REPORT OF THE

Virginia Coal and Energy Commission

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

SENATE DOCUMENT NO. 29

COMMONWEALTH OF VIRGINIA
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1992

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Arlen K. Bolstad, Senior Staff Attorney
John T. Heard, Senior Staff Attorney
Franklin D. Munyan, Staff Attorney

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TABLE OF CONTENTS

Report of the
Virginia Coal and Energy Commission
To
The Governor and the General Assembly of Virginia
Richmond, Virginia, 1992

I. INTRODUCTION

The Virginia Coal and Energy Commission continued to examine in 1991 many of the same key issues before it in 1990: power generation from nonutility power generation plants in the Southwest Virginia coalfields; funding of several state energy programs; and the impact of amendments to the federal Clean Air Act on the coal industry. In addition, the Commission focused on federal and state executive branch initiatives concerning energy production and conservation.

The Virginia Coal and Energy Commission studies all aspects of coal as a energy resource, and serves as a catalyst for the development of renewable and alternate energy sources. The Commission's focus and activities took on particular significance in 1991 as energy plans were announced by Virginia's Governor and by the U.S. Department of Energy.

In February 1991, the Bush Administration proposed a national energy strategy in a 217-page report prepared by the U.S. Department of Energy. The report presented a comprehensive proposal for increasing energy-use efficiency; securing reliable sources of future energy supplies; and reducing air, land and water pollution in the production and use of energy.

The Wilder Administration announced a three-year energy plan in September 1991 focused on energy efficiency and conservation. The plan targets agencies of the Commonwealth, endeavors to conserve energy resources while achieving economic savings, and promotes development of energy-savings plans at each agency.

The Commission received in-depth briefings on the national energy strategy and on the Wilder Administration's conservation plan. These briefings were put in context by additional briefings on a 1991 report prepared by the Division of Energy of the Virginia Department of Mines, Minerals and Energy. The report, entitled Virginia Energy Patterns and Trends; Virginia Energy Profiles: 1960 to 1990, analyzed the production, distribution and consumption of energy in the Commonwealth during a thirty-year study period.

The Commission's Energy Preparedness Subcommittee was briefed on Virginia's energy trends as well as the accomplishments and funding of various state energy programs. The Subcommittee's members learned that funding from the federal Oil Overcharge Fund is dwindling, thereby necessitating cut-backs in vital state-run programs for energy assistance and weatherization programs for low-income individuals and families.

This subcommittee also learned that energy savings at state facilities have resulted from the efforts of the Department of General Services' Energy Audit Team. Since much of that team's budget had, until recently, come from federal Oil Overcharge Program funding, more state funding will be required to continue the team's operations.

The Coal Subcommittee met in Abingdon on January 2 and received presentations on the federal Clean Air Act amendments; a federal grant for construction of a electrical power cogeneration project in the Southwest Virginia coalfields; and the related issue of transmitting independently produced power. The Subcommittee was also updated on the progress of the State Corporation Commission's review of transmission line enhancements that may facilitate wheeling power from western Virginia to the east. These enhancements assumed even greater importance after the Subcommittee learned that the SCC had determined that the current regional power grid would probably lack the capacity to wheel power after 1998, and that the Virginia Center for Coal and Energy Research had concluded that transmitting power from a nonutility generator in Southwest Virginia to the Virginia Power service area by either direct or indirect means was not technically or economically feasible at this time.

II. THE NATIONAL ENERGY STRATEGY

At its first meeting of 1991, the Virginia Coal and Energy Commission was briefed on the national energy strategy proposed by the Bush Administration, and its potential impacts on Virginia. John Randolph, director of the Virginia Center for Coal and Energy Research at Virginia Polytechnic and State University, reviewed the numerous goals of this complex strategy and the Administration's recommended approaches for accomplishing these goals.

A. NATIONAL ENERGY STRATEGY GOALS

According to Mr. Randolph, the new national energy strategy emphasizes:

- Developing new, marketable, and commercially viable technologies to increase energy efficiency in the residential, commercial, and industrial sectors.

- Reducing transportation energy demand by improving fleet fuel efficiency and increasing transportation energy supplies through the use of alternative transportation fuels.

- Reducing U.S. vulnerability to petroleum supply disruptions by expanding U.S. and worldwide oil and gas production capacity and strategic stocks, while ensuring a proper balance between energy security and environmental protection.

- Maintaining coal's competitiveness while meeting environmental, health and safety requirements, and creating a favorable export climate for U.S. coal and coal technology.

- Increasing the production of nuclear power while maintaining exacting safety and design standards, reducing economic and regulatory risk, and establishing an effective high-level nuclear waste program.

- Encouraging the efficient production of natural gas in an environmentally sound manner; and establishing a more efficient and accessible natural gas transportation and distribution system.

- Encouraging increased production of energy from renewable resources (e.g., solar, wind, and biomass).

- Improving environmental quality through the Clean Air Act, use of alternative vehicles and fuels, transportation technology research and development, industrial energy efficiency, integrated resource planning, expanded nuclear energy production, and natural gas reform.

B. THE STRATEGY'S IMPACT ON VIRGINIA

Although Mr. Randolph believed it unlikely that all of the goals of the national energy strategy will be enacted, he predicted that Congressional action on legislation implementing portions of the strategy will affect the Commonwealth as follows:

Coal---Central Appalachia coal production will probably increase under the Clean Air Act due to a greater demand for low sulfur coal. Employment opportunities in Virginia's coalfields should also increase.

Natural Gas---Combined incentives for unconventional natural gas will enhance production in Virginia (e.g., coalbed methane gas).

Alternative Fuels---While alternative fuels will be an important part of the new strategy, little emphasis will be placed on the coal-based alternative liquid fuels with which Virginia has experience. The Commonwealth may also have difficulty reviving its ethanol industry.

Electricity---The emphasis placed on generation competition and demand-side options will offer Virginia opportunities for continued experimentation in both areas.

Renewable Energy---If the new strategy provides incentives, there may be increased opportunities for renewable energy in Virginia.

III. THE VIRGINIA ENERGY PLAN

The Wilder Administration announced in September 1991 a three-year plan to enhance energy efficiency and conservation in state agency operations. Agencies are then expected to take the experience gained and assist their clients, when practicable, to improve energy efficiency and conservation. Summarizing the Administration's plan at a Commission meeting, Kathy J. Reynolds, Director for Administration of the Department of Mines, Minerals and Energy (DMME) said the Commonwealth must lead by example to conserve finite resources and achieve economic savings in the process.

Ms. Reynolds revealed that the plan's preliminary steps include energy manager appointments at all state agencies and development of agency energy-savings plans. The agency plans may include efforts to reduce electrical consumption at state buildings and facilities by replacing inefficient fixtures and taking other steps to reduce overall electrical load. Energy audits of state buildings and facilities will be conducted by the Department of General Services' Energy Team. Agency and employee carpooling will be encouraged to reduce fuel consumption and air pollution.

Transportation accounts for the largest portion of end-use energy consumption--43 percent in 1990--in the Commonwealth. The Governor's plan calls for reduced energy consumption in the transportation operations of all agencies. One strategy requires agencies to (i) reduce discretionary trips, (ii) choose meeting locations that ensure maximum fuel conservation, and (iii) examine the use of alternate fuels in meeting transportation needs. The Department of Transportation is slated to convert 50 vehicles in the state's fleet to compressed natural gas. State agencies will also expand their use of the telecommunications system to decentralize work and reduce the need for travel to offices, meetings, and conferences.

The plan has several addition objectives: energy-production efficiency, energy awareness, energy management planning, and the use of alternative fuels, renewables, and alternative energy sources. In the plan's first year (July 1991 through June 1992), energy efficiency in state and local government operations is the primary objective; in the second year, energy efficiency in state agency programs; and in the third, public outreach for business, industry, and consumers. A copy of the Governor's plan as presented to the Commission is attached as Appendix A.

Commission members commenting on the Governor's plan focused on the plan's energy-production efficiency objective. For example, Longwood College has converted some of its heating plants to wood-chip-burning facilities. However, since heating oil is presently quite affordable, such conversions may be economically unattractive. Also, increasing consumption of Virginia's low-sulphur coal should figure more prominently in a plan calling for pollution reduction as part of its overall goal, and agencies should coordinate their efforts while pursuing this plan to ensure that their plans mesh with this commission's goals.

IV. VIRGINIA ENERGY PATTERNS AND PROGRAMS

The Commission's Energy Preparedness Subcommittee met in September to review current information about Virginia's energy consumption patterns and the status of several state energy programs.

A. ENERGY PRODUCTION AND CONSUMPTION IN THE COMMONWEALTH.

John Randolph, Director of the Virginia Center for Coal and Energy Research, provided the Subcommittee with detailed information on current energy production and consumption in the Commonwealth. An outline of his remarks is attached as Appendix B. For the first time in the Commonwealth's history, energy consumption declined in 1990, primarily because of the mild weather and economic downturn. However, 1990 energy consumption totals doubled those of 1978, and future demand for energy within the state is expected to increase. The biggest question in the Commonwealth's energy future is how to address this increasing demand. The State Corporation Commission has been studying this issue and is now looking closely at demand-side management as one option.

Petroleum continues to be the dominant energy-producing fuel used in Virginia, accounting for 40 percent of all "energy" consumed in the state (by price). Members of the Subcommittee noted that the recent federal motor fuels tax increase exceeded the actual increase in the cost of the raw material (petroleum). Although oil prices may increase in the future, there will likely be fewer Virginia businesses sharing in the market.

B. LOW INCOME HOUSING ENERGY ASSISTANCE PROGRAM.

Cathy Olivis, a program specialist at the Department of Social Services, updated the Subcommittee on the status of the Low Income Housing Energy Assistance Program. The Department believes that although the economic downturn will increase demand for assistance from the program, federal funding available for the program will be reduced. Ms. Olivis explained that clients had already been notified to expect smaller benefit amounts. In order to reduce the administrative costs of local departmental offices, the State Board of Health recently decided to automate the determination of eligibility and benefit amounts for fuel assistance. Her remarks are attached as Appendix C.

C. WEATHERIZATION ASSISTANCE PROGRAM.

Bob Adams, Deputy Director of the Department of Housing and Community Development (DHCD), provided the Subcommittee with information on the Weatherization Assistance Program (WAP) (attached as Appendix D). Administered by the Department of Social Services until July 1, 1991, WAP is now administered by DHCD. DHCD has succeeded in reducing the administrative costs of the program by 50 percent, thereby freeing up funds sufficient to weatherize an additional 300 homes. To achieve this cost reduction, the agency has reduced staff and put contracts out for competitive bidding.

Despite these actions, funding reductions will have a big impact on WAP. Over 50 percent of the program's funds come from oil overcharge moneys, which dry up June 30, 1992. Reduced funding means that the number of households annually served by this program will drop from 5,000 to 2,000. Local weatherization programs in rural areas will be particularly hard hit by the lack of funds. Currently, Bath County is the only jurisdiction not covered by the program, although the agency is attempting to find a contractor to fill this gap.

D. DEPARTMENT OF GENERAL SERVICES ENERGY TEAM.

Jim Taylor, Statewide Energy Manager for the Department of General Services (DGS), told the Subcommittee that because of the lack of oil overcharge money traditionally used to fund the efforts of DGS's Energy Audit Team, the agency has recently prepared a budget addendum to assure the continued funding of the Team. Because of the Team's efforts, state facilities have averaged annual energy savings of $200,000. Since 1984, the Team has visited 221 state facilities in an effort to reduce energy expenditures. While these facilities have not necessarily reduced their energy consumption, they have lowered their energy expenditures by shifting to more favorable rates. In fiscal year 1990-91, state facility energy expenditures decreased by nearly two percent ($1.3 million) and BTU consumption at state facilities decreased by more than 2.5 percent. The Team is now preparing a generic specification which could be used by larger state institutions to bulk-purchase natural gas. By bulk-purchasing this gas, expenditures could be reduced by as much as 20 percent. A summary of the Energy Team's work is attached as Appendix E.

V. WHEELING POWER

A. INTRODUCTION

The Commission received reports on the feasibility of wheeling additional electric power from Southwest Virginia to the east. This is a significant issue of continuing interest to the Commission. Wheeling occurs in this context when an electric utility agrees to transmit power produced by a nonutility generator to a utility purchaser. The wheeling utility essentially permits its transmission facilities in the regional power grid to serve as a bridge between the generator and purchaser. Wheeling cannot be accomplished, however, unless the wheeling utility has transmission capacity sufficient to accommodate its own transmission load plus the load produced by the nonutility generator.

The Southwest Virginia coalfields are in close proximity to regional electrical transmission facilities owned by Appalachian Power Company (Apco). Virginia Electric and Power Company (Virginia Power) has recently turned to nonutility generators for the additional generation it needs to meet the growing demand in its eastern Virginia service area. Wheeling power through the Apco system from nonutility generating facilities in the Southwest Virginia coalfields would seemingly provide a solution to two problems: (1) Virginia Power's supply problems and (2) the need for economic growth in the coal region. As discussed below, however, Apco's wheeling capacity is the vital link between the coalfields and Virginia Power's service area.

The Commission learned that a nonutility generator has proposed to construct a $200 million 107MW generating facility in Wise County at the Tom's Creek coal mine near Coeburn. The U.S. Department of Energy is providing approximately $100 million of the facility's cost as a construction grant. That grant and thus the plant's construction depends on long-term wheeling and purchase agreements. The plant's developers hope to wheel through Apco and sell to Virginia Power. However, Apco officials have advised these developers and the Commission that Apco customer demands in the near term will consume the excess transmission capacity necessary to accommodate wheeling. Apco officials estimate that existing excess capacity will be eliminated by 1998; they are unwilling to commit to wheeling beyond that time.

Both Apco and Virginia Power view the existing regional transmission network as inadequate to meet future needs---with or without wheeling. Both intend to build new transmission lines connecting their systems and establishing an additional 2,000 MW of transmission capacity. Apco has reportedly agreed to commit 500 MW of this new capacity to wheeling for nonutility generators. Moreover, the 1991 General Assembly approved a measure requiring utility applicants for transmission line construction of 500 kilovolts or more in the area west of the Blue Ridge Mountains to reasonably accommodate wheeling requests from nonutility generators for up to twenty-five percent of the new capacity generated. This law is applicable to applications for such construction in 1991 and 1992.

Apco and Virginia Power have applied to the State Corporation Commission to construct the new transmission facilities discussed above. This proposal comprises 110 miles of 765 kV and 102 miles of 500 kV line. The proposed 765 kV line will connect Apco's Wyoming substation in southern West Virginia to its Cloverdale substation near Roanoke, Virginia. The proposed 500 kV line will connect Apco's Joshua Falls substation near Lynchburg, Virginia, to Virginia Power's North Anna Station north of Richmond, and then to Virginia Power's Ladysmith substation south of Fredericksburg. The cost of the overall program is estimated to be $430-450 million, which will be shared by the two utilities. The proposed projects could be completed by the late 1990s. The completion date assumes relatively rapid approval by the SCC and its West Virginia counterpart. The Commission learned of significant opposition to the line route by West Virginia residents living in or near the proposed right-of-way. To what extend this may delay approval of the West Virginia portion of the line from Apco's Wyoming substation in West Virginia to the Cloverdale substation near Roanoke remains to be seen.

B. WHEELING STUDY ISSUES

Completion of these new transmission facilities could be delayed beyond 1998 if requisite state and federal authorizations are not obtained in a timely fashion. Accordingly, the 1991 General Assembly authorized a study to determine (i) whether the existing transmission network could accommodate wheeling from Southwest Virginia, and (ii) the feasibility of constructing a new transmission line running directly from the Southwest Virginia coalfields to eastern Virginia. Thus, pursuant to HJR 441 of 1991 (attached as Appendix F), the State Corporation Commission and the Virginia Center for Coal and Energy Research (VCCER), with the cooperation of Virginia Power and Apco, studied the steps necessary to enable the wheeling of 100 megawatts or more of power, prior to 1998, from electric power plants in Southwest Virginia. The study examined:

- Transmission capacity in Southwest Virginia that could feasibly be allocated for wheeling.

- Enhancements that could be made to the existing Southwest Virginia transmission system to accommodate wheeling.

- Feasibility, in addition to the lines already proposed by Virginia Power and Apco (Wyoming to Cloverdale/Joshua Falls to Ladysmith), of constructing a new electrical transmission line directly from the Virginia coalfields.

The SCC analyzed (i) the physical configuration of the regional transmission system and the improvements (other than new line construction) that could be undertaken to enhance transmission capacity, (ii) the transmission operating practices of Apco and regional utilities to determine if the practices maximize transmission capacity without adversely affecting the reliability of the transmission system, (iii) current and projected wholesale power exchanges to determine if they saturate the regional system in terms of its ability to accommodate new load, and (iv) Virginia Power's capacity needs (demand).

The VCCER examined the feasibility of constructing a new west-to-east electrical transmission line from the Southwest Virginia coalfields to the Virginia Power service area. Such a line would probably cost over $100 million. The Center's study focused on the following factors:

- Whether the line would provide redundant transmission capacity.

- Whether the line would provide backup transmission capacity for power purchased by Virginia Power.

- The economic benefits and transmission capacity improvements that could be achieved by an investment of this magnitude.

Apco officials advised the Commission that while constraints on their transmission system capacity prevent them from entering into long-term wheeling contracts, the company believes it can commit limited capacity (200-250 megawatts) for wheeling on a short-term conditional basis. Conditions would include:

- A 1998 expiration date unless proposed transmission reinforcements are successfully completed by that time.

- Transmission under the agreement would be curtailed if Apco was forced to curtail its current obligations.

- Transmission under the agreement would be curtailed if Apco's Cloverdale/Lexington line is lost.

Virginia Power officials advised the Commission that their plans to construct the Joshua Falls/Ladysmith line are contingent upon (i) completion of the Wyoming to Cloverdale line and (ii) further improvements being made to the transmission system north of Virginia Power's service area.

C. WHEELING STUDY CONCLUSIONS

SCC Report

William F. Stephens, Director of the State Corporation Commission's Division of Energy Regulation, summarized the SCC's conclusions at the Commission's November meeting. He noted that facility improvements made or planned will improve west-to-east transfer capability on the existing regional electrical power transmission system. This added capability could enable the system to accommodate the transfer of up to 250 megawatts of additional power from Apco to Virginia Power's service area. This capability may be short-lived, however, because native load growth and possible delays in completing facility enhancements could result in the incremental consumption of the existing west-to-east transfer capabilities. Moreover, construction of one or more major transmission lines may be necessary to further accommodate significant west-to-east power transfer greater than 250 megawatts in any event.

VCCER Report

VCCER's Associate Director, Carl Zipper, appeared at the Commission's November meeting to discuss the Center's report on the wheeling issue. The VCCER concluded that transmitting power from the Southwest Virginia coalfields to the Virginia Power service area was not technically or economically feasible under the regional transmission network's current configuration. The VCCER examined the feasibility of both direct and nondirect transmission routes. It first analyzed construction of a line from a nonutility generation plant in the Southwest Virginia coalfields directly to a connection point in the western portion of the Virginia Power service area. In addition, the VCCER assessed the feasibility of constructing a line designed to interconnect with the Apco system to enable wheeling of power via that system into the Virginia Power service area.

Direct Line Option

The most feasible direct route to the Virginia Power System is a line to Virginia Power's facilities at Lexington and Virginia Power's construction of a line from near Lexington to the Ladysmith switching station in Spotsylvania County. This interconnection is generally acceptable to Virginia Power. However, load flow modeling studies conducted by Apco and Virginia Power show that this configuration would result in increased power flows on the existing Apco transmission facilities west and south of Apco's Cloverdale station in Botetourt County, north of Roanoke. Moreover, Virginia Power would require--for purposes of reliability--a double-structure, double-circuit line to the interconnection point. According to the VCCER, the cost of a line built to these specifications would render it economically infeasible. Finally, Virginia Power would still need to construct the 500 kV line from Lexington to Ladysmith to make this option work--a significant expense Virginia Power would have to weigh in relation to power supply bids from other nonutility generators who could supply the power without such costly facility enhancements.

The VCCER also looked at an alternate means of satisfying Virginia Power's reliability requirements: a single-circuit line to the Virginia Power service area combined with a radial line to the nearby Apco system in Southwest Virginia. The redundant path to the Apco system would provide transmission backup in the event of transmission disruption over the primary line. However, it is Apco's position that there is little difference between providing backup transmission capacity and wheeling the entire load since sufficient transmission capacity to transmit the nonutility generator's entire load at any time must exist. Consequently, wheeling charges would be assessed on the entire generation making this option economically infeasible.

Apco Interconnection Option

Finally, The VCCER studied placing the entire nonutility-generated load on the Apco system for transmission into the Virginia Power service area through existing interconnections between these two systems. The Apco 765 kV Baker-Broadford-Jacksons Ferry-Cloverdale line is the closest high-capacity transmission system to the Southwest Virginia coal region. However, Apco maintains that the heavy transmission load currently on this system leaves little or no capacity for wheeling services--at least none past 1998.

Another VCCER study scenario contemplated Virginia Power completing its Joshua Falls to Ladysmith 500 kV line in advance of the Apco 765 kV line from Wyoming, WV to Cloverdale, in conjunction with construction of a line from a nonutility generator to Jacksons Ferry. Flow modeling studies indicate that this configuration, in the absence of a completed Wyoming--Cloverdale line, would cause excessive loading on Apco's system west of Cloverdale. Moreover, Virginia Power indicates it would require financial consideration for an accelerated construction schedule.

The VCCER therefore concluded that under current transmission line configurations, that is, without the completion of transmission reinforcements planned by both Virginia Power and Apco, wheeling via direct and nondirect means is technically or economically infeasible.

D. NONUTILITY GENERATION OF ELECTRICAL POWER FROM THE VIRGINIA COALFIELDS.

Coalfield generating facilities are rapidly moving from concept to application. The coal subcommittee received a detailed report on a proposed facility that may be constructed if key contingencies can be resolved. Coastal Power Production Company of Roanoke is a partner in TAMCO Power Partners which proposes to build a power plant using air-blown, fluidized-bed coal gasification technology in combination with a gas turbine modified for use with either low BTU gas or natural gas. TAMCO intends to build the plant at the Toms Creek mine located near Coeburn in Wise County, Virginia. The Toms Creek mine is owned by a Coastal subsidiary.

The Toms Creek project is one of three coal-gasification demonstration projects approved by the U.S. Department of Energy (DOE) for construction grants in connection with its clean coal technology program. Two gas turbines would operate at the plant. One would burn low BTU gas produced in a coal gasifier plant; a second would run initially as a conventional natural-gas fired system. Once the technology is demonstrated, the second turbine will be converted to coal. The plant's expected cost is $219.1 million; the DOE grant is approximately 50 percent of that amount.

According to Coastal representatives, the plant would use 430 tons of bituminous coal per day to produce 55 megawatts of electrical power. The total output from the combined plant will be 107 megawatts electrical power and approximately 20,000 pounds per hour of industrial steam for use in a nearby coal preparation plant. Major economic benefits to the plant area are projected to include 50 permanent operating jobs, 200-300 construction jobs, 50-100 service area related jobs, and significant local tax revenues.

Vital to this project are long-term power purchase and transmission agreements enabling the plant to deliver electrical power to commercial customers by June 1995. Coastal officials say these agreements must be furnished to the Department of Energy by September of 1992 or DOE will not execute the cooperative agreement providing federal funding for this project. DOE reportedly will require a power-purchase agreement of at least 20 years' duration. Coastal officials told the coal subcommittee that the TAMCO partnership hopes to sell power produced by the Toms Creek facility to Virginia Power; they hope to transmit the power by wheeling it through an interconnection to the nearby Apco power grid. A summary of the TAMCO project is attached as Appendix G.

Apco officials, however, told the coal subcommittee that its current transmission system is unable to accommodate the long-term wheeling requirements of the Toms Creek project. They said that the Apco system simply lacks excess transmission capacity sufficient to accommodate the 100 megawatts of power to be produced by this project. Completion of the planned 765 kV line from Wyoming, West Virginia, to Cloverdale, Virginia, in conjunction with Virginia Power's construction of the proposed 500 kV line from Joshua Falls to Ladysmith, however, could result in sufficient capacity for wheeling.

E. OUTLOOK

The State Corporation Commission has scheduled joint hearings in April 1992 on Apco and Virginia Power transmission line enhancement applications. The Commission will continue to monitor this issue in the months ahead.

VI. MISCELLANEOUS REPORTS RECEIVED BY THE COMMISSION

A. COGENERATION PROJECTS

The Commission received an update on the status of four coal-burning cogeneration projects sponsored by Hadson Development Corporation. Two of the projects (Southampton and Altavista) are nearing the end of construction and are scheduled to go on-line before 1992. Hadson's Hopewell facility is expected to be completed and operating early in 1992. The company's Buena Vista project, anticipated to burn 250,000 tons of coal annually, has yet to receive the required air permit. However, that project's air permit is expected to be considered by the Air Pollution Control Board at its April 1992 meeting.

B. METHANOL FUEL

The Bush Administration's national energy strategy emphasizes increased production and use of alternative fuels. The Commission received a presentation on methanol from Glyn D. Short of ICI General Chemicals. Mr. Short explained that as a transportation fuel, methanol is the best alternative to gasoline because of its cleaner emissions, the abundance of feed-stocks from which it is produced, and its excellent performance in engines. While a new cost-effective process has been developed for producing this fuel from coal, methanol will still be more expensive than gasoline. Consequently, to encourage production of methanol fuel from coal, Mr. Short suggested that government subsidies and a regional approach (Tennessee, West Virginia, and Virginia) should be considered. Noting that a great deal of federal funding is now available for the development and production of alternative fuels, Mr. Short explained that Virginia would be a prime location for a large coal-to-methanol production facility. Such a facility would use up to seven million tons of coal annually.

C. CLEAN COAL TECHNOLOGY PROJECT PROPOSAL

Dr. Richard Wolfe of Coal Technologies, Inc., informed the Commission that his firm, in combination with two other companies, had recently submitted a proposal to the U.S. Department of Energy to build a $124.5 million facility in Wise, Virginia. The proposed facility will convert coal into coal liquids and metallurgical coke, use approximately 1,500 tons of Virginia coal per day, and

provide 200 new jobs. Use of a new technology will allow the facility to produce coke in a much shorter period of time then is currently possible. Proposed funding for the project is split 50/50 between industry and the federal government. Dr. Wolfe informed the Commission that this is one of the largest capital investment projects ever proposed for Southwest Virginia.

D. NATURAL GAS: PIPELINE CONSTRUCTION PROJECT

In 1988, Virginia Natural Gas, a wholly owned subsidiary of Consolidated Natural Gas, received approval from the SCC to construct a new natural gas pipeline from the Prince William/Fauquier County line to a point just east of Williamsburg. The two existing interstate gas pipelines have reached capacity, and recently proposed power generation facilities, which will burn natural gas, require additional transmission capacity. The company began construction of this 135-mile-long pipeline in April 1991, after obtaining approximately 200 local, state, and federal permits. The new pipeline will bring gas service to the Counties of Hanover, New Kent, Charles City, Essex, King and Queen, Middlesex, and Gloucester. Seventy-five percent of the new pipeline will be located on existing power line rights-of-way. The pipeline project, the largest of its kind in Virginia during the past 35 years, has a maximum daily capacity of 225 million cubic feet. This capacity could be doubled in the future by increasing compression. Primary customers to be served by the new line include Mitsubishi's Doswell power plant (650 megawatts), Virginia Power's Chesterfield 8 unit, and the City of Richmond. According to company officials, only 70 percent of the current maximum daily capacity of the new pipeline will be used immediately.

E. CLEAN AIR ACT AMENDMENTS.

The Coal Subcommittee received a detailed presentation on the 1990 federal Clean Air Act amendments and proposed Environmental Protection Agency regulations implementing Title IV of that measure. Copies of materials received on this issue are attached as Appendix H. Title IV's purpose is the reduction of sulfur dioxide (SO_2) emissions from coal- and petroleum-fired electric generating plants through a program establishing emission limits. This program's goal is a 50 percent reduction of current emission levels by the year 2000.

The program will operate in two phases. Phase I identifies 110 power plants with heavy SO_2 emissions, assigns emissions allowances on a per-ton basis, and requires compliance with the established allowances by 1995. Virginia Power's Mount Storm facility in West Virginia, for example, must reduce emissions by approximately 30,000 tons per year by then. No Virginia-based power plants, however, are included in Phase I. Phase II will require all other significant sources of SO_2 emissions to obtain emissions permits (with prescribed allowances) by the year 2000.

One key part of the program permits emissions allowance trading between affected companies. Thus, if Company A reduces emissions below its EPA-assigned allowances--presumably through the use of a cleaner fuel source (such as low-sulfur coal or natural gas) or scrubbers--it can sell any unused allowance to Company B. Company B, in turn, can add purchased allowances to its assigned allowance in establishing a ceiling for permitted emissions, or it can re-sell the allowances to Company C. This allowance-trading system is intended to expedite SO_2 emissions reductions nationally by allocating clean-up costs through a market-driven mechanism.

The coal subcommittee heard testimony suggesting that the high cost of scrubbers--and even the potentially high cost of unused emissions allowances--may position Virginia's low-sulfur coal as a cost-effective alternative in achieving Clean Air Act compliance. It is equally conceivable, however, that states home to high-sulfur coal producers will encourage utilities based there to install scrubbers. Ohio, for example, passed a $1-per-ton tax credit for high-sulfur Ohio coal burned in Ohio-based power plants.

The Illinois legislature took even stronger steps. It passed legislation requiring high-sulfur Illinois coal to be burned at four large generating facilities. The net effect will be to require the utilities that own these facilities to install scrubbers. The viability of this approach, however, is called into question by the U.S. Supreme Court's recent decision in Wyoming v. Oklahoma. An Oklahoma law requiring coal-fired electric utilities to burn a mixture of at least 10 percent Oklahoma-mined coal was found to be in violation of the U.S. Constitution's Commerce Clause.

Respectfully submitted,

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VII. APPENDIX GUIDE

The Virginia Energy Plan

August 20, 1991

COMMONWEALTH of VIRGINIA

Lawrence Douglas Wilder
Governor

Office of the Governor
Richmond 23219

August 20, 1991

Dear Fellow Virginians:

Experts estimate that energy consumption in the United States grew by 16 percent between 1975 and 1990. During that same period, due to rapid economic development and continuous population growth, consumption in Virginia grew by 45 percent. Even more startling, per capita energy consumption in Virginia increased from 20 percent below the national average in 1980 to only 3.5 percent below the average in 1989.

Energy use is expensive for both our citizens and our government. For example, we spend approximately $100 million per year on energy consumption in State-occupied buildings. We have the technology available to conserve energy and set a better example for the citizens of the Commonwealth.

Of course, energy use entails costs which are not apparent in our state budget. The lessons of the past two decades have taught us that the world does not enjoy an inexhaustible supply of energy resources. We have also learned that the United States has become far too dependent upon foreign sources for energy. Moreover, and just as important, the use of energy resources can have an adverse impact upon the present and future environment in which we and our children will live.

These realities dictate that we become more responsible in our use of energy. We now realize that we cannot depend upon Washington to solve these problems. If a solution is to be forthcoming, it must come from the people and government here in Virginia.

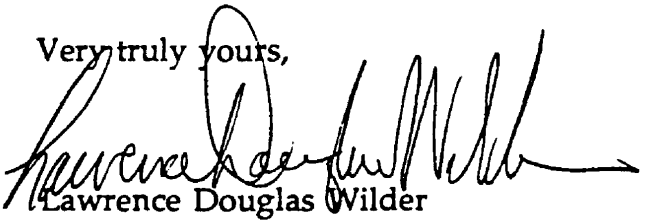
804 786-2211 TDD 371-8015

Therefore, I am pleased to announce that I have approved the implementation of Virginia's first comprehensive energy plan. The Virginia Energy Plan calls for government employees to concentrate upon the judicious use of all energy resources. The plan will require many of us to change some habits. However, if it is to be successful, as it must be, we will all have to participate. I am convinced that Virginia can rise to the task and that our state government can serve as a role model, providing an incentive to all Virginians to conserve energy.

I extend to all Virginians my appreciation for joining in this worthwhile objective.

With best wishes, I remain

Very truly yours,



Lawrence Douglas Wilder

Table of Contents

GOAL I: INCREASE ENERGY EFFICIENCY AND CONSERVATION IN STATE GOVERNMENT AND BY ITS CLIENTS

OBJECTIVE A

To increase end-use efficiency and conservation through June 30, 1994.

STRATEGIES

1. Consistent with the Governor's emphasis on environmental clean-up, the Natural Resources agencies and the Department of General Services will identify state-owned facilities where energy-efficiency improvements would lessen adverse environmental impacts. The Department of General Services and the Department of Planning and Budget will develop procedures to facilitate consideration of these projects in the state capital outlay process.

2. The Department of General Services, Division of Engineering and Buildings, will revise the capital outlay policies and procedures manual to: (1) strengthen life cycle costing of energy systems, and (2) strengthen energy-efficient building design.

3. The Department of General Services will reissue a revised and updated Energy Directive "5C" which deals with building operations parameters.

4. The Department of General Services, Division of Purchases and Supply, will improve the quantity and quality of energy-efficient products available to agencies for purchase under state contract.

5. The Department of Mines, Minerals and Energy will recommend financial mechanisms to support the funding of energy efficiency in state government to include, but not be limited to, shared savings, low-interest loans, bonds, gap financing, etc.

6. The State Air Pollution Control Board and the Department of Mines, Minerals and Energy will work with appropriate Natural Resources agencies to establish methods to evaluate environmental externalities and provide recommended methodologies to the Department of General Services for inclusion in the capital outlay policies and procedures manual.

7. The Department of General Services, State Energy Team, will track and report energy usage in state-owned facilities which meet established criteria for minimum energy use and cost per square foot.

8. The Department of Planning and Budget will evaluate and make appropriate recommendations to the Governor on agencies' need to retain energy savings from fiscal year to fiscal year when necessary to support the subsequent installment payments for energy-efficient improvements or to finance additional energy-efficiency improvements in their physical plants.

9. The Department of Mines, Minerals and Energy will work with local jurisdictions to develop and ensure energy management practices in locally-owned/operated facilities.

10. The Department of Mines, Minerals and Energy and appropriate Natural Resources agencies will actively participate in hearings held by the State Corporation Commission in reference to utility-based demand-side management programs.

11. The Department of General Services will assist all agencies in taking advantage of utility demand-side management programs and rate changes.

12. The State Water Control Board will encourage state agencies and localities to use water-saving devices which will conserve water and energy and reduce the maintenance costs of septic systems and sewage treatment.

13. The Department of Mines, Minerals and Energy with the Department of General Services will identify and encourage each agency which reviews and approves locally-controlled construction projects, including school buildings, sewage treatment plants, and jail construction, to implement life-cycle costing of the energy systems and advise local governments of energy-efficiency options which should be adopted.

14. The Department of Housing and Community Development will review current building requirements for energy-efficiency, strengthen requirements where necessary, and continue to provide training for building officials and industry professionals on plan review and enforcement efforts.

15. The Department of Mines, Minerals and Energy will establish a home energy rating system for existing and new construction.

16. The Department of Mines, Minerals and Energy will encourage local and regional planning commissions to consider energy efficiency in local zoning ordinances and planning.

17. The Department of Mines, Minerals and Energy will provide grants to schools and hospitals for energy-efficiency and conservation improvements.

18. The Department of Mines, Minerals and Energy will evaluate the energy conservation techniques implemented through their grant program to schools and hospitals and develop recommendations based upon the findings.

19. The Department of Housing and Community Development and the Department of Social Services will coordinate the weatherization and fuel assistance programs to ensure that fuel assistance recipients receive weatherization assistance which maximizes the use of fuel assistance dollars and increases the energy efficiency of the housing stock in Virginia.

20. The Department of Transportation, the Department of Conservation and Recreation and the State Air Pollution Control Board will work together to increase the use of energy-efficient, non-motorized alternatives to the automobile, such as cycling and walking, through the development of urban bikepaths and walkways.

OBJECTIVE B

To increase transportation efficiency and conservation through June 30, 1994.

STRATEGIES

1. The Department of Transportation will convert 50 vehicles in the state's fleet to compressed natural gas.

2. Each agency will reduce the number of discretionary trips, carpool when possible, use public transportation, practice efficient driving techniques, and choose meeting locations which ensure maximum fuel conservation.

3. The Department of Transportation will work with appropriate entities to encourage expansion of public transportation and rail in areas where such service is feasible.

4. Consistent with agency service requirements each agency will adopt flex-time or staggered work schedules (such as four 10-hour days) to reduce traffic congestion and support public transportation and carpooling.

5. The Department of Transportation will establish technical assistance services and distribute information to educate all state agency and public transportation fleet managers on energy-efficient vehicle maintenance and driving techniques.

6. The Department of Personnel and Training and Secretary of Administration will evaluate the recommendations of the Telecommuting Feasibility Study, conducted pursuant to HJR 77 of the 1990 General Assembly and recommend appropriate action to the Governor's Office.

7. The Department of Transportation and the Department of Mines, Minerals and Energy will coordinate with the State Air

Pollution Control Board to incorporate energy-efficiency assessments in planning transportation systems, especially areas with air quality concerns.

8. State agencies will expand their use of the telecommunications system to decentralize work and reduce the need for travel to offices, meetings, and conferences.

9. The Department of Mines, Minerals and Energy will work with the Department of Transportation and the Dulles Area Transportation Authority to implement transportation management projects to ensure efficiency in the transportation sector of Virginia.

10. The Department of Motor Vehicles and the Department of Mines, Minerals and Energy will research incentives for motorists to conserve fuel.

11. The Department of Transportation with the State Air Pollution Control Board will research and implement incentives for use of high-occupancy vehicles (HOVs), including but not limited to: (1) reduced tolls; (2) special toll booths for HOV use during peak periods; and (3) automatic toll collection procedures.

12. The State Police will encourage drivers' strict adherence to speed limits and requirements on high-occupancy vehicle (HOV) facilities.

OBJECTIVE C

To increase energy production efficiency through June 30, 1994.

STRATEGIES

1. Agencies with power generation systems will evaluate the efficiency of their production and transmission systems and implement improvements.

2. The Department of General Services, the Department of Corrections, and all colleges and universities, in coordination with the State Air Pollution Control Board, will encourage state-owned facilities to capture wasted energy to convert to electricity, where applicable.

3. The Department of Mines, Minerals and Energy will conduct an assessment of coal-burning efficiency in Virginia.

4. The Department of Mines, Minerals and Energy, in coordination with the Department of General Services, will select state agencies to serve as facility hosts for clean coal technology demonstration projects.

5. The Secretary of Natural Resources will recommend to the State Corporation Commission methods to assess the costs of environmental externalities in the review of utility cases.

6. The Department of Mines, Minerals and Energy will assess the economic and environmental potential for sustainable, large-scale biomass production in Virginia.

OBJECTIVE D
To increase awareness of energy efficiency and conservation

STRATEGIES

1. The Department of Mines, Minerals and Energy will provide training and technical support for all agency energy managers.

2. The Department of Education will coordinate with Virginia Energy Education Development to integrate energy education into the curriculum for grades K-12.

3. The Council on Higher Education will work with state colleges and universities to incorporate courses in energy conservation, management, and efficiency in all relevant professional curricula.

4. The Virginia Community College System will develop and provide technical training in emerging energy fields.

5. The Department of Education and the Department of Motor Vehicles will incorporate energy-efficient driving techniques into driver education.

6. The Department of Mines, Minerals and Energy will evaluate potential energy savings achieved by offering work alternatives to state employees, including on-site day care, trip reduction, satellite work centers, and telecommunications.

7. The Department of Mines, Minerals and Energy will institute a "recognition of excellence" award for facility energy managers.

8. Each agency will encourage employees to submit ESP suggestions for energy efficiency and conservation in state government.

9. The Department of Mines, Minerals and Energy will offer the toll-free Energy Hotline to answer questions on energy-related issues and assist consumers in the identification of fraudulent claims.

10. The Department of Mines, Minerals and Energy will distribute seasonal public service announcements to promote energy efficiency and conservation through the radio and newspaper media.

11. The Department of General Services and the Department of Transportation, in cooperation with the State Air Pollution Control Board, will promote the use of public transportation services, carpooling, vanpooling and rail through, for example, establishing a preferential parking program for carpools and vanpools on all state parking lots and developing a state agency transit discount pass program for state employees in major urban areas.

12. The Department of Mines, Minerals and Energy will co-sponsor the Virginia Energy Awards Program.

13. The Council on the Environment will promote and help incorporate an energy awareness component in the environmental education program it coordinates and promotes throughout the Commonwealth.

14. The Department of Agriculture and Consumer Services will provide consumer protection services to discourage the adoption of ineffective measures of energy conservation.

15. The Secretary of Economic Development will integrate the expertise, assistance, and cooperation of Virginia business and community leaders to advance the development, implementation, and acceptance of energy efficiency in Virginia.

OBJECTIVE E
To integrate planning for energy management.

STRATEGIES

1. The Department of Mines, Minerals and Energy will monitor energy supply and demand throughout Virginia for contingency planning purposes.

2. The Department of Mines, Minerals and Energy and the Department of Emergency Services will expand the Virginia Energy Guard Contingency Plan to include other fuel sources.

3. The Department of Mines, Minerals and Energy will coordinate the development and implementation of energy policy and planning for the Commonwealth of Virginia.

4. The Governor will direct each agency to develop and adopt an energy management planning process to accomplish a 25% reduction in energy consumption by 1998, measured against 1990 consumption levels.

5. Each agency will identify an energy manager, evaluate program policies and regulations with respect to energy efficiency, make recommendations to revise programs, and implement upon approval.

6. The Department of Mines, Minerals and Energy will provide guidance and training for energy management planning in state agencies.

GOAL II: ADVANCE RENEWABLE AND ALTERNATIVE ENERGY SOURCES IN VIRGINIA

OBJECTIVE A

To increase the use of alternatively fueled vehicles through June 30, 1994.

STRATEGIES

1. The Department of Mines, Minerals and Energy, in coordination with the State Air Pollution Control Board, will enable the conversion of 10% of local government transportation fleets to electrical, ethanol, or compressed natural gas.

2. The Department of Mines, Minerals and Energy, in coordination with the State Air Pollution Control Board, will assess the barriers to the use/availability of alternative fuels; facilitate the removal of such barriers; and make recommendations to enhance the acceptance of alternative fuels and technologies.

3. The Department of Mines, Minerals and Energy will demonstrate the use of coal-derived diesel fuel.

4. The Department of Mines, Minerals and Energy, in coordination with the State Air Pollution Control Board, will direct a public awareness campaign to increase acceptance and stimulate the demand for gasoline blended with 10% methanol/ethanol.

OBJECTIVE B

To increase the use of renewable and alternative energy sources.

STRATEGIES

1. The Department of Mines, Minerals and Energy, in coordination with the Department of General Services, will demonstrate renewable technologies in state applications by initiating pilot projects in state government facilities.

2. The Department of General Services will ensure that recycled products be included in state purchasing policies and practices to encourage purchase of those products by agencies.

3. Each agency will implement recycling programs based on guidance prepared by the Department of Waste Management.

4. The Department of Mines, Minerals and Energy will identify regional used oil recycling centers, which are easily accessible to every Virginian, and encourage citizens and businesses to recycle used motor oil.

5. The Department of Housing and Community Development will promote changes in the building codes to recognize the importance of solar energy equipment and building practices.

6. The Department of Mines, Minerals and Energy will promote renewable technology options in building design and construction.

7. The Department of Mines, Minerals and Energy will encourage consideration of alternative and renewable energy sources in local and regional planning.

8. Virginia Housing Development Authority and the Department of Housing and Community Development, in coordination with the Department of Mines, Minerals and Energy, will provide grants or loans to building owners and/or operators in the private sector to demonstrate renewable technologies.

9. The Department of Mines, Minerals and Energy, in partnership with public utilities, will demonstrate the use of thin-film photovoltaics for utility-scaled applications.

10. The State Water Control Board with the Department of Health will encourage, where appropriate, anaerobic sludge digestion for methane recovery to be used as an energy source at wastewater treatment plants.

11. The Department of Mines, Minerals and Energy with the State Air Pollution Control Board will research the feasibility of burning waste wood to generate electricity.

12. The Departments of Mines, Minerals and Energy; Forestry; and Game and Inland Fisheries will coordinate with the State Air Pollution Control Board to promote expanded use of wood as a supplemental or direct heat source by using environmentally-sound wood burning technologies.

13. The Department of Waste Management and the Department of Health with the State Air Pollution Control Board will encourage that landfills, where appropriate, be equipped with methane recovery systems.

14. The Department of Waste Management will continue to facilitate implementation of the waste management hierarchy emphasizing reduction, reuse, recycling, and waste-to-energy measures.

15. The Department of Agriculture and Consumer Services, the Department of Conservation and Recreation, the Department of Mines, Minerals and Energy, and the State Air Pollution Control Board will explore and implement, where feasible, the opportunities for methane recovery systems in agricultural settings.

Virginia Energy Production and Consumption: Trends and Prospects

Coal:

- ***Production and Distribution:***
  - **Trends:**
    - ▲ 46.5 million ton record production in 1990 (45% Buchanan Co.);
    - ▲ 44 mt average 1984-90;
    - ▲ Growth attributable to longwall production;
    - ▲ Hampton Roads shipments record 62 mt in 1990.
  - **Prospects:**
    - ▲ Outlook favorable through 1990s (Clean Air Act;exports), more uncertain thereafter.
  - **Current Programs:**
    - ▲ Mine regulation (DMME permitting, safety and environmental regulation);
    - ▲ Rules for Virginia coal use in state facilities;
    - ▲ Tax incentives for use of Virginia coal;
    - ▲ Coal marketing programs (DED);
    - ▲ Funding for research and technology development (University allocations, CIT, overcharge funds).
- ***Consumption:***
  - **Trends:**
    - ▲ 34% of Virginia energy use from coal (17% burned in-state;
    - ▲ 17% burned out-of-state and imported as electricity);
    - ▲ In-state consumption: 62% utility, 35% industry;
    - ▲ Consumption down in 1990, but still double 1978 use.
  - **Prospects:**
    - ▲ Near-term increase due to 1500 MW of planned utility and non-utility coal-fired electrical capacity in works (35% of existing coal capacity).
  - **Current Programs:**
    Air pollution permitting and regulation (DAPC);
    - ▲ SCC approval of utility, IPP coal-fired facilities.

Electricity

- ***Generation and Transmission:***
  - **Trends:**
    - ▲ In-state power plants generate 60-65% of electricity used in Virginia;
    - ▲ In 1990, 50% nuclear, 44% coal;
    - ▲ Non-utility generation increasing (provided 10% of Virginia Power's July 1991 peak load and double the existing non-utility capacity under development);
    - ▲ Environmental conflicts over siting power plants and transmission lines.
  - **Prospects:**
    - ▲ Increasing purchases of out-of-state and non-utility power;
    - ▲ Clover agreement sets precedent for stringent air pollution controls on new coal-fired capacity.
  - **Current Programs:**
    - ▲ SCC utility regulation (planning, power plant and transmission line construction);
    - ▲ Air pollution permitting and regulation of fossil-fueled plants;
    - ▲ SWCB water withdrawal permits for new generating facilities.
- ***Consumption:***
  - **Trends:**
    - ▲ Electricity sales averaged 4.4% annual growth from 1983 thru 1990 (despite a decline in 1990);
    - ▲ 39% residential, 27% commercial, 23% industrial, 11% public authority;
    - ▲ average residential rates increased about 12% from 1988 to 1990, after 5 years of decline;
    - ▲ they continued to rise in 1991, but are still less in real terms than in 1978;

- ▲ utility load management programs.
- **Prospects:**
  - ▲ Utilities forecast that demand growth will slow from recent 4-5% to 2% or less by 2000;
  - ▲ even so, Virginia Power projects its peak load to increase by 30% by 2000;
  - ▲ prompted by the SCC, utilities may expand conservation and load management programs.
- **Current Programs:**
  - ▲ SCC utility regulation (ratemaking, demand-side management);
  - ▲ see Consumption and Efficiency, below.

Petroleum Products

- ***Production:***
  - **Trends:**
    - ▲ Minor production in southwest Virginia, amounts to less than 0.02% of state consumption;
    - ▲ some exploratory drilling in Westmoreland Co. but as yet unsuccessful.
  - **Prospects:**
    - ▲ little to none.
  - **Current Programs:**
    - ▲ Oil well permitting and regulation (DMME);
    - ▲ Chesapeake Bay drilling moratorium.
- ***Distribution and Consumption:***
  - **Trends:**
    - ▲ Largest source of energy in Virginia (40% in 1990);
    - ▲ considerable growth in consumption since 1982 (3.2% per year, even with a decline in 1990), fueled by transportation use;
    - ▲ about 85% of supply comes via two major transmission lines from the south, the remainder via waterway;
    - ▲ major price fluctuations in past dozen years have followed national trends;
    - ▲ major cause of urban air pollution.
  - **Prospects:**
    - ▲ Virginia consumption and prices will likely follow national trends;
  - **Current Programs:**
    - ▲ DAPC air pollution regulation (stationary sources, mobile sources);
    - ▲ DMME contingency planning.

Natural Gas

- **Production:**
  - **Trends:**
    - ▲ Virginia natural gas production in southwest Virginia (14.8 million mcf in 1990) amounts to about 9% of state consumption;
    - ▲ production has dropped for three straight years from the 1987 record of 19.5 mill. mcf;
    - ▲ 5% of the producing wells in 1990 tapped coalbed methane, but 55% of the new wells drilled were into coal seams;
    - ▲ most Virginia production, including low-permeability deposits and coalbed methane, is eligible for federal tax credits;
    - ▲ weak market conditions (northern heating markets) and inadequate transmission pipelines from producing areas have inhibited production increases.
  - **Prospects:**
    - ▲ Expansion of coalbed methane well drilling and installation of new pipeline are expected to cause an increase gas production in the short term;
    - ▲ market conditions will determine longer term prospects.
  - **Current Programs:**
    - ▲ Gas well permitting and regulation (DMME).

- *Consumption:*
  - **Trends:**
    - Although natural gas consumption increased by an average 3.5% per year between 1983 and 1989, it dropped by 2.5% with the mild winter in 1990, and was only about 10% more in 1990 than in 1972;
    - by sector: 32% residential, 25% commercial, 40% industrial, and 3% utility.
  - **Prospects:**
    - Local distribution companies forecast an average 2.5% annual growth in consumption in the next few years;
    - use for electric power generation will increase as new gas-fired capacity under construction comes on line.
  - **Current Programs:**
    - SCC regulation of local distribution companies (planning, ratemaking, demand-side programs).

Renewable Energy

- *Production and Use:*
  - **Trends:**
    - 6% of Virginia energy comes from renewable energy (wood, waste-to-energy, hydro, ethanol, landfill gas, and solar);
    - about 3/4 comes from wood fuel in industry and residences;
    - non-utility small power producers have increased use of wood fuel, wastes, and landfill gas.
  - **Prospects:**
    - Further increases in renewable energy are likely from power generation from wood fuel, wastes and landfill gas;
    - the cost effectiveness of residential and commercial solar applications must improve before large investments occur.
  - **Current Programs:**
    - Waste-to-energy, landfill-gas regulation (DWM permitting, DAPC air pollution permitting and regulation);
    - air pollution regulation of wood-fueled facilities (DAPC);
    - ethanol production subsidy;
    - DMME information programs.

Consumption and Efficiency

- *Overall:*
  - **Trends:**
    - Virginia energy consumption grew by 30% between 1982 and 1989 compared to 15% for the nation as a whole;
    - energy use declined slightly in 1990 due to mild weather and economic recession;
    - consumption by sector: 31% transportation, 27% industrial, 23% residential, 19% commercial;
    - consumption by fuel: 40% petroleum, 17% coal, 17% electricity imports, 13% nuclear, 9% natural gas, 4% wood, < 1% net hydro;
    - almost 30% of primary energy is lost in the generation and transmission of electricity;
    - more than $12 billion was spent to purchase end-use energy in 1990, an increase of 11% over 1989.
- *Residential:*
  - **Trends:**
    - After 7 years of steady growth, residential energy use dropped by 6% in 1990, due to the mild weather;
    - Sources of residential end-use energy: 39% electricity, 22% natural gas, 20% petroleum products, 17% wood;
    - electricity is increasingly the fuel of choice for heating new residences.

- **Prospects:**
  - Continued increase in electricity is likely;
  - opportunities for improved efficiency in existing and new housing: building envelope, appliances and lighting.
- **Current Programs:**
  - Low-income weatherization (DHCD);
  - LIHEAP (DSS);
  - Building code (DHCD);
  - SCC utility regulation (demand-side management);
  - DMME information programs.

- ***Commercial:***
  - **Trends:**
    - After several years of steady growth, commercial energy use declined by 1.5% in 1990;
    - End-use sources: 57% electricity, 25% natural gas, 15% petroleum products;
  - **Prospects:**
    - Growth in consumption likely from continued development and reliance on electricity;
    - opportunities for efficiency improvements in existing and new buildings: lighting, HVAC management.
  - **Current Programs:**
    - Building code;
    - SCC utility regulation (demand-side management);
    - DMME information programs.
- ***Industrial:***
  - **Trends:**
    - Consumption has not increased as dramatically as other sectors;
    - Sources: 30% coal, 16% petroleum feedstocks, 11% petroleum fuel, 17% natural gas, 14% electricity, 12% wood;
  - **Prospects:**
    - Dependent on economic conditions, energy prices, and investments in efficiency.
  - **Current Programs:**
    - Regulation of air pollution from fuel combustion (DAPC);
    - DMME information.
- ***Transportation:***
  - **Trends:**
    - Considerable growth in consumption between 1982 and 1988 (6% per year), slowed to 1.3% in 1989 and 1990 due to higher prices and improved auto efficiency;
    - consumption driven by steady increase in vehicle miles traveled;
    - Sources: 64% motor gasoline, 18% diesel, 14% jet fuel;
    - 77% of petroleum products used in Virginia is for transportation;
    - transportation fuel expenditures rose to $5.5 billion in 1990, in real terms, still 16% than the record high in 1981.
  - **Prospects:**
    - Transportation dependency on petroleum products constitutes Virginia's (and the nation's) greatest energy vulnerability;
    - ample opportunities exist for improvements in efficiency, but most are dependent on federal action (e.g., auto efficiency standards, gasoline taxes).
  - **Current Programs:**
    Motor fuel taxes.

1991-92 ENERGY ASSISTANCE PROGRAM UPDATE

Major Issues

Funding

Attachments reflect the potential amount of federal dollars available for the Program this year based on the three proposals currently under consideration in Congress. Total dollars available will be reduced. It is anticipated that the need for assistance will increase based on the increases noted in other assistance programs in the State.

Program Design

The State Board of Social Services at its August meeting adopted the Department of Social Services staff proposal to automate the determination of eligibility and benefit amounts for the Fuel Assistance component. Application forms with some preprinted demographic data will be mailed to all households who received Fuel Assistance in the 1990-91 program year and other specified households who received Food Stamps, ADC or SSI.

It is anticipated that this design will reduce the amount of work needed in local departments to process applications and reduce local department of social services costs. The state office administrative costs will increase . The administrative cost formula was also changed. Of the 10% administrative cap, 6% will be allocated to local agencies and 4% will be allocated for state office costs.

Applications will be accepted during the month of November only. Benefit amounts for all eligible cases will be determined on a point matrix system at the beginning of January. All available Fuel Assistance dollars will be encumbered at one time.

Outreach

The Augustus F. Human Services Reauthorization Act of 1990 (Public Law 101-501) added an amendment requiring States that provide intake services through local departments of social services must provide these services through additional state and local governmental entities, or through community based organizations such as not-for-profit neighborhood based organizations, area agencies on aging, and community action agencies. The Department plans to contract with area agency on aging offices to provide these services on application fee basis beginning 11/91.

Leveraging Incentive Program

Public Law 101-501 also included an amendment allocating supplementary LIHEAP funds to states that can demonstrate they have acquired nonfederal leveraged resources for their LIHEAP programs. Leveraged resources are benefits made available to the LIHEAP program or to low income households that:

1. represent a net addition to total energy resources available to low-income households in excess of the energy resources that these households could acquire by purchasing energy at commonly available household rates, and
2. result from acquisition or development by the program of quantifiable benefits obtained from energy vendors, or are appropriated or mandated by the state for distribution.

Leveraging incentive funds are to be awarded by a formula established by HHS, taking into account each state's success in leveraging existing appropriations in the preceding federal fiscal year, the size of each states regular LIHEAP allotment, and the ratio of leveraged resources to the state's allotment.

Leveraging incentive funds are to be used only to increase or maintain benefits to households. The bill authorizes $25 million in FY92 and $50 million for each of FYs 93 and 94 to be used as leveraging incentive funds.

The Department plans to begin meeting with various vendors and vendor organizations in January, 1992 to develop and implement leveraging incentives for FY 93. A plan has been developed based on the characteristics of Virginia specifying the various leveraging options to be considered.

Central Processing

The Department is currently evaluating the possibility of implementing centralized processing of Fuel Assistance applications. This method would incorporate the use of mail-in applications to the state office. The application procedures implemented for the FY 92 program would remain in effect. Temporary personnel would be hired to perform the duties now provided by local departments. Local departments and other organizations would receive walk-in applications and be reimbursed on an application fee basis. Crisis and Cooling Assistance would continue to be administered locally due to the nature of these programs.

Savings in administration would be directed into benefits

for eligible recipients. After additional evaluation of this proposal, it will be presented to the State Board of Social Services, if it appears feasible for implementation, for statewide implementation in FY 93.

Rev. 6/28/91

1991-1992
Energy Assistance Program
Projected Funding

President's Budget	$	1,025,000,000
*Minus Withholding		100,000,000
	$	925,000,000
Va's Share (1.99%)	$	18,407,500
Plus Overcharge Monies		+5,600,000
Available Dollars	$	24,007,500
Minus		
Administration (10%)	$	2,400,750
Outreach		60,000
Leveraging		35,000
Client Education		5,000
Cooling Assistance		500,000
	$	21,006,750
** Plus Carryover from 1990-91	$	1,500,000
	$	22,067,750
Minus		
Crisis Assistance	$	2,200,000
Available for Fuel Assistance Benefits	$	20,306,750

*Withholding to be utilized as contingency funding. Monies will be released if oil prices increase significantly within a 30 day period.

**Estimate.

Benefit Dollars Comparison

	Fuel Assistance	Crisis Assistance
1990-91	$ 34,923,633	$ 2,385,460
1991-92	20,306,750	2,200,000
	$(14,616,883)	$ (185,460)

Caseload Statistics

1990-91

Application Received

Fuel Assistance	128,441
Crisis Assistance	11,075
Cooling Assistance (Prior Yr.)	2,268
Total	141,784

1991-92

Projection of Applications

Fuel Assistance	148,000
Crisis Assistance	17,500
Cooling	3,000
Total	168,500

7/17/91

1991-1992
Energy Assistance Program
Projected Funding

Senate Budget	$	1,600,000,000
*Minus Withholding		300,000,000
	$	1,300,000,000
Va's Share (1.99%)	$	25,870,000
Plus Overcharge Monies		+5,600,000
Available Dollars	$	31,470,000
Minus		
Administration (10%)	$	3,147,000
Outreach		60,000
Leveraging		35,000
Client Education		5,000
Cooling Assistance		500,000
	$	27,723,300
** Plus Carryover from 1990-91	$	1,500,000
	$	29,223,000
Minus		
Crisis Assistance	$	2,200,000
Available for Fuel Assistance Benefits	$	27,023,000

*Withholding to be utilized as contingency funding. Monies will be released if oil prices increase significantly within a 30 day period.

**Estimate.

Benefit Dollars Comparison

	Fuel Assistance	Crisis Assistance
1990-91	$ 34,923,633	$ 2,385,460
1991-92	27,023,000	2,200,000
	$(7,900,633)	$ (185,460)

Caseload Statistics

1990-91

Application Received

Fuel Assistance	128,441
Crisis Assistance	11,075
Cooling Assistance (Prior Yr.)	2,268
Total	141,784

1991-92

Projection of Applications

Fuel Assistance	148,000
Crisis Assistance	17,500
Cooling	3,000
Total	168,500

1991-1992
Energy Assistance Program
Projected Funding

House Budget	$	1,000,000,000
*Minus Withholding		600,000,000
	$	1,600,000,000
Va's Share (1.99%)	$	19,573,790
Plus Overcharge Monies		+5,600,000
Available Dollars	$	25,173,790
Minus		
Administration (10%)	$	2,517,379
Outreach		60,000
Leveraging		35,000
Client Education		5,000
Cooling Assistance		500,000
	$	22,056,411
** Plus Carryover from 1990-91	$	1,500,000
	$	23,556,411
Minus		
Crisis Assistance	$	2,200,000
Available for Fuel Assistance Benefits	$	21,356,411

*Withholding to be utilized as contingency funding. Monies will be released if oil prices increase significantly within a 30 day period.

**Estimate.

Benefit Dollars Comparison

	Fuel Assistance	Crisis Assistance
1990-91	$ 34,923,633	$ 2,385,460
1991-92	21,356,411	2,200,000
	$(13,567,222)	$ (185,460)

Caseload Statistics

1990-91

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1990-91 Energy Assistance Program
Statewide Summary

		FUEL	CRISIS	COOLING
I.	Total Persons Served	286,428	28,445	
II.	Total Households Served	112,104	9,403	
	Percent Containing:			
	A. Elderly (60 or over)	33.5	14.1	
	B. Disabled	27.4	18.9	
	C. Children (Under 16)	49.0	66.5	
	D. Black Persons	45.1	52.0	
	E. White Persons	53.8	46.7	
	F. Alien Persons	.4	.2	
III.	Household Income Source	Fuel/Crisis		
	Percent With:			
	A. Earned Income	29.3		
	B. Unemployment	1.6		
	C. Social Security	37.7		
	D. SSI	26.8		
	E. ADC	20.6		
	F. General Relief	1.1		
	G. Food Stamps	62.2		
	H. Veterans Benefits	3.9		
	I. Other	12.5		
	J. None	6.8		
IV.	Household Income Level			
	Percent With Income:			
	A. Under $2,000	9.9	17.2	
	B. $2,000 - 3,999	15.4	19.7	
	C. $4,000 - 5,999	34.7	26.0	
	D. $6,000 - 7,999	16.9	14.7	
	E. $8,000 - 9,999	10.5	9.5	
	F. $10,000 - 11,999	5.6	5.6	
	G. $12,000 - 14,999	6.7	4.8	
	H. $15,000 and over	2.4	2.7	
V.	Percent Who Used Each Fuel Type			
	A. Electricity	31.9	N/A	N/A
	B. Gas (Natural)	15.9	N/A	N/A
	C. Fuel Oil	12.2	N/A	N/A
	D. Kerosene	19.8	N/A	N/A
	E. Coal	5.1	N/A	N/A
	F. Wood	11.6	N/A	N/A
	G. LP Gas	3.5	N/A	N/A

		FUEL	CRISIS	COOLING
VI.	Approval Rate (Percentage)	87.3	84.8	
VII.	Benefits			
	A. Average per Household	$286	$223	
	B. Average per Recipient	112	78	
	C. Minimum	19	N/A	N/A
	D. Maximum	486	700	400
VIII.	Housing (Percentage)			
	A. Homeowners	36.8	26.8	
	B. Renters	61.3	70.6	
	C. Renters w/ Heat Incl.	1.0	2.6	
	D. Roomers	.8	.1	
	E. Subsidized Housing	19.9	17.9	
	F. Weatherized Homes	11.3	8.4	
IX.	Payment Method			
	1. Vendor Payments	76.4	98.2	
	2. Client Payments	23.6	1.8	

X. Dollars Available

LIHEA Grant	$27,650,705.00
LIHEA Contingency	8,399,937.00
Oil Overcharge Monies	3,707,031.00
Carryover	743,803.00
Total	$40,501,476.00

XI.. Expenditures

A.	Benefits Total = $	$32,065,381	$2,097,825
B.	Administration (Max = $3,975,767) State = $	Local = $	

XII. Types of Assistance Received

Crisis	#Cases	Amount Expended	Cooling	#Cases	Amount Expended
A. Equip Repairs	1,307	$157,498	H. AC Repairs	00	$ 0,000
B. Equip Purchase	1,462	836,984	I. Fan Repairs	0	000
C. Electricity	3,012	364,219	J. AC Purchase	000	000,000
D. Security Dep	3,587	459,956	K. Fan Purch	00	0,000
E. Space Heaters	361	221,467	L. Rewiring	0	000
F. Port Sp Htrs	39	5,800	M. Fan/AC Rental	0	000
G. Emerg Shelter	1	43	N. Prvnt Elec Cut Off	000	00,000
Z. Rebuild Furn	116	54,756	O. Pymt of Elect	000	00,000
			P. Elec Security Dep	00	0,00(

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Cooling

	#Cases	Amoun Expende
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I. Fan Repairs	0	000
J. AC Purchase	000	000,000
K. Fan Purch	00	0,000
L. Rewiring	0	000
M. Fan/AC Rental	0	000
N. Prvnt Elec Cut Off	000	00,
O. Pymt of Elect	000	00,
P. Elec Security Dep	00	0,000

The Virginia Weatherization Assistance Program began in 1975 and originated as a program that was created to help low-income households during the energy crisis of the 1970's. With small budgets and limited expertise, local weatherization programs utilized very simple conservation measures such as caulking, weatherstripping, storm windows and attic insulation in an attempt to make homes more energy efficient.

Over the past 15 years the Weatherization Assistance Program has experienced a slow learning process and has become technically more sophisticated with each passing year. Current energy research and weatherization studies have shown that traditional energy conservation measures such as caulking, weatheristripping, and window replacement do not save much energy and are not as cost effective as other measures that are beginning to be utilized. An evaluation of the Virginia Weatherization Program was conducted from June, 1989 through December, 1990 by the Virginia Center for Coal and Energy Research (VCCER) which reported the potential for increased energy savings of over 400% compared to measures installed as recently as 1989. The evaluation further reports that houses in Virginia tend to be "leakier" than in other States, with twice the national average for energy useage. Measures evaluated include sidewall insulation, heating system safety inspections, sealing thermal bypasses, and insulating furnace ducts. We know now that not only should we try to thoroughly insulate the building shell when possible, but we should diagnose and correct air movement and ventilation problems, involve the client in the weatherization process thru energy education, and perform safety inspections of all heating systems.

The heating system has often been a neglected part of the weatherization process but as of July 1, 1991 the Virginia Weatherization Program requires the heating systems to pass a safety inspection before any work is performed. Weatherization estimators will conduct heating system safety inspections on all oil, gas, wood, and coal stoves and furnaces to determine if the system is safe, code approved, and not emitting dangerous combustible by-products, such as carbon monoxide, back into the living space. If unvented kerosene heaters are the only source of heat in the dwelling, weatherization services will not be provided. If the heating system is found to be safe, then weatherization will begin estimating the house or mobile home to determine what insulating and sealing measures could best be used to make the home more energy efficient. If the heating system is found to be unsafe and the problem cannot be solved due to the condition of the heating system or because of lack of funds, then the dwelling will not be weatherized.

The single, largest problem now faced by the Virginia Weatherization Program is reduced funding (resulting from the loss of oil overcharge money) at a time when we have identified our greatest potential for safe and cost effective energy conservation.

- **Since 1984, the Weatherization Assistance Progam in Virginia has received U. S. Department of Energy (DOE) funding, supplemented by Low Income Energy Assistance funds or Oil Overcharge funds (of approximately $5 million), resulting in 4,500 to 5,000 households weatherized annually. Loss of funding to supplement the DOE funds (anticipated to be approximately $3.3 million) will reduce the number of households to 1,500 - 2,000 annually.**

Many local weatherization programs currently in operation would have inadequate funding at $3.3 million to operate (most of these are in rural areas). The programs which would have adequate funding to ensure their existence for the entire year are in urban areas - the lost opportunities for rural low-income Virginians would exceed that of urban residents. Many local weatherization program operators are also involved in other housing programs. In some instances, the only way these organizations continue to provide services in their area is by engaging in partnerships. Decreases in weatherization funds may jeopardize other housing services.

New weatherization measures can create a very tight house and this may impede the exhaust of poisonous combustion by-products. So safety inspections become the first step of the weatherization process. Although the Weatherization Assistance Program is changing dramatically in its technical approach, the purpose and mission of the program has remained the same - decreased national energy consumption, espicially of foreign oil and to reduce the impact of fuel costs on the households of low-income persons, particularly the elderly and handicapped.

REPORT FOR THE

ENERGY PREPAREDNESS SUBCOMMITTEE

of the

VIRGINIA COAL AND ENERGY COMMISSION

UPDATE ON PROGRAM TO CONTROL ENERGY COSTS IN STATE FACILITIES

September 19, 1991

Department of General Services
Wendell L. Seldon, Director

Prepared by:

James E. Taylor, Manager
Energy Conservation Section

EXHIBIT A

ENERGY CONSERVATION PROGRAM REQUIREMENTS

CONTRACT BETWEEN DEPARTMENT OF GENERAL SERVICES AND THE DEPARTMENT OF MINES, MINERALS AND ENERGY

Agreement for Services

1. Prepare reports on energy use in all state facilities for the period January thru December 31, 1990. Survey energy use at state facilities to look for waste and, when found, to recommend solutions to problems. Prepare report to compare by building class, heating degree days/energy-use data at Virginia facilities with similar facilities in at least two other adjoining states.

2. Visit at least twenty state facilities that show high energy usage to conduct studies and provide advice and training to facilities managers and operators on energy conservation measures. On-site analyses will include operating and maintenance practices and HVAC control systems. Energy equipment service agreements will be reviewed for maximum performance. A summary of findings and recommendations for each site visited will be provided to VDOE.

3. Review building designs and planned energy systems for new buildings and for building renovations to ensure maximum energy efficiency and best energy fuel source(s). Recommendations for energy savings will be made to facilities and to VDOE.

4. Monitor the effects of demand rates on state facilities by keeping records of use and costs in selected facilities and assist users with anomalously high loads in reducing cost/use rates.

5. Identify and rank according to prospects state facilities with good potential for cogeneration.

6. Assist facilities in the procurement of high efficiency energy equipment.

7. Prepare quarterly reports for VDOE containing complete fiscal data and narrative summaries of accomplishments. Reports are due within five (5) days of quarter's end.

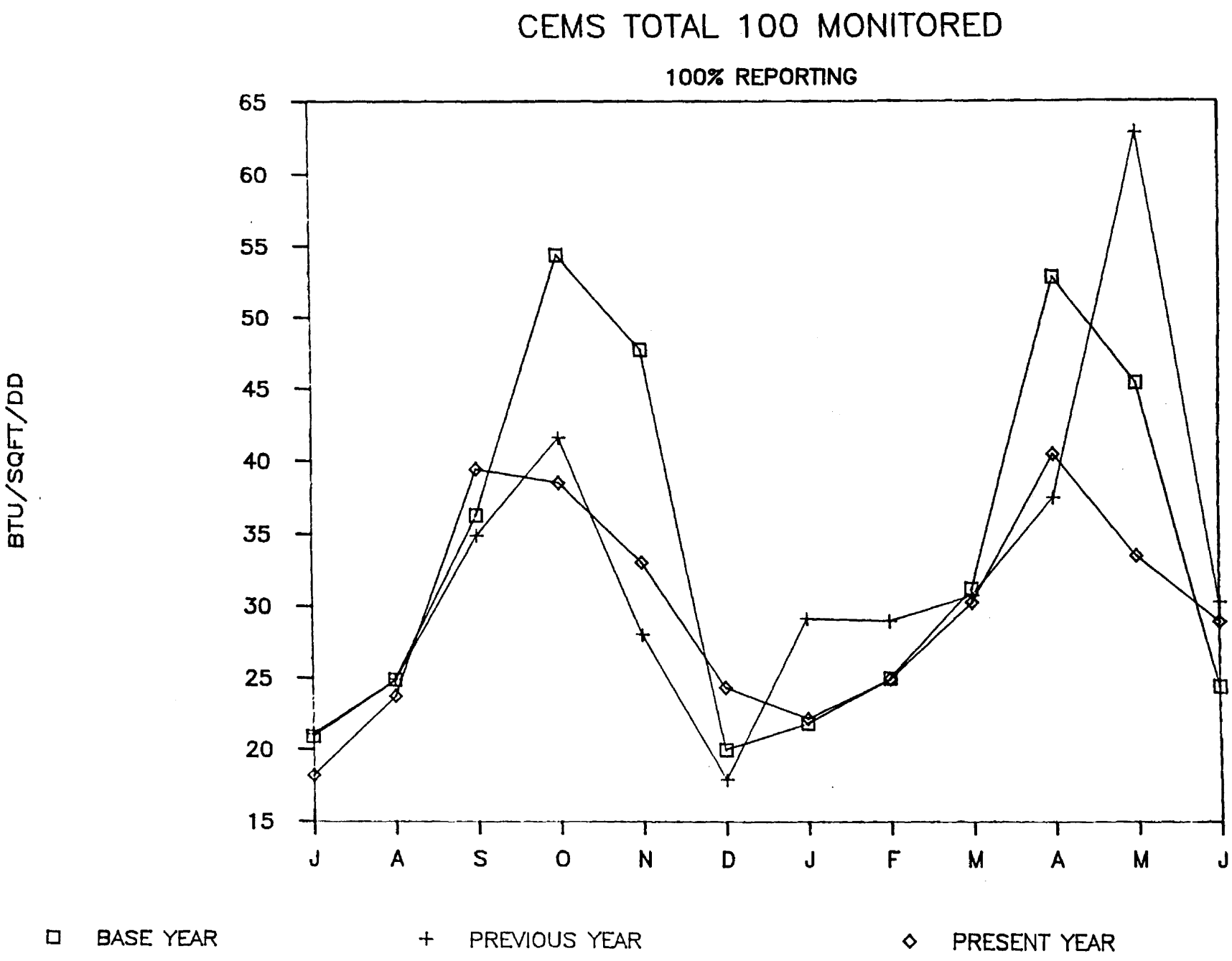
CEMS ANNUAL REPORT
FISCAL YEAR (90-91)
TOTAL 100 MONITORED
97% REPORTING

* UNITS				BTU'S			
PREVIOUS YEAR	FUEL	PRESENT YEAR	% CHANGE	PREVIOUS YEAR	FUEL	PRESENT YEAR	% CHANGE
5,945.80	FUEL OIL # 1	1,930.20	-67.54%	808,628,800	FUEL OIL # 1	262,507,200	-67.54
2,615,390.80	FUEL OIL # 2	2,134,970.50	-18.37%	363,539,321,200	FUEL OIL # 2	296,760,899,500	-18.37
350,525.70	FUEL OIL # 4	289,540.20	-17.40%	50,826,226,500	FUEL OIL # 4	41,983,329,000	-17.40
976,185.00	FUEL OIL # 5	777,272.00	-20.38%	143,499,195,000	FUEL OIL # 5	114,258,984,000	-20.38
3,348,188.00	FUEL OIL # 6	2,322,085.00	-30.65%	502,228,200,000	FUEL OIL # 6	348,312,750,000	-30.65
1,960,949.20	NATURAL GAS	1,811,494.00	-7.62%	2,000,168,184,000	NATURAL GAS	1,847,723,880,000	-7.62
102,386.40	LP GAS	82,788.80	-19.14%	9,378,594,240	LP GAS	7,583,454,080	-19.14
169,929.00	PURCHASE STEAM	125,438.10	-26.18%	169,929,000,000	PURCHASE STEAM	125,438,100,000	-26.18
1,094,873,912.00	ELECTRICITY	1,081,893,001.00	-1.19%	3,736,804,661,656	ELECTRICITY	3,692,500,812,413	-1.19
96,325.10	COAL	105,206.10	9.22%	2,600,777,700,000	COAL	2,840,564,700,000	9.22
15,689.80	WOOD	16,735.60	6.67%	125,518,400,000	WOOD	133,884,800,000	6.67
				9,703,478,111,396	TOTAL	9,449,274,216,193	-2.62
				163,243.90	BTU'S/SQ.FT.	156,533.67	-4.11

DOLLARS				UNIT COST			
PREVIOUS YEAR	FUEL	PRESENT YEAR	% CHANGE	PREVIOUS YEAR	FUEL	PRESENT YEAR	% CHANGE
$4,126.19	FUEL OIL # 1	$1,788.19	-56.66%	$0.694	FUEL OIL # 1	$0.926	$0.335
$1,783,598.03	FUEL OIL # 2	$1,697,448.30	-4.83%	$0.682	FUEL OIL # 2	$0.795	16.59
$214,792.16	FUEL OIL # 4	$192,540.93	-10.36%	$0.613	FUEL OIL # 4	$0.665	8.52
$536,653.07	FUEL OIL # 5	$639,018.63	19.07%	$0.550	FUEL OIL # 5	$0.822	49.55
$1,602,507.04	FUEL OIL # 6	$1,078,419.89	-32.70%	$0.479	FUEL OIL # 6	$0.464	-2.97
$7,403,389.20	NATURAL GAS	$6,932,573.20	-6.36%	$3.775	NATURAL GAS	$3.827	1.37
$62,400.29	LP GAS	$63,054.95	1.05%	$0.609	LP GAS	$0.762	24.97
$778,453.67	PURCHASE STEAM	$530,382.81	-31.87%	$4.581	PURCHASE STEAM	$4.228	-7.70
$51,941,710.63	ELECTRICITY	$51,958,869.32	0.03%	$0.04744	ELECTRICITY	$0.04803	1.23
$4,123,640.50	COAL	$4,067,128.46	-1.37%	$42.810	COAL	$38.659	-9.70
$174,463.14	WOOD	$173,819.20	-0.37%	$11.120	WOOD	$10.386	-6.59
$68,625,733.92	TOTAL	$67,335,043.88	-1.88%				7.53
$1.15	$/SQ.FT.	$1.12					

* UNITS OF MEASUREMENT

FUEL OIL	GALLONS
NATURAL GAS	MCF (MILLION CUBIC FEET)
LP GAS	GALLONS
RCHASE STEAM	1000 LB.S
ELECTRICITY	KWH (KILOWATT HOURS)
COAL	TONS
WOOD	TONS


CEMS TOTAL 100 MONITORED
100% REPORTING
BTU/SQFT/DD
65
60
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BASE YEAR
PREVIOUS YEAR
PRESENT YEAR

GENERAL ASSEMBLY OF VIRGINIA--1991 SESSION

HOUSE JOINT RESOLUTION NO. 441

Requesting the State Corporation Commission and the Virginia Center for Coal and Energy Research to study means available, prior to 1998, to "wheel" power produced by electric power plants in Southwest Virginia.

Agreed to by the House of Delegates, February 22, 1991
Agreed to by the Senate, February 21, 1991

WHEREAS, in March 1990, Virginia Power and Appalachian Power Company (APCO) announced joint plans to construct a series of new high-voltage power lines in Virginia and West Virginia; and

WHEREAS, one such power line would originate at Wyoming, West Virginia, and end near Roanoke, Virginia, and another would originate near Lynchburg and end at North Anna, Virginia; and

WHEREAS, Virginia Power and APCO anticipate, if all contingencies are met, that these new lines will increase the east-west electricity transmission capacity available through Virginia by 2000 megawatts or more; and

WHEREAS, Virginia Power and APCO indicate that if the proposed lines are built, a portion of this increased transmission capacity could be used to "wheel" power from proposed electric power plants constructed in Southwest Virginia; and

WHEREAS, APCO and Virginia Power indicate that the Allegheny Power System (APS) and Pennsylvania Jersey Maryland (PJM) power pool must also enhance their electricity transmission systems for the projected increases in transmission capacity, upon which the promised "wheeling" services from Southwest Virginia depend, to be fully realized; and

WHEREAS, the proposed lines may not be constructed until approved by the Virginia State Corporation Commission, the State of West Virginia and the appropriate federal agencies; and

WHEREAS, the Virginia Center for Coal and Energy Research reported in May 1990, that each 100 megawatts coal-fired electric power generation facility constructed in the Virginia coalfields would produce $137 million in capital investment, 125 construction jobs, $1.32 million in annual operating plant wages, $750,000 annually in property taxes, secure jobs for substantial numbers of coal miners, power plant operators and service industry personnel, and significantly increase Virginia coal sales; and

WHEREAS, numerous private, nonutility developers desire to construct power plants ranging in size from 100 megawatts to 400 megawatts each in Southwest Virginia; and

WHEREAS, Virginia Power and APCO are also considering siting new electric power plants in Southwest Virginia; and

WHEREAS, APCO and Virginia Power estimate the increased capacity created by the proposed lines to "wheel" power from such power plants in Southwest Virginia will be available in 1998, but recognize that the actions required of APS and the PJM power pool and the approvals required from state and federal agencies could cause the increased "wheeling" capacity to not be available until later than 1998; and

WHEREAS, if approved, constructed and used for the purposes proffered by Virginia Power and APCO, the proposed electricity transmission lines represent a positive, long-term solution to the need to "wheel" power from Southwest Virginia power plants; and

WHEREAS, the present economic development needs of Southwest Virginia establish the need to study what can be done in the near future to enable power to be "wheeled" from power plants in Southwest Virginia earlier than 1998; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the State Corporation Commission, with the support of the Virginia Center for Coal and Energy Research, is hereby requested to study what steps could be implemented in the near future to enable 100 megawatts or more of power, prior to 1998, to be "wheeled" from electric power plants built in Southwest Virginia. The study should include, but need not be limited to, an examination of: (i) how much transmission capacity currently existing on the transmission system serving Southwest Virginia could feasibly be allocated for such a purpose, and (ii) what enhancements could be made for such a purpose to the existing Southwest Virginia transmission system; and, be it

RESOLVED FURTHER, That the Virginia Center for Coal and Energy Research, with comment and review by the State Corporation Commission, examine the feasibility, in addition to the lines proposed by Virginia Power and APCO, of constructing a new electricity transmission line directly from the Virginia coalfields for such a purpose; and, be it

RESOLVED FINALLY, That Virginia Power and APCO are hereby requested to fully cooperate with the State Corporation Commission and the Virginia Center for Coal and Energy Research in the conduct of these studies and to provide any information requested by the Commission or the Center which is necessary to complete such studies. The Commission and the Center shall take all necessary steps to protect the confidentiality of any proprietary information provided by Virginia Power and APCO for this purpose.

The Commission and the Center should present two interim reports each on their respective studies to both the Virginia Coal and Energy Commission and the Virginia Coalfield Economic Development Authority by June 1, 1991, and September 1, 1991.

The Commission and the Center shall complete their work in time to submit their findings and recommendations to the Governor and the 1992 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

TAMCO
May 17, 1991
DE-PS01-91FE62271
I03502.B07

Project Summary

TAMCO Power Partners proposes to build the Toms Creek Integrated Gasification Combined Cycle Demonstration Plant at a site near Coeburn in Wise County, Virginia and requests U.S. Department of Energy funding support under the Clean Coal IV Demonstration Program. This new power plant will utilize air-blown, fluidized bed gasification technology, developed by the Institute of Gas Technology, in combination with a General Electric MS 6001 model gas turbine modified for use with either low Btu gas or natural gas, and a conventional steam bottoming cycle. The plant will demonstrate improved coal to power efficiencies with regard to commercially available systems, while significantly reducing SO_2 and NO_x emissions and the environmental impacts associated with solid waste and particulate matter.

TAMCO Power Partners, a general partnership, is comprised of Tampella Power Corporation of Williamsport, Pennsylvania, who will provide the coal gasification plant for the project and will commercially develop the demonstrated technology, and Coastal Power Production Company of Roanoke, Virginia, who will provide the fuel and operate the power plant. Members of the project team include Stone and Webster Engineering Corporation, who will design and construct the power plant and the balance of the plant, and the Institute of Gas Technology, who will assist in the design and testing of the gasifier.

The project will be located at the Toms Creek mine, owned by ANR Coal (a subsidiary of Coastal Corporation) in Southwest Virginia and will use 430 tons/day of bitunimous coal to produce 55 MW of electric power. In order to meet the requirements of a viable power sales contact, an additional natural gas-fired MS 6001 gas turbine and a heat recovery steam generator are also to be located at the same site. However, only a single steam turbine will be used to generate power from steam produced in both the gas turbine systems. The total output from the combined plant will be 107 MW electric power and approximately 20,000 lbs/hr of steam for use in a nearby coal preparation plant. Upon completion of a successful demonstration program, TAMCO intends to add a second coal gasification unit to convert the plant to total coal firing. The schematic for the proposed project is shown in the Figure that follows.

The electric power from the site will be transmitted via a new 11-mile transmission line, to be built by Appalachian Power Company for distribution through their existing transmission system for sale under contract. Initially, the second turbine will be fired by natural gas. After the successful completion of the Toms Creek IGCC Demonstration Project, another gasifier train will be installed, using private funding, to provide coal gas for the second gas turbine system. Therefore, the cost of the second gas turbine/heat recovery steam generator system is not included in demonstration plant requested cost sharing from DOE.

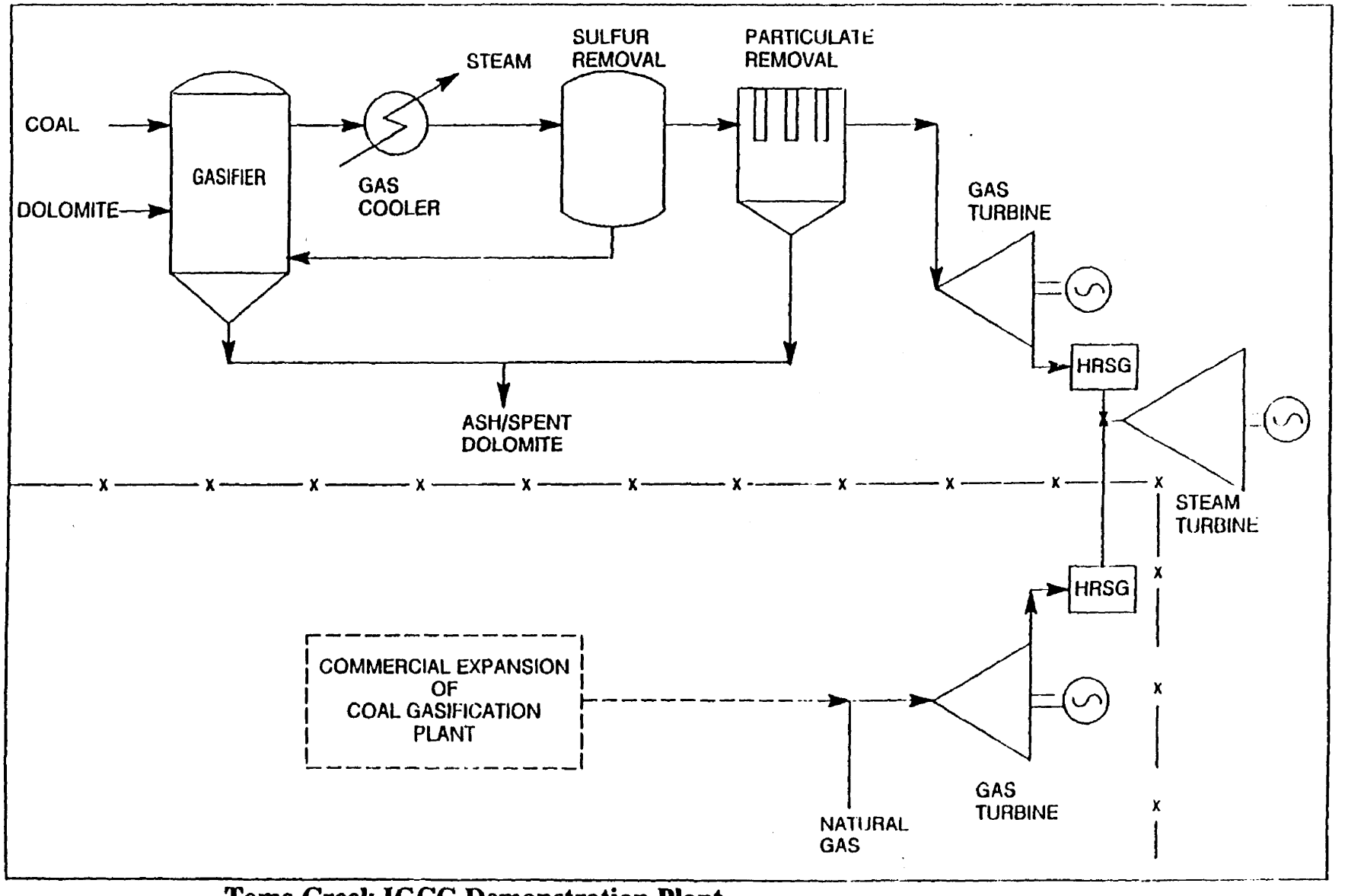
The gasification technology used in the project is the U-Gas Process which uses air and coal in a fluidized bed reactor to produce a low Btu gas. Dolomite is injected into the gasifier to accomplish up to 90 percent sulfur removal from the gas produced, which is then passed through a zinc titanite regenerable sulfur removal system and a ceramic candle filter system for fine particulate removal. Offgas from sorbent regeneration is routed back to the gasifier, thereby achieving up to 99 percent sulfur removal. The spent dolomite is contacted with air before discharge so that the gasifier residue, including the coal ash, becomes a glassified and nonleachable product.

The hot, clean coal gas is used as a fuel in a combined-cycle power generating system consisting of a conventional combustion turbine modified for use with either low Btu or natural gas, a heat recovery steam generator, and a steam turbine. The plant will include the subsystems necessary to comply with all applicable local, state, and federal regulations. The emission levels are expected to be equal to levels achievable by any other advanced coal-based power cycle and significantly better than conventional systems. The attached figure shows the proposed power plant system flow scheme and indicates the portion of the facility which is not included in the Demonstration Project.

The project will demonstrate the potential of this power generation technology to provide more efficient coal-based power generation while achieving a reduced level of environmental emissions and impacts. Improvements in plant heat rate, compared with conventional commercial systems, should reduce carbon dioxide emissions by 10 to 15 percent, depending on plant size and gas turbine design, while providing state of the art control of SO_2, NO_x, and particulate emissions. The technology is suitable both for repowering existing utility plants fueled by coal, oil, or natural gas and for adding new capacity. Commercial applications are expected in the late 1990s.

The total cost for the project is estimated to be $219.1 million, with TAMCO Power Partners providing 50.2 percent of required funding. The project duration will be 81 months, including a three-year demonstration period during which different types of coal will be tested in the plant.

The TAMCO proposal fully conforms to all requirements outlined in the Program Opportunity Notice for Clean Coal Technology IV, and the project team is committed to a successful demonstration project and technology commercialization program in accordance with those requirements.



Toms Creek IGCC Demonstration Plant
TAMCO Power Partners
Toms Creek IGCC Demonstration Plant

ACID RAIN CONTROL PROGRAM
TITLE IV

Acid Rain Regulation	40 CFR Part No.
Permits	72
Allowance system	73
Opt-in	74
Continuous emissions monitoring	75
Nitrogen oxides control	76
Excess emissions	77

ACID RAIN CONTROL PROGRAM, TITLE IV REGULATIONS

PART 72 PERMITS:

Title IV of the Clean Air Act is to be implemented through the issuance of operating permits by the EPA to be coordinated with State Clean Air programs. The permits will ensure source accountability for the emissions reductions mandated by Title IV, yet afford flexible planning opportunities to help minimize the costs of compliance. A key element will be maintaining national consistency, so as to effectively support the allowance trading market. There will be three permits: (1) Permits issued by EPA in Phase I; (2) Permits issued by authorized state or local agencies in Phase II; and (3) Permits issued by EPA in Phase II, when no state or local agency has been authorized.

PART 73 ALLOWANCE SYSTEM:

The fundamental compliance mechanism for the SO_2 reduction program is the creation of a system of marketable allowances. Under the system, EPA will establish guidelines which will track allowances used by affected sources. The overall objective will be to provide an affected source the flexibility to meet its SO_2 emissions limitation requirements economically, while providing environmental accountability for collective compliance with the national cap on SO_2 emissions. EPA views its role as filling three critical needs: (1) establishing neutral, low-cost rules of exchange; (2) providing tracking information on allowances; and (3) identifying a person's authority to transfer allowances.

PART 75 CONTINUOUS EMISSIONS MONITORING:

This requires the installation and operation of a continuous emissions monitoring system (CEMS) on each affected unit. The CEMS is defined as including: (1) a SO_2 pollutant concentration monitor; (2) a NO_X pollutant concentration monitor; (3) a volumetric flow monitor; (4) an opacity monitor; (5) a diluent gas monitor; and (6) a data gathering and handling system. The effective use of the CEMS will not only ensure source compliance, but will instill confidence in the market value of an allowance being traded.

PART 77 EXCESS EMISSIONS:

This part defines the consequences for failing to comply with the acid rain program's SO_2 and NO_X emissions requirements. Specifically, it outlines the planning requirements for the offset of excess SO_2 emissions; describes the actions to be taken by EPA on proposed offset plans; and specifies requirements for the imposition, calculation and payment of excess emission penalties. The fine for emissions exceeding the number of allowances held will be $2,000 per ton of excess emissions, with this to be adjusted for inflation. In addition to the fine, the owner of the unit in violation will be required to offset the excess emissions by an equal amount in the next year.

VIRGINIA POWER, SO2 COMPLIANCE

Plant	Unit No.	MW Cap	On-line Year	SO2 Rate	85-87 Avg	85-87 SO2	1988 SO2	1989 SO2	Phase I SO2	Phase II SO2
				lbs/MMBtu	Btu	Tons	Tons	Tons	Tons	Tons
Bremo Bluff	3	71	1950	1.31	3.4	2,206	2,574	2,587	N/A	2,017
	4	163	1958	1.32	9.8	6,489	5,028	6,611	N/A	5,897
		234		1.32	13.2	8,695	7,602	9,198	N/A	7,914
Chesterfield	3	105	1952/84	1.49	3.5	2,634	3,471	3,367	N/A	2,118
	4	171	1960	1.50	8.9	6,678	7,648	6,963	N/A	5,336
	5	333	1964	1.50	17.5	13,121	15,482	14,628	N/A	10,474
	6	671	1969	1.50	31.3	23,424	20,931	25,748	N/A	18,788
		1,280		1.50	61.2	45,857	47,532	50,706	N/A	36,716
Chesapeake	1	111	1953/87	N/A	N/A	N/A	4,565	6,466	N/A	0
	2	111	1954/88	N/A	N/A	N/A	4,438	6,489	N/A	0
	3	162	1959/82	1.45	8.7	6,290	8,131	7,584	N/A	5,210
	4	221	1962	1.45	11.1	6,099	10,073	11,829	N/A	6,685
		605		1.45	19.8	12,389	18,204	19,413	N/A	11,895
Possum Point	3	105	1955	1.50	4.3	3,205	2,810	3,202	N/A	2,570
	4	221	1962	1.50	12.8	9,588	7,789	9,090	N/A	7,684
		326		1.50	17.1	12,793	10,599	12,292	N/A	10,254
Yorktown	1	171	1957/84	1.91	8.9	8,491	8,662	9,318	N/A	5,337
	2	175	1958/85	1.93	5.4	5,247	8,660	8,706	N/A	3,267
		346		1.92	14.3	13,738	17,322	18,024	N/A	8,604
Mount Storm	1	545	1965	2.89	35.0	50,621	45,915	55,258	43,720	20,987
	2	545	1966	2.89	28.5	41,155	53,517	49,715	35,580	17,080
	3	538	1973	2.88	33.9	48,897	48,120	53,827	42,430	20,365
		1,628		2.89	97.4	140,673	147,552	158,800	121,730	58,432
Clover	1*	393	1994	N/A	N/A	N/A	N/A	N/A	N/A	2,796
	2*	393	1995	N/A	N/A	N/A	N/A	N/A	N/A	2,796
		786								5,592
TOTAL		5,205			223.0	234,145	248,811	268,433	121,730	139,407

* Scrubber

1990 DESTINATION OF VIRGINIA COAL
UTILITY COMPANIES

Utility Co./ Plant Name	Total (000 Tons)	Virginia (000 Tons)
Appalachian Power		
Clinch River	1,614	1,614
Glen Lyn	539	475
	2,153	2,089
Baltimore G&E		
Brandon Shores	1,862	7
Crane*	740	14
	2,602	21
Carolina P&L		
Asheville	970	903
Cape Fear	541	22
Lee	437	8
Robinson	209	2
Roxboro	5,543	31
	7,700	966
Delmarva P&L		
Edge Moor	566	51
Indian River	1,626	176
	2,192	227
Detroit Edison		
Monroe	8,073	113
Duke Power		
Allen	1,255	1,255
Belews Creek	3,342	225
Buck	83	27
Cliffside	908	19
Dan River	269	47
Lee	309	16
Marshall	3,848	1,808
	10,014	3,397
Florida Power		
Crystal River	5,542	879
Georgia Power		
Arkwright	194	23
Hammond*	2,004	1,300
Harllee Br.	4,000	39
McDonough*	1,471	186
Scherer	3,522	508
Yates*	2,676	865
	13,867	2,921

1990 DESTINATION OF VIRGINIA COAL, cont.

Utility Co./ Plant Name	Total (000 Tons)	Virginia (000 Tons)
Montaup Electric		
Somerset	411	411
New England Power		
Brayton Pt.	2,420	899
Salem Harbor	883	201
	3,303	1,100
No. Indiana P.S.		
Michigan City	1,126	56
Potomac Elec. Power		
Potomac River	937	342
Pub. Ser. E&G		
Mercer	963	963
Savannah Elec.		
Port Wentworth	418	418
So. Carolina E & G		
Canadys	768	103
McMeekin	563	415
Urughart	529	62
Wateree	1,773	395
	3,633	975
Tampa Electric		
Big Bend*	6,093	90
Tenn Valley Auth		
Paradise*	7,181	60
Sevier	2,062	1,223
	9,243	1,283
Virginia Power		
Chesterfield	2,805	267
Chesapeake	1,198	744
Possum Point	581	19
Yorktown	529	27
	5,113	1,057
Wisconsin P & L		
Dewey	519	28
Edgewater	2,188	21
Rock River	251	9
	2,958	58
TOTAL	86,341	17,366

* Affected Plant, Phase I