



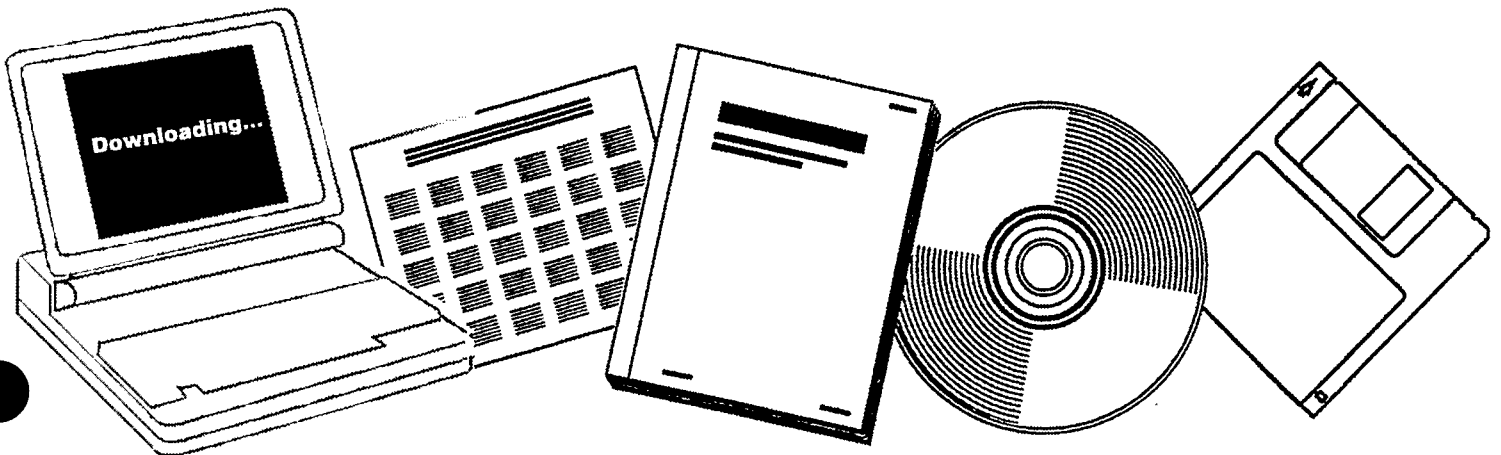
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RECOMMENDATIONS FOR A SYNTHETIC FUELS COMMERCIALIZATION PROGRAM

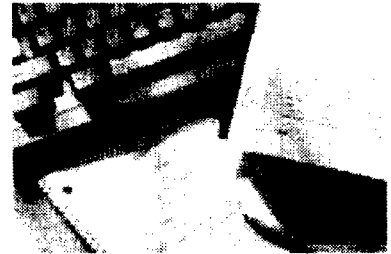
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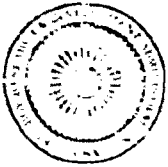
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DRAFT ENVIRONMENTAL STATEMENT, ERDA-1547, SYNTHETIC FUELS COMMERCIALIZATION PROGRAM

Enclosed is a copy of the subject draft environmental statement for placement in your respective Public Document Room for public inspection. The Summary Sheet is also enclosed.

The statement is being issued jointly by the Energy Research and Development Administration (ERDA) and the Department of the Interior. The three volumes of the Synthetic Fuels Task Force Report are also enclosed. The volumes are: I - Overview Report; II - Cost/Benefit Analysis of Alternate Production Levels; and III - Technology and Recommended Incentives.

W. H. Pennington
Office of the Assistant Administrator
for Environment and Safety

Enclosures:
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*NP-20796-P2
is not part of ERDA-1547.
It is a Task Force back-up
document. Non-ERDA
per Frank Lewis, W.H. Pennington's
Office is file on 20 of Reg. Dev.
1/3/1976*



SUMMARY SHEET

Draft Environmental Statement (ERDA-1547)

Synthetic Fuels Commercialization Program

U.S. Energy Research and Development Administration
and U.S. Department of the Interior

1. This Draft Environmental Statement has been prepared and issued by the U.S. Energy Research and Development Administration and the U.S. Department of the Interior in accordance with the National Environmental Policy Act and the implementing guidelines of the Council on Environmental Quality in support of the administrative proposal for implementation of the Synthetic Fuels Commercialization Program.
2. An incentive program is proposed to ensure production at commercial scale of the equivalent of 350,000 barrels per day of synthetic fuels from coal, oil shale, and biomass (urban and other wastes). Optional program sizes of one million barrels per day and 1.7 million barrels per day equivalents are considered.
3. Synthetic fuels conversion plants constructed with aid of the proposed incentives would create air and water pollution and solid waste, and create noise and aesthetic degradation. Conjunctive developments necessary to support the plants would include mining, pipelines, and transmission lines, each of which would also impact air, water, and land. Community development or expansion would be required to support conversion plants in remote areas. Because of the size of the program, impacts would occur in many regions of the country.
4. Major alternatives to the action that were considered include: no action; alternative program levels and mixes; increased conservation to reduce energy demand; increased emphasis on alternative domestic energy resources; and increased oil and gas imports.
5. Comments on the Draft Statement are being requested from: the Departments of Agriculture; Commerce; Defense; Health, Education, and Welfare; Housing and Urban Development; Justice; Labor; State; Transportation; and Treasury; the Advisory Council on Historic Preservation; Environmental Protection Agency; Federal Energy Administration; Federal Power Commission; General Services Administration; Interstate Commerce Commission; National Science Foundation; National Aeronautics and Space Administration; Nuclear Regulatory Commission; Community Services Administration; Tennessee Valley Authority; and Water Resources Council; the Governors and Clearinghouses of all fifty states and environmental and other organizations that may have an interest in the Program (these organizations are listed on the reverse side). A 60-day comment period has been established.
6. The Draft Environmental Statement was forwarded to the Council on Environmental Quality on January 16, 1976, and a notice submitted to the Federal Register announcing its availability.

NOTE: For further information contact Matthew J. Reilly, Acting Assistant Director for Environment and Safety, Fossil Energy, Energy Research and Development Administration, Washington, D. C. 20545.

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NOVEMBER 1975

RECOMMENDATIONS FOR A

SYNTHETIC FUELS COMMERCIALIZATION PROGRAM

Volume II

COST/BENEFIT ANALYSIS OF
ALTERNATE PRODUCTION LEVELS



REPORT SUBMITTED

by

SYNFUELS INTERAGENCY TASK FORCE

to

THE PRESIDENT'S ENERGY RESOURCES COUNCIL

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EXECUTIVE SUMMARY

Background

The cost/benefit analysis addressed the question of whether the Federal Government should accelerate the commercial production of synthetic fuels and, if so, at what rate. A decision analysis was utilized to assist in making this determination. Specifically, the alternative program levels evaluated in this report are:

- No Program - no Federal involvement in a commercialization program, but continuation of research and development and normal investment decisions by U.S. industry.
- Information Program - Federal involvement designed to assist in the establishment of the equivalent of 350,000 barrels per day in capacity.
- Medium Program - designed to produce approximately 1,000,000 barrels per day.
- Maximum Program - designed to produce approximately 1,700,000 barrels per day.

Each alternative program was quantitatively evaluated allowing for such factors as: uncertainty, future influences, relative prices, technological change (learning curves), and other economic as well as non-economic values. In addition, the hedging or insurance value of alternatives has been incorporated in the evaluation. Thus, the expected net benefit takes into account not only economic benefits but also the costs of embargo protection, environmental effects, and socio-economic effects. For each of the three alternative levels of the commercialization program, the following synthetic fuel technologies were included: shale oil, coal syncrude, solvent refined coal, methanol from coal, and high and low Btu gas from coal. In this context, it is important to note that the mix of plants considered under each of the alternative program levels is intended to be representative and was predetermined. In other words, there is no attempt in this analysis to examine what would be the best (least cost) mix of plants for a commercialization program of a given size from either the economic or environmental point of view.

Results of the Analysis

The expected costs of all commercialization alternatives considered exceed the benefits. For the three programs relative to no program, the discounted expected net negative benefits (in 1975 dollars) are:

- -1.6 billion dollars for the information program
- -5.4 billion dollars for the medium program
- -11.0 billion dollars for the maximum program

It is important to note that there is considerable uncertainty in net benefit incorporated into the cost/benefit analysis. For example, there is a 10 percent chance that net benefits will exceed \$7.0 billion and a 10 percent chance that they will be less than -\$9.0 billion for the information program. Further, other benefits, such as demonstrating our international resolve, may add to these results. The most crucial factors affecting the results under the proposed commercialization program levels are:

- The probability of a strong cartel
If there is a strong cartel through the end of the century, the informational and medium commercialization programs yield positive expected benefits of \$2.7 billion and \$6.5 billion respectively. Under a weak cartel, the expected benefits of the two programs are -\$5.6 billion and -\$16.5 billion respectively.
- The cost of synthetic fuels
If synthetic fuels turn out to be inexpensive (around \$11 per barrel crude oil equivalent in 1975 dollars), the information program results in a net expected benefit of \$3.4 billion. If, on the other hand, synthetic fuels are expensive, the expected net benefit of the information program is -\$6.2 billion. The expected net benefits of the medium program range from \$5.7 billion to -\$19.2 billion under the similar assumptions with respect to the cost of synthetic fuels.

- The effect of the program on synthetic fuels costs. Regardless of the general level of synthetic fuel costs, the larger the commercialization effort the more costs are assumed to decline. The information program is judged to reduce cost by an average of \$1.83 per barrel, and the medium program by an additional \$2.08 per barrel. This is the largest single positive effect of the program. In eliminating this effect from the information program, the net benefit declines from -\$1.6 billion to -\$3.2 billion.

In addition to the above, the Task Force sought to determine whether other energy initiatives, by either the executive or legislative branches of the Federal Government could affect the desirability of a synthetic fuels commercialization program. It was found that:

- If the government should adopt a six million barrel per day import restriction by price or quota, the information program would have an expected positive net benefit of \$12.0 billion; however, in this case the nation would incur a loss in expected benefit (social surplus) on the order of \$73 billion given a strong cartel and \$17 billion given a weak cartel.
- A storage program of .6 to 1.0 billion barrels would have almost minimal effect on the desirability of a synthetic fuels commercialization program; however, such a storage program would have an expected net benefit to the nation of about \$7 billion.

Finally, it was determined that the expected benefits of a program are relatively insensitive to reasonable changes in the following factors:

- social discount rate
- probability and consequences of an embargo
- environmental and socio-economic costs
- divergence of private and public interest.

Conclusions and Recommendations:

The findings of the decision analysis are that a fully committed synthetic fuels commercialization program at the 1.7 mm bbls/day or 1 mm bbls/day level cannot be justified at this time. Further, there is an expected net loss of \$1.6 billion associated with the information program of 350,000 bbls/day. However, it should be noted that any of the following additional positive benefits which were not measured by the analysis could move the information program towards a more positive posture:

- The international leverage (bargaining position) that would accrue to the United States as a result of a synthetic fuels program.
- The resolution of uncertainty with regard to government policy which may otherwise inhibit development of the synthetic fuel technologies close to commercial development.
- The value to the United States of lower oil payments made by other importing nations.
- The world and domestic leadership value of an activist position.
- Possible favorable impact on cartel strength.

In addition to the above, although the balance of payments effect was assessed to be zero by the Task Force, there is a positive value implicit in terms of the export of technology if the program is successful. Furthermore, it should be recalled that the Synthetic Fuels Task Force did not address the question of the optimal mix of plants. It is believed that a more positive net benefit would have accrued to all the program levels if only those synthetic fuel processes whose cost are close to present world oil prices had been examined. The remaining technologies should be reassessed for commercial development within a few years based on research and development undertaken by the Energy Research and Development Administration as well as those research efforts being undertaken by the International Energy Agency member nations.

In light of the above conclusions, the Cost/Benefit Task Force believes that the information program should be undertaken with a budgetary authority to install capacity of up to 350,000 barrels per day crude oil equivalent.

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LIST OF ABBREVIATIONS

AEC	Atomic Energy Commission
BAU	Business as Usual
b or bbl	barrels
b/d	barrels per day
BuM	Bureau of Mines
CBE	Crude Barrel Equivalent
CF	Cubic Feet
CY	Calendar Year
DOI	Department of Interior
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ERDA	Energy Research and Development Administration
FEA	Federal Energy Administration
FPC	Federal Power Commission
FY	Fiscal Year
GOCO	Government Owned & Company Operated
ICC	Interstate Commerce Commission
IGT	Institute of Gas Technology
LNG	Liquified Natural Gas
MM b/d	Million barrels per day
mcf	Thousand Cubic Feet
mmscf	Million Standard Cubic Feet
MM	Million
NPV	Net Present Value
NSF	National Science Foundation
OCR	Office of Coal Research
OMB	Office of Management & Budget
OCS	Outer Continental Shelf
PIB	Project Independence Blueprint
QUAD	Quadrillion (10^{15}) Btu

LIST OF ABBREVIATIONS (continued)

R&D	Research & Development
scf	Standard Cubic Feet
SRC	Solvent Refined Coal
SRI	Stanford Research Institute
tcf	Trillion Cubic Feet
t/d	Tons/Day
TPD	Tons Per Day
USG	United States Government
USGS	United States Geological Survey