SELECTION OF PROJECTS FOR FINANCIAL ASSISTANCE BY THE UNITED STATES SYNTHETIC FUELS CORPORATION

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INTRODUCTION

The Energy Security Act of 1980 provides for financial assistance to synthetic fuels projects in the form of price guarantees, purchase agreements and loan guarantees as well as loans and joint ventures.[1] In opting for these forms of incentives the Congress of the United States decided in favor of greater government involvement in decision making on the resources to be developed, the technology to be used, the economic viability of the projects and other matters than would be the case had additional tax incentives such as more investment tax credits, more rapid depreciation or such other devices as expensing of capital been selected. In the judgment of some "Evidence to date suggests that most of these decisions are better left to industry, subject to more general government review as to consistency with national need."[2] The challenge which the United States Synthetic Fuels Corporation faces is to provide the greater government involvement that the Energy Security Act requires without losing the advantage of having critical decisions made by industry.

This article will consider a number of the factors relvant to project selection and the criteria Synfuels is applying in selecting projects for financial assistance in response to its first and second solicitations.[3] Although specific criteria have not yet been published for subsequent solicitations, the factors which are being utilized in the current solicitations reflect in large degree the requirements of the Energy Security Act and will heavily influence future project selections as well. This review is intended to provide background for those who are interested in the selection process. The perspective is not that of an expert in the many technical questions presented, and no dissection of the published criteria will be made. The objective will be to examine some of the decisions which will have to be made and the balancing of competing criteria that will be required.

The result will support the need for a flexible and qualitative approach to the selection process as distinguished from the application of more precise or purely quantitative criteria. The latter might provide greater certainty to prospective applicants and a clearer guide against which to measure the Corporation's actual decisions, but would, in the judgment of the author, tip the balance too far in favor of decision making by the government or worse

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[1]Energy Security Act §131(b)(2) 42 U.S.C. §8731(b)(2) (1980 Supp.).

[2]Balzhiser, R.E., Vice President of Research and Development, Electric Power Research Institute "Synthetic Fuels-Liquids", Findings and Recommendations of the Advisory Panel on Synthetic Fuels, Report to the Committee on Science and Technology, U.S. House of Representatives, Ninety-Sixth Congress, August, 1980, Appendix IV, at 96.

[3]"Supplement to the Initial Solicitation for Synthetic fuels Projects," U.S. Synthetic Fuels Corporation, December 11, 1982 (hereinafter cited as Initial Solicitation); Second Solicitation for Synthetic Fuels Projects, United States Synthetic Fuels Corporation, December 11, 1981 (hereinafter cited as Second Solicitation).

still in favor of projects designed to enhance their prospects of selection without sufficient regard to their contribution to achieving a self-sustaining synthetic fuels industry. It should be recognized, as the Director of the Energy and Minerals Division of the General Accounting Office has pointed out, that the judgmental approach is not without risk and the integrity of the selection process may be questioned if criteria are too flexible.[4] A high degree of proficiency will be required on the part of the Corporation's staff in analyzing the projects submitted to the Corporation. The good judgment of the Corporation's Board of Directors in making awards of financial assistance will determine whether the Corporation will achieve its goals.

I. *Current Status of Development of the Synthetic Fuels Industry in the United States.*

Ten possible projects for the commercial production of synthetic fuel from oil shale were identified in a 1979 Congressional Committee study.[5] Twenty seven coal projects for the production of high BTU gas, 4 for the production of medium BTU gas and 8 for the production of low BTU gas were identified in the same study together with three projects for the production of liquid fuels from coal. An additional sixty-seven research and development projects were also identified. Sixty-three projects in total applied to the Corporation for assistance in 1981 and nine shale and twenty-one coal based projects have recently been identified by the Corporation as developing projects and technologies.[6] Of the projects applying to the Corporation, a number have furnished substantial additional data requested by the Corporation These included ten coal based projects, six oil shale projects, three tar-sands projects, two coal-oil mixture projects and two heavy oil projects.[7] From the twenty-eight projects submitting additional data eleven consisting of one oil shale, one coal-oil mixture, one heavy oil, and eight coal projects, including both coal gasification and liquifaction technologies, have been identified by the Corporation's Board of Directors as having met the requirement of maturity.[8] After a further review of the technology involved in the eleven projects, the Board will make selections of projects for in depth review. Two other oil shale projects and one coal project have already been designated to receive assistance by the United States government and at least another twelve projects are expected to apply to the Corporation by May 31, its deadline for its second solicitation. In all approximately forty projects with commercial potential have been identified as current or potential candidates for serious consideration for government assistance in the near term.

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[4]Peach, J.D., Letter dated August 5, 1981 to Mr. Edward E. Noble, Chairman, United States Synthetic Fuels Corporation.

[5]Report by the Subcommittee on Synthetic Fuels of the Committee on the Budget, U.S. Senate, September 27, 1979, at 212-250.

[6]Testimony of Edward E. Noble, Chairman, United States Synthetic Fuels Corporation before The Subcommittee on Energy Development and Applications and Subcommittee on Investigations and Oversight of the House Committee on Science and Technology, July 27, 1982; U.S. Synthetic Fuels Corporation Staff Briefing for the Board of Strategic Matters, January, 1982, Appendix A.

[7]Synfuels, January 8, 1982 at 1.

[8]United States Synthetic Fuels Corporation. Press Release January 21, 1982.

Although all of these facilities are several years away from commencing production, it is apparent that a very substantial commitment to commercial scale production of synthetic fuels is being made in the United States. As awards of financial assistance begin to be made by the United States Synthetic Fuels Corporation, this committment will gather momentum. Although it seems clear that the goal of 500,000 barrels of crude oil equivalent per day adopted by the Congress of the United States in 1980 will not be achieved by the initial target date of 1987, it seems equally clear that a very substantial foundation is being laid for the reaching of half of that barrellage in the foreseeable future.

A great deal of preliminary work in identifying the factors which are relevant in the selection of synthetic fuels projects was done by Committees of the United States Congress prior to the passage of the Energy Security Act of 1980.[9] To summarize briefly that act set as goals the creation of a commercial synthetic fuel industry in the United States capable of producing 500,000 barrels of crude oil equivalent per day by 1987 and 2,000,000 barrels of crude oil equivalent per day by 1992.[10] The Act authorized 20 billion dollars for its various purposes and approximately 18 billion dollars has been appropriated for the Department of Energy and the Corporation to provide financial assistance to synthetic fuels projects. The Energy Security Act contemplated that an additional 68 billion dollars might be made available to the Corporation after 1984. Given the budget climate in Washington at present it is unlikely that the second phase appropriations will be made. It remains to be seen, however, how the President and Congress will respond in the event of another dramatic oil supply crisis especially if commercially viable projects are available but are being held up solely for lack of funding.

Prior to the adoption of the Energy Security Act an extensive investigation of the potential and problems of a synthetic fuels industry was made by Congressional Committees. Among these efforts was that of the House Committee on Science and Technology which established an Advisory Panel on Synthetic Fuels. Various reports to this panel identified a number of factors as being critical to the successful development of the synthetic fuels industry.[11] Principal among these in the case of oil shale and coal gasification and liquifaction projects were the limitations of the current state of technology, the financial sources for funding projects and the economic considerations involved in successfully marketing the products to be produced in competition with other available fuels. Manpower, fabrication and infrastructure capabilities as well as the corporate capabilities of prospective project sponsors were also identified as limiting factors.

Significant environmental and social consequences were foreseen in the opening up of available sites in areas where only limited development has taken place to date, especially in the Western United States.[12] Among the

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[9]Pub. L. No. 96-294, 94 Stat. 611 (1980).

[10]Pub. L. No. 96-126, Pub. L. No. 96-294 and Pub. L. No. 96-304.

[11]Findings and Recommendations of the Advisory Panel on Synthetic Fuels, Report to the Committee on Science and Technology, U.S. House of Representatives, Ninety-Sixth Congress, Second Session, Serial KKK, August 1980, (hereinafter cited as Advisory Panel Report).

[12]Balzhiser, R.E., Vice President of Research and Development, Electric Power Research Institute "Synthetic Fuels-Liquids", Advisory Panel Report, Appendix IV.

environmental factors which were identified for consideration in synthetic fuels projects were the impact of ambient air quality standards and prevention of significant deterioration increments. Effluent limitations although thought not likely to be an insuperable obstacle were also identified as relevant factors in evaluating particular projects. Among the important consequences of sociological impacts is the potential for "high employee turnover, absenteeism, low productivity and high accident rates" with resulting "excessively high construction costs, delays in schedule, and high operating costs."[13]

II. *Project Selection Process*

The initial solicitation published by the Corporation elicited a wide variety of proposals for financial assistance. The review process has involved a preliminary examination of the eligibility of projects for financial assistance under the Energy Security Act followed by a first phase review in which projects which do not meet the Corporation's selection criteria on the basis of the information submitted by the sponsors are eliminated. In phase one projects have been divided into resource categories for their initial examination. Those which meet the Corporation's eligibility, maturity and strength requirements will receive a very detailed scrutiny in what the corporation refers to as Phase II. In this phase "programmatic objectives" such as supporting a diversity of technologies and utilizing several domestic resources will be applied.[14] The Board has noted in each of its solicitations that it "reserves the right to make several, one or no awards in each resource category and to make awards to less strong proposals within any resource category in order to satisfy the programmatic criteria" it has established.[15] The Board has also noted that it may in exceptioinal circumstances enter into negotiations with sponsors of a project which does not meet the Corporation's maturity standards and proceed to an award, if necessary to achieve the Corporation's goals.[16]

The Corporation is not utilizing a conventional competitive bidding procedure under which the government requests proposals in response to prescribed specifications. Nor is the Corporation negotiating after no competitive bids have been received or none have been found acceptable as provided for in Section 131(b)(3) of the Act.[17] Rather the Corporation's process is a highly competitive one which might be analogized to feeding proposals through a funnel. The Corporation's Initial Solicitation invited virtually any and every synthetic fuel project to apply with a minimum of requirements and formality.[18]

The sixty-three projects that responded covered a very broad spectrum of resources, technologies and end products. The funnel narrowed as additional data has been requested, Department of Energy selections were made

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[13]Carpenter, S. Romcoe, Center for Environmental Problem Solving, Boulder, Colorado, Advisory Panel Report, Appendix XIII quoting "Community Relations Policy and Planning Guide," Rocky Mountain Energy Company, Lakewood, Colorado.

[14]Initial Solicitatioin at 17; Second Solicitation at 17.

[15]*Id.* at 5.

[16]Initial Solicitation at 5; Second Solicitation at 6.

[17]Energy Security Act §131(b)(3); 42 U.S.C. §8731(b)(3) (1980 Supp.).

[18]Initial Solicitation For Proposals For Financial Assistance For Synthetic Fuels Projects, United States Synthetic Fuels Corporation, Nov. 21, 1980, 45 Fed. Reg. 79965 (1980).

and project maturity has been identified as being essential. Projects which appear to meet the Corporation's maturity, technical and financial standards on the basis of information supplied by the sponsors will then be given an in depth examination in which the information supplied will be verified and a close project specific examination will be made. At this point projects will be approaching the neck of the funnel. The last step in the process will include negotiating the terms upon which assistance will be granted.

It is not yet clear how the final decisions will be made if the negotiations yield more than one project which is close to being satisfactory but which has unresolved questions. As we will note throughout our discussion of the factors relevant to the selection process, the criteria are not absolute and many balances will have to be struck. It is entirely conceivable for example that the Board may decide that it is prepared to accept the risks inherent in one or two coal gasification or liquifaction projects but that unresolved technical or marketing questions pose too great a risk of the Corporation's resources to fund all the finalists. The Board may also decide to reserve a greater portion of its substantial, but not unlimited resources, for later solicitations or there may be reductions through the budget process of funds that are available to the Corporation.

In the last analysis, however, not all projects are likely to meet the Corporation's criteria equally well. In this situation the Board may well find it desirable to utilize the best and final offer process to solicit truly competitive bids by remaining finalists from which it will select the project or projects representing the least commitment of the Corporation's resources, the lowest unit production cost, most promising technology, or the sponsor commitment insuring the greatest sharing of risks.[19] The very substantial commitments of funds that sponsors will have made to meet the requirements for reaching this final stage, possibly involving hundreds of millions of dollars, in reliance on the Board's decision to include their projects in the final process may, however, limit the Board's willingness to follow this approach.

The Board may be spared the dilema of selecting between more than one acceptable project, because its funds are sufficient and its diversity mandate justifies taking substantial risks. Perhaps sponsors will decide the risks are too great to commit their funds and withdraw thereby eliminating the need for the Board to make a choice between finalists. In any event the Board can insure that selections have been made in the competitive environment contemplated by the Energy Security Act by requiring finalists to be measured against the highest possible standards in a process where weaker competitors have been eliminated as the neck of the funnel has grown narrower.

III. *Project Selection Criteria*

A. Resource Bases

The various factors developed from the studies undertaken in conjunction with the consideration of the legislative alternatives that led to the Energy

[19]Energy Security Act §131(b)(2), 42 U.S.C. §8731(b)(2) (1980 Supp.).

Security Act of 1980, provide a starting point from which to examine the factors which the United States Synthetic Fuels Corporation has determined are relevant in its selection of projects for financial assistance. The Corporation has broken the proposals submitted in response to its initial solicitation into the following four resource categories:

1. oil shale;
2. coal, including lignite, peat and coal-oil mixtures and magnetohydrodynamic topping cycles;
3. tar sands/heavy oil; and
4. hydrogen from water by electrolysis.[20]

The Corporation has followed the mandate of the Energy Security Act of 1980 which contemplated that the initial solicitation by the Corporation would encompass a diversity of technologies for each potential domestic resource.[21] Examination of the different resource bases is, therefore, the point at which our examination of criteria will begin.

1. Oil Shale

Initial oil shale projects will almost certainly require high grade shale resources.[22] Such resources are found in the United States where deposits of oil per ton range from 25 to 40 gallons per ton. To put these numbers in perspective it is interesting to note that richer deposits of 40 to 50 gallons per ton may be found in the Soviet Union.[23] In evaluating oil shale resources, however, a number of factors besides gallons per ton will play an important part. For example in certain areas a thick rock mantle overlies the shale deposits. This factor may prevent development in some areas and will add considerably to the cost and limit the volume of oil recovery.[24] The presence of certain minerals increases the energy requirements for processing the shale, but may have offsetting advantages because of their marketability as separate products. As the Geological Survey points out an ideal deposit for synfuel development would "(1) be above the water table, (2) have thin overburden, (3) be unfractured, and (4) be lacking in unwanted accessory minerals and harmful trace elements. No such areas exist; therefore, evaluation and tradeoffs will be necessary."[25] In determining which of several competing shale projects is to be selected the advantages of the thickest and richest shale deposits in the Piceance Creek Basin of Colorado will have to be weighed against such negatives as the thickness of the overburden, the requirement for

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[20]Initial Soliciation at 2.

[21]Section 126(a) of the Energy Security Act, 42 U.S.C. §8722 (1980 Supp.).

[22]Synthetic Fuels Development, Earth Science Considerations, U.S. Department of the Interior Geological Survey (hereinafter cited as Geological Survey).

[23]Committee Print 97-7, United States Versus Soviet Synthetic Fuels Technology Assessment, Subcommittee on Economic Stabilization of the Committee on Banking, Finance and Urban Affairs, House of Representatives, 97th Congress, First Session, Report of an Ad Hoc Task Force Under the Sponsorship of the Office of the Under Secretary of Defense for Research and Engineering, 1981.

[24]Geological Survey at 14.

[25]*Id.* at 16.

disposing of ground water, and the mining problems presented by the rock characteristics. In certain areas a surface mining approach is clearly indicated.[26] Such an approach in turn influences and possibly dictates the technology for recovery of the shale oil.

2. Coal (including lignite, peat and coal oil mixtures).

In evaluating the resource base of a coal gasification or liquifaction project geologic constraints will have to be considered. To produce 50,000 barrels of oil or 250 million standard cubic feet per day of gas will require 20,000 to 40,000 tons of coal per day.[27] Coal reserves of 12 million to 24 million tons will be needed for one year and, assuming a 30 year life span of a plant, reserves of between 360 million and 720 million tons of economically recoverable coal suitable for the technology proposed to be used will be required. These tonnages are not available in certain regions.[28] Other limiting factors noted by the Geological Survey are: the thinness of the coal bed which may not meet requirements for large-scale mechanized mining, excessive deepness of coal beds may preclude current mining practices, thick glacial deposits covering coal beds, aquifer disruption, mining hazards, acid mine drainage and coal quality.[29]

It is stating the obvious that a coal based synthetic fuels project must have an adequate resource base, but in selecting among competing projects the comparative strength of the base may be an important consideration. As the Geological Survey points out adequate water must be obtainable at the site. Such problems as competing uses of coal lands as farm lands and commitments to the metallurgical and power industries must be taken into account as the broader considerations of development of a synfuels industry as contrasted with the more limited characteristics of a single project are weighed. In view of the Corporation's mandate to assist in developing an industry utilizing diversity among types and qualities of resources these broader considerations pertinent to replication will have to enter into specific decisions.[30]

3. Other Resources

Tar sands, including certain heavy oil resources, coal-oil mixtures and water as a source of hydrogen through electrolysis are other resource bases from which synthetic fuels may be derived. Projects to produce synthetic fuels from biomass have, however, been excluded from financial assistance by the Corporation.[31] The unique characteristics of each of these resources will have to be considered in weighing projects based on them.

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[26] *Id.*
[27] *Id.* at 6.
[28] *Id.*
[29] *Id.*
[30] Energy Security Act §126(a)(2), 42 U.S.C. §8722(a)(2).
[31] Energy Security Act §112(17)(C), 42 U.S.C. §8722(17)(C).

B. Technological Factors

Although surface retorts utilizing U.S. shale technologies have operated at the 300 to 1,000 ton per day scale, none have operated at commercial volumes.[32] Accordingly in evaluating projects utilizing surface retorts problems inherent in scaling up from pilot plant operations to a commercial scale will be of great concern. In addition to the scale up problems of a surface retort, the modified in situ retort has encountered a variety of technical problems. In spite of these problems, however, in view of the fact that the two oil shale projects which are receiving financing from the Department of Energy utilize surface retorts, the Synfuels Corporation may under the Energy Security Act's mandate to support a diversity of technologies have to give serious thought to modified in situ retorts rather than financing further projects using surface retorts. In doing so it will have to balance the goals of maximizing production against diversity of technology. It will also have to consider whether solutions to the difficulties the modified in situ process has encountered, including problems of mine safety, can be resolved without increasing costs beyond the point where the project will cease to be economically feasible. Just as limitations inherent in the various resources dictate certain technologies, solutions to technical problems may result in higher costs which will impact on marketing feasibility. It is no doubt with these concerns in mind that the Corporation has emphasized that projects must be "mature" in order to be serious candidates for assistance, i.e., have progressed far enough to permit reliable estimates of technical cost and other financial data.[33] As a practical matter this may well mean that the technology must have reached the pilot plant stage.

Technological questions of a different kind are relevant to evaluating projects for the conversion of coal to gas and liquids. These processes have already been developed in other countries and technological risks can be minimized by using these processes. As has been pointed out, however, in a Report to the House Committee on Science and Technology utilizing the proven processes may result in the U.S. shifting from reliance on Middle East oil to reliance on "overseas engineering and fabrication capability."[34] Although it would seem prudent for Synfuels to give lower weight to buy American considerations versus greater technological reliability, the fact that the Great Plains project which utilizes western coal and the Lurgi process has received financing from the Department of Energy may well argue for an American technology such as that developed by Texaco and represented by the Coolwater project inCalifornia. Projects like Coolwater will not be supported, however, if sufficient funds are available to the project from sources other than the Corporation — the credit elsewhere test.

Favorable technological considerations must also be balanced against resource availability. For instance tar sands plants are reported to have advantages of design flexibility, speed of construction and cost as compared with coal and shale based facilities. On the other hand most tar sands beds are "too

[32]Advisory Panel Report at 48.
[33]Initial Solicitation at 8; Second Solicitation at 8.
[34]Advisory Panel Recommendations at 103.

deep for economic development by mining."[35] Many other factors will have to be weighed in the decision process but the coal technology example is useful to demonstrate the non-technical considerations that have to be balanced against technical criteria even though demonstrated commercial use insures greater reliability. The tar sands example requires balancing current production advantages with potential for long-term contribution to a commercial synthetic fuels industry. The degree to which weight is attached to other factors in spite of technical uncertainties, on the one hand or technical advantages on the other hand will also distinguish Synfuels from a private financing source.

C. Management Capability

One of the most importat determinants of a successful project will be the experience and ability of the project managers. Synfuels has recognized the significance of this element in connection with its Initial Solicitation and in its Second Solicitation.[36] Although past experience of organizations is frequently extensive and the experience of individuals can be documented, such factors as "the quality and composition of the sponsor's technical teams"[37] may involve a judgmental decision relying in part on intuitive perceptions. Even in projects utilizing proven technology "the experience of individuals designated as project managers and key project engineers with projects of similar size and complexity"[38] will undoubtedly be of importance, because of the size and complexity of synfuels projects.

D. Economic Viability

A major difference between the program of the Department of Energy in the research, development and demonstration of synthetic fuels processes and the projects to be provided assistance by Synfuels lies in the requirement of the latter that projects "have a high probability of economic viability".[39] On the one hand coverage of expenses including debt service will be required but of great significance is the demonstration of "cash sufficient . . . to provide an adequate overall incentive to sponsors".[40] The question of what constitutes an "adequate overall incentive to sponsors" may well be a matter of considerable debate. Just as with picking projects with good management the Corporation will face a special challenge in determining what constitutes an adequate return on the sponsor's investment.

If a project is successful a substantial return will be fully justified by the risk and skill involved in achieving that success. If a project is unsuccessful, and the Corporation suffers a loss on its financial committment, Congressional criticism is sure to be sharp, if the sponsor has been rewarded through tax or other devices notwithstanding the failure of the project. This area is critical to attracting the best available sponsors. It is also one where the judgment of the

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[35] *Supra*, note 32.

[36] Initial Solicitation at p. 10; Bayrer R.L., Assistant Vice President, Project Development, United States Synthetic Fuels Corporation letter to sponsors applying to the Corporation for financial assistance under the Corporation's Initial Solicitation (hereinafter cited as Bayrer letter); Second Solicitation at 11 and Annex A thereto at 8.

[37] Initial Solicitation at 11; Second Solicitation at 11.

[38] *Id.*

[39] *Id.*

[40] *Id.*

Corporation through its staff and Board will be most important. As a corollary to providing a favorable return on the sponsors' investment the Corporation has stated that it "will seek to assist projects that: . . . have sponsors and lenders willing to take larger rather than smaller equity risk positions relative to total project costs;"[41] The size of the sponsor's commitment may not be the only consideration. For example the timing of sponsor contributions may be important. Having them spread over the full construction period may be one way of insuring that the Corporation's "good money" is not thrown after the sponsor's already committed funds if a project has run into serious problems. Spreading may result in less sponsor commitment when the Corporation's first dollar is obligated, but it insures that the sponsor will be as desirous as the Corporation of not throwing good money after bad, if, during the course of construction, the sponsor determines that the project is flawed in some serious respect.

The speed with which a sponsor recovers its investment after giving effect to tax considerations is another ingredient in this same question. Even if a sponsor is making a very substantial contribution, the sponsor's risk may be significantly reduced, if, for example, its investment can be recovered through tax credits, accelerated depreciation and other tax benefits before the project becomes fully viable. In evaluating sponsor commitment, however, the Corporation may seek to take after tax consequences into consideration in connection not only with the amount of the sponsor's commitment but also in connection with the timing of recovery of the sponsor's investment. Sponsor's may seek full credit for their investment notwithstanding the fact that non-project income will become non-taxable because of deductions derived from project expenses. Presumably the sponsor could incur non-synfuels related expenses which could be deducted against such non-project related income had it elected not to participate in a synthetic fuels project, but the Corporation may not concur with this approach. Other sponsors may not be able to realize fully either immediate or even deferred tax benefits if the sponsor's income is not taxable for any reason. This tax status may require higher contributions from the sponsor or greater financial assistance from the Corporation.

Accordingly, where tax benefits from unrelated income are involved, the speed of recovery of the sponsor's investment will have to be balanced against the size of the sponsor's commitment. If the Corporation is to achieve the goal of maximum private decision making and responsibility, a substantial and sustained sponsor commitment and a commensurate discounted rate of return on its investment will be a very significant criterion in selecting projects for financial assistance by the Corporation.

Another critical element in economic viability is the validity of cost estimates. The Corporation has addressed this problem by stressing the need for "significant development effort" to insure project maturity[42] and by inviting submission of the detailed technical and engineering data necessary to determine the reliability of cost estimates.[43] Although the Corporation has said it will not "dictate economic assumptions such as interest rates and inflation

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[41] *Id.* at 12.

[42] Initial Solicitation at 8; Second Solicitation at 9.

[43] Bayrer letter; Second Solicitation, Annex A.

rates,"[44] it has also said it will make adjustments in assumptions to permit the comparison of projects on a common basis. The practical effect may be that proposals which have used assumptions which are more favorable than the standard assumptions used for comparability will be rejected because their adjusted outcomes will be less favorable than the sponsors anticipated. In not publishing assumptions in advance the Corporation may be able to avoid substituting its judgment as to appropriate assumptions for that of project sponsors in order to have the benefit of the sponsors' best judgments on realistic assumptions. It seems unlikely though that the Corporation will not have to draw its own conclusions as to the most reliable assumptions on such key questions as a range of rates for inflation, interest costs and energy prices when it reaches the selection stage of the process.

Another significant element in the economic viability of the project is the project's plan for the upgrading of its output, if required as in the case of shale oil. Transportation and refinery facilities in the case of shale products and coal liquification facilities and access to pipelines in the case of coal gasification projects will also be important factors. The availability of markets at profitable prices for the syncrude, methane, methanol or other end product and any byproducts produced will be of critical importance. Liquid fuel from tar sands and syncrude from shale oil are currently the synthetic fuels most likely to produce competitively priced end products. Conversely satisfactory markets for low, medium and even high BTU gas seem to be more difficult to foresee, although in the latter case rolled in pricing may avoid the problems of high price.[45] Certain features of the Powerplant and Industrial Fuel Use Act of 1978 and the Natural Gas Policy Act may on the one hand help and on the other hand make more difficult the marketing of high price synthetic gas.[46] In addition the market for methanol as a fuel or as a chemical is uncertain and potentially limited in volume, at least in the near term.[47] The Corporation will have to give marketing plans very careful scrutiny while at the same time responding to the Energy Security Act's mandate for diversity in the period prior to the submission by the Corporation to Congress of a comprehensive strategy which is due by June 30, 1984, but may be postponed for one year.[48]

Evaluation of sponsor's proposals for dealing with uncertainties in marketing synthetic fuels at adequate prices will be among the most difficult questions presented to the Corporation. No specific criteria have been enunciated for this evaluation, and its importance will vary depending upon the type of financial assistance requested. The Corporation may seek to minimize the problem by utilizing price guarantees where the uncertainty is greatest, but it is required to put a cap on its maximum obligation on any one project.[49]

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[44]Initial Solicitation at 11; Second Solicitation at 12.

[45]Synfuels Week, December 28, 1981 at 2, reporting on Booz Allen Study for the Department of Energy on thirteen feasibility studies for low and medium – BTU coal gasification projects.

[46]For an interesting discussion of the impact of federal regulation on the marketing of synthetic fuels, see Harsch and Holt, *Marketing Synthetic Fuels: The Roles of Federal Regulation and the Synthetic Fuels Corporation*, 2 Energy Law Journal 331 (1981).

[47]The Stanford Research Institute is reported to be "very pessimistic" about methanol/gasoline blends and neat methanol fueling but more optimistic about the use of methanol as a fuel for electric utilities. Alcohol Week, January 4, 1982 at 5.

[48]Energy Security Act §126(b)(2), §126(d)(1), 42 U.S.C. §8722(b)(2) and §8722(d)(1) (1980 Supp.).

[49]Energy Security Act §131(k)(1), §152(b)(1)(c), 42 U.S.C. §8731(k)(1), §8752(b)(1)(c) (1980 Supp.).

Whether such an approach would make financing feasible for a sponsor remains to be seen. In certain cases both loan and price guarantees may prove to be the only feasible approach. This area illustrates the balancing that may be necessary between the type of financial assistance requested as a criterion and other factors such as technological and resource diversity and economic viability.

E. Environmental, Health and Safety Considerations.

The Energy Security Act provides expressly for a role for the Corporation in environmental, health and safety matters. In evaluating the technology to be used the Corporation must consider the technology's potential for complying with applicable regulatory requirements.[50] Perhaps even more importantly, the Act states that "Any contract for financial assistance shall require the development of a plan, acceptable to the Board of Directors [of the Corporation], for the monitoring of environmental and health related emissions from the construction and operation of the synthetic fuel project."[51] In preparing the plan the sponsor must consult with the Environmental Protection Administration, the Department of Energy and appropriate state agencies. As the Conference Committee pointed out "The monitoring of emissions — gaseous, liquid or solid — and the examination of waste problems, worker health issues and other research efforts associated with any synthetic fuel project receiving assistance . . . will help to characterize and identify areas of concern and develop an information base for the mitigation of problems associated with the replication of synthetic fuel projects. The Corporation is not expected to involve itself in the development or execution of such plans except for the necessary approval. The Conferees intend that development of the plans and actual data collection be reserved to the applicants for financial assistance after consultation with appropriate federal and state agencies."[52] The Corporation has sought information to satisfy this requirement by specifying that it will consider whether the project will provide information for the analysis of the effects of substances with potential adverse effects, including unregulated substances, has selected a site in compliance with applicable environmental regulations, has made provision to obtain required permits and makes provision for the abatement of environmental and health related emissions.[53] The Corporation has also stated that it will take into consideration the cumulative impacts of other projects proposed to be built in the area.

In evaluating a project's plans for monitoring environmental and health related emissions the Corporation will have to take into consideration the wide ranging scope of federal and state regulation in these areas. At one count twenty-one federal laws affecting siting, construction and operation of synthetic fuels plants were identified.[54] Numerous state laws are also applicable. The

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[50]Energy Security Act §131(b)(3)'(B)(iii), 42 U.S.C. §8731(b)(3)(B)(iii) (1980 Supp.).

[51]Energy Security Act §131(3), 42 U.S.C. §8731(e) (1980 Supp.).

[52]Joint Explanatory Statement of the Committee of Conference on S. 932, H.R. Rep. No. 96-1104, 96th Cong., 2nd Sess. at 213-14 (1980).

[53]Initial Solicitation at 15; Second Solicitation at 15.

[54]Synfuels From Coal and the National Synfuels Production Program: Technical, Environmental, and Economic Aspects, printed at the request of the Committee on Energy and Natural Resources United States Senate, First Session, 97th Congress, Publication No. 97-3, January 1981. (hereinafter cited as Energy and Natural Resources Report).

Corporation will of course be relying on the various regulatory agencies directly involved for insuring substantive compliance by the projects with the various laws and regulations.

In view of the statutory mandate that contracts for financial assistance provide for the required monitoring plans as distinguished from a requirement that the project with the best plan receive an award, the Corporation may not feel compelled to require that these plans be fully developed when it is making its selection of projects to be awarded financial assistance. As long as preliminary indications are presented that satisfactory plans will be developed, the Corporation may determine to leave the presentation of the details of these plans to the post selection process when the contract details are being worked out. The Corporation may also provide in its contracts for a covenant operative after assistance is granted, which would require monitoring plans when regulatory requirements are ascertained. At this stage of applying the selection criteria it may be sufficient for a project to demonstrate that it will develop a satisfactory plan as required by the Corporation. When the Board comes to deciding that a particular plan is acceptable, however, it will need to keep in mind that synthetic fuels have a potential for contributing to the meeting of environmental requirements by energy users. This possibility exists because producing and burning synthetic fuels may well be less degrading to the environment than burning coal for example.[55] The effect could be to enhance the market for synfuels. This result can only be achieved, however, if the synfuels plants meet applicable environmental standards and the fuels produced are clean.

Worker health and safety considerations also have a bearing on selection. For example protecting workers from hazardous gases may well add significantly to the costs of the modified in situ oil shale retort. Concern has been expressed about the presence of carcinogens in coal based synthetic fuels projects.[56] These problems may have to be considered in connection with manpower availability as well as costs and perhaps in connection with the comprehensive strategy to be presented to the Congress by the Corporation in 1984 and 1985.[57] The need to gather information for the development of this strategy may become an indirect criterion in applying the statutory requirement for a diversity of technologies for each potential domestic resource.[58]

F. Availability of Water.

The Geological Survey has pointed out that most potential synfuel areas of the country have local water available for synfuel use, but there are areas of considerable size where, although water is sufficient, it is already fully committed.[59] The potential for conflict with irrigation and livestock production needs for surface water has also been pointed out by the U.S. Water Resource

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[55]Energy and Natural Resources Report at 6.

[56]For a discussion of occupational health and safety considerations in coal based synfuels plants see Energy and Natural Resources Report at 200.

[57]Energy Security Act §131(b), 42 U.S.C. §8731(b) (1980 Supp.).

[58]Energy Security Act §127(a)(3), 42 U.S.C. §8723(a)(3) (1980 Supp.).

[59]Geological Survey at 30.

Council.[60] In certain areas, aquifers which have not been tapped for irrigation because of high cost may nevertheless be economic for a synfuels project.[61] The Corporation has required that projects demonstrate the availability of an adequate water supply and that provision has been made to limit adverse effects on water quality.[62] The problems of demonstrating reliability will undoubtedly vary among geographic locations, resource bases and technologies. For example demonstrating both the ability to cope with seasonal fluctuations as well as periodic droughts may be a significant element in evaluating a western oil shale project. In an eastern coal based project the availability of water for cooling may be the largest water consumption need.[63] This need may be offset to some degree by air cooling but only at higher costs.[64] Accordingly in coal based projects water availability may be an item that impacts primarily on costs.

G. Socioeconomic Factors and Labor Force Requirements.

A great deal of concern has been expressed by state and local government officials faced with the prospect of providing extensive services before the property tax or other taxes from synthetic fuels projects are producing sufficient revenues to fund the costs associated with these projects. Another problem is presented when the synfuels project is located in one state or county and municipal services must be provided in another because workers live in a different municipality or even state. The Corporation has called for proposers to demonstrate that they have developed strategies to identify and deal with needs for housing and services.[65] Collaboration with local communities and satisfactory financing arrangements to fund the various needs must also be available.[66] Similarly a demonstration that an adequate labor force will be available is called for.[67] As noted in the discussion of studies that were done for Congressional Committees in connection with the adoption of the Energy Security Act, socioeconomic and labor force elements may come together because of the impact of the boom town phenomenon on the availability and productivity of labor.[68]

Evaluating projects for their attention to these factors may be very difficult where management has not made the very extensive efforts that have been undertaken in connection with such projects as the Colony Oil Shale Project being undertaken by Exxon and Tosco where a town to house project workers and others is being built. A danger is that on the one hand costs may seem excessive in the project that has dealt adequately with socioeconomic and labor factors and may be understated in the project that has largely ignored this aspect or has assumed it will be provided for by others. As the very substantial

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[60]U.S. Water Resources Council. The Nation's Water Resources 1975-2000 Vol I: Summary, Government Printing Office, 1978 referred to in Energy and Natural Resources Report at 232.

[61]Geological Survey at 28.

[62]Initial Solicitation at 16; Second Solicitation at 16.

[63]Energy and Natural Resources Report at 225.

[64]*Id.*

[65]Initial Solicitation at 15; Second Solicitation at 16.

[66]Initial Solicitation at 16; Second Solicitation at 16.

[67]*Id.*

[68]*Supra* note 15.

costs that are being incurred in connection with the Colony project demonstrates the size of these costs can be very high. Accordingly special attention will have to be given to the validity of estimates both of direct costs and hidden costs resulting from low labor productivity and turn over in projects which have not given substantial attention to this problem. Areas where existing facilities and labor sources are available may have a substantial comparative advantage that shows up indirectly in project costs.

CONCLUSION

As this article is being prepared for publication the Board of Directors of Synfuels has determined that eleven projects which responded to its initial solicitation have met its test for project maturity.[69] By the time it appears in print determinations of project strength are scheduled to have been addressed. We have discussed the selection process and many of the factors that the Board will have considered as it moves toward the final selection of projects to receive financial assistance. Although an extended period will elapse before final awards will be made, two conclusions can be drawn. The first is that the solicitation process has achieved the initial goal of attracting a very broad array of proposals. It is also clear from the Corporation's solicitations that, if technically and economically feasible projects are available, the Board intends to give full effect to the Energy Security Act's mandate to finance a diversity of technologies and domestic resources prior to the submission to the Congress in 1984 or 1985 of a comprehensive strategy for achieving the national synthetic fuel production goals. In doing so it will take into account the one coal gasification and two oil shale projects already designated to receive assistance as a result of actions by the Department of Energy. In meeting the national production goals projects not receiving assistance will also play a part.

A tentative conclusion can also be drawn that the solicitation process will be highly selective. Given the Act's production goals, it is not yet clear whether there will be true competition between comparable projects, because there may simply be too few projects which survive the criteria that have been established to permit the Corporation to be able to discriminate between qualifying projects. It is also too early to determine whether a satisfactory balance will be struck between the conflicting goals of the government's involvement mandated by the Act in critical decisions and the hope of the Act's sponsors that decisions will reflect the business motivated judgments of private industry. Initially at least it appears that these goals are being met and the concern expressed by the Corporation's board members to avoid wasting the taxpayers money gives some basis for confidence that they will be achieved.

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[69] *Supra*, note 8.