

REPORT OF THE
VIRGINIA COAL AND ENERGY COMMISSION
TO
THE GOVERNOR
AND
THE GENERAL ASSEMBLY OF VIRGINIA



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**Report of the
Virginia Coal and Energy Commission
To
The Governor and the General Assembly of Virginia
Richmond, Virginia
December, 1979**

To: Honorable John N. Dalton, Governor of Virginia
and
The General Assembly of Virginia

I. LEGISLATIVE HISTORY

During the 1979 General Assembly Senator J. Harry Michael, Jr. introduced Senate Bill No. 829 creating the Virginia Coal and Energy Commission. (See Appendix I.) The legislation passed and as of July 1, 1979 a permanent Commission was appointed (Chapter 22.1 of Title 9 of the Code of Virginia).

The original Coal and Energy Commission began as an ad hoc group of legislators and State agency representatives interested in furthering the Commonwealth's utilization of its abundant coal reserves with particular emphasis on liquefaction and gasification. In 1975 Senate Joint Resolution No. 109 created the first Virginia Coal and Energy Commission which gave formal status to the ad hoc group.

As the energy situation worsened the legislature became more and more aware of the need for the establishment of a permanent commission to monitor on a continual basis the energy problems of the Commonwealth, the nation and the world and to enact legislation when necessary to improve upon the situation, always bearing in mind the abundant coal reserves in Virginia. It is the role of the permanent Commission to evaluate the energy situation in terms of what might be done legislatively to improve upon it.

The Commission is composed of twenty members, five from the Senate, eight from the House of Delegates and seven appointed from the State-at-large by the Governor. The members are as follows: Senator J. Harry Michael, Jr., Charlottesville; Delegate W. Ward Teel, Christiansburg; Delegate James F. Almand, Arlington; Senator Herbert H. Bateman, Newport News; Senator Frederick C. Boucher, Abingdon; Senator Charles J. Colgan, Manassas; Delegate J. Paul Councill, Jr., Franklin; Senator Virgil H. Goode, Jr., Rocky Mount; Delegate Joseph A. Johnson, Abingdon; Delegate George W. Jones, Chesterfield; Delegate Glenn B. McClanan, Virginia Beach; Delegate Lewis W. Parker, Jr., South Hill; Delegate A. Victor Thomas, Roanoke; Herbert O. Funsten, Professor of Physics, College of William and Mary; Walter C. Ayers, Virginia Petroleum Association; J. Richard Lucas, Department of Mining and Mineral Engineering, VPI&SU; George L. Jones, Office of Emergency and Energy Services; Stanley Ragone, Virginia Electric and Power Company; Fred W. Walker, Conservation and Economic Development; and Frank T. Sutton, III, Commonwealth Natural Gas Corporation. Ex-officio members include Dr. Richard Wolfe, Vice President of Research and Development, United Coal Companies and Eugene R. Brady, Vice President of Production, Roanoke Electric Steel.

II. GENERAL SUMMARY

The Commission has heard testimony from a number of persons at its seven meetings relating to energy problems and possible solutions. The abundance of energy policies at the federal level make it difficult for the State to understand its role in the energy picture and follow through with directives for conservation, allocation, etc. Many complain that due to overly strict federal regulations the coal reserves in Virginia are underutilized and that the Commonwealth should have as its top priority an increase in the utilization of this natural resource. A number of businesses were targeted at the federal level several years ago to convert their boilers from coal to oil because of air quality problems. Now these same companies are being asked to convert back to coal burning devices because of economic and international upheavals. A combination of high spot market oil prices and unstable conditions in foreign countries such as Iran has resulted in record high utility bills in Virginia and across the nation. The emphasis now, and a strong one born of necessity, is on conservation and alternate sources of energy such as resource recovery from the solid waste stream, synthetic fuels, nuclear power, low head hydroelectric power, supplemental gasohol for transportation and solar energy. The Commission has attempted during the past year to investigate available

alternative sources and make any legislative recommendations which it deems necessary to advance these sources, thus lessening the State's and the nation's dependence upon foreign sources of oil.

As an example it has been estimated that resource recovery in the form of energy on a national basis could replace approximately 5% of the energy now supplied by foreign oil. An equivalent amount would be the shortage experienced during the summer of 1979 when Iran was caught up in a revolution and no longer producing or shipping oil to this country.

At the present time due to a licensing moratorium on the operation of new nuclear power plants the North Anna II station is inoperative. As a result approximately 8 million barrels of oil on an annual basis must be used in place of the power originally to be derived from Station No. II costing between \$12-14 million per month.

There follows in this report an account of Commission activities including its meetings and deliberations.

III. COMMISSION MEETINGS

A. April 25, 1979: First meeting after adjournment of 1979 General Assembly.

The Commission was addressed by W. W. Madden, Manager of Exxon Corporation Planning, Houston, Texas who commented on the national/international energy situation. He stressed six steps which could be taken by the State to ease the energy situation. These include:

1. encouraging responsible discussion of the Nation's energy situation;
2. publicizing the need for energy conservation;
3. accelerating steps to conserve energy in state facilities and equipment;
4. strict enforcement of the 55 mile per hour speed limit;
5. ensuring the Commonwealth has a mechanism to implement federal regulations; and
6. urging federal action on appropriate steps.

The Commission also looked into the idea of expanding the Virginia Housing Development Authority to assist within the purview of its energy loan conservation program those other than low/moderate income families.

Commission input was requested for a cabinet level task force which Governor Dalton appointed to investigate the conversion from oil to coal or natural gas in State-owned buildings.

B. June 25, 1979: Resource and energy recovery from the Solid Waste Stream.

Representatives from 1) a locality with a resource recovery (steam) facility, 2) the State Solid Waste Commission and 3) the federal DOE's Office of Waste Management addressed the Commission at this time. The City of Salem supplies steam generated from its resource recovery facility to the neighboring Mohawk Tire Plant, generating between 4200 and 4500 BTU's per pound. At the same time that Salem was faced with the problem of securing land for a new landfill, the idea of a resource recovery facility became more and more plausible. The facility is in operation at this time, saving 174 million cubic feet of natural gas or its fuel equivalent per year. This was the first facility of its type on the east coast, designed to operate 24 hours per day, 5 days per week. The facility has, however, not run a full month to date without some mechanical problem.

It is estimated that enough natural gas was saved during three month's partial operation of the plant to heat 90 homes for one year. At full capacity enough natural gas to heat 2,175 homes will be saved, thus enabling Salem to meet one of its objectives: conservation of a natural resource.

Two recommendations were suggested: 1) an increase in the appropriation made to counties, cities and towns for solid waste management (\$2,500 plus 5¢ per capita at present); and 2) a tax break for those companies who chose to dispose of their own solid waste in the manner utilized by

Resource recovery should not be looked upon as a panacea for the solid waste problem. It is rather a way to eliminate a percentage of the available waste stream while generating energy. At the present time landfills serve as the least expensive way in which to dispose of waste, but in the long run the economics are likely to swing toward resource recovery facilities. Also, public sentiment runs strong when the question of a new landfill site is raised. At the national level the Resource Conservation and Recovery Act of 1977 emphasizes increased use of resource recovery and a gradual phase-out of landfills except in sparsely populated areas where a plant is not economically feasible.

A suggested recommendation was that the State provide full faith and credit for revenue bonds for the construction of resource recovery facilities. These systems are used extensively in European countries as a result of a shortage of landfill sites and high energy cost. The cost of disposal may run as high as \$30.00 per ton in these countries.

C. July 30, 1979: Low head hydroelectric energy.

Small Scale Hydropower (SSH) development was the principle subject of this meeting of the Commission. This source of power is of interest primarily because there are a large number of small (low head) dams in the State that conceivably could become sources of hydroelectric generation. Nationwide there is an estimated 55,000 Mw of additional electrical generating capacity available at existing dam structures. The technology is proven, and the economic feasibility is becoming more likely for SSH development as the cost of other forms of energy increases.

There apparently is no reason that Virginia should not reap its share of the benefits from SSH development. The Commission heard that given the State's climate and geology, the State is favorably disposed to construction of small dams. A number of small dams already exist, and more importantly, many of these are either now used for hydrogeneration or have been so used in the past.

There is currently considerable activity in Virginia which would go a long way toward establishing SSH development feasibility.

These projects are summarized as follows:

1. DOE has funded a study for upgrading the generating capacity at the Regal Textile Company at Fries, Virginia.
2. Two Public Utility Regulatory Policy Act (PURPA) feasibility studies with the American Electric Power Company.
 3. Preliminary Applications
 - a. Brumley, Washington County.
 - b. Fries Textile Company, Fries, Virginia.
 - c. City of Martinsville.
 - d. Two for Owens-Illinois.
 4. City of Radford and City of Bedford are in early stages of planning for enlarging their hydro capacity.

Probably the most cogent statement of need came from Robert P. Asbury, City Manager of Radford. He pointed out the two most critical needs from his perspective to be 1) on-site technical assistance to help improve environmental assessment and 2) a State voice before the Federal Energy Regulatory Commission to reduce barriers to the licensing process. The reasons for these needs are clear. First, just to acquire the necessary information and to subsequently pursue a license costs about \$500,000 and second the delays in the license procedure can add months or years to a project as well as substantial project cost increases. These barriers can be insurmountable for a small scale

developer.

D. August 15, 1979: Solar Energy.

The Commission's meeting held at Ferrum College coincided with the dedication of the \$250,000 Ferrum College Solar Facility. It was most appropriate to have Solar Energy in Virginia as the topic of the meeting. The facility at the college is quite a large one intended to provide space heat for one dormitory and hot water for three dormitories. The data obtained from the operation of this system will be quite useful in evaluating the applicability and cost effectiveness of institutional solar use.

Solar applications in Virginia fall into essentially two classifications: liquid fuels via alcohol and space/hot water heating. An interesting facet of the fuel alcohol (or gasohol) development is the on-farm application, i.e. small scale vs. large scale commercial operations. A cooperative operation was described to the Commission. In this type of operation, participating farmers bring their grain to the processor. The grain is fermented and ethanol is distilled from the resulting mash. The two products are alcohol and the residue. The residue can be fed to animals dry (distillers dry grain) or wet. In either case the feed is high in protein content and reported to be easily digestible and produces superior weight gain. Alternatively, the residue can be further processed through a methane digestion (similar to sewage sludge digesters) in which the gaseous product is methane. Methane can be used as fuel for the fermentation/distillation process and the residue from the digester remains a high quality (in nitrogen) fertilizer.

Luke Staengel, who described the process to the Commission, had submitted a grant proposal to DOE requesting funds to help set up the process. DOE has since awarded Mr. Staengel the grant and presumably work is underway.

Of considerable interest is that the scheme proposed for this cooperative concept is expected to result in an ethanol production cost of \$.65/gallon. Furthermore, the animal feed is to be returned to the participating farmer. Presently, ethanol prices vary between \$1.30 to \$1.65 per gallon on the open market. This project should be followed and its operating experiences and production costs monitored.

There is considerable activity in Virginia in the solar market place. Virginia ranks 45th in the states in solar projects with a total business volume of some \$25 million as estimated by the Virginia Solar Council. A number of solar projects, both passive and active, were described, and a booklet outlining a wide variety of solar applications already installed in houses in Virginia was distributed.

Legislation went into effect on January 1, 1978 to allow local tax exemption for solar equipment (§ 58-16.4 of the Code of Virginia). Since that time five localities have chosen to utilize the provisions of this statute.

E. October 4, 1979: Synthetic Fuels and Gasohol.

Several suggestions were made at this meeting to improve the coal industry in the Commonwealth: 1) expedite the conversion from oil to coal for public utilities; 2) modify air quality standards in some areas; and 3) consider an embargo or tariff approach in order to stabilize the coal market both in the State and nation. One problem area is that of mine safety where improvements in training, inspection and enforcement are necessary.

The possibility of utilizing Virginia coal in synthetic fuel plants has been investigated by the Commission. At the present time the federal Department of Energy (DOE) is deciding upon the location of a number of synthetic fuel plants in the "pioneer" stage throughout the nation. In a report issued by DOE entitled *Environmental Analysis of Synthetic Liquid Fuels* Virginia was not a preferred site for one of these plants. At the present time the Secretary of Commerce and Resources is investigating the implications—economic and environmental—for the location of such a plant in the coal region of Virginia. The Governor is also actively pursuing a grant from DOE for construction of such a facility in the Commonwealth.

Delegate A. Victor Thomas chaired a Subcommittee composed of Senator Colgan, Delegate Almand, Dr. Lucas, and Dr. Wolfe which had 15 meetings during a two-day trip to Washington, D. C. with the Virginia Congressional delegation, the DOE and the Environmental Protection Agency

(EPA). The Subcommittee's objective is to move toward achieving a unified voice for the coal industry from Virginia. After consideration and deliberation the Commission unanimously adopted the Subcommittee's three recommendations as follows:

1. The Coal and Energy Commission expresses its full and wholehearted support for coal utilization and urges the Governor, as leader of the Commonwealth, to speak out in support of such coal utilization.
2. The utilization of Virginia coal should be made a matter of highest priority. This priority should be expressed by the Governor (i) in pursuing the earliest possible conversion of oil fired utility boilers to coal, (ii) in supporting the application by VPI/SU to DOE for funds for a university coal research center and (iii) in pursuing the location of a synthetic fuels (coal conversion) plant in Virginia.
3. Liaison with the Virginia Congressional Delegation should be maintained to facilitate efforts at the national level to effect conversion to coal wherever feasible. The text of the Subcommittee's report is contained as Appendix II.

The Commission also discussed the possibility of a pilot project for the experimental production of gasohol at Blandy Farm for university- or state-owned vehicles. A Subcommittee was created to work with University of Virginia in this endeavor and consists of Delegates Councill and Parker, Senator Goode, Mr. Sutton, Dr. Funsten, and Mr. George L. Jones.

F. November 26, 1979: Follow-Up on Synthetic Fuel Plants.

At this meeting the Commission discussed in greater detail the idea of locating a "pioneer" synthetic fuel, or coal conversion, facility in the Commonwealth. A presentation was made by representatives of Badger Energy, Inc. of Cambridge, Mass. on the status of coal-to-methanol-to-gasoline commercial plant technology. Badger Energy, Inc. designed the Sasol plant in South Africa, which at full production generates 40% of the motor oil utilized by the Republic of South Africa. It is presently the largest coal conversion facility in the world.

If construction of a plant were to begin in 1980 with completion and production of the product in 1990, the cost of the gasoline "at the gate" would run \$1.09 per gallon. If the time for construction and initial operation ran from 1985 to 1995, the cost of gasoline "at the gate" is expected to average \$1.46 per gallon.

In terms of environmental problems, for example, at the Sasol plant the disposal of fly ash is an operation conducted off site in landfills in South Africa which must absorb as much as 7-8000 tons per day. It was noted that Mary Lee coal from Alabama was used in the design study which Badger conducted in preparation for the equivalent of the Sasol plant in the United States. This is a high quality coal with 12% ash content. Eastern coals such as that in Virginia are considered good for most technologies.

George Fumich, Acting Assistant Secretary for Fossil Fuels, DOE, stated that a plant in Virginia would need at least 25,000 tons of coal per day as well as 20 million gallons of water resulting in 2 to 3.5 barrels of oil/liquid from a ton of coal. The cost of one facility of this kind would run close to \$2 billion and one thousand persons would be employed.

RECOMMENDATION: That a State authority be created to look into all aspects, including economic and environmental, of the location of a coal conversion plant in the Commonwealth and to work with DOE toward locating a pioneer plant in the coal regions of the State for the production of gasoline.

OTHER ACTIONS AND RECOMMENDATIONS OF THE COMMISSION

A. A resolution proposed by the Governor was amended and adopted by the Commission at its November 26, 1979 meeting relating to the location of a synthetic fuel plant in the Commonwealth partially funded by the DOE. (See Appendix III.)

B. A Subcommittee was created to investigate other energy-saving ideas such as the four-day work week. Subcommittee members are: Delegate Parker, Senator Colgan and George L. Jones.

C. The Commission also investigated geothermal energy as an alternate source. An overview of the subject of geothermal energy as an energy resource and policy and legal consideration of its development is to be found in Senate Document No. 28, the report of the Coal and Energy Commission for the 1979 Governor and General Assembly. This year the Commission has reviewed the status of development and began the process of evaluating policy options which will form the basis for laws governing geothermal development.

There appears to be no technological barrier to development of geothermal energy in Virginia. As with most alternate energy forms, the principle question is one of finding an economical source of such energy. To be sure the extent of geothermal resources available to Virginians is unknown at this time. Nevertheless, preliminary data are encouraging and several groups have evidenced interest in recovering geothermal heat.

The NASA installation at Wallops Island is evaluating geothermal energy as a heat source for their new heating needs. This is a case in which a distribution system is in place and should favorable engineering parameters for the energy source be forthcoming, cost effective applications may well develop. A similar type of application, i.e. direct heat recovery, for an industrial park type of development is being discussed by the Industrial Development Authority of the county of Accomac, Parksley, Virginia.

There are two projects worthy of note concerned with discovery of geothermal sources. A drilling project is in the planning stage which is directed toward evaluation of the potential for so-called "hot dry rock" energy in the Eastern Shore area. This energy source is a high temperature source usually without its own transfer medium (brine). Thus water has to be introduced into the hot formation, extracting the heat from the rocks and brought back to the surface where heat is recovered. The project planned proposes drilling 10-20 holes between Crisfield and Wallops. NASA-Wallops is interested in this project as part of their planning for space heating noted above.

A second project, now completed, is the exploratory well at Crisfield, Md. In spite of some adverse criticism of geothermal potential due to lower than expected temperature and low productivity, a system approach shows how even these supposed adverse conditions can support a cost effective heating installation. The essential characteristics of the exploratory well are temperatures of about 130 degrees F. and flows of 100 gal/min. Using the data developed from this one exploratory well, a project to provide space heating for Crisfield High School has been evaluated. By retrofitting the distribution system so that the base load is carried by the geothermal heat and peaking available with in-place boilers, it is estimated that a overall potential savings of 56,200 gallons of No. 2 fuel oil could be realized. Using a cost of \$0.75/gal. for oil, and an escalation factor of 10% for oil and electricity costs, a payback period of 15 1/2 years is calculated. If subsidation for installation could be obtained (and it likely can) the payback period is shortened (down to 3.9 year for an 80% subsidy). (Data on the Crisfield operation was obtained from F. C. Paddison and A. C. Stone, Advanced Research Programs, Johns-Hopkins University Applied Physics Laboratory, in a letter to W. L. R. Rice, Department of Energy, Division of Resources Management.)

D. The Commission endorses the grant proposal submitted by VPI/SU to DOE to establish a university coal research laboratory.

A consortium of six universities representing the four contiguous states of Maryland, North Carolina, Tennessee and Virginia, and involving each State's landgrant university, proposes to establish the "Central Appalachian Regional University Coal Research Laboratory" (CAR-UCRL). This laboratory would focus upon research, education, and information dissemination designed to promote the expanded and more efficient use of the "Low-Sulfur Appalachian" (LSA) Coals of Eastern Tennessee, Eastern Kentucky, Southern West Virginia, and Southwestern Virginia.

VPI/SU will be the lead university. Each participating university has ongoing research and educational programs designed to provide technology and graduates to the coal industry. The area represented by the laboratory encompasses coal reserves amounting to almost 23 billion tons of coal at less than 1% sulfur.

The CAR-UCRL program is divided into five areas. The universities doing the research are shown for each of the areas.

- 1) Characterization (University of Tennessee & VPI/SU) - Projects probe the chemical structure

and liquefaction properties of LSA coals, as well as the physical properties of coals for mineability, correlation, and beneficiation.

2) Production (UVA & VPI/SU) - Projects deal with the geological factors in mine roof stability, the optimization of coal extraction and methane emission in multiple seam mines, and other factors upon which the productivity of Central Appalachian Regional coal mines depend.

3) Utilization (VPI/SU, VCU, U. of Md. & U. of Tenn.)- Projects to demonstrate performance of LSA coal in state-of-the-art equipment by small scale users (i.e. furnaces fired at less than 250 million Btu/hr), and to study ways (for example catalysts) to improve converting coal to liquid fuels.

4) Environmental Effects (VPI/SU, N.C. State Univ., Univ. of Tenn.) - Projects will address the impacts of increased coal production and utilization on land, water, air, and society.

5) Information Dissemination (VPI/SU) - This project will make knowledge available to all segments of society who can participate in the benefits arising from expanded utilization of LSA coals, as well as to coordinate information exchange between participants during the project.

A central objective of the CAR-UCRL will be to contribute to the education of students through research participation so that an expansion of knowledge about LSA coals may lead to an improved response to the nation's energy dilemma.

The project is proposed for a five year period. Funding is expected to average about \$3-million per year with the cost being shared approximately equally between federal sources and participants. Final funding amounts and arrangements are to be subject of negotiation.

APPENDIX I

§ 9-145.1. Commission established; agency assistance; powers and duties.—The Virginia Coal and Energy Commission is hereby established as a permanent agency of the Commonwealth and is hereafter referred to in this chapter as “Commission.” The Commission shall generally study all aspects of coal as an energy resource and shall study ways in which the Commonwealth can take action on energy related problems. All agencies of the State shall assist the Commission in its work. In addition to the aforementioned general powers, the Commission shall also perform the following functions:

A. Act in an advisory capacity to the Governor and executive branch agencies upon energy related matters;

B. Investigate and consider such questions and problems relating to the field of coal and energy utilization and alternative energy sources as may be submitted;

C. Make recommendations to the Governor and General Assembly on its own initiative;

D. Consult with applicable State agencies on all matters regarding energy conservation, including the promotion and implementation of initiatives for the public-at-large to conserve energy;

E. Endeavor to encourage research designed to further new and more extensive use of the coal and energy resources of the Commonwealth;

F. Effectively disseminate any such proposals to groups and organizations, both State and local, so as to stimulate local governing bodies and private business initiative in the field of energy related matters; and

G. Coordinate its efforts with those of the Virginia Solar Energy Center established pursuant to § 10-214 and the Virginia Center for Coal and Energy Research established pursuant to article 2.01 (§ 23-135.7:1 et seq.) of chapter 11 of Title 23 of the Code of Virginia.

APPENDIX II

The Coal Utilization Subcommittee chaired by Delegate Thomas made the following report to the Commission on the Status of coal utilization in the Commonwealth on October 4, 1979.

The Coal Subcommittee of the Coal and Energy Commission spent September 25 and 26 in Washington discussing the issues surrounding the utilization of coal in the Commonwealth. This Subcommittee, Chaired by Delegate A. Victor Thomas, includes Senator Charles Colgan, Delegate Jim Almand, Dr. Richard Wolfe and Dr. Richard Lucas. The objectives of the Subcommittee were three-fold. Probably the most far reaching objective was that of taking the first necessary steps to formulating a unified voice for the Commonwealth concerning the utilization of coal. The Coal and Energy Commission presents a unique opportunity to foster the implementation of a unified voice since it is a legislative commission, including in its membership governor's appointees representing both the private sector, the Governor's office and academia. These discussions of the Subcommittee have served to close the loop by involving the Virginia Congressional Delegation. The second major purpose of the visit was to publicize the interest and intent of the Commonwealth to encourage to the extent feasible the conversion of oil burning facilities to coal, subject to the necessary approval. The third purpose of the visit was to raise the awareness of cognizant officials to the availability of grant monies for establishing coal research centers at universities. Specifically, in this case, a grant is to be submitted by VPI/SU through the Virginia Center for Coal and Energy Research for a grant as authorized by the Surface Mining Act of 1977.

The timing of the visit and any action that may result is underscored by the urgency with which the conversion of fossil fuel fired facilities from oil to coal is viewed. The United States continues to import oil at a record rate and in August of this year actually imported about 6% more oil than in August of 1978. This was in spite of the national goal of not importing more oil than in the 1977 base period. In addition, there is extensive unemployment in the coal fields; 4,000 idled in the State of Virginia, 12,000 in West Virginia and 4,000-6,000 in Kentucky. Many of the smaller coal operations in Southwest Virginia are either out of business or facing bankruptcy due to the soft coal market. Spot coal prices at the present time (Coal Week - September 24, 1979) are less than \$20.00 per ton, which is roughly equivalent to 50¢ per gallon gasoline. More than 60 utilities have been targeted at the federal level which could convert to coal with modifications of their facilities provided EPA and DOE issue the required permits for such a conversion. The process of converting to coal has been started by several utilities but is costly and lengthy due to permitting process.

If the coal industry is to grow and flourish it must be perceived as a robust and challenging growth opportunity. This means that the industry must be able to attract the very best talent, both managerial and technical. To attract the caliber required to provide the talent to make the industry grow, it is necessary to have training and research facilities available through our university system. The Surface Mining Act of 1977 made provisions for the establishment of 13 university coal research centers. These funds are to be made available on a matching basis. It is very important that one of these research centers be located in the State of Virginia. VPI/SU, through the Virginia Center for Coal and Energy Research, intends to submit a proposal to the Department of Energy by October 15, 1979 for one of these grants. The importance of receiving the funding for this research center is underscored not only by the unemployment picture presented above but also from the standpoint of developments expected later under the synthetic fuels projects now being discussed by the Congress. Location of synthetic fuels plants for the conversion of coal to other energy forms is likely to include a factor related to the availability of research facilities and highly trained specialists.

The Subcommittee's plan to accomplish its objectives was to spend a day talking with as many members of the Virginia Congressional Delegation as possible and to follow these discussions with talks with the relevant federal agencies, specifically the Environmental Protection Agency (EPA) and the Department of Energy (DOE). Most of the advance arrangements had been made through Senator Harry F. Byrd, Jr.'s office, with some impromptu appointments obtained during the course of the talks.

The accomplishment of the purpose of setting in place the mechanics for unifying the voice of the Commonwealth behind one speaker met with spectacular success. It was clear from the discussions with a number of the Virginia Congressional Delegation that the unified voice of Virginia should be presented by the Governor. A conversation by Chairman Thomas and the Governor confirmed his agreement with that approach and the Governor offered his full support. Over the course of two days, discussions were held with every member of the Virginia Congressional

Delegation or their staff. The session with Senator Byrd resulted in his expression of full support for our efforts as well as a promise to follow up the initiatives from the Governor. In addition, Senator Byrd reported on the progress of the debate of the windfall profits tax and the use of such revenue for funding the synthetic fuels program. It would appear that the windfall profits tax will probably receive action in the next couple of months and this, of course, will determine the level of funding that the synthetic fuels program will receive. Discussions with Senator Warner resulted in strong expressions of support and also some expert help in the person of Roger Sindelar. The discussions with Congressman Wampler resulted in his very firm support in addition to an offer that his office might be used as a clearinghouse for dissemination of information on the efforts of both the Subcommittee and the full Commission. Congressman Wampler also provided the Subcommittee with the very able assistance of Mr. Steve Berry to help the Subcommittee with the arrangements to meet the remaining Congressmen. Congressman Butler met with the Subcommittee, along with Congressman Wampler, and expressed his support for the Subcommittee's efforts. The Subcommittee was able to speak directly to Congressmen Whitehurst and Dan Daniel, and with the staff of Congressmen Harris, Fisher, Robinson, Satterfield and Tribble. In every case the mission of the Subcommittee was well received and all evidenced strong support for the emphasis on utilization of coal.

In addition to the Virginia delegation, the Subcommittee met with staff from the House Subcommittee on Energy and Power chaired by Representative Dingell of Michigan. Representative Dingell's Subcommittee hears all legislation having to do with energy and power and therefore will hear the legislation related to national energy policy. It was noted during the visit with this Subcommittee's staff that Virginia was the first state to talk to them as a Commonwealth about their efforts to implement statewide energy policy.

The second day of talks were devoted to discussions with the EPA and the DOE. The primary purpose of these discussions was to determine the status of applications made by VEPCO for converting their oil fired boilers to coal. A secondary purpose was for the Subcommittee to hear from these regulatory agencies the guidelines whereby such applications are received and acted on. It should be noted that during the visit of the Subcommittee, Chairman Thomas was notified that a Delayed Compliance Order was being issued on Portsmouth's Unit No. 4 with publication in the Federal Register to be on Monday, October 1. This means that following the usual comment period (approximately 30 days) this particular generating unit can be converted to coal from oil. [Note: This unit was returned to service burning coal in November, 1979 after the electrostatic precipitator was installed and the boiler refurbished.]

The Subcommittee's meeting with the EPA was with representatives of the Offices of Legislation, the Policy Planning Division, the Division of Air, Noise and Radiation and the Planning and Management Division. Various members of these offices entered the discussion as necessary and as questions were asked pertaining to their particular expertise.

It is probably of value to take a look at an overview of the permitting process whereby one is allowed to convert from oil burning facilities to those burning coal. Even at the rather considerable risk of oversimplifying this process, it is of benefit to be aware of the several avenues whereby one can pursue the desired goal of converting to coal. It is sometimes difficult to sort out the proper order of steps and to identify all the acronyms commonly used in discussing such processes, and in so doing some details may be omitted. Nevertheless, the essential features are clear. There are essentially two avenues to pursue. The first is the voluntary process. The voluntary method is under the authority of the Energy Supply and Environmental Coordination Act (ESECA). Under this act application to make a conversion to coal is first of all made to DOE. The DOE then asks the EPA to certify that the facility can indeed be converted; for example that the equipment is amenable and that there is a supply of coal, and that the proposed conversion is in compliance with the State Implementation Plan. Additionally, if there is an urgency regarding the conversion, the EPA may be requested to issue a Delay Compliance Order (DCO). Such an order allows the utility to convert to coal under a schedule which would permit a temporary relaxation of emission standards. Having obtained the necessary certifications from the EPA, the DOE then grants the final approval which is termed the final Notice of Effectiveness (NOE). This final notice is immediately followed by publication in the Federal Register.

The second avenue to convert to coal is the so-called involuntary process. The authority for the involuntary process is the Fuel Use Act. For this method the EPA does not play much of a role. The Fuel Use Act provides a means whereby a utility can be "forced" to convert to coal. The DOE

does ask the EPA for an evaluation of the effect on the environment, but basically this involuntary process is a DOE show. The application of the Fuel Use Act is discussed in some greater detail a little bit later in this report.

During this discussion the EPA was careful to point out that it was not in any way a bottleneck to the permitting process. Rather, some statistics were quoted which showed that their agency was far ahead of the DOE in consideration of conversion permits. These representatives estimated the time required for processing a Delayed Compliance Order would be of the order of 60 to 120 days.

A question was raised as to the relaxation of attainment of environmental standards to facilitate the conversion of utilities to coal. These representatives see the economics of the conversion such that it is more economical to install the proper equipment to meet the pertinent environmental standards than it is to remain on oil. Most utilities concur provided the remaining life of the units after conversion is sufficient to offset the cost of conversion.

The appropriate representatives of the EPA reviewed the status of the applications that VEPCO has made for the conversion to coal burning facilities. There are two plants that are now embarked in the voluntary process discussed above. These two plants are those at Chesterfield and at Portsmouth. The Chesterfield plant has six generating units. Two of these units are not candidates for conversion to coal due to their size and age. Two of the units at this plant are now burning coal, and two of the units are seeking voluntary conversion. For these latter two units, State approval has been granted and the application is now in EPA. The status of this permit is that the Delayed Compliance Order is now being sought. However, there does appear to be some environmental problem involved in issuing this particular order which should be cleared up when the new precipitator is installed in Chesterfield. It is anticipated the both of these units will be allowed to convert to coal after Chesterfield precipitator work is completed in mid 1980.

There are four generating units at the Portsmouth plant. Two of these units are not candidates for conversion to coal due to their age and size. For a third unit a precipitator to remove particulate matter is programmed to be added to the unit and when this equipment is installed an application will be submitted for its conversion to coal. The largest unit at the Portsmouth plant was, as noted earlier, granted a Delayed Compliance Order while the Subcommittee was in Washington and the unit is now on coal.

The other two plants owned by VEPCO, Possum Point and Yorktown, are being pursued under the Fuel Use Act and under this authority the EPA is playing a minimal role. In addition, at Yorktown there is a local consent agreement which prohibits coal burning. The process involved under the Fuel Use Act is discussed in some greater detail a little bit later on.

Following the visit with the EPA, the Subcommittee next visited the DOE. This department had present representatives of various divisions, the Economic Regulatory Administration, Fossil Energy Division, Energy Technology Division, and the Congressional Office of the DOE. In addition to the purpose of discussing the permit applications for conversion from oil to coal, the Subcommittee wished to discuss with the DOE the subject of the siting of synthetic fuel plants and the funding of university coal research laboratories. The Subcommittee learned that Dr. Edward Friedman has recently been appointed as Director of Energy Research in the DOE. His office will be the contact point for subsequent talks about the coal laboratories.

Of considerable interest to the Subcommittee was a report recently issued by DOE which had made specific reference to the siting of synthetic fuel plants. This report, *Environmental Analysis of Synthetic Liquid Fuels*, 7/12/79, had failed to recommend a single site in Virginia out of a total of 42 sites nationwide. The DOE representatives present at this meeting denied that this report reflected an official position of the Department of Energy. Further, that the report had been written exclusively from an environmental standpoint and that the publicity that the report had received had indeed been unfortunate.

A representative of the Economic Regulatory Administration (ERA) led the discussion of oil to coal conversion permitting from the DOE perspective. Regulations for converting existing facilities under the Fuel Use Act were issued on August 20, 1979, and the staffing to administer these regulations is only about 40% complete. Conversion under the Fuel Use Act (i.e., involuntary conversion on the part of the utilities) is a very complicated and lengthy procedure. This process will likely require more than one year. The time consuming and costly element of this process is an

Environmental Impact Statement.

There are two facilities in Virginia which interest the DOE under the Fuel Use Act - Possum Point and Yorktown. The Portsmouth and Chesterfield plants are proceeding under the voluntary conversion process (see above discussion with EPA). At the Possum Point plant only the conversion of Unit 5 appears to be in contention. This unit is designed to burn oil only and conversion would be quite costly. There is one unit at Possum Point that likely will convert when a new precipitator installation is completed in 1982. Yorktown has a problem under the local consent order as discussed above, even though two units can probably be converted to coal.

DOE pointed out that VEPCO has been quite cooperative in these proceedings. More meetings have been held with VEPCO than with any other utility in the nation.

The remaining discussion with the DOE was about coal conversion processes. DOE feels that indirect liquefaction (conversion to methanol) now has the greatest chance of immediate success. Furthermore, conversion to liquid fuel is farther along in development than conversion to gaseous fuel. There is being built in Germany a demonstration plant to produce 700 barrels per day of gasoline from methanol using the Mobil process.

Several general observations are in order concerning the visit of the Subcommittee to the Federal agencies EPA and DOE. 1. Both of these agencies, EPA and DOE, place the burden of delay on each other. Both contend that their part in the process is quite facile and the problem lies, they know not where, in the sister agency. 2. The perceived image of VEPCO is that of a cooperative utility. 3. It is terribly frustrating to deal with Federal agencies. It is difficult to get clear answers to direct questions. These agencies do not portray the image of problem solvers.

Subsequent to the Subcommittee's activities in Washington, follow-up talks with the State Air Pollution Control Board and VEPCO were held. The purpose of these talks was to confirm the information about the applications for converting oil-fired electric generating units to coal and to gain the local on-scene perspective. In general, the information from all sources agreed. Clearly as one gets closer to the physical plant the details become more numerous and sharper.

Representatives of the Air Pollution Control Board pointed out that there are now a number of coal-fired generating facilities in operation. Appalachian Power Company and Potomac Edison Power and Electric Company (one plant in Virginia) burn coal exclusively. VEPCO has a coal-fired plant at Mt. Storm, West Virginia and Bremo, Virginia, as well as the units already converted to coal at Portsmouth and Chesterfield.

VEPCO reviewed their coal conversion plan. The net result of this plan is that by the end of 1982, or early 1983, all large (and economically feasible to be converted) electric generating units with dual fuel firing capability will be firing coal. Also noted by the utility, and confirmed by the Air Board, is that sulfur oxide scrubbers are not necessary on the units in Virginia being converted to coal. This results from the fact that the regulations detailing New Source Performance Standards (NSPS) and Prevention of Significant Deterioration (PSD) are not involved for converting oil fired units to coal provided that there will be no significant pollution emission increases. The latter condition is being met for coal fired facilities by use of devices (precipitators, for example) to curtail particulate emission.

University Coal Research Laboratories

The Surface Mining Control and Reclamation Act of 1977 (PL95-87), Title VIII, provided for the establishment of 13 University Coal Research Laboratories (UCRL) at institutions of higher education having accredited master's and/or doctoral degree programs in disciplines related to ongoing coal research programs.

Virginia Polytechnic Institute and State University submitted a proposal as the lead institution in a consortium with the states of Tennessee, North Carolina and Maryland on October 15, 1979, to the Department of Energy to be considered being named a UCRL.

In the Conference Report, U. S. Congress, entitled "Making Appropriations for the Department of Interior and Related Agencies," dated November 8, 1979, the following position was agreed upon in the report:

“The managers are agreed that the \$5 million added for University Coal Research is for research at universities having existing laboratories capable of coal research and is not to be used to establish a system of “University Coal Research Laboratories” as authorized by PL95-87, the Surface Mining Control and Reclamation Act of 1977.”

The disposition of the 5 million appropriated to the Department of Energy for University Coal Research is not clear, but it is expected that DOE may employ it to fund competitive proposals from universities interested in pursuing coal research. At this time, the disposition of the 24 proposals which were submitted to DOE for the UCRL program has not been decided. It may be that DOE may proceed to name the 13 laboratories; however, this will depend upon the legislative intent of the Appropriations Committee of the Congress. Because of the increasing priority of coal in partially meeting the energy needs of this nation, it appears that some time in the future the University Coal Research Laboratory concept may be implemented, if not this year, perhaps at some future time.

Mining and Minerals Resources Research Institutes

The Director, Office of Surface Mining, Reclamation and Enforcement, (OSM) U. S. Department of Interior, Washington, D. C., has recently advised Virginia Polytechnic Institute and State University that it is expected that VPI&SU will be named a Mining and Mineral Resources Research Institute under Title III, Surface Mining Control and Reclamation Act in 1977, (PL95-87) as a result of a proposal from the University that was submitted in August, 1978. After certain requirements are met to the satisfaction of OSM, it is expected that the formal signing will take place in the near future. During the first year, the University may expect to receive the following:

- A. A \$110,000 grant for the operation and maintenance of the institute;
- B. A fellowship and scholarship grant for approximately \$160,000 to be spent over a three-year period; and
- C. Perhaps the privilege of competing by submitting research proposals for research funding totaling \$5 million in the area of a mining and minerals resources research institute.

It is expected that much of the research effort expanded by the University in the M²R²I program will be in the general area of coal, the predominant mining activity in the state.

APPENDIX III

WHEREAS, the Nuclear Regulatory Commission has authorized the renewed operation of Virginia Electric and Power Company (VEPCO)'s North Anna Station Unit I, and

WHEREAS, the Nuclear Regulatory Commission subsequently declared a licensing moratorium on the operation of all new nuclear power plants, and

WHEREAS, Unit II of VEPCO's North Anna Station as constructed, is identical to Unit I of VEPCO's North Anna Station, and is affected by this NRC moratorium, and

WHEREAS, the NRC moratorium lists no specific hazards in its declaration which would prevent the operation of a North Anna Unit II but would allow the operation of its twin power plant, North Anna I, and

WHEREAS, it is a matter of common knowledge and concern that fuel costs will be unprecedented this winter, which has caused the Governor of Virginia, and the entire Congress of the United States, to authorize emergency energy impact assistance to low-income Americans, and

WHEREAS, the operation of North Anna II would mean an immediate cost savings of \$12 million to \$13 million per month on electricity rates in the Commonwealth; conversely, the moratorium preventing the operation of North Anna Unit II is mandating increased electricity costs of an additional \$12 million to \$13 million per month to Virginians by forcing the utility to buy more expensive replacement fuels, including imported oil; and

WHEREAS, the impact of curtailed purchases of Iranian oil will further increase the cost and decrease the availability of electricity produced by oil-based electrical generating plants;

NOW, THEREFORE, BE IT RESOLVED, that the Virginia Coal and Energy Commission, a body duly authorized and constituted by § 9-145.1 of the Code of Virginia, does hereby support the exemption of Unit II at VEPCO's North Anna Station from the NRC moratorium, and supports the actions of Governor John N. Dalton in requesting this exemption of NRC Chairman, Joseph M. Hendrie; and

BE IT FURTHER RESOLVED, that the Virginia Coal and Energy Commission's position be provided Virginia's Congressional Delegation by the Governor at his meeting with the Virginia House and Senate members of Congress, November 29, 1979.

APPENDIX IV

Comments by Virgil Goode, Jr., to the Report of the Coal and Energy Commission for the 1980 Session

It was a pleasure to serve on the Commission this past year and to hear the many speakers and topics about energy problems and developments that were presented over the course of the year to the Coal and Energy Commission. I would also like to commend the Chairman of the Commission for his fair handling of the proceedings at the various meetings and for his efficient and expeditious manner in dealing with the vast amount of information that came before the Commission.

There are two statements made in the report that I would like to commend on. In the "General Summary" section of the report, it is stated that "a combination of high spot market oil prices and unstable conditions in foreign countries such as Iran has resulted in record high utility bills in Virginia and across the nation." I think these two items have been influencing factors on the high utility bills in Virginia, but there are other factors, such as management decisions, certain expenditures, accounting practices, the policies and procedures of the State Corporation Commission, and other items, that have also contributed to the high utility bills in Virginia.

It is also stated that the end of the "General Summary" section that 8 million barrels of oil must be used in place of nuclear power at VEPCO's North Anna II nuclear plant. The Moratorium oil and cost figures in the report apparently stem from the statements made by VEPCO's President, and I think that we should have had more information, such as someone from the NRC to explain the reasons behind the moratorium and more facts about the safety at North Anna and of nuclear power, before asking the NRC to lift the moratorium.

I personally would not want to live near a nuclear power plant, but apart from the safety conditions, there is also the question of future costs of nuclear fuel. A December 23, 1979 article on Page A-10 in the *Roanoke Times* indicates that nuclear fuel could get like oil in terms of cost. The article pointed out that the price of uranium has already risen from \$8 a pound in 1968 to \$43.50 per pound this year and suggested that the possibility existed of another OPEC in uranium. Coal, whose ownership apparently is less concentrated than oil or nuclear fuel, appears to offer a cheaper source of energy than either oil or uranium so long as a competitive, free enterprise market exists with coal. Wind power, solar, small hydro, and alcohol also offer excellent sources of energy and ones that the United States and Virginia must emphasize strongly in the decade ahead.

