Conf-811267--App. Add. Summ.



CONF-811267--App.Add.Summ.

DE82 021030

# International Energy Workshop, 1981

## Addendum to Appendix. Workshop Materials

**June 1982**

Alan S. Manne, Editor

Stanford University Institute for Energy Studies
Stanford, California 94305

AT03-79PE70117

This report contains material presented at a workshop held at Stanford University on December 10,11, 1981. The editorial work was supported by the Electric Power Research Institute and the United States Department of Energy. The individual participants are solely responsible for the views expressed here.

## DISCLAIMER

**Contents - Addendum to Appendix**

# Abstract, International Energy Workshop

December 10, 11, 1981

Name of individual preparing abstract: Nazli Choucri

Name of organization: M.I.T.

Name of the analysis: International Petroleum Exchange Model (IPE)

Reference (including date) of most recent report:

N. Choucri, International Energy Futures: Petroleum Prices, Power and Payments (MIT Press, 1981)

Purposes of the analysis:

- dynamic simulation model of world oil market focusing on price determination and world-wide consequences
- examine adjustments of countries and regions to alternative prices and quantities
- examine economic and financial consequences

Countries/regions;

- buyers, sellers, and international oil companies
- OECD: aggregate and individual sectors: US, W. Europe, Japan, Canada, Australia, New Zealand
- OPEC: Middle East, Non-Middle East
- non-OPEC: other 3rd World Countries

Time periods: 1970-2020
1970-1980 - validation against historical data and results of other models
1980-2020 simulations

Physical products (inserting an asterisk next to each item whose price is determined endogenously):

* petroleum (quantity & prices)
* investments in exploration and development
* non-oil capital in oil exporting countries
* imports of goods and services in oil exporting countries

See sources for other products

Methodology (including your group's approach to energy conservation and interfuel substitution):

simulation (system dynamics)

regression estimates (to obtain parameters for historical and cross-sectoral fit)

Abstract, International Energy Workshop

December 10, 11, 1981

Name of individual preparing abstract: Daniel A. Dreyfus

Name of organization: Gas Research Institute

Name of the analysis: 1983 Baseline Projection

Reference (including date) of most recent report:
1982 Research and Development Program April 2, 1981

Purposes of the analysis:

To develop projection of U.S. energy supply and demand in the absence of new technologies beyond those indicated by current trends. The Baseline Projection so developed is the basis against which GRI assesses the effects of its R&D projects.

Countries/regions:

United States

Time periods:

1980 to 2000

Physical products (inserting an asterisk next to each item whose price is determined endogenously):

Energy supply and demand*
electricity prices*
gas prices (cost basis)*
petroleum product prices *
coal prices
crude oil prices

Methodology (including your group's approach to energy conservation and interfuel substitution):

Energy demand built up on a sector-by-sector basis consistent with external constraints placed on fuel availability. There is a large amount of gas substitution for petroleum in the industrial and residential/commercial sectors as an increasing share of petroleum products are consumed in the transportation sector and used as petrochemical feedstocks.

Abstract, International Energy Workshop

December 10, 11, 1981

Name of Individual preparing abstract: *W. Calvin Kilgore*

Name of organization: *Energy Information Administration*
*U.S. Department of Energy*

Name of analysis: *Annual Report to Congress, 1981*

Reference (including date) of most recent report:

*1980 Annual Report to Congress, Volume Three: Forecasts*
*March 18, 1981*

Purpose of the analysis:

1. *Project world oil prices.*
2. *Assess security of supply issues.*
3. *Project world energy balances.*
4. *Assess economic impacts.*

Countries/regions:

*33 world regions.*

Time periods:

*1980 - 1995 with emphasis on 1985, 1990, and 1995.*

Physical products (inserting an asterisk next to each item whose price is determined endogenously):

*55 different product/sector combinations.*
*All prices are endogenous.*

Methodology (including your group's approach to energy conservation and interfuel substitution):

*Constrained market equilibrium on the basis of energy prices and OPEC behavior. Own and cross price elasticities used to estimate conservation and interfuel substitution.*

## TABLE 1. PILOT OIL IMPORT DEMAND SCENARIO RESULTS

| | 1980 | 1985 | 1990 | 2000 |
|---|---|---|---|---|
| GNP (bil. 1980 $) | 2641 | 3082 | 3542 | 4488 |
| Total Primary Energy Consumption (quad BTU) | 78.86 | 82.17 | 88.51 | 100.48 |
| Energy Consumption (including utility consumption of oil and gas) | | | | |
| Oil (quads) | 33.94 | 31.65 | 32.14 | 31.90 |
| Gas (quads) | 20.94 | 29.36 | 19.75 | 18.56 |
| Electricity (tkWh) | 2.434 | 2.774 | 3.220 | 3.883 |
| Energy Imports | | | | |
| Oil (mil. bbl/day) | 6.08 | 5.43 | 5.42 | 5.42 |
| Domestic Energy Production | | | | |
| Oil, incl. NGL (quads) | 21.07 | 20.16 | 20.20 | 18.64 |
| Synthetic oil (quads) | | | .46 | 1.75 |
| Gas (quads) | 19.94 | 19.36 | 19.75 | 17.94 |
| Coal (quads) | 20.32 | 23.77 | 27.24 | 32.62 |
| Nuclear elec (quads) | 2.79 | 4.67 | 7.83 | 12.14 |
| Hydro, Geo, Solar (quads) | 2.81 | 3.41 | 3.92 | 6.43 |

## TABLE 2. CONSUMERS' MODULE AND INDUSTRIAL MODULE RESULTS

| | 1980 | 1985 | 1990 | 2000 |
|---|---|---|---|---|
| Space Heat Provided (quads) | 3.99 | 4.54 | 5.15 | 6.08 |
| Space Heat Fuel Used | | | | |
| Oil (quads) | 1.76 | .95 | .22 | |
| Gas (quads) | 3.71 | 3.18 | 2.12 | 1.55 |
| Electricity (quads) | .64 | .84 | 1.38 | 1.69 |
| Fleet Average Personal Automobile Fuel Mileage (mpg) | 15.7 | 19.5 | 20.9 | 24.7 |
| Substitutable Industrial Fuel Use | | | | |
| Oil (quads) | 2.13 | 1.59 | .99 | |
| Gas (quads) | 6.91 | 6.90 | 6.85 | 7.32 |
| Coal (quads) | 2.27 | 3.46 | 4.69 | 7.30 |
| Industrial Capital Expenditures for Energy Equipment (bil 1976 $) | | | | |
| Conversion Equipment | 2.09 | 2.33 | 3.21 | 2.41 |
| Conservation | .15 | .26 | 1.02 | 1.95 |

Abstract, International Energy Workshop

December 10, 11, 1981

Name of individual preparing abstract: Roger Brinner

Name of organization: Data Resources

Name of the analysis: DRI Residential Energy Demand Model

Reference (including date) of most recent report:

DRI Energy Review, Summer 1981

Purposes of the analysis:

Creation of a model of residential energy demand using rational expectations and explicit technological assumptions within a non-econometric/economic choice model to forecast capital stock characteristics. Subsequently, an econometric model is estimated to predict energy usage per unit of capital stock by type.

Countries/regions:

New England, Middle Atlantic, South Atlantic, East North Central, West North Central, East South Central, West South Central, Mountain #1, Mountain #2, Pacific #1 and Pacific #2

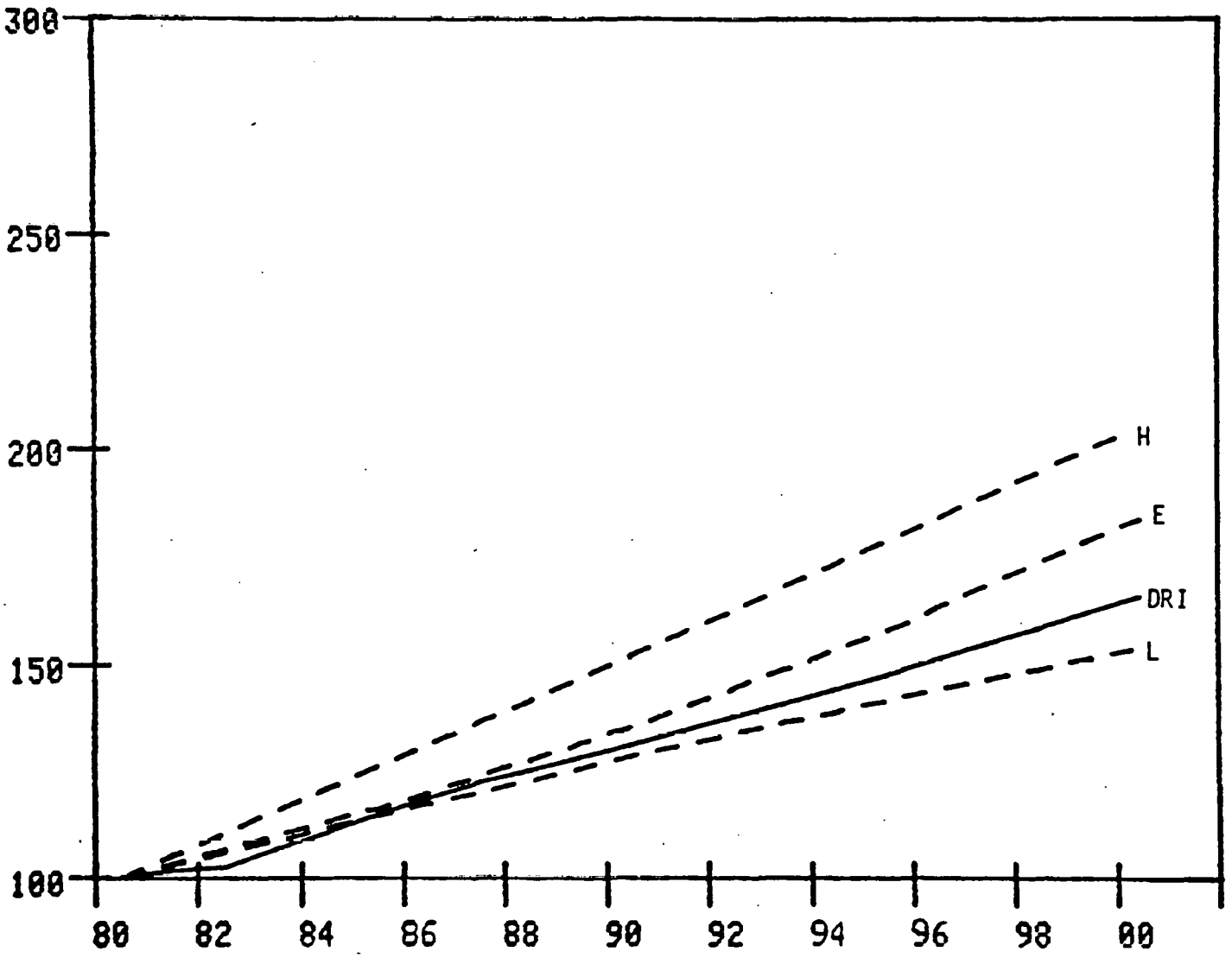
Time periods:

present to year 2,000

Physical products (inserting an asterisk next to each item whose price is determined endogenously):

Methodology (including your group's approach to energy conservation and interfuel substitution):

Gross National Product
U.S.
(1980=100)

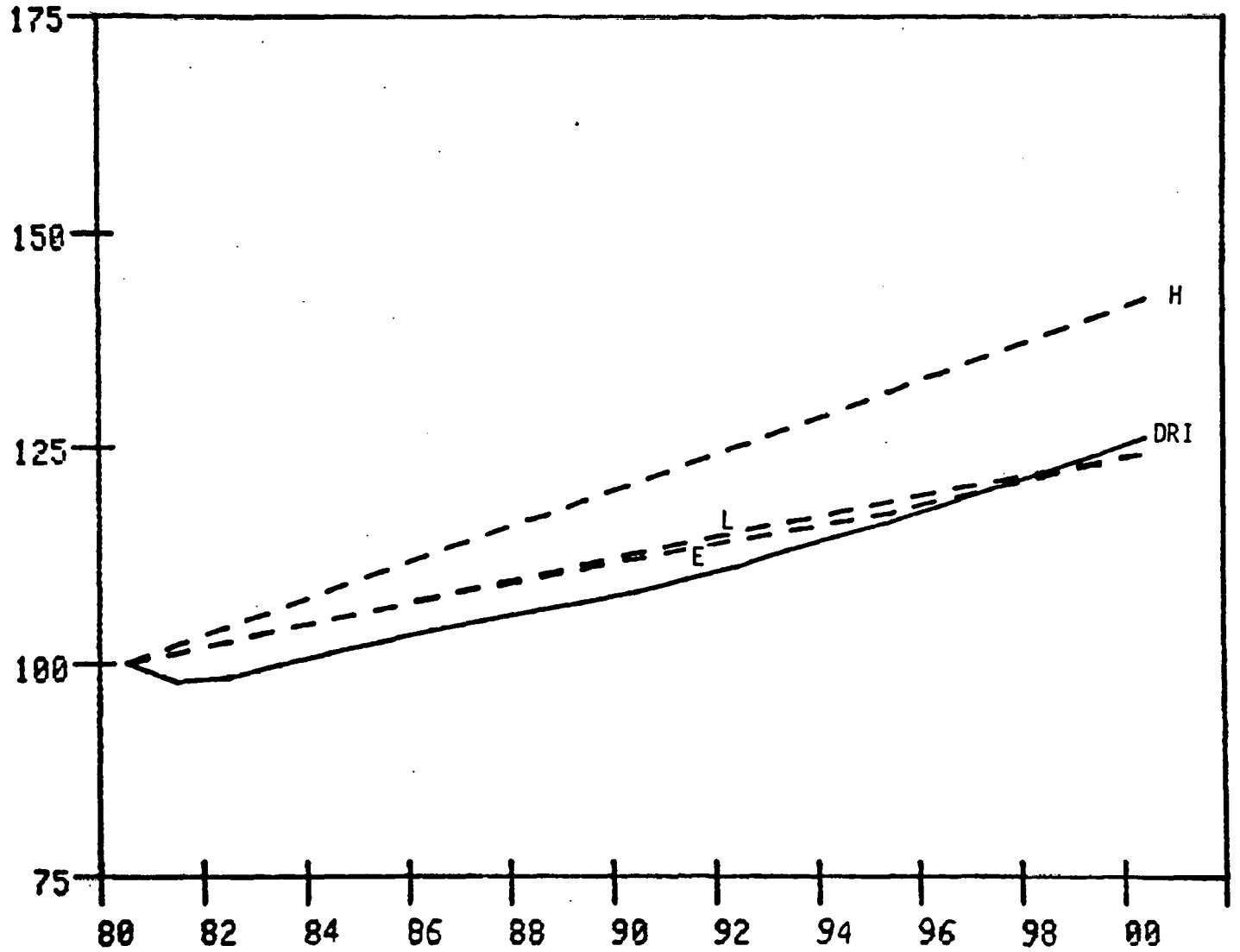



Sources:

L IIASA-Low
H IIASA-High
(Canada + U.S.)

E EMF-Reference
DRI Data Resources, Inc.
(U.S. only)

Primary Energy Consumption
U.S.
(1980=100)

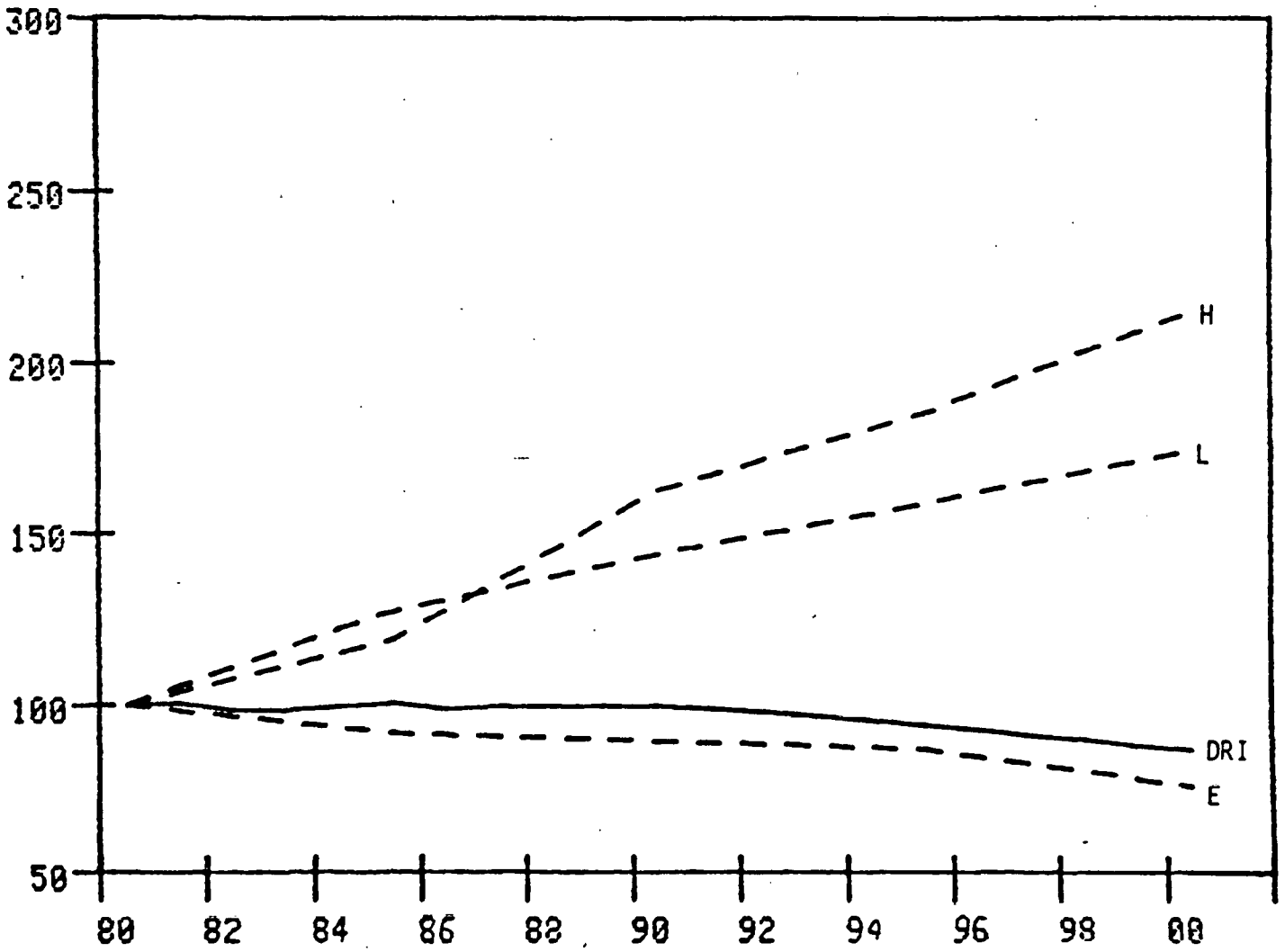



Sources:

L IIASA-Low
H IIASA-High
(Canada + U.S.)

E EMF-Reference
DRI Data Resources, Inc.
(U.S. only)

Domestic Crude Oil Production
(Excluding Synthetic Fuels)
U.S.
(1980=100)

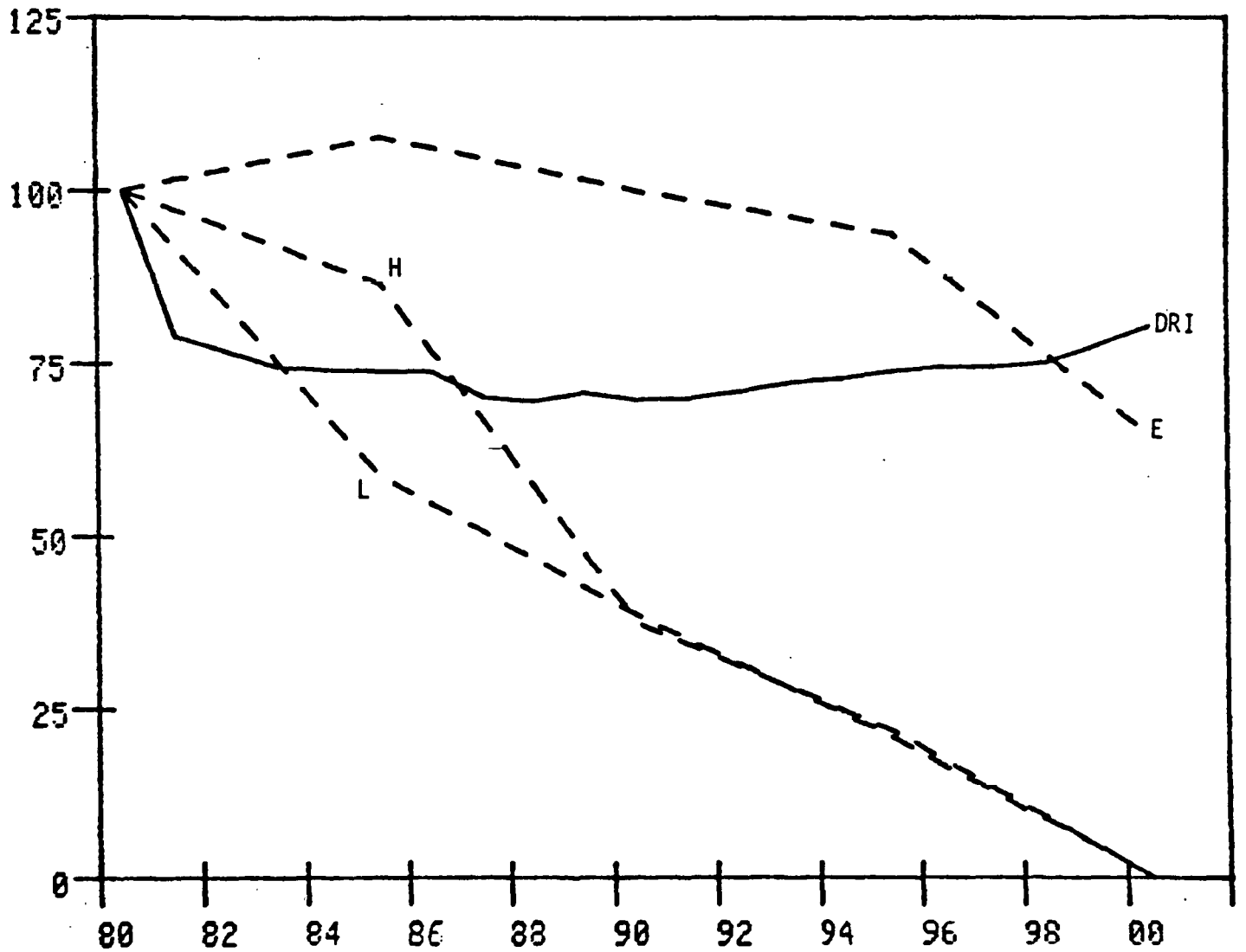



Sources:

L IIASA-Low
H IIASA-High
(Canada + U.S.)

E EMF-Reference
DRI Data Resources, Inc.
(U.S. only)

Crude Oil Imports
U.S.
(1980=100)

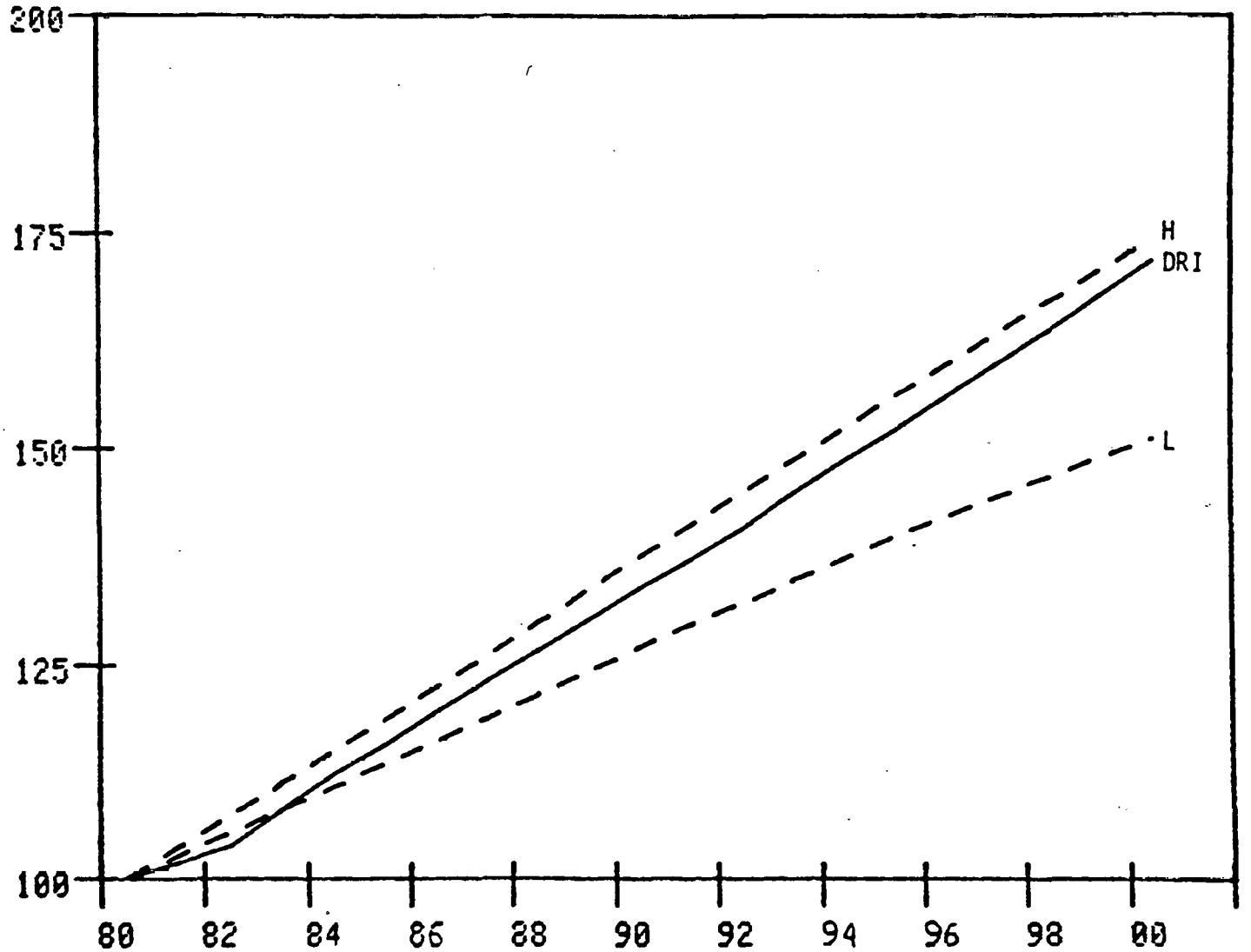



Sources:

L IIASA-Low
H IIASA-High
(Canada + U.S.)

E EMF-Reference
DRI Data Resources, Inc.
(U.S. only)

Total Electricity Generation
U.S.
(1980=100)

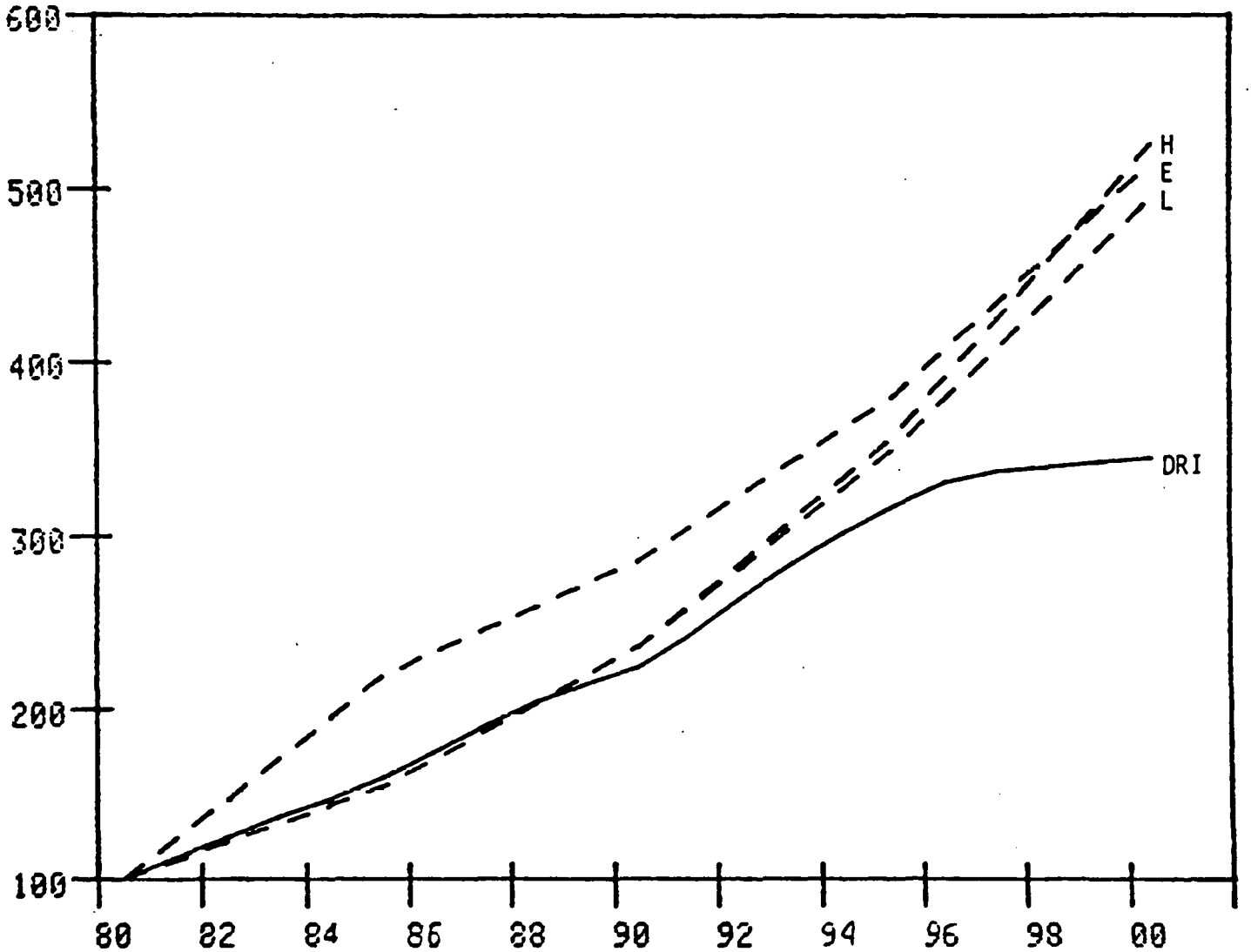



Sources:

L IIASA-Low
H IIASA-High
(Canada + U.S.)

E EMF-Reference
DRI Data Resources, Inc.
(U.S. only)

Total Nuclear Electricity Generation
U.S.
(1980=100)




Sources:

L IIASA-Low
H IIASA-High
(Canada + U.S.)

E EMF-Reference
DRI Data Resources, Inc.
(U.S. only)