commerce Committee, warned by FEA and the FPC that massive natural gas shortages were imminent, fashioned this bill to deal with the supposed emergency. While working on the bill, it became apparent no such massive shortages would occur. By December the bill seemed unnecessary. The Rules Committee, going against its own previous decision not to consider bills for rules during late December, insisted the bill be brought up for consideration by that Committee.

In giving the bill a rule, against the advice of the Commerce Committee Chairman and the Subcommittee Chairman, the Rules Committee also made in order the Krueger long-term deregulation proposal, and should Krueger fail, the Brown seven-year deregulation proposal. The Rules Committee refused to allow simultaneous floor consideration of Representative Fraser's bill to extend regulation of natural gas.

This extraordinary procedure of taking a matter out of the hands of the relevant committee which had cooperated with the leadership and the Rules Committee and then granting consideration of only one side of the issue, the pro-deregulation side, circumvents the legislative procedure, setting a very bad precedent for continued action such as this. To avoid this bad precedent, I urge you to vote against adoption of the rule.

Should the rule succeed, perfecting amendments to the Krueger proposal must be made. I have placed in the Congressional Record of January 19 an amendment to tighten the definition of "new natural gas." This amendment provides only natural gas produced by independent producers could be considered in determining how new natural gas is defined. Such an amendment would reduce the amount of natural gas eligible for deregulation, but would preserve incentives for the independent producers who do most of the exploration.

I urge you to reject the rule for H.R. 9464. If the rule is adopted, I ask your support for my independent producer amendment to the Krueger proposal.



Sincerely,

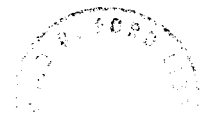
A handwritten signature in dark ink, appearing to read "Bob Eckhardt".

Bob Eckhardt

NATURAL GAS
FACTS AND FIGURES FOR 1974
TECHNICAL REPORT 76-1

January 22, 1976

FEDERAL ENERGY ADMINISTRATION
OFFICE OF THE DEPUTY ASSISTANT ADMINISTRATOR
FOR DATA AND ANALYSIS
OFFICE OF OIL AND GAS ANALYSIS



Natural Gas Facts and
Figures for 1974*

This report shows the sources and disposition of natural gas volumes in the United States during 1974.

A schematic diagram provides a general picture of how gas flows from the supply source to the end-use customer.

Information is provided on average wellhead interstate and intrastate gas prices, city gate prices (wholesale) and end user prices (retail).

A description of the several types of sales not regulated by the Federal Power Commission is also provided.



Table 1
BUREAU OF MINES TERMINOLOGY ASSOCIATED WITH NATURAL
GAS PRODUCTION AND 1974 VOLUMES (MCF)

1.)	Gross withdrawals	:	22,849,793	- Gas withdrawn from oil and gas wells
	Minus			
2.)	Repressuring	:	1,079,890	- Gas injected into the reservoir in order to increase recovery
	Equals			
3.)	Net withdrawals	:	21,769,903	-
	Minus			
4.)	Vented and Flared	:	169,381	- Includes direct losses on producing properties and residue blown into the air.
	Equals			
5.)	Marketed production	:	21,600,522	- Volume delivered to processing plants, sold to pipelines or sold directly to end-use customers by producers.
	Plus			
6.)	Withdrawals from storage	:	1,700,546	- Gas withdrawn from storage reservoirs.
	Plus			
7.)	Imports	:	959,284	-
	Equals			
8.)	Total Supply	:	24,260,352	
	Minus			
) Lease and Plant Fuel	:	1,477,386	- Fuel used on leases or in processing plants
	Minus			
10.)	Extraction losses	:	887,490	- Volume shrinkage resulting from extraction of natural gas liquids
	Minus			
11.)	Transmission losses	:	288,731	- Gas lost or unaccounted for in the transmission process
	Minus			
12.)	Pipeline fuel	:	668,792	- Fuel used by pipeline for compressors, etc.
	Minus			
13.)	Injected into Storage	:	1,784,209	- Gas injected into storage reservoirs
	Minus			
14.)	Exports	:	76,789	-
	Equals			
15.)	Deliveries to consumers	:	19,076,955	

In 1974, 24.3 TCF of gas supply was available, of which 79 percent was delivered for end-use consumption. The remaining 21 percent was used for exports, used for repressuring, extraction of natural gas liquids, fuel, or was reported as lost and unaccounted for during transmission.

DISTRIBUTION OF NATURAL GAS: 1974

In 1974 the 19.08 TCF of natural gas reported as delivered was distributed as follows:

TABLE 2
1974 End-use Distributions of Natural Gas (TCF)

<u>Total</u>	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Electric Utilities</u>	<u>Other</u>
19.08	4.79	2.26	8.31	3.43	0.29

Other: The category other is defined as deliveries to municipalities, public authorities, street lighting, etc.

NATURAL GAS TRANSMISSION SYSTEM

Figures 1 traces the flow of natural gas from the sources of supply to end-use deliveries.

INTERSTATE AND INTRASTATE PRICES

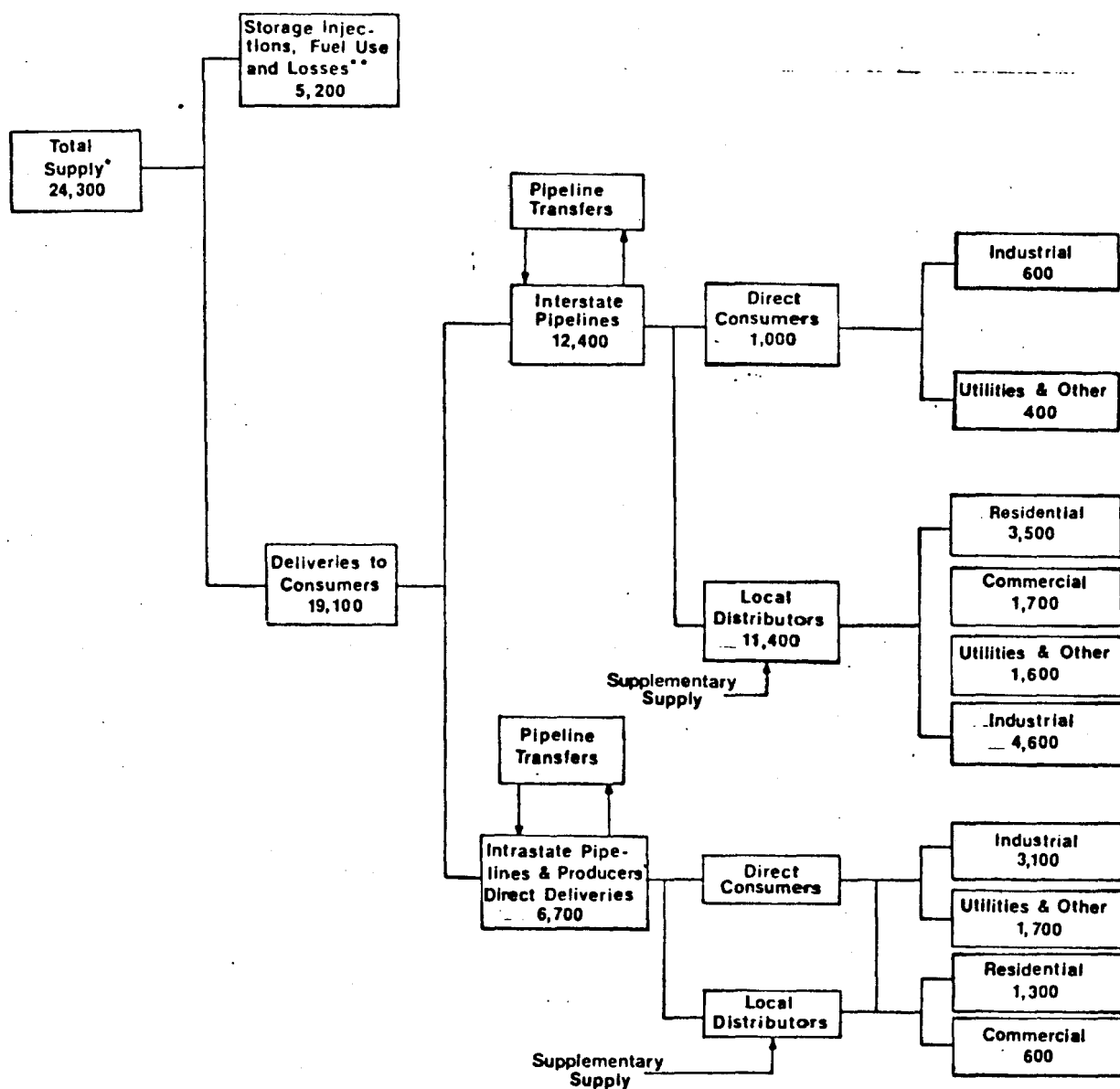
Most of the contracts for the purchase of gas by interstate pipelines from producers are for terms of 15 to 20 years. The price distribution of old interstate contracts as of 1972 (latest year available) are as follows.

TABLE 3
Price Distribution of Old Gas Contracts-Interstate Gas
(1972)

<u>Price ¢/MCF</u>	<u>% of Gas</u>	<u>Price ¢/MCF</u>	<u>% of Gas</u>
Over 31	5.3	17.01-19	17.6
29.01-31	1.2	15.01-17	9.2
27.01-29	4.7	13.01-15	4.7
25.01-27	10.0	11.01-13	2.7
23.01-25	3.7	9.01-11	.03
21.01-23	21.3	below 9	.01
19.01-21	19.3		

Interstate gas volumes are classified as old gas or new gas by the FPC for producer price regulation purposes. In 1974, the ceiling prices for old gas were still on an area basis and ranged from 11¢ per Mcf to 28¢ per Mcf, the base ceiling price for new gas sold for resale to interstate pipelines was 42¢ per Mcf and the average price for all gas purchased by interstate pipelines from domestic producers was 27¢ per Mcf. The average price for intrastate gas, not subject to the FPC's jurisdiction is estimated to be 37¢ per Mcf. These prices along with transportation and distribution mark-ups to end-users are presented in Figure 2.

Overview — U. S. Natural Gas System [Bcf]



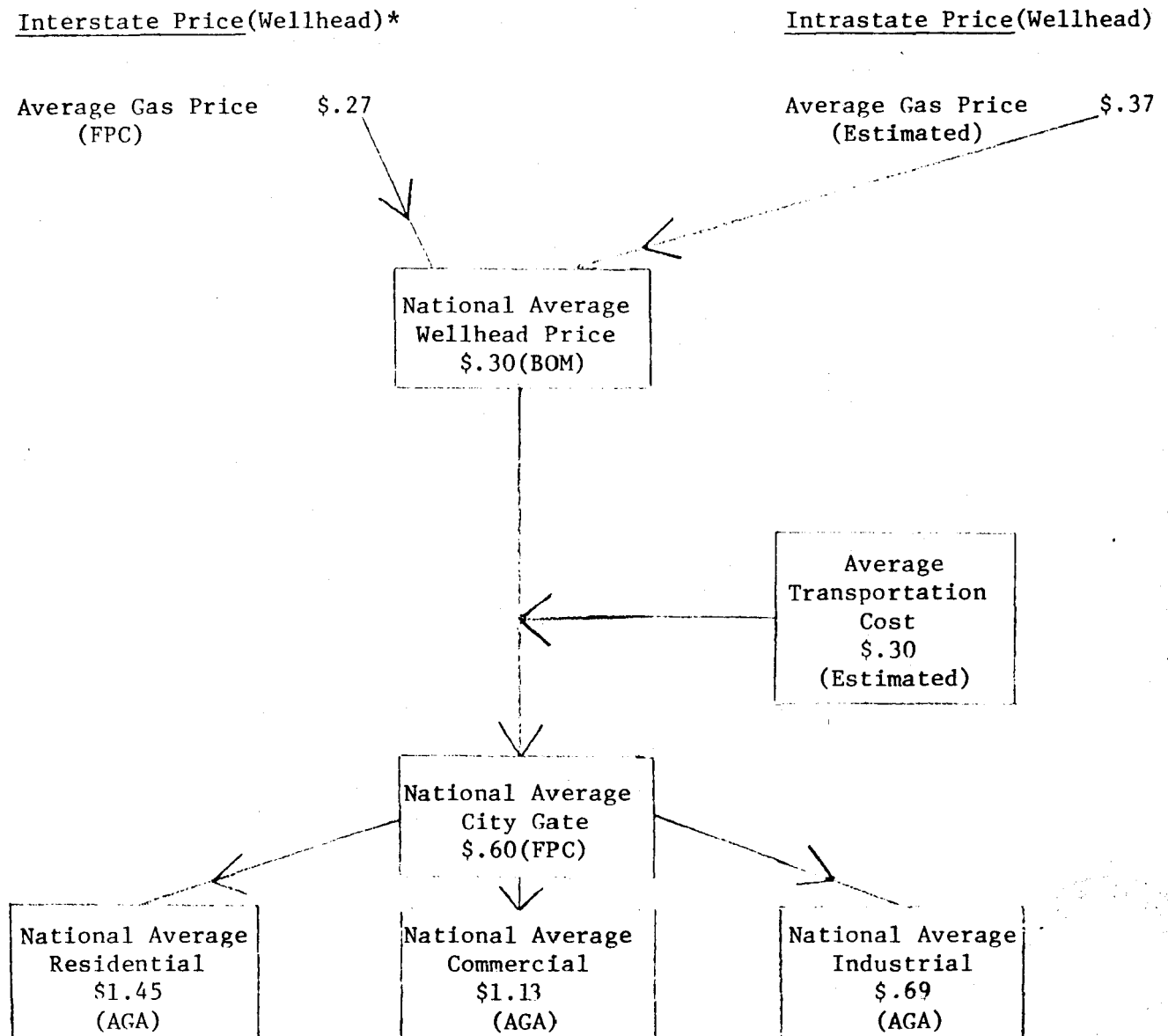
* Supply includes U.S. marketed production, withdrawals from storage, and imports.

** Gas for such purposes as lease and plant fuel, pipeline compressor fuel, extraction loss, and transmission losses.

Source: Based primarily on data from "Natural Gas Production and Consumption: 1974" (Washington, DC: Bureau of Mines, Mineral Industry Surveys, 1975).

Note: Divisions between interstate and intrastate volumes are estimated.

FIGURE II
1974 PRICES OF NATURAL GAS
AT VARIOUS STAGES OF THE PRODUCTION
TRANSPORTATION AND DISTRIBUTION SYSTEM
(\$/MCF)



*Note: In 1974 the national base ceiling price for natural gas regulated by FPC was 42¢/Mcf. Old gas was regulated on an area price ceiling basis with rates ranging from 11¢ (Oklahoma Other Area) to 28¢ (Appalachian area). The FPC reports that the weighted average initial price, inclusive of adjustments, for new intrastate contracts for the period 1-1-74 to 1-1-75 was 92¢ per Mcf.

Description of Types of Sales Not Regulated by FPC

There are several types of sales by producers where it is recognized that the Federal Power Commission has no jurisdiction. Such sales do not require FPC certification nor is the producer's price controlled, either directly or indirectly. These sales are:

1. Direct sales and delivery by a producer to an end-user or distributor for consumption within the state of origin.

2. Sales and delivery directly to an intrastate pipeline, i.e., a pipeline which purchases and sells all of its gas within the state where the gas is produced.

3. Sales to a natural gas processing plant within the state of origin for redelivery to (1) or (2) above.

4. Sales to an interstate pipeline company but with delivery into separate pipeline systems from which all gas is consumed within the state where the gas is produced i.e., an intrastate system operated by an interstate pipeline.

In addition, there are sales by producers to interstate pipelines under certain conditions over which the Federal Power Commission has not in the past asserted jurisdiction, either directly or indirectly. These sales are:

5. Sales to an interstate pipeline where the gas is delivered at a point on a branch line within the state where the gas is produced and all of the gas downstream from the point of delivery is consumed within the state.

6. Sales to an interstate pipeline where the interstate pipeline terminates in the state where the gas is produced and the gas picked up in the state is consumed in the same state i.e., the pipeline downstream of the point where this gas is purchased does not cross the state line.

The regulatory status of sales under these conditions is currently under review by the Commission in several individual pipeline cases. The pipelines resell such gas under the terms of their FPC Tariffs, i.e., at FPC regulated prices. The question before the Commission is whether the full unregulated prices paid under (5) and (6) type purchases should be rolled in with the regulated purchased gas prices in determining the proper purchased gas cost allowance for rate making purposes, e.g., incremental rates. Thus, the Commission may in the future exert indirect control over the field prices for such sales.

The FPC may also exert indirect control over the field price of gas under certain conditions through its certification procedures. This occurs under the following conditions:

7. Direct sales by producers to end-users, distributors or intrastate pipelines within the state where the gas is produced and the gas is transported through an interstate pipeline.

8. Direct sales by producers to end-users outside of the state of origin.

Under these transportation conditions, the FPC may consider the field price of the gas in determining whether or not the transportation of such gas is in the public interest and whether a Certificate of Public Convenience and Necessity should be issued.

The FPC exerts direct control over producer's wellhead or field prices where:

9. The sale is made to an interstate pipeline and delivered into a system from which all or any portion of the gas in the system is transported and sold outside of the state of origin.

10. The sale or delivery of the gas is made to a natural gas processing plant or to another producer for resale or redelivery to an interstate pipeline as in (9) above.

The varying degree of control exerted by the FPC upon producer gas prices is roughly reflected in the statistics collected by the FPC. The Commission does not collect nor publish data pertaining to the intrastate sales by producers that are considered non-jurisdictional (1, 2 and 3 type sales) except in limited and infrequent cases, e.g., reports of intrastate contracts by interstate companies. Intrastate sales to an interstate pipeline, whether definitely intrastate (Type 4) or "questionably" intrastate (Types 5 and 6), are collected and included in the published FPC statistics. The volumes involved are not generally reported separately but instead are included in the total purchased gas and sales figures. Sales of the "indirectly controlled" (Types 7 and 8) appear in the FPC statistics under the category "Gas Transported For Others."

NATURAL GAS DEREGULATION ANALYSIS

TECHNICAL REPORT

FEA 76-3

JANUARY 23, 1976

OFFICE OF POLICY AND ANALYSIS
FEDERAL ENERGY ADMINISTRATION

EXECUTIVE SUMMARY

Deregulation of natural gas yields higher prices and higher prices bring forth higher production. Current legislation has artificially created two separate but interdependent markets for natural gas. Without deregulation, the interstate consumers of natural gas will bear a disproportionate share of the burden of declining production. Under present regulation the absolute quantity of natural gas consumption in the interstate market would decline by 43 percent while the quantity available to intrastate customers would increase by 29 percent.

Projected Natural Gas Production

If natural gas wellhead regulation continues at current real prices, total domestic natural gas production would decline from the 1974 level of 21.6 TCF to less than 18 TCF by 1985. If regulations are combined with a national price ceiling of \$1/MCF, production would reduce to less than 16 TCF. However, if new contracts are deregulated, FEA estimates that 1985 production could rise to 22.3 TCF. Forecasts of domestic production and sales to the interstate market under several legislative alternatives are summarized in Figure 1. These various bills and the associated production estimates imply different costs to the consumers, create different regional imbalances, and can affect the oil import position of the United States. To the extent that gas shortages are translated into oil consumption, oil imports will increase. The difference between deregulation and continued regulation could be as much as 2 million barrels per day.

Cost of Deregulation

Short Term: While the long-run impacts of natural gas deregulation are important, the short-run effects in 1976 include higher costs. For example, FEA estimates the 1976 impact of the Pearson-Bentsen bill to be a total cost of \$5 billion to \$6 billion.

Long-Term: FEA estimates of the long-run impact of gas deregulation on residential fuel bills are computed for several of the proposed legislative actions pending before Congress. Figure 2 shows the 1980 and 1985 Annual Residential Fuel Cost for several of the pending bills.

The Annual Residential Fuel Cost in 1985 is lowest under the Pearson-Bentsen Bill because of the impact of incremental pricing, lowering the first cost to the consumer but increasing the cost to the industrial sector. To the extent that increased industrial costs are passed through, the total costs to all consumers will be comparable to the other bills.



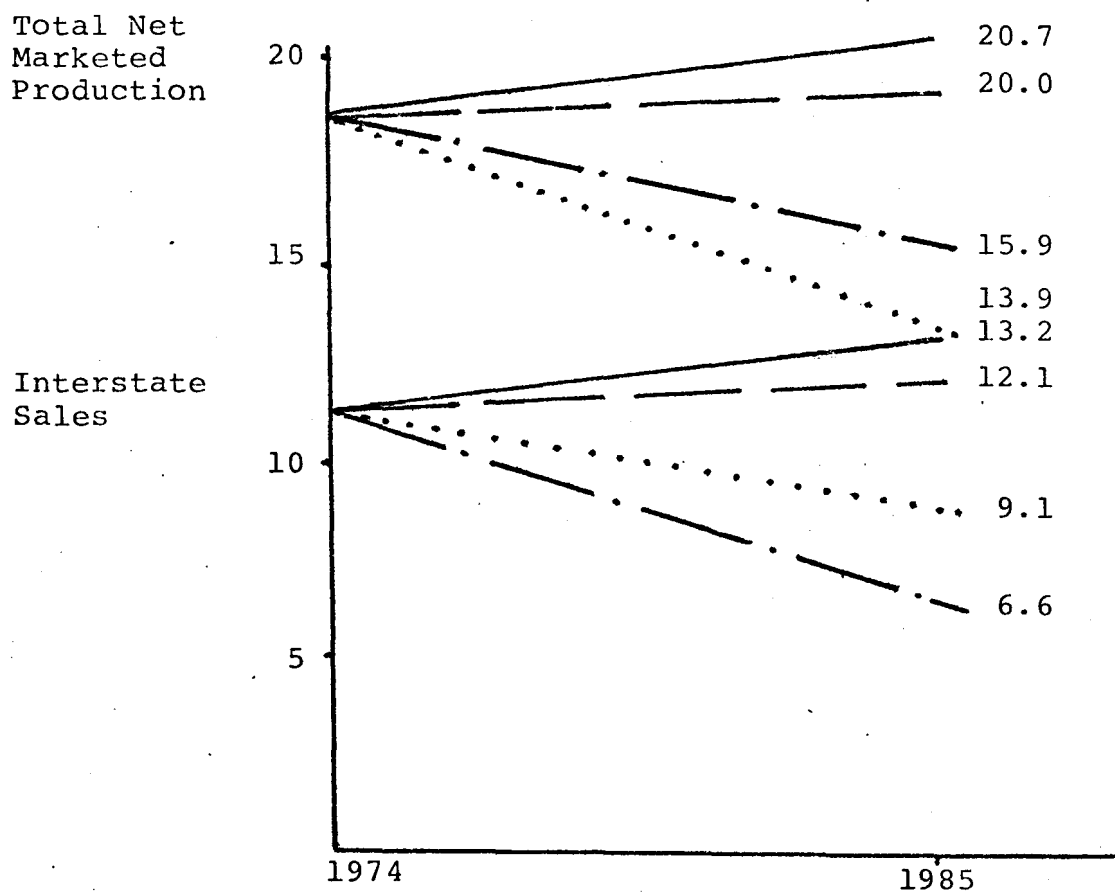
Interstate and Intrastate Sales

The various legislative options provide for markedly different long-run impacts on the interstate market. The current regulations have contributed to a reduction of interstate sales from over 13 TCF to 11.6 TCF in 1974. This reduced supply has caused an increase in the estimates of gas curtailments and the extension of supply interruptions to higher priority users. Continuation of current regulations would reduce interstate sales to less than 7 TCF in 1985 while increasing intrastate sales from 7.2 TCF to 9.3 TCF. The alternative deregulation proposals will maintain or increase sales to the interstate market without reducing the levels in intrastate sales.



FIGURE 1

NET MARKETED NATURAL GAS PRODUCTION UNDER VARIOUS POLICIES*:
TOTAL PRODUCTION AND INTERSTATE (TCF)



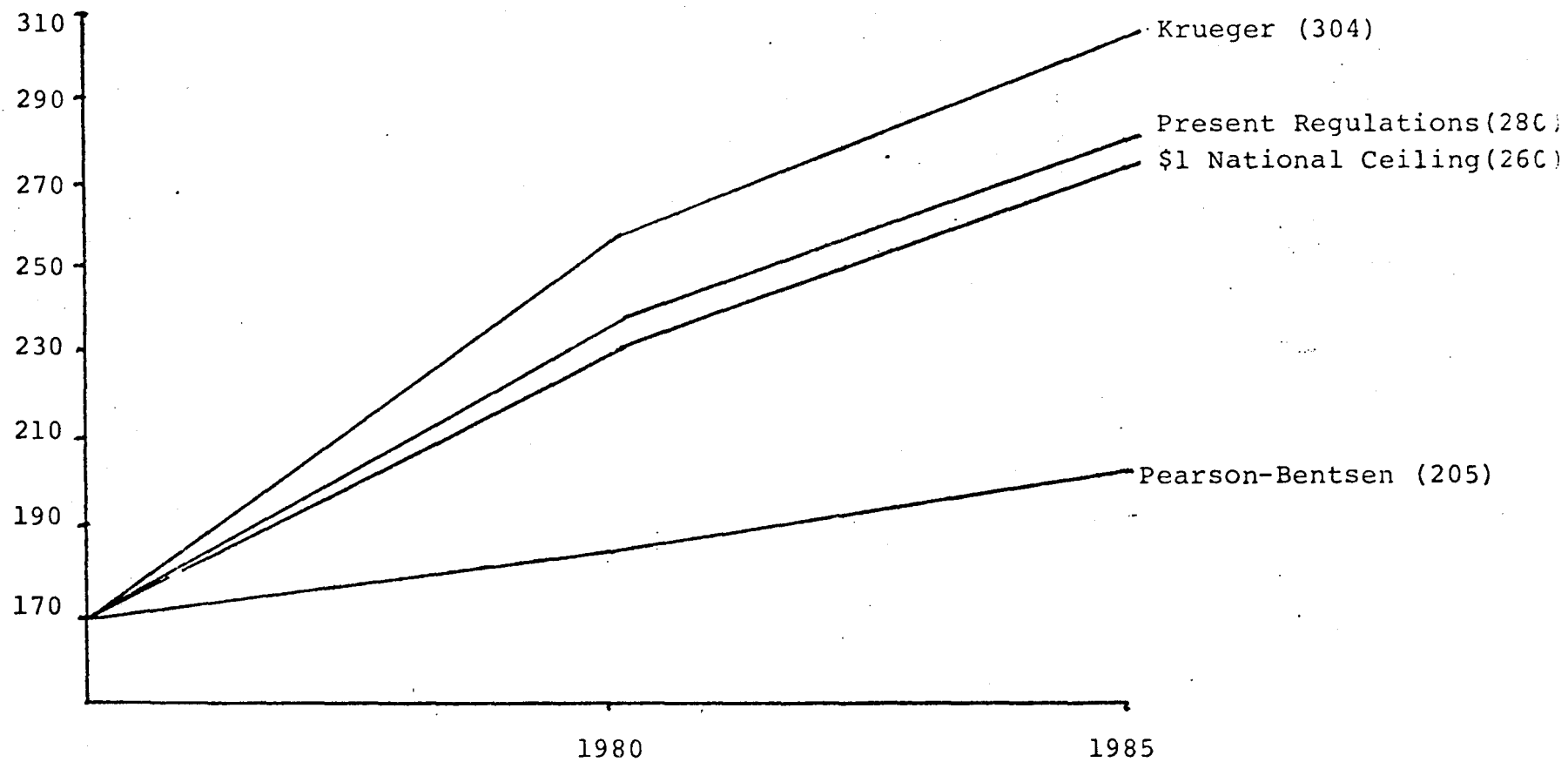
Legend:

- Pearson-Bentsen
- Krueger
- - - Present Regulation
- \$1 National Ceiling

* Intrastate sales are the difference between total net marketed production and interstate sales.

FIGURE 2

ANNUAL RESIDENTIAL FUEL BILL
(CONSTANT 1975 \$/YR)



NATURAL GAS DEREGULATION ANALYSIS

1. Introduction
2. Impact of Prices on Natural Gas Supply
 - 2.1 Natural Gas Supply
 - 2.2 Natural Gas Reserves
 - 2.3 FEA Forecast Methodology
 - 2.4 Price Impacts on Demand
 - 2.5 Comparison of Alternative Supply Forecasts
3. Estimated Total Costs of Deregulation with S2310 in 1976
4. Long-Term Impacts of Natural Gas Deregulation
 - 4.1 Methodology
 - 4.2 Estimates of Impact of Natural Gas Deregulation
 - 4.3 Inter/Intra State Supply Distributions

Acknowledgments

This paper was prepared with contributions from William Hogan, Hillard Huntington, David Knapp, John Kraft, John Neri, David Nissen, Mark Rodekohr, and James Sweeney.

NATURAL GAS DEREGULATION ANALYSIS

1. Introduction

This technical paper presents a quantitative analysis of issues associated with natural gas deregulation. The major analytical topics addressed are the impact of prices on natural gas supply, estimates of the impact of current proposed natural gas deregulation on the total residential fuel bill and the residential natural gas fuel bill, and estimates of the total cost of deregulation to the consumer in 1976. The impact estimates include only gas consumption from domestic sources, excluding liquified natural gas, synthetic fuels and imported natural gas. Thus, total gas consumption from all sources will be above that reported in this paper.

This paper is the latest in a series of preliminary documents addressing this subject. The series of revisions have evolved with the improvements in the underlying data base and methodology. This is the first revision to fully incorporate the estimates developed in conjunction with the revision of the Project Independence studies.

2. Impact of prices on Natural Gas Supply

Prior to the preparation of the first Project Independence studies, the major sources of information regarding the potential supply of natural gas were found in the forecasts of the Federal Power Commission, the estimates of the Natural Gas Potential Supply Committee, the TERA Modeling System of the American Gas Association, the MacAvoy-Pindyck Model developed by researchers at MIT, and the oil and gas model of the National Petroleum Council. The Federal Power Commission forecasts and those of the Natural Gas Supply Committee did not derive from formal models and the TERA and MacAvoy-Pindyck system did not contain the necessary regional detail available in the National Petroleum Council Model. Therefore, the Federal Energy Administration began an effort to modify the National Petroleum Council model to permit integration into the overall Project Independence studies.

The revised supply model produces estimates of natural gas production which recognize the difference in costs and, therefore, prices of producing from reserves of different size and quality. This price sensitivity is essential in evaluating the impacts of fuel competition or in assessing the potential supply results from gas price deregulation.

The revision of estimates for Project Independence is completed within FEA. This section presents estimates of these revised gas supply figures, explains the methodology of development, and compares the FEA forecasts to other estimates that are available. These figures indicate the importance of prices in determining potential gas supply and indicate the impacts of continuation of price regulation below market clearing levels. The effects of alternative regulatory structures are discussed in more detail in section 4.

The prices discussed in this section refer to new gas prices at the wellhead. Since old contract prices can continue in effect, the costs to the consumer could be correspondingly lower.

2.1 Natural Gas Supply

If new natural gas prices are deregulated and real uncontrolled oil prices remain at their current level, FEA estimates that total domestic production will be 22.3 TCF in 1985 at a wellhead price of \$2.13. If full deregulation does not occur and new natural gas prices are set at \$1.00/MCF at the wellhead, this supply estimate could drop to 15.8 TCF. The sensitivity of these aggregate estimates are displayed by separating the discussion into the contribution of total supply that comes from gas wells (non-associated gas) and that which comes from wells that primarily produce oil (associated gas). The historical production of non-associated and associated natural gas appear in Table 1.

Table 1

Historical Production of Associated and Non-Associated Production (TCF)

	<u>Associated*</u>	<u>Non-Associated*</u>
1966 **	4.6	12.9
1967	4.7	13.6
1968	4.6	14.7
1969	4.8	15.9
1970	4.8	17.1
1971	5.0	17.1
1972	4.8	17.7
1973	4.8	17.8
1974	4.2	17.1

*Preliminary net production

**Not available prior to 1966

Source: Reserves of Crude Oil, Natural Gas Liquids and Natural Gas in the United States and Canada and United States Productive Capacity as of December 31, 1974. Volume 29, May 1975. American Gas Association

Previous to 1966, separate production estimates for non-associated and associated gas were not reported. However, estimates of additions to reserves to proved reserves are reported and appear in Table 2. This table shows that in 1967, when FPC price regulations became a constraint (or binding), proved reserves peaked and have been declining since then. Except for 1970, additions to reserves have been declining since 1967. It is felt that the decline since 1967 in both additions to reserves and proved reserves is a result of the FPC price controls which while implemented in 1954 revised in 1961 and became a binding constraint in the 1966-1967 period.

Non-Associated Gas

The FEA model and assumptions produce estimates of natural gas production for 12 oil and gas producing regions. The actual production from these regions depends upon a number of factors including demand, relative transportation costs, leasing rates, and uncertainties about the total available supply of gas. Non-associated gas production in 1974 was 17.1 TCF. Under the FEA business as usual conditions (BAU), the national production possibilities as a function of price are depicted in Table 3. Non-Associated production at the lowest price examined, \$1.00/MCF, is 13.3 TCF in 1985. At the highest price, \$2.80/MCF, the figure rises to 18.1 TCF. In 1990, the range is even greater, going from 8.8 TCF to 17.9 TCF for \$1.00 and \$2.80 respectively.

Table 3 indicates the effects of depletion and the changes in production over time as a function of price. This phenomenon is depicted in more detail for selected prices in Figure 1.

Table 2

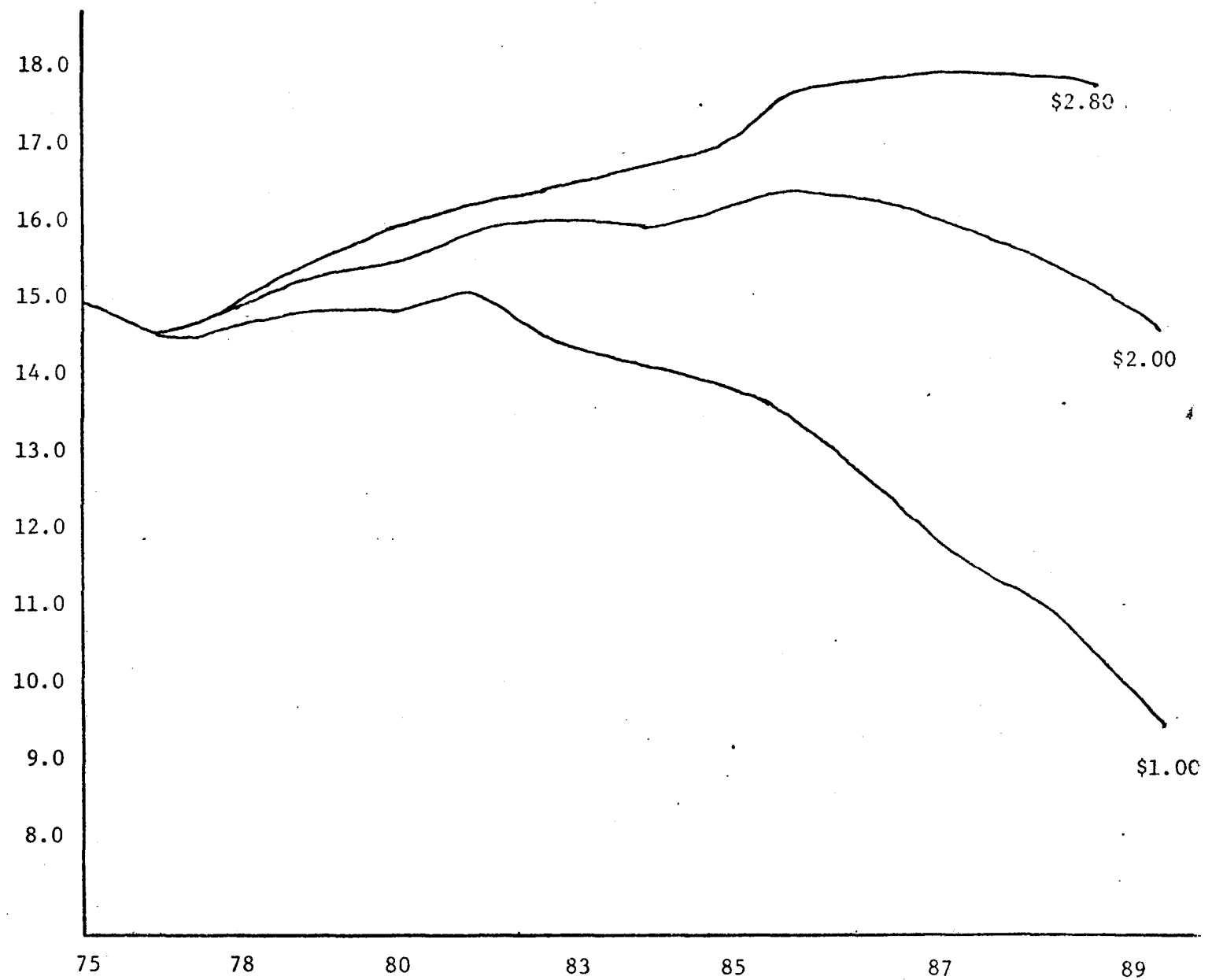
ANNUAL ESTIMATES OF PROVED NATURAL GAS RESERVES IN THE UNITED STATES, 1945 THROUGH 1974, TOTAL ALL TYPES

(TCF)

<u>Year</u>	<u>Total of Discoveries, Revisions and Extensions</u>	<u>Proved Reserves at End of Year</u>
1945		146
1946	17	159
1947	10	165
1948	13	172
1949	12	179
1950	11	184
1951	15	192
1952	14	198
1953	20	210
1954	9	210
1955	21	222
1956	24	236
1957	20	245
1958	18	252
1959	20	261
1960	13	262
1961	17	266
1962	19	272
1963	18	276
1964	20	281
1965	21	286
1966	20	289
1967	21	292
1968	13	287
1969	8	275
1970	37	290
1971	9	278
1972	9	266
1973	6	249
1974	8	237

Source: See Table 1

FIGURE 1
NON-ASSOCIATED NATURAL GAS PRODUCTION FROM THE LOWER 48 STATES
ANA OCS IN THE BUSINESS-AS-USUAL OUTLOOK



* Interval from 1980 to 1989 fitted on 1980 and 1989 observations for the \$1.00 case.

Table 3
Non-Associated Gas Production (TCF)
(BAU)

<u>Wellhead Price (1975 \$)</u>	<u>1980</u>	<u>1985</u>
\$0.60	9.9	5.9
\$1.00	15.4	13.3
\$1.20	15.6	14.5
\$1.40	16.0	15.5
\$1.70	16.1	16.1
\$2.00	16.2	16.6
\$2.20	16.2	16.9
\$2.40	16.3	17.3
\$2.80	16.5	18.1

Regardless of price the Outer Continental Shelf (OCS) contribution to production is constant in 1980 (3.7 TCF) and in 1985 (4.5 TCF). This special characteristic for the OCS is a temporary phenomenon, applicable over this time frame because of the limitations on leasing. The forecasts with higher leasing rates or for later years show greater OCS production and response to price changes.

The sensitivity of these production estimates to factors other than price have been examined under two separate scenarios other than BAU prepared by FEA. The primary pessimistic or optimistic assumptions are summarized in Table 4

Table 4
Optimistic and Pessimistic Outlook Assumptions

	<u>Pessimistic</u>	<u>BAU</u>	<u>Optimistic</u>
Resource Assessment	USGS "Mean" Minus 36%	USGS "Mean"	USGS "Mean" Plus 36%
OCS Leasing**	18.7 Million Acres	27.7 Million Acres	39.7 Million Acres
Investment Tax Credit	10% through 1977; 7% thereafter	10% through 1977; 7% thereafter	10% throughout

*These represent \pm one standard deviation around the USGS "statistical" mean.

**Oil leasing not separated from gas leasing here.



These alternate assumptions produce significantly different production estimates, but the basic price sensitivity of the output is preserved. Table 5 indicates the effects of the alternate scenarios on the production estimates for 1985. The difference in production from the pessimistic to the optimistic is 3.9 TCF at \$2.00.

Table 5

Non-Associated Gas Production (TCF)
(1985)

<u>Wellhead Price</u> <u>(1975 \$)</u>	<u>Pessimistic</u>	<u>BAU</u>	<u>Optimistic</u>
\$2.00	15.2	16.6	19.1
\$2.80	16.2	18.1	20.9

Associated Gas Production

In addition to the volumes of gas from gas wells, there is a significant contribution of production from wells that are primarily oil wells. In 1974, this amounted to 4.2 TCF. The evaluation of the price sensitivity of associated gas is complicated by the importance of the price of oil and the significant contribution of higher oil production that comes from increased gas prices. Table 4 depicts these effects for 1985 by displaying the business as usual associated gas supply under two assumptions. The first group indicates the associated gas supply if gas and oil prices are assumed to be in approximate BTU equilibrium for the consumer. This indicates that the supply of associated gas would rise from 2.54 TCF at \$1.00/MCF to 4.19 TCF at \$2.00/MCF in 1985.

Table 6

Associated Gas (TCF)

<u>Wellhead Price</u> <u>(1975 \$)</u>	<u>Production With Oil</u> <u>Prices at BTU Equilibrium</u>		<u>Gas and Incremental</u> <u>Oil at \$13</u>	
	<u>1980</u>	<u>1985</u>	<u>1980</u>	<u>1985</u>
\$1.00	2.31	2.54	3.45	3.80
\$2.00	2.49	4.19	3.92	6.59

The second group depicts the gas equivalent if prices of uncontrolled oil maintain their current real level and the increased oil production due to gas price changes is included on a BTU basis. This indicates that as prices range from \$1.00 to \$2.00 the production of natural gas or natural gas equivalents could increase from 2.54 TCF to 4.19 TCF or from 3.80 TCF to 6.59 TCF in 1985, depending upon corresponding assumptions about the world price of oil.

Special Regions

In addition to the associated and non-associated gas production estimates of the FEA model, there is a contribution from areas known as special regions (Alaska, tight gas) which is estimated separately. The 1985 estimated supply from special regions is .17 TCF at under \$1.00 and .46 TCF over \$1.10.

Price Sensitivity

The estimates for associated and non-associated production show a significant response to higher prices. The aggregate supply elasticities over the range of \$1.00/MCF to \$2.00/MCF range from .42 to .47 depending upon assumptions about oil prices. These estimates are higher than those that have been inferred from the November 1974 Project Independence Report. The methodology that produces these figures, and the changes from previous assumptions, are outlined in a later section. A comparison of these estimates and those of other models is also presented.

2.2 Natural Gas Reserves

Additions to reserves are a fundamental element in the forecasting procedure and a popular criteria for evaluating the sustainability of the production estimates. The FEA methodology, expanded below, includes a fixed decline curve which implies a final ration for production and reserves on a regional basis.

In examining natural gas reserves the important numbers are non-associated gas proved reserves at the end of the year and net additions to non-associated gas proved reserves. The relevant historical data for 1966 to 1974 appear in Table 7.

-9-
TABLE 7

ANNUAL ESTIMATES OF PROVED NON-ASSOCIATED NATURAL GAS RESERVES
IN THE UNITED STATES (TCF)

	<u>Additions to Reserves</u>	<u>Total Reserves at End of Year*</u>
1966	17.0	217.4
1967	17.9	221.8
1968	13.9	220.9
1969	6.8	211.8
1970	9.3	204.1
1971	8.9	195.9
1972	7.8	186.1
1973	3.9	172.2
1974	7.0	162.2

*Includes revisions and extensions.
Source: See Table 1

The regional breakdown of reserves for 1974 end of year are recorded in Table 7.

TABLE 8

ANNUAL ESTIMATES OF 1974 PROVED NON-ASSOCIATED
NATURAL GAS RESERVES BY REGION (TCF)

<u>Region</u>	<u>Proved Reserves at End of 1974</u>
Alaska (1)	5.4
Pacific Coast (2)	2.1
Pacific Coast OCS (2A)	0.2
Western Rocky Mtn (3)	9.1
Eastern Rocky Mtn (4)	4.6
W. Texas - E. New Mexico (5)	14.4
W. Gulf Basin (6)	59.8
Gulf of Mexico OCS (6A)	30.9
Mid Continent (7)	30.8
Michigan Basin (8,9)	1.2
Appalachian (10)	3.7
Atlantic Coast (11)	0.0
Atlantic Coast OCS (11A)	0.0
TOTAL	162.2

To obtain production responses, the deregulation of natural gas brings forth reserve additions in 1980 and 1985 at different prices. The sensitivity of these aggregate reserve additions are displayed for 1980 and 1985 as a function of price. Only reserve additions for nonassociated gas are presented, since associated gas is a function of real petroleum prices.

Table 9 indicates the effects of changes in reserve additions as a function of price by region.

Table 9
Non-Associated Gas Reserve Additions (TCF)
for 1980 and 1985 by Region
(BAU)

	Well-head Price 1975 \$	Regions**												Total
		<u>2</u>	<u>2a</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>6a</u>	<u>7</u>	<u>8,9</u>	<u>10</u>	<u>11</u>	<u>11a</u>	
1980	0.60	0.0	0.0	0.0	0.0	0.0	0.0	11.6*	0.0	0.0	0.0	0.0	0.0	11.6
	1.00	0.0	0.0	0.9	4.4	8.9	15.3	28.6	21.2	0.0	0.0	0.0	0.0	79.3
	2.00	0.6	0.0	2.3	6.1	14.0	19.7	28.6	17.2	0.2	1.4	0.0	0.0	70.1
	2.80	0.8	0.0	2.5	6.8	15.3	29.1	28.6	23.1	0.3	1.5	0.0	0.0	108.0
1985	0.60	0.0	0.0	0.0	0.0	0.0	0.0	11.6*	0.0	0.0	0.0	0.0	0.0	11.6
	1.00	0.0	0.0	1.0	4.4	8.9	17.3	51.1	22.6	0.0	0.0	0.0	0.0	105.3
	2.00	1.3	0.5	4.4	11.3	26.2	38.1	51.1	31.5	0.9	2.7	0.0	0.0	168.0
	2.80	2.3	0.9	4.9	13.3	33.8	57.3	51.1	40.5	1.4	3.4	0.0	0.0	208.9

* Drilling in region 6a commences for four years and then ceases.

**For names of regions see Table 8..

The annual average additions to reserves computed over six years from 1975 through 1980 are comparable to the reserve additions which occurred prior to 1970. In fact, at a \$1.00 price, reserve additions average 13.2 TCF per year. Prior to FPC regulations constraining discoveries, the reserve additions including associated gas averaged above twenty TCF per year.

2.3 FEA Forecast Methodology

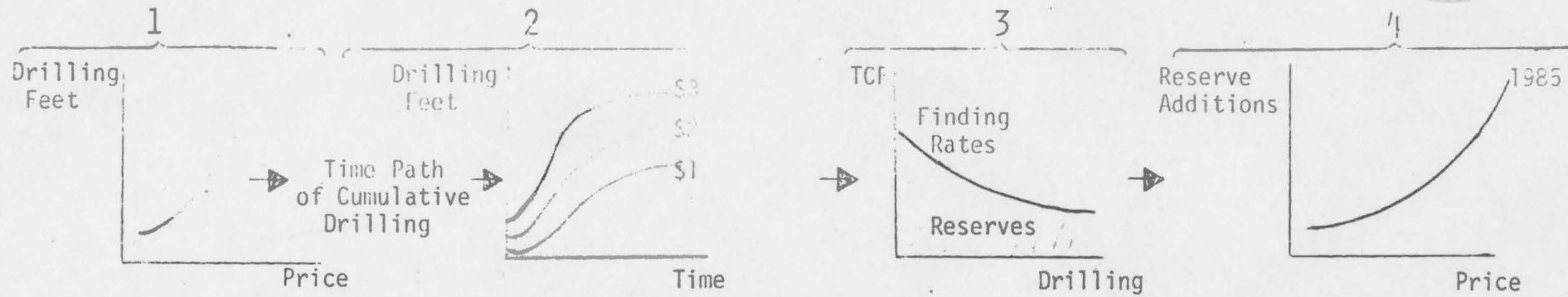
The estimation of possible natural gas production requires the systematic evaluation of factors such as total available reserves, drilling rates, finding rates, costs of exploration and development, rates of production from established reserves and the interaction of these factors with prices, tax policies, capacity development and leasing policies. The evaluation of particular natural gas policies and the integration of natural gas into the full energy system require an extensive capability to combine these elements and progressively improve the supply assessment.

The schematic of the FEA gas supply model is displayed in figure 2. The full detail of the system, combining associated, non-associated, special regions, and oil prices is not illustrated. In addition, the calculations described occur on a regional basis and actual production and consumption can be affected by demand and transportation differentials when combined in the full Project Independence Evaluation System. However, the general structure and the role of price assumptions are illustrated.

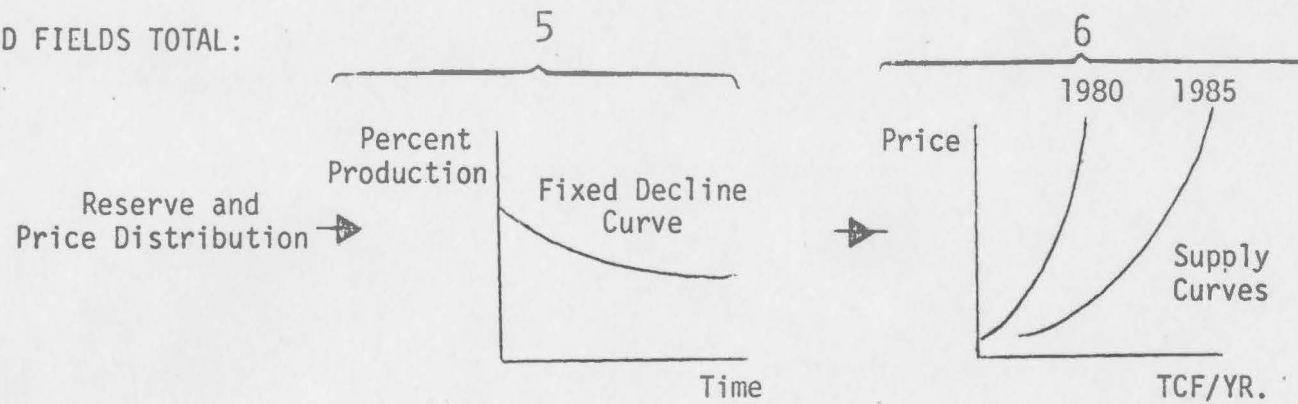
The first stage of the calculations ignores the important time phasing but applies the costing, reserves, and drilling information to estimate the total cumulative drilling that will take place eventually if the price is fixed at a given level. The result, a cumulative supply curve of drilling is input to stage 2. The cumulative supply of drilling at various prices is converted into a time profile of drilling, recognizing the need for gradual adjustment of drilling as increased facilities are developed and equipment is fully utilized over a reasonable life. The time path of cumulative drilling is applied, in stage 3, to a finding rate curve which portrays the total new reserves found as a function of cumulative drilling. This finding rate curve is established by initializing at the current experience, declining the curve exponentially after adjusting to ensure that the cumulative addition to reserves is equal to the U.S. Geological Survey Circular 725 estimate of total reserves. These total reserve estimates vary from the 95% confidence level of 766 TCF to the mean of 961 TCF to the 5% confidence level of 1156 TCF. The pessimistic and optimistic supply projections are taken, in part, from \pm one standard deviation according to this distribution.



NEW FIELDS:



NEW & OLD FIELDS TOTAL:



STRUCTURE OF FEA GAS SUPPLY MODEL

Figure 2

The combination of the drilling time path and finding curves produces, for each year, the approximate supply of reserve additions as a function of price shown in stage 4. For OCS development, the important impact of leasing schedules enters the system by limiting the reserves that can be added in a given year and thereby limiting the resulting production.

Existing reserves, arrayed by the marginal costs of production, are combined with the supply curve for reserve additions and applied to the production decline curve. This determines the rate at which production from reserves will occur over time and is the final step in calculating the supply for different years as a function of price. The FEA model establishes this decline curve to approximate historical rates. The decline curve does not vary with price in this model.

Once the schedule of annual reserve additions is combined with the decline curve, the additions of reserves at various prices are multiplied by the production rates to determine production and price combinations that would be forthcoming for each year of the analysis. The resulting supply curve is the representation of production possibilities, under the list of important assumptions, that can be combined with other estimates of fuel supply, demand and substitution to obtain an estimate of actual production and consumption.

The current FEA model employed is improved over that of the November 1974 Project Independence report in two ways. First, the reserve additions implied by the finding curves have been formally combined with the most recent estimates of total reserves published by the USGS. Previously, the finding rates were established judgmentally and drilling was curtailed when reserves additions approached total availability. This change improves the realism of the finding rate and associated cost estimates for large drilling changes. The second, and more significant change is the internal calculation of cumulative drilling as a function of price in stage 1. Previously, drilling was determined judgmentally and only one drilling curve was available for all prices. This curve was selected to approximate the drilling that would be forthcoming at wellhead prices of \$.97/MCF (\$.80 in 1973 dollars) in 1985. Table 8 indicates the estimates of production reported at that time and reflects this assumption, an assumption which defers production from higher priced reserves until later years. This simplification was used in the original study because the estimates at that time indicated that these prices and quantities would be sufficient to achieve equilibrium and the focus was on evaluating fuel substitution, not the evaluation supply increments at higher prices. Other improvements in FEA demand estimates have altered the equilibrium price calculations and motivated the more extensive

treatment summarized here. It is indicated clearly that higher prices produce significantly higher supplies, and prices higher than today's regulated prices are needed if current consumption levels are to be maintained or forecasted demands are to be met from domestic sources.

2.4 Price Impacts on Demand

The impacts of prices on supply of natural gas are the major focus of this paper, but the corresponding effect on demand should not be overlooked. The revision of FEA estimates for total supply and demand illustrates that regulation can produce major supply deficits or regional imbalances. Due to the known existence of curtailments, an unregulated price may not affect consumption if only unsatisfied demand is being bid away. Conversely, a regulated price would not increase consumption, but would increase the quantity of unsatisfied natural gas demand.

TABLE 10

Original Project Independence Report Supply Estimates¹ (1985)

Price ²	Non-Associated ³ Gas (TCF)	Associated ⁴ Gas (TCF)		Total Natural Gas ⁵ (TCF)	
		<u>\$8.48 Crude Price</u>	<u>\$13.32 Crude Price</u>	<u>\$8.48 Crude Price</u>	<u>\$13.32 Crude Price</u>
\$0.48	9.48			15.30	16.11
0.73	16.66			22.48	23.29
.97	18.14	5.82	6.63	23.96	24.77
1.21	18.15			23.97	24.78
2.42	18.17			23.99	24.80

¹Project Independence Report pp. 93 and 94, BAU case.

²1975 prices. In the PIR tables, all prices are given in 1973 dollars.

³Southern Alaska and tight gas. The non-responsiveness of supply above \$1.20 is due to logistic and institutional constraints.

⁴Quantities of associated gas can be expected to vary with the natural gas price. This variation is not portrayed here. However, this variation with natural gas price is far less than the variation with crude oil price.

⁵This approximation is preliminary since the supply responsiveness with price is biased slightly upward as explained in Footnote 1 and is biased slightly downward as explained in Footnote 3. The overall effect of these offsetting biases, while small, is unclear.

2.5 Comparison of Alternative Supply Forecasts

In this section the FEA model supply forecasts are compared to five other forecasts of long term natural gas supply; the AGA-TERA Model of the American Gas Association, the MIT Model developed by MacAvoy and Pindyck, the SRI-GULF Model developed by Stanford Research Institute, the Federal Power Commission (FPC) and Energy Research and Development Administration (ERDA) natural gas projections. Four of these forecasts are based upon supply response to price (TERA, MIT, SRI-GULF, FPC). The ERDA forecast is a trend projection based upon assumed reserve availabilities.

Table 11
DOMESTIC NATURAL GAS PRODUCTION (TCF)

A Comparison of: FEA, TERA,
MIT, SRI-GULF, FPC, and ERDA
(1980 and 1985)

Year	Price \$ '75 (\$/MCF)	FEA at Current World Oil Prices	AGA-TERA	MIT	SRI-GULF (Nominal Case)	FPC*	ERDA**
1980	\$1.75	20.63	19.6	40.7***	23.3	24.6	22.0
1985	2.00	22.67	21.7	N/A	25.7	26.4	24.5

* Forecast related to prices of \$2.04 and \$1.78 for 1980 and 1985 respectively.

** Forecast not related to price.

***The original MIT study limited prices to 90¢/MCF and corresponding production estimates of 32.6 TCF. This 40.7 TCF was attained by solution of the model at the \$1.75 price which may be outside the range of reliability.

Strict comparison of the models is difficult due to differences in model construction, techniques, and basic assumptions underlying the forecast. The SRI-GULF Model, as does the FEA Model, solves for equilibrium supply, demand, and prices. The actual equilibrium prices from the SRI Model are \$1.73 and \$2.07. The TERA and MIT Models do not solve the equilibrium price; the wellhead price is exogenous to each model. The FEA equilibrium prices were input to these models to obtain the supply forecasts. The TERA forecast is about 1 TCF lower than the FEA forecast. In separate analysis, FEA has determined that this model tends to be pessimistic with respect to the drilling success ratios^{1/}.

1/ A Comparison of Two Natural Gas Supply Models, by John A Neri, Federal Energy Administration Technical Report 75-15, June 10, 1975, Office of Quantitative Methods, Washington, D. C.

The MIT Model is much higher than all of the presented forecasts. The MIT supply forecasts are very optimistic with respect to discovery size and offshore gas. The SRI Model, while solving for essentially the same equilibrium prices, shows approximately 3 TCF more production than the FEA forecasts for 1980 and 1985. The FPC forecast is taken from the option three case - deregulation of new gas - as presented in "A Preliminary Evaluation of the Cost of Natural Gas Deregulation", January 1975. The forecasts for 1980 and 1985 are approximately 4 TCF above the FEA forecasts. The equilibrium prices from the FPC Model are very different from the FEA and SRI prices. These prices are \$2.04/MCF and \$1.78/MCF for 1980 and 1985 respectively. This reduction in the supply price is most likely due to the assumed threefold increase in the supply elasticity from .06 to .16 between 1980 and 1986.

The estimates are provided to indicate the range of estimates currently available and the relative position of the FEA forecasts.

Although all the models for which price data are available tend to confirm the FEA estimates about required future equilibrium prices, it is difficult to obtain an exact comparison of price sensitivity of the other systems. For the FEA, TERA, and MIT Models, approximate estimates of the aggregate price sensitivity are displayed in Table 12. As stated above, FEA analysis indicates that the TERA price sensitivity is pessimistic, and that of the MIT Model is optimistic. The FEA estimates, based on the best available data, methodology, and judgments is the most reliable representative of price impacts on supply. This model indicates that 5.3 TCF of additional product can be made available as gas prices increase from \$1.00 to \$2.00

Table 12

APPROXIMATE 1985 SUPPLY REDUCTIONS
DUE TO PRICE CHANGES (TCF)

<u>Wellhead Price</u> <u>(1975 \$)</u>	<u>FEA</u>	<u>TERA</u>	<u>MIT **</u>
\$2.00	20.8	21.7	40.7
1.00	15.8	18.9	32.6
CHANGE	5.0	2.8	8.1

** These figures are from the 1980 supply estimates for the MIT model with the \$2.00 row evaluated at \$1.75. Equilibrium solutions to the MIT model occur in 1980 at 90¢/Mcf. 1985 prices in the \$2.00 range may be outside of the range of reliability.



3. Estimated Total Costs of Deregulation With S2310 in 1976

While the long-run impacts of natural gas deregulation are important, the short-run effects in 1976 are of interest. Section 4 of this paper examines the impacts of various deregulation proposals on the total fuel bill and the natural gas fuel bill of the residential user in 1985. In this section FEA's estimate of the impact of deregulation in 1976 are presented for the current version of S2310.*

The price of number 2 fuel oil in 1976 is translated into an equivalent retail price for natural gas. A number 2 fuel oil price of \$15.50/bbl is comparable to a retail natural gas price of \$2.66/MCF. To get the wellhead price, transportation and distribution costs are subtracted. In 1974 the average transportation cost plus distribution mark-up was 55¢/MCF. This yields a deregulated wellhead price of $(\$2.66 - \$0.55) = \$2.11/\text{MCF}$.**

This estimate is a simplified method for estimating the short-run price change and does not assume any supply response. The deregulated price could be higher or lower if these responses develop.

Given the estimated wellhead prices of \$2.11/MCF, the cost increases associated with various categories of natural gas are presented in Table 13.

* S.2310 is known as the Natural Gas Emergency Act of 1975.

** The \$15.50/bbl is the delivered price for oil at the burner tip. The \$15.50/bbl distillate oil converts to \$2.66/MCF gas. Subtracting the transportation cost and distribution mark-up of 55¢/MCF yields a wellhead price of $(\$2.66 - \$0.55) = \$2.11$. This figure is consistent with the PIES estimated deregulation price of \$2.13/MCF in 1985. The distillate price of \$15.50 is in question, since the December 1975 price of distillate price used to convert to natural gas equivalent prices should be weighted average of both the industrial and residential price. From 1974 data it is derived that the industrial distillate fuel price is 96.4% of the residential price. Therefore using an average 1974 residential distillate fuel price of \$15.82/bbl. The approximate industrial price would equal \$15.26/bbl. From 1973 data it is found industrial distillate fuel, and the residential sector consumes the remaining 46 percent. Weighting the appropriate residential and industrial prices by these percentages yields an average distillate fuel price of \$15.51/bbl. Since the average value of retail distillate is uncertain, a price of \$15.50/bbl was chosen.



TABLE 13

FEA ESTIMATES OF 1976 COST INCREMENTS
DUE TO DEREGULATION OF NATURAL GAS UNDER S2310

<u>Cost Element</u>	<u>Quantity*</u>	<u>Cost</u>
1) Intrastate Gas	5	4.3
2) Non-Jurisdictional Interstate Sales	1	.86
3) OCS Gas	N/A	0.0
4) Onshore Gas	.3	.26
5) Additional Production	.5	0.0
6) Old Contracts	.3	.04 to .27
TOTAL	7.1	5.46-5.69

To the extent that increased natural gas production replaces higher priced imported oil, the above estimate is reduced.

* The quantities refer only to those increments of gas affected by S2310. Because of long-term contracts or lack of time response some quantities are not affected (N/A).

4. Long-Term Impacts of Natural Gas Deregulation

FEA estimates of the long-run impact of natural gas deregulation on residential fuel bills are computed for several of the proposed legislative actions pending before Congress. The proposed legislative actions are outlined in an appendix.

This section reports estimates of the anticipated effects of several policy proposals for the field price of natural gas, which is currently regulated by the Federal Power Commission if it is sold for resale across state lines or if it is carried for resale by an interstate pipeline that has been certified by the Federal Power Commission. The results were derived from a parametric framework that uses supply and demand schedule information currently being used as inputs to the Project Independence Evaluation System (PIES). The supply curves are based upon the FEA production model, which uses a discounted cash flow technique to relate production levels with price. The consumer demand relationships are based upon the forecasts for the Federal Energy Administration's Econometric Regional Demand Model (ERDM), in which natural gas was one of several major fuels to be analyzed. This information is used to determine equilibrium prices, production, consumption, and associated economic impacts given certain price constraints on gas under existing interstate contracts and on new offshore gas.

4.1 Methodology

The analysis of the effects of deregulation of natural gas is conducted in the context of the Project Independence Evaluation Systems results for the 1985 \$13.00 reference case, which represents the equilibrium solution when new gas is deregulated. For continued regulation, a regulated supply curve is constructed and allowed to equilibrate with a regulated demand curve to produce a new price and production level. A number of simplifying assumptions are made in order to approximate the solution.

The approach assumes a set of separated inter/intrastate markets in which the regulated demand curve is the demand in the region and the regulated supply curve is the supply in the region minus any volume under long-term contract to the interstate market. In the absence of price controls in the inter/intrastate markets, each of these markets will equilibrate

$$(1) \quad D_i (P_i) = S_i (P_i) - ECS_i \text{ for all } i \in I_p$$

where D_i is the regional demand, S_i is the regional onshore supply, P_i is the unregulated price, and ECS is the volume supplied to the interstate market under existing contracts.

In addition, nonproducing states satisfy a portion of their demand for interstate gas in 1985 from existing gas contracts

$$(2) \quad D_i (\bar{P}) = ECR_i + UD_i (\bar{P}) \text{ for all } i \in I_R,$$

where UD_i is the unsatisfied demand in the region and ECR_i is the interstate volume received under existing contracts.



A third class of states produce gas for intrastate use and also receive gas from existing interstate contracts

$$(3) \quad D_i(P_i, \bar{P}) = S_i(P_i) + ECR_i + UD_i(\bar{P}) \text{ for all } i \in I_{PR}.$$

In principle, individual solutions for each state in class I can be derived. Further, given data on existing contracts supplied (ECS_i) and existing contracts received (ECR_i) and estimates of unsatisfied interstate demand (UD(\bar{P})), equilibrium intrastate prices can be derived for states in class I_p and I_{PR}. Total demand under interstate gas regulation is:

$$(4) \quad D_{US}^R = \sum_i D_i, \text{ for all } i \in (I_p \cup I_R \cup I_{PR}).$$

An approximation to the above solution can be derived by concentrating on the major producing states (i.e., the WSC demand region) and determining regulated supply and demand for that region.

The following assumptions were made:

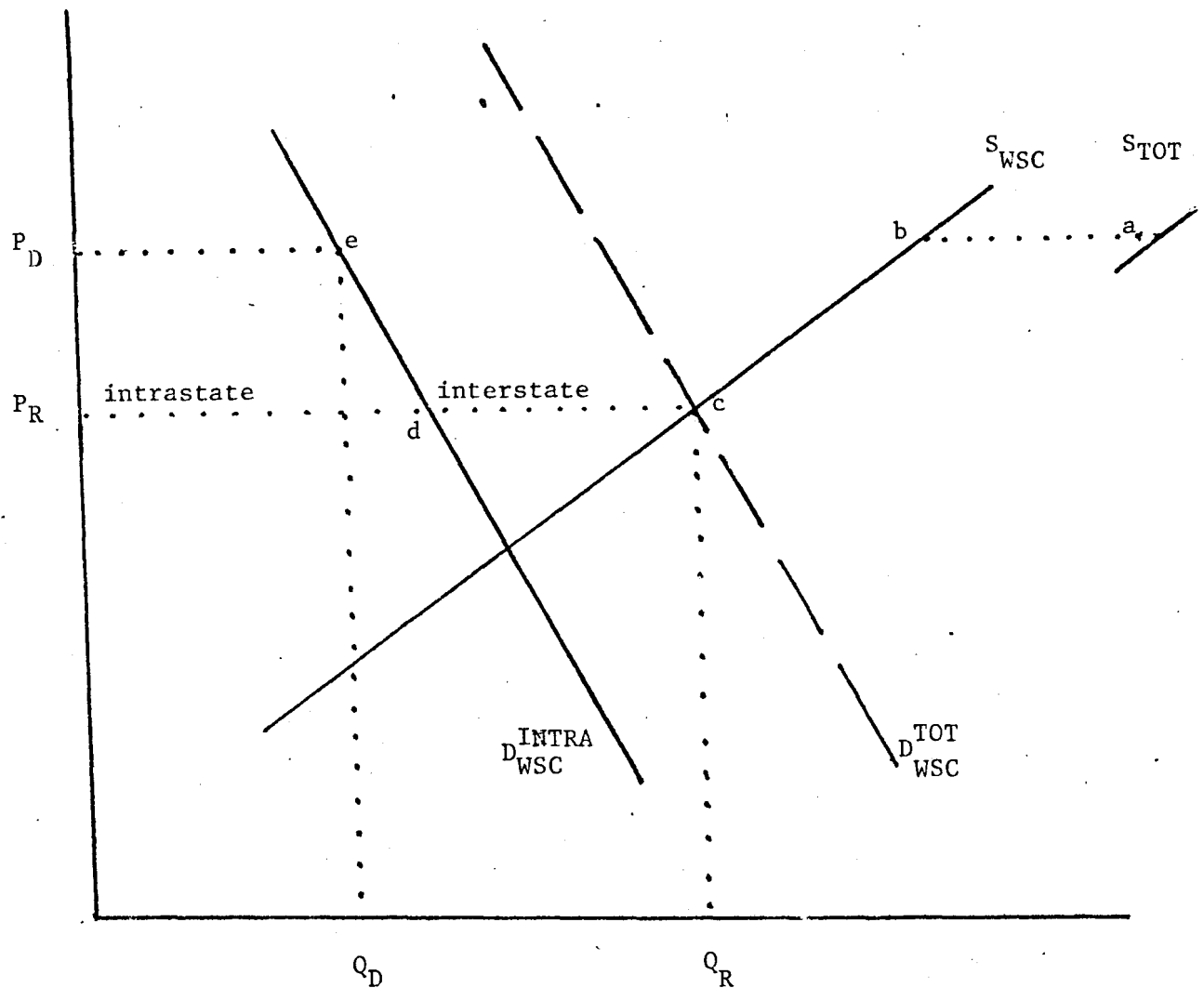
- . All West South Central gas consumption is intrastate gas.
- . The existing ratio of OCS to non-OCS contracts will be maintained under continued regulation.
- . The WSC intrastate market is representative of all domestic intrastate markets.
- . Quantities under existing interstate contracts decline at a rate of 7-8% per year.
- . The ratio of non-WSC non-Alaskan production to WSC production continues at its present level.
- . The intrastate demand curve for WSC is stable under deregulation, i.e., the regulated and deregulated intrastate equilibria are on the same demand curve.

The methodology is summarized in the accompanying graph. With continued regulations, the demand for onshore gas from the West South Central Region is D_{WSC}^{Intra} plus contracted interstate volume, or D_{WSC}^{TOT} which must be satisfied by the available supply, S_{WSC} . The market equilibrates at P_R and Q_R , of which d is intrastate and dc is interstate gas. When new gas is deregulated, interstate consumers bid for this onshore gas as well as for volumes from offshore and Alaska. The new contract price rises to P_d , which expands onshore production in this region to point b , and reduces intrastate consumption along demand curve, D_{WSC}^{Intra} , to point e . In addition, there is increased production in the offshore and Alaskan regions, gas from which must enter the interstate system.

4.2 Estimates of the Impact of Natural Gas Deregulation

Estimates of the effects of continuing present regulations as well as those

FIGURE 3
THE WEST SOUTH CENTRAL INTRASTATE
MARKET UNDER REGULATION AND DEREGULATION



LEGEND:

- ab - non WSC supply from PIES
- dc - estimated intrastate gas under continued regulation
- e - deregulated intrastate equilibrium
- a - deregulated total natural gas supply
- bc - WSC supply expansion due to deregulation
- de - WSC intrastate demand contraction due to higher deregulated price
- P_D - deregulated equilibrium price for WSC
- P_R - REGULATED EQUILIBRIUM PRICE FOR WSC intrastate gas

of several recently proposed legislative actions are derived from this methodology and appear in Table 14. The more important results are discussed below.

Present Regulations. With this option only the intrastate market will be in equilibrium. Gas from the onshore areas will be produced until demand in this market is satisfied at a new contract price of about \$1.80/MCF. Offshore and Alaskan gas production, on the other hand, is restricted by an assumed FPC field price ceiling of \$.60/MCF plus any cost-of-living adjustments. Total marketed production equals 17.9 TCF for the nation, although only 6.6 TCF of this would be allocated to the interstate market. Residential annual gas bills are a comparatively low \$215 (the second last column) for those who maintain their gas service but the residential bills for all customers who would have gas under deregulation would be substantially larger at \$280 per year, or even higher if synthetic natural gas is substituted. Finally, curtailed industrial users would be forced to purchase imported oil.

Krueger. The Krueger proposal defines new contracts as gas that is dedicated to the interstate market for the first time in addition to any volume under an expiring interstate contract. This option would stimulate more production than would the continued regulation case because: (1) the price of new onshore gas would rise above its \$1.80/MCF level and (2) the price of new offshore and Alaskan gas would rise above its regulated level of \$.60/MCF. The Krueger offshore provisions are particularly difficult to analyze because there is no a priori knowledge about how the Federal Power Commission will regulate this gas during the 1975-80 period, and current supply estimates make it impossible to forecast the producers' response to a phased deregulation that will end in 1981. The analysis assumes that under both Krueger and Pearson/Bertsen proposals, producers expect in 1976 a deregulated price for OCS gas by 1985. If there are uncertainties about the phasing out of these controls, production would be less and prices greater than indicated in the table. It should be noted that the FEA oil and gas production model, assumes flexible capital markets and does not incorporate any supply effects of an improvement in the gas producers' cash-flow. Thus, when expiring contracts are renegotiated at a market price rather than a regulated one, the improved cash-flow situation of the producers does not increase supply in the model.

Although gas expenditures will increase (as both price and production increase) oil expenditures in the interstate region will decrease. The net effect on total energy expenditures (column 4) is very small and therefore, the effects of natural gas deregulation on the costs of other goods and services (as a result of higher energy prices) is anticipated to be minimal - about \$1 per person by 1985. Studies that relate increased gas costs to the general price level of the nation's goods and services are erroneous because they fail to account for the important substitution of gas for oil when natural gas is deregulated. In the interstate residential market, annual gas bills would increase to \$304 to a group of consumers who would be paying \$280 for both gas and oil under the continuance of the present regulations.

Pearson-Bertsen. The two main differences between this and the Krueger option are that: (1) gas under expiring contracts would continue to be regulated (at the assumed FPC ceiling of \$.60/MCF plus any cost-of-living adjustments)

1985: Comparison of the Effects of Proposed Natural Gas Legislation
(All Prices are in Constant 1975 Dollars)



Policy	Nation				Interstate				
	Marketed Gross (Tcf)	Production Net ^{a/} (Tcf)	Average Field Price ^{b/} (\$/Mcf)	Net Energy Expenditures ^{c/} Per Capita (\$/Yr)	Sales (Tcf)	Industrial Price (\$/Mcf)	Residential Price (\$/Mcf)	Residential Annual Gas Bill ^{d/} (\$/Yr)	Residential Annual Fuel Bill ^{e/} (\$/Yr)
1974	21.6	18.8	.30	-	11.6	.68	1.47	170	170
Present Regulations	17.9	15.9	1.24	160	6.6	1.08	1.85	215	280
Krueger	22.3	20.0	1.71	161	12.1	1.85	2.62	304	304
Pearson-Bentsen (Passed)	23.0	20.7	1.72	166	13.2	2.70	1.77	205	205
\$1 National Ceiling Price	15.8	13.9	.80	130	9.1	1.20	1.97	229	260

a/ Gas consumed by end-users from domestic sources, excluding liquified natural gas, synthetic fuels and imported natural gas.

b/ Total gas revenues per mcf of net marketed production.

c/ Sum of revenues for gas and for required oil imports to satisfy the demand under deregulation, divided by a projected population of 244 million in 1985.

d/ Assumes that residential customer uses the same gas volume (116 mcf) as he did in 1974, even at higher prices.

e/ Represents the residential bill if the consumer replaces the gas available under deregulation with distillate oil, (using the residential price when crude oil is imported at \$13/BBL). This calculation assumes that by 1985 residential users will be curtailed in proportion to their present share of the interstate market. Although curtailments in the past have predominately affected industrial users, many of the seriously curtailed pipelines have already lost much of their industrial load, leaving the residential customer served by these pipelines vulnerable. If interstate customers replace natural gas with synthetic fuels, the fuel bill under regulation and under the national ceiling price will be greater than that indicated above.

(2) the cheaper old gas would be allocated first to residential users. Both of these provisions place greater pressure on the bidding for new gas, causing the new contract price to be greater than in the Krueger option.

The provision that extends the regulated price to expiring contracts reduces the supply of gas that can be sold at the unregulated price. Paying an average price for all gas, consumers would bid the new contract prices higher than if a smaller volume of old gas was to be price-controlled.

The allocation of cheap gas to residential users does not encourage homeowners to conserve gas as much as they would under the Krueger option and, consequently, this reduces the volume that would be available to industries. To allocate this smaller supply of industrial gas among competing users, higher new contract prices would be negotiated, thereby eliminating industrial uses for which the value of gas is not equal to or above this higher price. As a result, the industrial price would be considerably larger than with the Krueger proposal, and this increase would be passed through to households when they purchase other products and services. Thus, the higher new gas and industrial prices would mean that all consumers who buy products and services would be asked to subsidize the homeowner who burns natural gas. (In addition, it is not clear that these price provisions will actually protect the residential customer from higher costs. A lower industrial load is likely to make it more costly for utilities to meet the highly seasonal demand for residential customers. The gas and fuel bills in the table do not account for any such increases in the residential distribution costs.

The higher new gas prices would stimulate some additional production above that in the Krueger option.^{1/} Although interstate residential prices are lower, interstate industrial and intrastate prices are substantially larger, resulting in a small increase in average field price. Net energy expenditures per capita (column 4) is increased as a result of greater gas production (there are not additional oil expenditures as a result of excess demand in either case because natural gas demand is satisfied with either option). From an economic efficiency perspective, the additional domestic production of natural gas, which is made necessary by the greater subsidized residential demand, would not be warranted because domestic resources could be more productive if they were engaged elsewhere in the economy.

^{1/} The conclusion about greater production may not appear obvious from the discussion in the preceding paragraph because interstate residential consumption is increasing while interstate industrial and intrastate consumption is declining as compared to the results of the Krueger option. Increased production can be shown, however, by initially noting that in the Krueger case, total gas production is 22.3 TCF when the new contract prices reaches \$2.10 per MCF. The Pearson-Bentsen pricing provision would augment this consumption level at that price by an amount equal to the difference between residential consumption at the lower Pearson-Bentsen price and that at the higher Krueger price. In short, subsidizing residential users increases the Bentsen residential level, resulting in higher new contract prices and more production.

\$1 National Ceiling Price. There have been some proposals to extend price controls to the intrastate market. In Table 14 the results of a one dollar ceiling for all new gas are presented. This option would provide for some increments from offshore and Alaskan fields but would roll back substantially the equilibrium intrastate price under the continued regulated case (by 1985, from \$1.80/MCF to \$1/MCF). Total gas production would decline to 15.8 TCF with excess demand being created in both the intrastate and interstate markets.

4.3 The Interstate-Intrastate Distribution of Natural Gas Supply

The differences between deregulation and regulation are substantially more pronounced for interstate supply than for total national production. With the continuation of the present regulations at today's prices (in constant dollars), interstate supply would decline about 5.0 Tcf below its 1974 level of 11.6 Tcf - a reduction of 43 percent. If new gas is deregulated (as in the Krueger proposal), the higher gas prices would allow large volumes of gas to enter the interstate market, because not only will more offshore and Alaskan gas be produced but also some onshore gas will be bid away from the intrastate market. Under these conditions, the decline in interstate sales would be halted, resulting in slightly more sales than its present level by 1985. The Pearson-Bentsen proposal would increase interstate sales mainly through bidding gas from the intrastate market. It does this, however, at the expense of higher new gas prices and significantly higher industrial prices.



TABLE 15

PROJECTED INTERSTATE/INTRASTATE SALES UNDER
DIFFERENT POLICIES, 1985

<u>Policy</u>	<u>Marketed Production</u>		<u>Sales</u>	
	<u>Gross</u>	<u>Net*</u>	<u>Interstate*</u>	<u>Intrastate*</u>
1974 Data	21.6	18.8	11.6	7.2
Present Regulations	17.9	15.9	6.6	9.3
Krueger	22.3	20.0	12.1	7.9
Pearson-Bentsen	23.0	20.7	13.2	7.5
\$1 National Ceiling	15.8	13.9	9.1	4.8

* Gas consumed by end-users from domestic sources, excluding liquified natural gas, synthetic fuels and imported natural gas. Total gas consumption (including these other sources) would be greater.