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Coal Conversion

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COAL CONVERSION JUNE 1986

PURPOSE

The term "coal conversion" as used in the report refers to the utilization of coal or coal-derived fuels (liquid, gas, or solid) as a replacement for petroleum-derived fuels such as fuel oil or gasoline. The conversion from oil to coal as the primary fuel is examined for the four energy-consuming sectors: transportation, industrial, electric utility, and the non-industrial commercial and residential sector. The report identifies and examines those considerations which encourage or discourage such fuel conversion - be they technical, environmental, legal, or regulatory issues.

The National Coal Council examined the prospects for coal conversion in each of the energy sectors of the economy and the findings were set forth. Project economics favoring the use of coal were set as a precondition to coal conversion in the United States.

FINDINGS

Where it is economically justifiable, coal conversion can contribute significantly to the fulfillment of national policy goals by:

- Reducing that portion of the United States balance of trade deficit which is attributable to imported oil;
- Providing for an energy mix which will enhance our national security and economic stability by decreasing our dependence on imported petroleum; and
- Reducing the overall cost of fuel consumption to the user while stimulating domestic economic growth.

Note that in 1986, the balance of trade deficit was approximately \$132 billion with oil imports being 38% (\$50.4 billion). At the close of 1992, the deficit has decreased to about \$81 billion but petroleum imports still result in a negative balance of over \$40 billion, or 55 % of the total negative balance.

Domestic coal reserves and production capacity are more than adequate for any and all proposed coal conversions. Both reserves and production capabilities exceed the most optimistic forecast for coal utilization, even for the next two centuries.

The study's overall conclusions are that, where it is economically justified, increased and enhanced use of coal can do the following:

- Reduce the U.S. energy trade deficit;
- Enhance domestic energy and economic security; and
- Stimulate long-term economic growth.

The study results indicate that sufficient economic incentives do not exist for coal conversion in the industrial or utility sectors when the delivered price of crude oil falls below the \$18 to \$25 per barrel range, or at a crude oil to coal cost difference of less than \$1.25 per million Btu. The same conclusion was reached for the transportation sector at \$30 per barrel, or a \$2.00 per million Btu difference, oil to coal. There have been challenges to these numbers. What is indicated is that a more concentrated, programmatic approach to coal conversion is required. The prospects for coal conversions are illustrated in Table 1.

Table 1
Petroleum Consumption by Energy Sector (DOF/EIA)
(Quadrillion Btu)

	<u>1985</u>	<u>1991</u>
Transportation	19.4	21.43
Industrial	7.7	8.06
Residential/Commercial	2.6	2.18
Electric Utility	1.1	1.18
TOTALS	30.80	32.85
	(42% of all energy)	(40.5% of all energy)

TRANSPORTATION SECTOR - Coal conversion is most likely in a liquid form. An infrastructure for coal-derived liquid distribution and sales is required for this conversion. Certain Federal regulations under the Clean Air Act and the Energy Policy and Conservation Act impede the commercial adoption of alternate fuels to gasoline.

ELECTRIC UTILITY SECTOR - This sector's oil consumption has dropped from 1.75 million barrels per day in 1978 to 486,000 in 1985. Only about 11% of this reduction is from coal conversion; the bulk of the reduction is from under-utilization of capacity.

INDUSTRIAL SECTOR - Industrial boiler capacities are an order of magnitude below that of utility boilers. Coal conversion is hindered by economies of scale. There is a need for short-term payouts on capital projects and local coal distribution centers for competitive price deliveries.

COMMERCIAL/RESIDENTIAL SECTOR - Again, the economies of scale are a major factor. Clean coal technologies, yet to be developed, can overcome disadvantages of scale. The Department of Energy's Clean Coal Technology Program of the 1980s and 1990s has made great progress to this end.

RECOMMENDATIONS

Many recommendations were put forth to enhance and accelerate coal conversion. The passage of time has strengthened many of these recommendations. Relative to Federal policies, some recommendations are as follows.

- Establish demonstration projects with emphasis on fuel switching.
- Establish a national clearinghouse for the exchange and dissemination of technical results.
- Host a National Conference of Governors of coal-producing and coal-utilization states to adopt legislation to provide incentives for removal of barriers to coal conversion.
- The Corporate Average Fuel Economy (CAFE) standards require minimum average miles per gallon standards by auto manufacturers. This standard should be changed to miles per million Btu consumed. As is, it is biased against fuels which contain less energy per gallon but may be more economical with better fuel conservation.