REPORT OF THE COMMISSION TO STUDY THE ENERGY CRISES IN THE COMMONWEALTH

TO

THE GOVERNOR

AND THE GENERAL ASSEMBLY OF VIRGINIA

Senate Document No. 23

COMMONWEALTH OF VIRGINIA

Department of Purchases and Supply

Richmond

1975

MEMBERS OF COMMISSION

GEORGE F. BARNES, CHAIRMAN

C. D. DUNFORD, VICE CHAIRMAN

LESLIE D. CAMPBELL, JR.

CLAIBORNE D. GREGORY

WILLIAM B. HOPKINS

GEORGE W. JONES

GLENN B. McCLANAN

JOHN L. MELNICK

LEWIS W. PARKER, JR.

STANLEY RAGONE

EUGENE M. SCHEEL

STAFF

JOHN A. BANKS, JR., DIRECTOR

JONATHAN MURDOCH-KITT

SUSAN T. GILL

REPORT OF THE

COMMISSION TO STUDY THE ENERGY CRISES IN THE COMMONWEALTH

TO

THE GOVERNOR

AND THE GENERAL ASSEMBLY OF VIRGINIA

Richmond, Virginia

December 1974

TO: Honorable Mills E. Godwin, Jr., Governor of Virginia

and

The General Assembly of Virginia

INTRODUCTION

The energy crisis of the winter of 1973-1974 was the beginning of the United States' energy problems. To the citizens of the Commonwealth, the gasoline shortage was thought to be resolved when the lines at the gasoline filling stations disappeared. The gasoline crisis of last winter may have temporarily subsided, but the energy problem, for which there is no quick solution, is still with us.

The crisis was caused by domestic shortages of acceptable energy resources and by a mismatch in supply and demand relationships of specific energy resources such as oil and natural gas.

The search for new and expanded sources of energy and the development and production of these sources has not kept pace with the growing consumption of energy. Although the United States has less than six percent of the world's population, it uses almost thirty-three percent of the world's energy. Nearly seventy-eight percent of the energy used by the United States comes from oil and gas. Energy consumption has doubled in the United States since World War II, and is expected to double again by 1985 ["Report to the President on OCS Oil and Gas-An Environmental Assessment": Council on Environmental Quality (1974)] . Americans can no longer take for granted the perpetual availability of energy at relatively low cost. Fossil fuels such as natural gas and oil, which generate most of today's energy, have dwindled in supply domestically and have become costly to import. The consumption of and demand for energy continue to exceed the supply in readily useable forms and in forms compatible with environmental

standards.

In the midst of this energy crisis, these contributing factors and a steadily deteriorating energy situation led the 1973 General Assembly to create the Commission to Study the Energy Crises in the Commonwealth.

SENATE JOINT RESOLUTION NO. 128

Creating a commission to study the energy crises in the Commonwealth.

Whereas, a conflict exists between the Commonwealth's increasing demand for energy to further economic growth and maintain a high standard of living, and its ability to provide that energy; and

Whereas, such conflict affects not only the Commonwealth, but also the nation, and has been termed an energy crisis; and

Whereas, the elements of this crisis consist of a decreasing supply of fuels, an increasing demand for the energy created by these fuels, and an increasing cost to acquire them; and

Whereas, ways must be found to meet the increasing demand for energy-producing fuel without sacrificing our natural environment; now, therefore, be it

Resolved by the Senate, the House of Delegates concurring, That there is hereby created the Commission to Study the Energy Crises in the Commonwealth, hereinafter referred to as the Commission. The Commision shall study dimensions and consequences of the energy crises by conducting a study of the existing and future demands for energy-producing fuels in the Commonwealth, the amounts and types of needed fuel suplies that will be available, the likely cost of the future consumers of energy in Virginia, and the environmental consequences of extracting and utilizing such fuels.

The Commission shall be composed of eleven members, five to be appointed by the Speaker of the House of Delegates from the membership thereof, three to be appointed by the Committee on Privileges and Elections of the Senate from the membership of the Senate and three to be appointed by the Governor from the State at large.

Members of the Commission shall serve without compensation but shall be reimbursed for the expenses incurred by them in the performance of their duties in the work of the Commission, for which, and for such other expenses as may be required, including secretarial and other professional assistance, there is hereby appropriated from the contingent fund of the General Assembly the sum of fifty thousand dollars.

The Commission shall submit to the General Assembly an interim report no later than November one, nineteen hundred seventy-three, and a final report no later than November one, nineteen hundred seventy-four, of its findings along with recommendations to be considered in establishing an energy policy for the Commonwealth designed to meet the energy crises.

#

The study directives of the above resolution to examine existing and future energy demands in the Commonwealth, the amounts and types of needed fuel supplies that will be available, and the likely cost and environmental consequences were not addressed by the Commission. These directives will be examined by the State Energy Office in an Energy Survey of the State . This survey should be available before the 1976 General Assembly Session.

The Commission filed an interim report (SD #6) in December of 1973. This was recognized by the 1974 General Assembly:

SENATE JOINT RESOLUTION NO. 34

Directing the Commission to Study the Energy Crises in the Commonwealth to make a final report to the Governor and General Assembly.

Whereas, Senate Joint Resolution No. 128 of the 1973 Session of the General Assembly created a Commission to Study the Energy Crises in the Commonwealth; and

Whereas, pursuant to that Resolution, the Commission has made an interim report to the General Assembly; now, therefore, be it

Resolved by the Senate, the House of Delegates concurring, That the Commission is commended for its work thus far and directed to continue its study in order that a final report may be made to the Governor and General Assembly in nineteen hundred seventy-four in accordance with the provisions of Senate Joint Resolution No. 128 of the 1973 Session of the General Assembly.

#

ORGANIZATION AND WORK OF THE COMMISSION

A. Pursuant to Senate Joint Resolution No. 128 of 1973, the Speaker of the House appointed the following Delegates as members of the Commission: C. D. Dunford, who was elected Vice Chairman, of Tazewell; George W. Jones of Bon Air; Glenn B. McClanan of Virginia Beach; John L. Melnick of Arlington; and Lewis W. Parker, Jr., of South Hill.

The Committee on Privileges and Elections of the Senate appointed the following Senators as members of the Commission: George F. Barnes, who was elected Chairman, of Tazewell; Leslie D. Campbell, Jr., of Ashland; and William B. Hopkins of Roanoke.

The following citizens were appointed to the Commission by the Governor from the State at large: Claiborne D. Gregory of Doswell; Stanley Ragone of Richmond; and Eugene M. Scheel of Waterford.

The Virginia Advisory Legislative Council and the Division of Legislative Services made staff and facilities available to carry out this study; Jonathan Murdoch-Kitt and Susan T. Gill were assigned to assist the Commission.

B. The Commission heard from private citizens, industry representatives, and members of State executive agencies during its meetings. In addition to its deliberations, the Commission members took three tours to acquaint themselves more fully with the problems and possibilities of energy production. The first tour was of both deep and surface coal mining operations in southwest Virginia. On the second tour the Commission visited the construction site of the Virginia Electric and Power Company's North Anna Nuclear Power Plant. The third tour covered offshore drilling, production, and refinement of oil and gas in the Gulf of Mexico off the coast of Louisiana.

The Chairman, Senator Barnes, appointed a subcommittee chaired by Senator Campbell and including Delegate McClanan and Mr. Gregory to examine offshore exploration for oil and gas and to consider the feasibility of a deepwater port facility located off Virginia.

As a result of its meetings, tours and research, the Commission offers the following major recommendations with following supplemental recommendations.

MAJOR RECOMMENDATIONS

A. That legislation be adopted memorializing the Congress of the United States to reexamine specific sections of the Coal Mine Health and Safety Act of 1969 (P.L. 91-173) so that numerous small coal mines in Virginia can be reopened. See proposed legislation in Appendix I of this report.

B. That the State retain its storage capability at the Cheatham Annex on a temporary basis and that an inventory of petroleum be maintained in sufficient quantity to insure that fuel can be allocated to Virginians if necessary.

C. That legislation be enacted that:

(1) encourages and promotes exploration and development of oil and gas resources on the Outer Continental Shelf adjacent to Virginia's coast, provided, however, that such development

activities are conducted so as to protect Virginia's environment and style of life; and

(2) delegates to the State Corporation Commission such powers and duties as are necessary to assure proper control and regulation of offshore development activities. See proposed legislation in Appendix II and Appendix II A. of this report.

D. That legislation be adopted commending the Governor and the State Energy Office for the work they have done and directing that the State Energy Office be continued under the Governor's executive order and emergency funding until the nineteen hundred seventy-six General Assembly Session when the permanence of the State Energy Office can be examined. See proposed legislation in Appendix III of this report.

E. That legislation be adopted continuing the Energy Crises Study Commission. See proposed legislation in Appendix IV of this report.

REASONS FOR RECOMMENDATIONS

A. Congress should be memorialized to reexamine Title 30 §§ 811(c), 861 and 865 of the United States Code (Coal Mine Health and Safety Act of 1969 P.L. 91-173), so that numerous small coal mines in Virginia can be reopened and that previously non-permissible equipment can be utilized in coal mines above the water table where methane gas has not been detected in amounts above one fourth of one percentum and where the mine has no record of methane ignitions.

In 1966 there were 39 tipple mines (large mines) and 1,232 small mines or truck mines licensed and operating in Virginia (a truck mine is generally one in which the coal is mined and must be trucked to a railroad loading facility). These figures contrast sharply with the 51 tipple and 312 truck mines operating in November of 1974. Most of the small truck mines had to close because they could not get permissible equipment. Many small mines which remained in operation were granted temporary permits to use non-permissible equipment if new permissible equipment was at least on order. Now, the waiting list for new permissible equipment grows larger and the delays in delivery of the equipment grow longer to a minimum of two years. While these delays continue, millions of dollars worth of non-permissible equipment lie in storage, small mines remain closed, and energy problems become more serious, partially because of a lack of coal.

Title 30 § 811(c) (Promulgation on and Revision of Mandatory Health and Safety Standards) of the 1969 Coal Mine Health and Safety Act provides in part:

> In addition to the attainment of the highest degree of safety protection for miners, other considerations shall be the latest available scientific data in the field, the technical feasibility of the standards, and experience gained under this and other

safety statutes.

Although this section refers specifically to increased technology in mine safety for miners, it also refers to technology that will allow mining with equipment previously classified as non-permissible. New methane monitors of better quality and increased accuracy than those available in 1970 when the Coal Mine Act went into effect have been developed and manufactured. All the face equipment in a truck mine would be controlled by a methane monitor set at a predetermined level which would instantly de-energize all the equipment in the producing section if methane were detected. Sections 811(c), 861 (Mandatory Safety Standards for Underground Mines) and 865 (Electrical Equipment) of the 1969 Act should be re-examined in light of the new and improved methane monitors which have been manufactured since the enactment of the 1970 federal legislation.

Section 863(b) (Ventilation) should also be re-examined to promote greater mine safety by increasing the minimum quantity of air required in the last open crosscut as well as at the intake end of a pillar line from nine thousand cubic feet a minute to ten thousand cubic feet a minute. The minimum quantity of air required on each working face should be increased from three thousand to four thousand cubic feet a minute. These increases in air quantity recognize the accepted fact that the only real way to safeguard against methane ignition is by proper ventilation.

An additional point should be made. From the time the Federal Coal Mine Act went into effect in April of 1970, until the present time, there have been a total of twenty-nine ignitions; but in Virginia there have been only two ignitions in mines using non-permissible equipment under special permit. In one of the two ignitions, the methane could have been ignited by either non-permissible equipment or cigarette smoking. Although there is no way of knowing if the equipment in these two instances actually caused the ignition, it is the opinion of the Commission that given Virginia's safety record with non-permissible equipment, new and improved methane monitors now being manufactured, and increased safety standards for mine ventilation, federal authorities should recognize these facts and technological developments and re-examine the law. Non-permissible equipment can be equipped with methane monitors to make it safe, and to help small coal mines in the nation get back into operation to relieve the energy problem.

B. The State should temporarily retain its storage capability at the Cheatham Annex and maintain an inventory of petroleum in sufficient quantity to insure that, if necessary, fuel can be allocated to Virginians during the energy problem. Cheatham Annex storage should be maintained in the event of an emergency such as that of last winter (1973-1974). Even with the mild winter, eleven million gallons of Virginia's fuel were allocated to citizens both from Cheatham Annex and from the State Petroleum Set-Aside. This petroleum supplied the basic needs of the people of the Commonwealth. Given the possibility of a harsh winter and increasing expense of imported petroleum, the State should maintain its Cheatham Annex petroleum storage capability.

Virginia was the only state to take petroleum storage precautions last year. The Governor, Secretary Rowe, and Virginia should be commended for the foresight and decisiveness in taking this leading action.

C. Virginia should encourage and promote exploration and development of the Outer Continental Shelf adjacent to Virginia's coast, provided, however, that such development activities are conducted so as to protect Virginia's environment and style of life. The Commission was impressed by the safety measures built into the operation, the cleanliness, and the positive steps being taken by the oil industry in Louisiana to protect the environment.

With an immediate go ahead, it will still take three to five years of lead time before production wells can be drilled on Virginia's Outer Continental Shelf. Equipment and machinery must be built, men must be trained, and large investments will have to be made before exploration and development can take place. This period of time should be sufficient to perform all the necessary studies on the offshore area (from the outer limits of exploration into the three mile limit), the interface area (from the shoreline to the three mile limit), and the onshore area (everything landward from the upper limit of the wetlands). Many of these precautions and studies were advocated by the ad hoc Outer Continental Shelf Advisory Committee in their November 1974 report, "Virginia and the Outer Continental Shelf: Problems, Possibilities, and Posture", which was studied by the Subcommittee on Offshore Ports and Exploration.

The Subcommittee of the Commission recommended legislation on leasing and regulating OCS development, which the Commission adopted. A resolution that expresses the intent of the Commission regarding OCS development is in Appendix II. Legislation that sets out Virginia's OCS policy, names the State Corporation Commission as the agency with OCS authority, and establishes the leasing and regulating laws for the Commonwealth is in Appendix II A. The OCS leasing and regulating legislation will become effective upon proclamation of the Governor subsequent to a decision in favor of Virginia in the matter of the U.S. v. Maine et. al. , now pending before the U. S. Supreme Court. Virginia has intervened in this case which will decide the issue of dominion and control of the OCS.

Given Virginia's and America's need for petroleum products, the ongoing energy problems, and the balance of payments difficulties the country is experiencing because of oil imports, Virginia should delegate such powers and duties to the State Corporation Commission to assure proper control and regulations of offshore development activities.

D. The Governor, the Secretary of Administration, and the fuel allocation office should be commended for the decisions they have made and the work they have done on fuel allocation in the winter of 1973 and the establishment and coordination of a State energy office which sponsored the 1974 Governor's Energy Conference emphasizing "energy, the environment, and the economy". Energy has become a matter of primary importance in Virginia and must remain so in the future.

The handling of energy matters has become the responsibility of the State Energy Office which was created by Governor Godwin by executive order pursuant to his emergency powers. Many responsibilities have been assigned to the State Energy Office including: administering the State Set-Aside and fuel allocation; initiating and implementing energy programs; coordinating energy decisions and activities between agencies of the federal, State, and local governments; and encouraging cooperation on energy related matters among government, Virginia business, industry, utilities, the academic community, and the public. The State must have an Energy Office to perform these vital energy related functions; therefore, the State Energy Office should be continued under its emergency executive order and funding with periodic evaluation and review by the Governor until the nineteen hundred seventy-six Session of the General Assembly when an evaluation and decision should be made about its continuance.

E. The study of the energy crises in the Commonwealth which was originated by the 1973 Session of the General Assembly in Senate Joint Resolution No. 128 should be continued. The energy crisis of last winter and the gasoline shortage has become an energy problem of long term duration. Although the Commission spent much time and effort in its deliberations, more remains to be done. Further study is necessary before specific suggestions and legislative recommendations can be made on ways in which the State can increase energy supply and decrease energy demand. In addition, the State should set the example and encourage comprehensive voluntary conservation or require conservation plans. The means for implementing recommendations must also be considered along with examination of expected benefits.

The subcommittee on offshore ports and exploration did not finish its work. At the time of the writing of this report, the subcommittee is working on model legislation for leasing and regulating offshore oil and gas exploration and development. The subcommittee is also examining the feasibility of a deepwater port off Virginia's coast. Specific recommendations will probably follow the completion of the subcommittee's work.

Because the Commission has money left from its previous allocation, further funding will not be necessary.

SUPPLEMENTAL RECOMMENDATIONS

These recommendations focus on increasing energy supply and decreasing energy demand. They are not intended to be comprehensive, rather to indicate the measures which the State should be considering and inplementing as related to the energy problem. Short-range (one to three years) concerns to increase energy supply center mainly on improving existing production and stepping up exploration of oil, coal, gas, and nuclear fuels. Mid-range increases in energy supply (three to ten years) include coal gasification, increased nuclear capability, new refineries, offshore oil and gas development, solid waste as fuel, and solar development.

Long range focus (ten years and over) should be centered upon research and development in fusion, breeder reactors, solar, magneto-hydrodynamics, hydrogen, wind, geothermal, and increased efficiency in the production of all previous energy supplies. See Appendix V of this report for a table of possible alternate energy sources for Virginia.

Decreasing energy demand means conservation in all three time periods and includes increased insulation, improved appliance efficiency, improved automobile design and increased gas mileage, improved efficiency in heating and cooling, government incentives for conservation, and much more.

A. Increasing Energy Supply.

1. Coal.

Production and utilization of coal should be emphasized because it is Virginia's most abundant, useful and reliable energy resource. Every aspect of coal exploration, extraction, transportation, conversion and use should be researched and developed.

It is the opinion of the Commission that surface mining of coal must continue. Some operators working with the Division of Mined Land Reclamation have adopted reclamation techniques which have been highly successful, and in some instances have improved the land to the point where it has greater value to the ecology and to the country than it had before being mined. Existing laws can be enforced by the State agencies involved to increase the use of these and possible new techniques, and to discourage attempts by the unscrupulous or marginal operator from doing business in the Commonwealth.

Moreover, the Commission cannot overlook the fact that mining is essential to the economy of the Appalachian south-west and that the nation is faced with an "energy crisis". Men, now productive in mines, would be bound to either move, and take up work to which they are unfamiliar and untrained, or go on the relief rolls. Therefore, surface mining of coal must continue.

The Commission recommends:

a. A shift from dependence on foreign oil toward a dependence on domestic energy sources.

b. Research and development of coal gasification, liquefication, and solvent refinement.

c. Intensive research to make coal a clean fuel including development of better stack gas sulphur removal devices and other methods.

d. Increased tax incentives should be provided for industries which install and use pollution control/abatement equipment.

e. Proposed federal coal strip mine legislation should be examined both from a reclamation and an energy production point of view; it is the opinion of this Commission that the coal surface mining laws in Virginia are adequate and are doing a good job at this time.

f. Special State scholarships for mining engineering should be considered.

2. Petroleum.

Virginia can possibly initiate a supply of petroleum and petroleum products by encouraging and promoting exploration and development of the Outer Continental Shelf. Along with exploration, the next most important petroleum aspect is refinement. It is the opinion of the Commission that more refineries are necessary and based on the new refineries that were visited in Louisiana it was proven that clean refineries that meet every Environmental Protection Agency standard can and are being built.

The Commission recommends:

a. An oil refinery (or refineries) should be located in Virginia provided that it meets every environmental, health and safety requirement of the Commonwealth and federal government.

b. The federal government should clarify its interpretation of environmental laws and regulations controlling construction of refineries and their operation so that the industry will have an accurate understanding of precisely what must be done to meet the requirements.

c. The possibility of a deepwater port off Virginia's coast for large oil tankers should be studied further by State and federal agencies, and private industry should be encouraged by State and federal government to examine this area.

d. Congress should consider ways to encourage exploration by independent "wildcat" oil drillers and oil companies.

e. Disposition of revenues obtained from State regulated offshore activities must be examined, and if the federal government is adjudicated as the entity with dominion and control of the OCS, then the federal government should share leasing and royalty revenues with the State who should, in turn, share these revenues with localities most affected by OCS development.

3. Natural Gas.

Natural or pipeline gas is in short supply and Virginia will experience at least a twenty-five percent curtailment this winter. This curtailment may be made-up by liquefied natural gas (LNG), synthetic gas (SNG), and propane if these products are available and this winter is not severe. Interruptable natural gas customers (those who agree to be cut off first in the event of curtailment in exchange for favorable rates when the product is available) have

already been cut off for the remainder of this winter and most are using their alternate fuel supply. Industrial users who cannot switch to other forms of fuel and have had firm contracts for gas will be hardest hit if further gas curtailment is instituted. Natural gas shortages will become worse in the future unless quick action is taken.

The Commission recommends:

a. Government well-head pricing restrictions of natural gas on interstate shipments should be moderated or removed.

b. Exploration for natural gas (usually found with oil deposits) on the OCS should be encouraged with proper safeguards.

4. Nuclear.

In addition to coal and other energy sources, we will depend more on nuclear energy as the energy problem continues. After the tour of the VEPCO North Anna Nuclear Power Plant, the Commission gained new respect for the comprehensive safety program, the safety equipment and the generating capacity of a new nuclear electric power plant.

The Commission recommends that nuclear generation of electricity should be encouraged with proper research, construction and safety precautions.

5. Solar.

Solar energy is regarded as the nearest-to-present future energy source technically and economically feasible to the Commonwealth. It is also perhaps our cleanest energy possibility. The Fauquier County High School in Warrenton is an example of a working solar energy project in Virginia. It was one of four pilot solar projects in the United States funded by a National Science Foundation grant. A solar energy system funded by an NSF grant for the proposed Virginia Science Museum would be the largest solar heating and cooling system yet constructed in the United States.

Although solar energy is considered by many as a novel source of power, NSF studies have shown that present limited application is possible. Solar units have proven themselves in certain areas of the country on government, institutional and commercial buildings with ten thousand square feet or more of available roof or ground space as a source of supplemental heating and cooling. Because these units are designed only to heat and cool the building and heat hot water, they are especially suited to office buildings and schools. Electricity would still be required for lighting and powering equipment. An alternate energy source (probably electricity) would be required to supplement the solar energy system during inclement weather. This presents a problem to the utility to forecast electric demand and plan for peak loads. The answer to these problems is development of improved storage for solar energy. As with any novel source of energy, initial consumer acceptance must be encouraged by industry and government.

The Commision recommends:

a. The NSF solar projects be carefully reviewed for further applications.

b. The proposed Virginia Science Museum with its solar roof unit should proceed with appropriate funding from NSF or ERDA (the new federal government energy research and development agency).

c. Tax credits should be considered for individuals and businesses who invest in solar and other exotic energy units, so that they are not taxed for the additional investment or improvement expense, and they are encouraged to implement it.

d. The State should consider participating in solar demonstration projects.

6. Solid Waste.

Solid Waste is a domestic source of heat energy that has the advantages of dependability, volume, and fair BTU (heat) quality. Seventy to eighty percent of the 125 million tons of waste Americans throw away annually consists of paper, wood, cardboard, food scraps, and plastic which are burnable as a boiler fuel or as a supplement to pipeline gas. The balance of the solid waste is mostly glass, metal and dirt. The glass and metal can be recycled (chiefly aluminum at about $300 per ton and steel at $30 per ton) which results in large energy savings over the cost and energy expense of processing virgin ore. The disadvantages of burning solid waste (and recycling) are the initial cost of equipment, transportation, possible pollution, and the fact that it is only feasible in or near cities or metropolitan areas of 100,000 persons or more.

The Commission recommends:

a. That the State strongly consider funding a pilot project at the University of Virginia (for example) that uses solid waste mixed with coal to heat buildings.

b. That appropriate State agencies pursue the idea of solid waste as a source of energy.

7. Exotic Energy Sources.

No potential source of energy should be neglected especially in light of future possibilities. Energy sources that hold some promise for Virginia are magneto-hydrodynamics utilizing coal, hydrogen, geothermal, and wind. See Appendix V for possible alternate sources of energy for Virginia.

B. Decreasing Energy Demand: Conservation.

It is the opinion of the Commission that conservation is the only sure and immediate way to help lessen the energy problem. The Commission advocates energy conservation while minimizing both

the damage to the economy and sacrifice of personal comfort and freedom.

Many states have compiled lists of energy saving measures and their benefits. Some states have generalized the expected benefits of the measures and have focused on conservation implementation by government example, by voluntarily adopting government requests or encouragement, and by mandatory government regulation. The Georgia report (See Appendix VI) is a good example of this approach. Other states have emphasized more specific estimates of the benefits of each conservation idea without addressing the mode of implementation. Some of the Georgia recommendations are advocated by the members of the Commission, but further study is necessary before specific recommendations can be adopted.

Total energy consumption in the United States divided among user categories is: industry, forty-one percent; commercial, fourteen percent; transportation, eight percent and residential and private automobiles, thirty-seven percent. The breadkown of the thirty-seven percent of the energy consumed by individuals is: automobile, forty-two percent; heating and air conditioning, forty percent; hot water, six percent; cooking, four percent; refrigeration, four percent; lighting, one percent, and miscellaneous, three percent. Because of our ongoing energy problem, any wasted energy is significant. However, the figures above indicate that in the household use of energy, emphasis should be placed on elimination of wasteful habits and inefficiencies and increased energy conservation in auto use and home heating and air conditioning.

1. Insulation.

The State Board of Housing is carrying out a study on insulation pursuant to House Joint Resolution No. 131, 1974. Because of extensive research being done on the national level and because of the complex and technical nature of the work, the Board has chosen to work with the National Conference of States on Building Codes and Standards. Uniform insulation standards should be completed during 1975. The Commission recommends insulation with a value of R-19 in the attic and insulation with a value of R-11 for exterior walls and floors over unheated areas. The R value is the effectiveness of the insulation measured by its resistance to the passage of heat. An investment in insulation can normally be regained within two or three years through energy savings.

Another recommendation that should be considered is tax credit for increasing the amount of insulation in homes and businesses and for utilization of storm window installation.

2. Building Design and Energy Requirements of Equipment.

More attention must be given to energy sensitivity in designing and constructing buildings to make the best use of sunlight, natural air flow, convection currents, and other basic climatic and geographical factors. Similarly, the life-cycle energy costs and needs of equipment purchased by the State, the business community and individuals must be considered as well as initial costs.

3. Eliminating energy Waste and Encouraging Conservation.

The Commission recommends voluntary conservation by business, industry, and individuals with incentives and examples set by State government. This does not preclude future consideration of penalties for those who consciously decide to waste energy through their economic decisions.

The Commission also suggests:

a. Encouraging people to use car-pools and other forms of mass transportation.

b. Increased use of special car-pool commuter lanes like those used in the Virginia expressways to and from Washington, D. C.

C. Policy.

Every energy decision the State makes affects its energy policy. Consistent energy policies should be established that will become a comprehensive energy program and plan for Virginia's future.

1. Research and Development.

The Commission worked through the State Council on Higher Education's Research and Development Committee to poll all four year colleges and universities in Virginia to survey the capability for energy research and energy research now being done. The poll revealed that the College of William and Mary in cooperation with Old Dominion University was conducting a Statewide study of mass transit; University of Virginia had coordinated the June, 1974, National Conference on Solar Energy; and that Virginia Polytechnic Institute and State University's Center for Energy Research has an NSF grant to make a long range study of world wide energy resources and supplies. Both Virginia Polytechnic Institute and State University and University of Virginia have research programs and energy curriculums.

The Commission recommends:

a. State encouragement and funding of energy research and development at Virginia schools.

b. State encouragement of cooperation with federal agencies and private industry on research and development.

c. Coordination of all energy research in Virginia with ERDA.

d. The State Council on Higher Education should designate the lead institution on each energy project.

e. State establishment and funding for at least one fulltime coal research position.

f. State scholarships in mineral and mining engineering, geology, energy research, and related areas.

2. Educating the Public.

Without long lines at gasoline stations, consumers do not believe there is an energy problem. Although we may not be in a severe "crisis" at present, Virginians must be informed that we are in the first stages of an energy problem that will certainly become worse unless some positive actions are taken.

The Commission recommends:

a. An expanded statewide public energy information program be conducted by the State Energy Office.

b. The State Energy Office should inform Virginians about the true nature of the problem and the facts about the proposed solutions, e.g., that non-polluting petroleum refineries can and must be built, and that they are being built within EPA guidelines.

c. Conservation education in schools should be encouraged by the State Board of Education.

d. The youth should be encouraged to support energy conservation through awards, prizes, and special recognition at events such as science fairs.

See Appendix VII for an energy resource map of Virginia.

4. Environment.

The energy problem will not evaporate or be solved quickly. The Governor said in his letter to Virginians who attended the Governor's energy Conference on November 8, 1974, in Richmond:

> The attitude that energy is the foe of environmental quality is not valid and must not persist. An adequate energy supply and the maintenance of an attractive environment are both vital to our well-being. It is essential that a balance be achieved on a continuing basis between energy and environmental needs. It should be understood that energy supplies can and must be provided on an environmentally acceptable basis, and environmental standards must be set at levels achievable at reasonable cost and with the least detrimental effect on the future of our society.

All studies, legislation, and regulations should give equal consideration to the environment, the economy and energy to give Virginians a clear picture of the associated benefits and costs. A balance must be achieved between energy, the environment, and the economy if Virginia is to survive and prosper.

CONCLUSION

The energy crisis was a culmination of a series of events that began several years ago that resulted in the United States' present

energy problem. Although every section of society (business, individuals, industry, and government) must participate in solving the energy problem, in the next few years the individual consumer has the most power to balance energy demand with supply through conservation and wise use of energy. This will require the development of an "energy conservation ethic": the practice of conservation with minimal damage to the economy and sacrifice of personal comfort and freedom.

Developing offshore oil and gas deposits, using our coal resources, accelerating nuclear power, funding research and development in increasing energy supply and decreasing demand and insuring environmental quality are all long-term actions, mainly the responsibility of private industry with appropriate government safeguards and regulations.

State government can be the key to success by coordinating national programs with local needs. The State must do the difficult job of leading by example, encouraging voluntary effort, and requiring action. State governments deserve a great deal of the credit for guiding America through the 1973-1974 energy "crisis" with fuel allocation programs, public information, and energy conservation programs. This kind of effort is needed to continue to carry Virginia through the energy problem.

#

Respectfully submitted,

George F. Barnes, Chairman

C. D. Dunford, Vice Chairman

Leslie D. Campbell, Jr.

Claiborne D. Gregory

William B. Hopkins

George W. Jones

Glenn B. McClanan

John L. Melnick

Lewis W. Parker, Jr.

Stanley Ragone

Eugene M. Scheel

THIS PAGE LEFT BLANK INTENTIONALLY

THIS PAGE LEFT BLANK INTENTIONALLY

Footnote 1

Mr. McClanan asked that the following dissenting comment be appended to his signature.

There are many dangers and unknown factors associated with oil exploration and development off our coast. It is imperative that we prepare ourselves propperly, prior to encouraging this development as the majority report would have us do. All other Atlantic States have either adopted the cautious and deliberate approach that I recomend, or else, they have taken positions of direct opposition to off-shore exploration.

No State leasing and regulatory legislation for oil exploration on the Outer Continental Shelf should be passed until it is determined that we have jurisdiction. The case before the U. S. Supreme Court of Maine Vs. United States is scheduled to be decided this spring. If the decision is favorable to the states, appropriate legislation can be introduced at the 1976 session. This course will provide adequate time to prepare quality legislation with all possible safeguards.

Footnote 2

Mr. Melnick asked that the following additional comment be appended to his signature.

Refineries will be necessary in the future but local acceptance must be a major factor. A complete education program should be undertaken for any area suitable for an oil refinery outlining facts and risks that go along with its establishment. Although some communities may welcome this type of industry, communities that are not receptive should not have such industry foisted upon them.

It is my opinion that the coal surface mining laws are not adequate; I cannot agree that they are doing a good job at this time. I only agree that we are doing a better job than before recent amendments to the law were passed. These laws are still grossly inadequate to take care of reclamation of orphan lands. The law should be amended in many additional areas to protect the rights of abutting landowners and to further safeguard the ecology of those affected areas of Virginia. Federal legislation should be examined in the light of our energy requirements never forgetting our environmental obligations; we should strongly emphasize to Congress that small deep mines that have proved during the last several years that they can be safely operated with a minimum of new equipment should be reopened, thereby discouraging new strip mining operations in Virginia.

It is my recommendation that the Commission membership be increased and the Governor's appointments to the Commission be structured to bring in representatives from local government and environmental groups. This should be done in the form of an amendment in the nature of a substitute to Senate Joint Resolution No. 97, 1975.

THIS PAGE LEFT BLANK INTENTIONALLY

SENATE JOINT RESOLUTION NO. 92

Memorializing Congress to examine certain sections of the Federal Coal Mine Health and Safety Act of 1969.

WHEREAS, in nineteen hundred sixty-six there were one thousand two hundred thirty-two truck or small mines in Virginia, but in November of nineteen hundred seventy-four there were only three hundred twelve; and

WHEREAS, most of the decrease in the number of truck mines has been due to the inability to obtain permissible equipment because of its unavailability within a reasonable amount of time; and

WHEREAS, millions of dollars worth of nonpermissible equipment lies in storage; and

WHEREAS, 30 USC 811 (c) of the Federal Coal Mine Health and Safety Act of 1969 provides in part that:

> "...In addition to the attainment of the highest degree of safety protection for miners, other considerations shall be the latest available scientific data in the field, the technical feasibility of the standards, and experience gained under this and other safety statutes."; and

WHEREAS, new methane monitors of greater accuracy than those available in nineteen hundred seventy when the Federal Coal Mine Health and Safety Act went into effect are now available; and

WHEREAS, these new methane monitors, set at a predetermined level, can instantly deenergize all nonpermissible face equipment in the producing section of a truck mine if methane is detected; and

WHEREAS, the only effective way to take care of methane is by proper ventilation; and

WHEREAS, between April of nineteen hundred seventy and November of nineteen hundred seventy-four, in Virginia mines using nonpermissible equipment, there were only two ignitions, one of which may have been caused by cigarette smoking; and

WHEREAS, great benefits to our energy needs, economy, employment rate, and balance of payments would result from production of more coal by reopening our small coal mines; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Congress of the United States is respectfully memorialized

to examine sections 811 (c), 861, and 865 of the Federal Coal Mine Health and Safety Act of 1969 in light of the facts mentioned in this resolution; and, be it

RESOLVED FURTHER, That Section 863 (b) of the Act should be examined for possible change to increase the minimum quantity of air required from nine thousand to ten thousand cubic feet a minute in the last open crosscut and at the intake end of a pillar line. Minimum quantity of air required on each working face should be increased from three thousand to four thousand cubic feet a minute; and, be it

RESOLVED FINALLY, That the Clerk of the Senate is directed to forward a copy of this resolution to the Clerks of the Senate and the House of Representatives of the United States and to each member of the Virginia delegation to the Congress.

#

SENATE JOINT RESOLUTION NO. 91

Virginia should encourage and promote exploration of the Outer Continental Shelf.

WHEREAS, the demand for energy in the Commonwealth and the nation is increasing and will continue to increase for the foreseeable future; and

WHEREAS, domestic production of oil and gas has declined in recent years; and

WHEREAS, it is in the interest of Virginia and the nation to reduce the degree of dependence upon imports of oil from foreign nations to meet domestic energy demand; and

WHEREAS, there is reason to believe that the Atlantic Outer Continental Shelf contains significant quantities of oil and gas which can be developed consistent with State and national environmental policies; and

WHEREAS, the Commission to Study the Energy Crises in the Commonwealth, after a review of information and evidence gathered in connection with development of the Outer Continental Shelf, including the document released by the ad hoc Virginia Outer Continental Shelf Advisory Committee in November, nineteen hundred seventy-four, believes that the development, processing, and distribution of the oil and gas reserves on the Outer Continental Shelf adjacent to Virginia's coast should proceed in order to meet energy demands; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That exploration and development of oil and gas resources of the Outer Continental Shelf adjacent to Virginia's coast should be encouraged and promoted, provided, however, that such activities are consistent with the requirements of applicable environmental safeguards and conducted so as to protect, insofar as possible, onshore social, economic and environmental conditions of the coastal area of Virginia.

#

Appendix IIA

SENATE BILL NO. 788

A BILL to create the Outer Continental Shelf Act of Virginia so as to provide for the leasing and regulating of the Outer Continental Shelf adjacent to Virginia's coast.

Be it enacted by the General Assembly of Virginia:

1. *Article 1.*
General Provisions.

§ 1. Short title.—This Act shall be known as the Outer Continental Shelf Act of Virginia and is cited herein as the Act.

§ 2. Legislative findings; declaration of policy and purpose.—A. The General Assembly finds that exploration and development of oil, gas and other resources of the Outer Continental Shelf of Virginia provides a significant, promising source of energy and employment. It further finds that the proper control of offshore development requires thorough planning in selection of appropriate leasing sites; consideration of the overall impact of offshore development, including consideration for the environment; and the incorporation and use of control techniques as an integral and simultaneous part of offshore development.

B. The General Assembly declares that it is in the public interest to foster, encourage and promote the development, production and utilization of the natural resources of oil and gas in the Commonwealth of Virginia; and to protect the public and private interests against the evils of waste in the production and utilization of oil and gas by prohibiting waste as herein defined; to safeguard, protect and enforce the co-equal and correlative rights of owners in a common source or pool of oil and gas to the end that each such owner in a common pool or source of supply of oil and gas may obtain his just and equitable share of production therefrom; and to obtain, as soon as practicable, consistent with the prohibition of waste, and compliance with applicable environmental requirements, the full development by progressive drilling of other wells in all producing pools of oil and gas or of all pools which may hereafter be brought into production within the State, until such pool is fully defined.

C. It is the intent and purpose of this Act to permit each and every oil and gas pool in Virginia to be produced up to its maximum efficient rate of production, subject to the prohibition of waste as herein defined, and subject further to the enforcement and protection of the co-equal and correlative rights of the owners of a common source of oil and gas, so that each common owner may obtain his just and equitable share of production therefrom. It is not the intent nor the purpose of this Act to require or permit the proration or distribution of the production of oil and gas among the fields and pools of Virginia, on the basis of market demand.

D. It is in the public interest and shall be the policy of this Act to require and encourage the proper control of offshore development so as to minimize or prevent adverse disruptions and injurious effects thereof upon the people and resources of the Commonwealth through good industry and sound conservation practices, and to require and encourage through operations and planning, consideration of surrounding ecology and land use, including compliance with applicable environmental laws and regulations and incorporation of control techniques to assure proper control of the offshore development.

To these ends, the State Corporation Commission is directed to enforce this Act consistent with the provisions of the health, safety and environmental laws of Virginia.

§ 3. Exemptions.—A. When any act or action that is specifically regulated or covered by this Act also involves the use of or in any way affects any State-owned subaqueous bed, such act or action shall be regulated by the State Corporation Commission and such act or action shall be exempt from the provisions of § 62.1-3 of the Code of Virginia.

B. Notwithstanding Chapter 12 of Title 45.1 (§§ 45.1-106 through 45.1-144 of the Code of Virginia), this Act shall apply to leasing and regulating oil and gas activities on the Outer Continental Shelf adjacent to Virginia's coast, including the exploration for and production and transportation of oil, gas or other minerals on and from such offshore area.

§ 4. Definitions.—Unless the context otherwise requires, the following words have the following meanings when found in this Act.

A. "Waste" in addition to its ordinary meaning, means "physical waste" as that term is generally understood in the oil and gas industry. It includes:

1. The inefficient, excessive, or improper use or dissipation of reservoir energy; and the location, spacing, drilling, equipping, operating, or producing of an oil or gas well in a manner which results, or tends to result, in reducing the quantity of oil or gas ultimately recoverable from a pool; and

2. The inefficient storing of oil; the producing of oil or gas from a pool in excess of transportation or marketing facilities or of reasonable market demand; and the locating, spacing, drilling, equipping, operating, or producing of an oil or gas well in a manner causing, or tending to cause, unnecessary or excessive surface loss or destruction of oil or gas.

B. "Commission" means the State Corporation Commission.

C. "Person" means any natural person, corporation, association, partnership, receiver, guardian, trustee, executor, administrator, fiduciary, or representative of any kind.

D. "Oil" means crude petroleum oil, and other hydrocarbons, regardless of gravity, which are produced at the well head in liquid form by ordinary production methods.

E. "Gas" means all natural gas, including casinghead gas, and all other hydrocarbons which are produced at the well head in gaseous form by ordinary production methods.

F. "Pool" means an underground reservoir containing a common accumulation of crude petroleum oil or natural gas or both. Each zone of a general structure which is completely separated from any other zone in the structure is covered by the term "pool" as used in this Act.

G. "Field" means the general area which is underlaid or appears to be underlaid by at least one pool. It includes the underground reservoir or reservoirs containing crude petroleum oil or natural gas or both. The words "field" and "pool" mean the same thing when only one underground reservoir is involved; however, "field" unlike "pool" may relate to two or more pools.

H. "Owner" means the person who by lease has the right to drill into and to produce from a pool and to appropriate the production either for himself or for others.

I. "Producer" means the owner of a well capable of producing oil or gas or both.

J. "Product" means any commodity made from oil or gas. It includes refined crude oil, crude tops, topped crude, processed crude petroleum, residue from crude petroleum, cracking stock, uncracked fuel oil, fuel oil, treated crude oil, residuum, gas oil, casinghead gasoline, natural gas gasoline, naphtha, distillate, gasoline, kerosene, benzine, wash oil, waste oil, blended gasoline, lubricating oil, blends or mixtures of oil with one or more liquid products or by-products derived from oil or gas, and blends or mixtures of two or more liquid products or by-products derived from oil or gas, whether hereinabove enumerated or not.

K. "Illegal oil" means oil which has been produced within the State from any well in excess of the amount allowed by any rule, regulation, or order of the Commission, as distinguished from oil produced within the State not in excess of the amount so allowed by any rule, regulation, or order, which is "legal oil."

L. "Illegal gas" means gas which has been produced within the State from any well in excess of the amount allowed by any rule, regulation, or order of the Commission, as distinguished from gas produced within the State not in excess of the amount so allowed by any rule, regulation, or order, which is "legal gas."

M. "Illegal product" means any product of oil or gas, any part of which was processed or derived, in whole or in part, from illegal oil or illegal gas or from any product thereof, as distinguished from "legal product," which is a product processed or derived to no extent from illegal oil or illegal gas.

N. "Tender" means a permit or certificate of clearance for the transportation of oil, gas, or products, approved and issued or registered under the authority of the Commission.

§ 5. Rules and regulations.—The Commission has authority to make, after notice and hearing as provided in this Act, any reasonable rules, regulations, and orders that are necessary from time to time in the proper administration and enforcement of this Act, including rules, regulations, or orders for the following purposes:

A. To require the drilling, casing, and plugging of wells to be done in such a manner as to prevent the escape of oil or gas out of one stratum to another; to prevent the intrusion of water into oil or gas strata; to prevent the pollution of fresh water supplies by oil, gas, or salt water; and to require reasonable bond with security for the performance of the duty to plug each dry or abandoned well.

B. To require the making of reports showing the location of all oil and gas wells, and the filing of logs, electrical surveys, and other drilling records.

C. To prevent wells from being drilled, operated, and produced in a manner to cause injury to neighboring leases or property.

D. To prevent the drowning by water of any stratum or part thereof capable of producing oil or gas in paying quantities, and to prevent the premature and irregular encroachment of water which reduces, or tends to reduce, the total ultimate recovery of oil or gas from any pool.

E. To require the operation of wells with efficient gas-oil ratios, and fix these ratios.

F. To prevent blow outs, caving and seepage in the sense that conditions indicated by these terms are generally understood in the oil and gas industry.

G. To prevent fires.

H. To identify the ownership of all oil or gas wells, producing leases, refineries, tanks, plants, structures, and all storage and transportation equipment and facilities.

I. To regulate the shooting and chemical treatment of wells.

J. To regulate secondary recovery methods, including the introduction of gas, air, water, or other substance into producing formations.

K. To limit and prorate the production of oil or gas or both from any pool or field for the prevention of waste.

L. To require, either generally or in or from particular areas, certificates of clearance or tenders in connection with the transportation of oil, gas, or any product.

M. To regulate the spacing of wells and to establish drilling units, including temporary or tentative spacing rules and drilling units in new fields.

N. To require interested persons to place uniform meters of a type approved by the Commission wherever the Commission designates on all pipelines, gathering systems, barge terminals, loading racks, refineries, or other places necessary or proper to prevent waste and the transportation of illegal oil or illegal gas. These meters shall be under the supervision and control of the Commission. It shall be a violation of this Act, subject to the penalties provided herein for any person to refuse to attach or install a meter when ordered to do so by the Commission, or in any way to tamper with the meters so as to produce a false or inaccurate reading, or to have any device through which the oil or gas can be passed around the meter, unless expressly authorized by written permit of the Commission.

O. To require the inspection of pipelines to prevent blow outs and seepage.

P. To require that the product of all wells shall be separated into so many million cubic feet of gaseous hydrocarbons and barrels of liquid hydrocarbons, either or both, and accurately measured wherever separation takes place. Gaseous hydrocarbon measurement shall be corrected to ten ounces above atmospheric pressure. Liquid hydrocarbons shall be measured by barrels of forty-two gallons each. Both measurements shall be corrected to sixty degrees Fahrenheit.

Q. To require the establishment of an oil spill clean-up organization to insure recovery of oil spills.

Article 2.

Oil, Gas, and Mineral Leases of State Submerged Lands.

§ 6. Authority of Commission.—The Commission, with the approval of the Governor, is hereby authorized to negotiate, sell and convey leases on the submerged lands owned by the State for the exploration for and development and production of oil, gas and such other minerals that may be therein or thereunder, and mineral substances as are therein specified, to any person, firm, corporation or association authorized to do business in the State, subject to and in accordance with the provisions of this Act.

§ 7. Definition of submerged lands, exploration and production of land beneath the Baylor Survey and within thirty-five miles of shore.—As used in this article, the term "submerged lands" shall mean those lands the title to which is vested in the State and

which underlie that portion of rivers, lakes, bays, inlets, marshes, estuaries, reefs, Chesapeake Bay, Atlantic Ocean, and other water bottoms and islands within the jurisdiction of the State. Any leases sold on submerged lands within the Baylor Survey, (defined in § 28.1-100 of the Code of Virginia) or in the Atlantic Ocean within thirty-five miles of the mean low water mark of Virginia's Atlantic shore shall specifically prohibit any surface operations, including locations for drilling operations thereon, and the rights of the lessee to any such lands shall be limited to exploration and production by and from wells whose surface locations are on lands outside the Baylor Survey and beyond the thirty-five mile limit covered by the same lease or a different lease or leases. Directional drilling under the surface of the submerged lands of the Baylor Survey or within the thirty-five mile limit shall be permitted, and if the adjoining lands are covered by a separate State lease, consent to utilize the surface of such lease for directional drilling under the Baylor Survey land lease or under the lease of land within the thirty-five mile limit shall not be withheld. Permits, leases, and easements of submerged lands for fishing purposes shall be separate and not interfere with leasing the mineral rights underneath the same land.

§ 8. Lease form, rules and regulations.—The Commission shall prepare the form of the lease to be offered for sale and the rules and regulations under which such lease shall be sold, consistent with law and the provisions of this article, and copies thereof shall be available to the public at the office of the Commission and the advertisements of a lease sale shall so state. The lease shall:

A. Cover a compact area determined by the Commission not to exceed 5,000 acres;

B. Be for a primary term of five years and as long thereafter as oil, gas or other minerals may be produced in paying quantities from the leased premises or drilling or reworking operations as approved by the Commission are conducted thereon;

C. Require the payment of a stated fixed royalty of not less than sixteen and one half per centum, in the amount or value of the production saved, removed, or sold from the leased premises;

D. Contain stated fixed rental provisions as the Commission deems appropriate;

E. Authorize the pooling or unitizing of the leased premises, in whole or in part, with other lands or leases and the calculation of royalty on production resulting therefrom in the manner provided in § 13;

F. Provide that the commencement of operations for the drilling of a well on, or production of oil, gas or minerals or mineral substances covered thereby on any portion of a unit in which all or any part of the leased premises is embraced shall have the same effect under the terms of the lease as if such operations or production had occurred on the leased premises;

G. Allow payments in lieu of royalty if the lease is not otherwise being maintained on wells which have been completed as gas wells and are capable of producing gas in paying quantities but are shut-in pending development of a satisfactory market outlet, provided that such shut-in period shall not exceed forty-eight months from the date of completion of such gas wells, and agree that such payments shall operate to cause the lease to be considered as producing in paying quantities for all purposes thereof;

H. Provide that no transfer or assignment thereof, in whole or in part, shall be valid unless approved by the Commission and that such approval shall not be unreasonably withheld;

I. Provide for the suspension of lease obligations and term in the event of conditions of

force majeure, as specified in the lease; and

J. Provide for execution in the name and for and on behalf of the State by the Commission and for approval by the Governor. The lease also may contain such other terms and provisions as the Commission prescribes, including any special terms and provisions the Commission prescribes at the time of offering an area for lease for the protection of the rights vouchsafed to the people of the State concerning fishing, fowling and the catching and taking of oyster and other shellfish, in and from the submerged lands so leased and the water covering such lease.

§ 9. Application for lease, deposit, commission action.—Any person, firm, corporation or association who desires to purchase an oil, gas and mineral lease covering the submerged lands shall make written application to the Commission giving the description of the area proposed to be leased and enclosing a cashier's check or a certified check for two hundred dollars as evidence of good faith. This sum shall be returned if the applicant bids for the lease. Upon receipt of an application accompained by such deposit, the Commission shall review same and may cause an inspection of the area to be made, including geophysical and geological surveys. If, after receipt of the report of the inspection, if made, and after such review, the Commission determines that the interest of the State will be served, the Commission shall advertise for bids of bonus to be paid for a lease or leases covering all or part of the area described in the application. The Commission also may advertise, at any time and on its own motion and without application, for bids for a lease or leases on any part of the submerged lands in the same manner as if an application had been made.

§ 10. Notice of lease sale, public hearing.—Prior to holding a sale of oil, gas and mineral leases on the submerged lands, the Commission shall take the following action:

A. The Commission shall publish in a newspaper of general circulation in the State and a second newspaper of general circulation in the county or locality in which the area is located, notice of the proposed sale not less than once a week for four consecutive weeks, the last publication to be not less than five days in advance of the sale date. All notices shall state that the lease or leases shall be offered for sale and shall contain a description of the area or areas proposed to be leased, time and place when bids will be received and opened, the provisions of the lease, or reference to a particular form, the royalty and rental to be paid, and other information the Commission may consider necessary. The Commission may also cause notices to be sent to those whom it thinks would be interested in submitting bids.

B. The Commission shall conduct a public hearing on any lease or leases proposed to be sold which cover an area of submerged lands within a radius of ten miles of the boundaries of any county, city or town. In such event, the Commission shall, after notice thereof by publication once in a newspaper of general circulation published at least one week prior to the hearing in the vicinity of the area offered to be leased, call upon all interested persons to attend the hearing where they will be given the opportunity to be heard. All comments made at the hearing shall be considered by the Commission prior to the proposed sale of the area and, if after the hearing, the Commission considers the sale contrary to the public welfare, it may withdraw the area, or any part thereof, from the proposed sale.

§ 11. Bidding, right of Commission to reject any and all bids.—All bidding for oil, gas and mineral leases on the submerged lands shall be by sealed bids and may be for the whole or any particularly described portion of the area advertised. All bids shall be filed with the Commission at the place, and prior to the time, specified in the advertisement of sale and shall be accompanied by a cashier's check or a certified check for the amount of the offered consideration and made payable to the State Treasurer. All bids shall be opened

by the Commission in public at the place and time specified in the advertisement of sale. No bid filed subsequent to the date and hour of sale specified in the advertisement of sale shall be considered. The Commission shall accept the highest qualified bid or reject all bids with respect to a particular tract. A qualified bid is one made strictly in accordance with the requirements and rules of the sale specified in the advertisement. The Commission may reject all bids, or may lease a smaller amount of property than advertised and withdraw the rest. However, no lease of a smaller amount of property than advertised shall be granted for any less proportionate bid and rental than the smaller amount bears to the total area advertised or embraced in the most favorable bid submitted. If all bids are rejected, the Commission may in its discretion immediately offer for competitive bidding a lease or leases upon all or any designated part of the area advertised, upon terms appearing most advantageous to the State, but no lease thus offered shall be sold for less bonus than was previously offered in the most favorable bid for the same area, and this offering shall be subject to the Commission's right to reject any and all bids.

§ 12. Bond required, forfeiture, damages.—The Commission shall require a surety or property bond or acceptable evidence of financial responsiblity from the lessee of each oil, gas and mineral lease on the submerged lands prior to the time such lessee mines, drills or extracts in any manner, oil, gas or other mineral from such lands. Any bond shall be from a surety company authorized to do business in the State and shall serve as security and shall be forfeited to the Commission to pay for any damages caused by mining or drilling operations of the lessee. For the purpose of this section, damages shall include but not be limited to air and water pollution, destruction of wildlife or marine productivity and any other damage which impairs the health and welfare of the citizens of the State.

§ 13. Payments to State Treasurer, royalty computation, State Treasurer's log.—A. All rentals, royalties, shut-in payments or other sums payable to the State as lessor under the terms of valid existing oil, gas and mineral leases entered into hereunder shall be paid by lessee to the State Treasurer.

B. The State's royalties shall be computed by lessee after deducting any oil, gas or other mineral reasonably used for the production thereof. In the event of production of oil, gas or other minerals from any unit created under the provisions of such leases, the State shall receive and accept on account of production, whether or not production is from any part of the area covered by the lease, the royalty as agreed to by the Commission. The Commission is authorized to agree to participation on the basis of any combination of relevant factors such as but not limited to: surface acreage, estimated original reserves in place, estimated ultimate recovery, sand thickness, porosity and permeability, as determined by approved engineering practices. Lessee shall pay this portion of the royalty in the same manner, and subject to the same conditions, as other royalties agreed to be paid under the lease but such payment shall be in lieu of all other royalties which would accrue under the lease on account of production from any part of the area covered by the lease included in the unit.

C. The State Treasurer shall maintain a log in which he shall note the date and time of receipt of each payment and nature thereof, whether cash, check or other funds, and he shall promptly advise the Commission of the receipt of such payments. The State Treasurer shall submit to the Commission for its review and approval the evidence of each payment of royalty, rental and shut-in payments so that the Commission may determine whether such payment was correct, sufficient and timely made and all such royalty, rental and shut-in payments to the State Treasurer shall be received subject to the review and approval of the Commission. All payments to the State Treasurer other than royalty, rental and shut-in payments shall not require prior approval by the Commission, and the State Treasurer may accept such payments immediately and disburse them as provided hereafter. The immediate acceptance of such payments shall not prejudice either the right of the State as lessor or the rights of the State's lessee or lessees as provided under the

terms of the validly existing oil, gas and mineral leases. If it is subsequently determined that either overpayments or underpayments have occurred, correction for an underpayment will be made at a later date upon proper notification by the Commission to the lessee, and overpayments may be offset, compensated for or recovered from royalty thereafter accruing to the State as authorized under the provisions of Article 3. After review and approval of the payments requiring prior approval by the Commission, the State Treasurer shall note such approval, thereby evidencing the acceptance of such payment effective as of the initial receipt thereof. No payment disapproved by the Commission shall be accepted by the State Treasurer. The failure or delay of either the Commission or the State Treasurer to take any action or perform any function with respect to any payment shall not affect the validity of any payment made or tendered to the State Treasurer, and the timeliness thereof shall be determined as of the time such payment is made or tendered to the State Treasurer.

§ 14. Amending leases.—The Commission may enter into agreements affecting or amending such leases; provided, however, it shall not amend a lease to reduce the amount of bonus, rental, or royalty except in case of unitization.

§ 15. Supervision of leases; lessee's report to Commission; Commission's report to the General Assembly.—A. The Commission shall exercise full supervision of all oil, gas and mineral leases covering the submerged lands in order that it may determine that the terms of the leases are fully complied with. It shall have the general authority to take any action for the protection of the interests of the State and may annul a lease upon any legal ground following notice to the lessee and an opportunity by the lessee to be heard as provided by § 12.1-28 of the Code of Virginia. The Commission shall require from each lessee an annual notarized report as to the status of operations on the land under lease. Such report shall include the number of holes drilled, dates of drilling, depth of drilling, and results of the operation. Reports of mining operations shall also include the number of cubic yards mined. The notarized report of both mining or drilling operations shall include a financial report of moneys paid over to the State, if any. The Commission may require reasonable additional information, as may be necessary, for a better understanding of the operation under lease; provided, however, this shall not be construed as authorizing the Commission to require any lessee to divulge information relating to its work product, trade secrets, or methods of operation not commonly shared with a leasing agency. Failure to submit the report required by this section within ninety days following the anniversary date of the respective lease may be grounds for revoking and setting aside any lease as to which such report should have been made. The report required by this section may be introduced in evidence in behalf of the State or any agency thereof in any court proceeding as prima facie evidence of the information contained therein.

B. The Commission make reports to the General Assembly of all leases sold under the provisions of this article, such report to be made on or before the first day of December preceding the convening of each regular session thereof.

§ 16. Rights to use or construct on an easement, removal of structures.—In addition to the rights and privileges granted to a lessee under any lease issued or maintained under this Act, the Commission may grant, subject to such reasonable conditions as the Commission may prescribe, the following:

A. The right to use or an easement to construct and maintain platforms, fixed structures, and artificial islands, and to use the same for carrying on operations, including drilling, directional drilling, producing, treating, handling, and storing production, and housing personnel engaged in operations, not only in connection with the lease on which the platform, structure, or island, is situated, but for the conduct of operations on any other lease, State or federal.

B. The right of use or an easement to construct and maintain platforms, fixed structures, and artificial islands on areas of the submerged lands, near or adjacent to the leased area, and to use same for drilling directional well or wells to be bottomed under the leased area, and for producing and reworking such well or wells, and for handling, treating, and storing the production therefrom. Such rights of use or easement if on an area subject to any lease issued or maintained under this chapter shall be granted only after the lessee under such lease has been notified and afforded an opportunity to voice objections thereto and any such right shall be exercised only in such manner so as not to interfere unreasonably with operations of the lessee under such lease.

C. The right of use or an easement to construct and maintain pipelines on areas of the submerged lands which are constructed, owned, and maintained by the lessee and used for purposes such as (i) moving production to a central point for gathering, treating, storing, or measuring; (ii) delivery of production to a point of sale; (iii) delivery of production to a pipeline operated by a transportation company; or (iv) moving fluids in connection with lease operations, such as for injection purposes. The Commission is authorized to approve any reasonable offshore or onshore location as the central or delivery point. Rights of use or easement across areas covered by a lease issued or maintained under this article shall be granted only after the lessee under such lease has been notified by the applicant and afforded a reasonable opportunity to express his views with respect thereto, and any such rights shall be exercised only in a manner so as not to interfere unreasonably with operations of the lessee under such lease.

D. Once a right of use or easement has been exercised by the erection of platforms, fixed structures, artificial islands, or pipelines, the right shall continue only so long as they are maintained and are useful for the purpose specified therein, as determined by the Commission, even beyond the termination of any lease on which they may be situated; and the rights of all subsequent lessees shall be subject to such rights of use and easement by prior lessees. Upon termination by the Commission of the right of use and easement, the lessee shall remove or otherwise dispose of all platforms, fixed structures, artificial islands, pipelines, and other facilities and restore the premises to the satisfaction of the Commission; provided, however, that pipelines may be abandoned in place as long as they do not constitute a navigational or other hazard as determined by the Commission.

Article 3.

Regulation of Activity on State Submerged Lands.

§ 17. Authority of the Commission.—The Commission has jurisdiction and authority over all persons and property necessary to enforce effectively the provisions of this article and laws relating to the conservation of oil and gas. The Commission shall make such inquiries as it thinks proper to determine whether or not waste, over which it has jurisdiction, exists or is imminent. In the exercise of this power the Commission has the authority: to collect data; to make investigations and inspections; to examine properties, leases, papers, books, and records; to examine, survey, check, test, and gauge oil and gas wells, tanks, refineries, and modes of transportation; to hold hearings; to provide for the keeping of records and the making of reports; and to take any action that reasonably appears to it to be necessary to enforce this article, subject to and in accordance with the following provisions of this article.

§ 18. Power of Commission; filing requirements; emergency rule.—A. In all matters arising under this Act, the Commission shall have the power of a court of record as provided by § 12.1-13 of the Code of Virginia. The procedure before the Commission and appeals, and the maintenance, preservation and certification of records shall be as provided

by Title 12.1 of the Code of Virginia.

B. Whenever any application shall be made to the Commission for creation, revision or modification of any unit or units for production of oil or gas, or for adoption of any plan for spacing of wells or for cycling of gas, pressure maintenance or restoration, or other plan of secondary recovery, the applicant shall be required to file with the application such number of copies as the Commission shall require of a map of such unit or units or well spacing pattern or explanations of such plan of cycling, pressure maintenance or restoration, or other secondary recovery program and within a reasonable time notice shall be given of the hearing to be held thereon, in the manner prescribed by the Commission, and a copy of such plat or explanation of the program shall remain on file at the Commission and be open for public inspection.

C. If the Commission finds an existing emergency which in its judgment requires the making, changing, renewal, or extension of a rule, regulation, or order without first having a hearing, the emergency rule, regulation, or order shall have the same validity as if a hearing had been held after due notice. The emergency rule, regulation, or order shall remain in force no longer than fifteen days from its effective date. In any event, it shall expire when the rule, regulation, or order made after notice and hearing with respect to the same subject matter becomes effective.

§ 19. Fixing allowable production, public hearings.—An order fixing allowable production of oil or gas or making changes therein for any month or other period shall be issued by the Commission on or before the twenty-third day of the month preceding the month for which the order is to be effective and it shall be promulgated in Commission records and made available to the public at the office of the Commission.

A. In the case of old fields or pools for which schedules of allowables had been previously issued, it shall not be necessary for the Commission to have a hearing prior to the issuance of any subsequent order fixing or changing the schedule of allowables unless there is a written request for a hearing by an interested person. This provision permitting the issuance of a schedule of allowables for old fields without a hearing is an exception to the general rule requiring notice and hearing prior to the issuance of an order by the Commission.

B. In the event a schedule of allowables is promulgated without previous notice and hearing, an aggrieved producer of oil or gas may file with the Commission at its office within seventy-two hours from the publication of the order, a petition giving in detail the grounds of his complaint. Thereupon, the Commission promptly shall conduct a hearing either formal or informal. After the hearing, the Commission shall summarily render a decision. If its decision is not made on or before the effective date of the order complained of, that order shall be suspended until a decision is rendered. During this period, the former order shall remain in force.

§ 20. Commission shall not require additional wells.—Whether or not the total production from a pool be limited or prorated, no rule, regulation, or order of the Commission shall in terms or effect:

A. Make it necessary for the producer from, or the owner of, a tract of land in the pool, in order that he may obtain the tract's just and equitable share of the production of the pool, as that share is set forth in this section, to drill and operate any well or wells on the tract in addition to the well or wells that can without waste produce this share; or

B. Occasion net drainage from a tract unless there be drilled and operated upon the tract a well or wells in addition to the well or wells thereon that can without waste produce the tract's just and equitable share of the production of the pool.

§ 21. Drilling units.—For the prevention of waste and to avoid the drilling of unnecessary wells, the Commission shall establish a drilling unit or units for each pool. A drilling unit, as contemplated herein, means the maximum area which may be efficiently and economically drained by one well. This unit shall constitute a developed area as long as a well is located thereon which is capable of producing oil or gas in paying quantitites.

§ 22. Location of well on drilling unit.—Each well that is permitted to be drilled upon a drilling unit hereafter established shall be drilled at the location designated by the Commission, after public hearing, in the order creating the unit. The Commission shall consider all available geological and engineering evidence and shall provide for the unit well to be located at the optimum position in the drilling unit for the most efficient and economic drainage of such unit with such exceptions as may be reasonably necessary where topographical conditions exist that would make such a location of the unit well unduly burdensome or where the designated unit well was drilled or commenced prior to the creation of the drilling unit; provided, however, the Commission shall fix the well location for each drilling unit so that the producer thereof shall be allowed to produce no more than his just and equitable share of the oil and gas in the pool, as this share is set forth in § 23.

§ 23. Just and equitable share of the pool.—Subject to the reasonable necessities for the prevention of waste, and to reasonable adjustment because of structural position, a producer's just and equitable share of the oil and gas in the pool, also referred to as a tract's just and equitable share, is that part of the authorized production of the pool whether it be the total which could be produced without any restriction on the amount of production, or whether it be an amount less than that which the pool could produce if no restriction on amount were imposed, which is substantially in the proportion that the quantity of recoverable oil and gas in the developed area of his tract or tracts in the pool bears to the recoverable oil and gas in the total developed area of the pool, in so far as these amounts can be practically ascertained. To that end, the rules, regulations, and orders of the Commission shall be such as will prevent or minimize reasonably avoidable net drainage from each developed area, that is, drainage not equalized by counter drainage, and will give to each producer the opportunity to use his just and equitable share of the reservoir energy. In determining each producer's just and equitable share of the production authorized for the pool, the Commission is authorized to give due consideration to the productivity of the well or wells located theron, as determined by flow tests, bottom hole pressure tests, or any other practical method of testing wells and producing structures, and to consider other factors and geological and engineering tests and data as may be determined by the Commission to be pertinent or relevant to ascertaining each producer's just and equitable share of the production and reservoir energy of the field or pool.

§ 24. Pooling interests on a drilling unit.—When two or more separately owned tracts of land are embraced within a drilling unit which has been established by the Commission as provided in § 22, the owners may validly agree to pool their interests and to develop their lands as a drilling unit. Where the owners have not agreed to pool their interests, the Commission shall require them to do so and to develop their lands as a drilling unit, if it finds it to be necessary to prevent waste or to avoid drilling unnecessary wells.

A. All orders requiring pooling shall be made after notice and hearing. They shall be upon terms and conditions that are just and reasonable and that will afford the owner of each tract the opportunity to recover or receive his just and equitable share of the oil and gas in the pool without unnecessary expense. They shall prevent or minimize reasonably avoidable drainage from each developed tract which is not equalized by counter drainage.

B. The portion of the production allocated to the owner of each tract included in a drilling unit formed by a pooling order shall, when produced, be considered as if it had been produced from his tract by a well drilled thereon.

C. In the event pooling is required, the cost of development and operation of the pooled unit chargeable by the operator to the other interested owners shall be limited to the actual reasonable expenditures required for that purpose, including a charge for supervision. In the event of a dispute relative to these costs, the Commission shall determine the proper costs, after notice to all interested persons and a hearing.

§ 25. Failure to agree to pool, share of production.—Should the owners of separate tracts embraced within a drilling unit fail to agree upon the pooling of the tracts and the drilling of a well on the unit, and should it be established by final and unappealable judgment of the Supreme Court of Virginia that the Commission is without authority to require pooling as provided for in § 24, then, subject to all other applicable provisions of this article, the owner of each tract embraced within the drilling unit may drill thereon. The allowable production therefrom shall be such proportion of the allowable production for the full unit as the area of the separately owned tract bears to the full drilling unit.

§ 26. Requiring unit operation of a pool.—Without in any way modifying the authority granted to the Commission by § 22 of this article to establish a drilling unit or units for a pool, the Commission, upon the application of any interested party, also is authorized and empowered to enter an order requiring the unit operation of any pool or a combination of two pools in the same field, productive of oil or gas, or both, in connection with the institution and operation of systems of pressure maintenance by the injection of gas, water or any other extraneous substance, or in connection with any program of secondary recovery; and the Commission is further authorized and empowered to require the unit operation of a single pool in any situation where the ultimate recovery can be increased and waste and the drilling of unnecessary wells can be prevented by such a unit operation. In connection with such an order of unit operation, the Commission shall have the right to unitize, pool and consolidate all separately owned tracts and other property ownerships. Any order for such a unit operation shall be issued only after notice and hearing and shall be based on findings that (i) the order is reasonably necessary for the prevention of waste and the drilling of unnecessary wells, and will appreciably increase the ultimate recovery of oil or gas from the affected pool or combination of two pools; (ii) the proposed unit operation is economically feasible; (iii) the order will provide for the allocation to each separate tract within the unit of a proportionate share of the unit production which shall insure the recovery by the owners of that tract of their just and equitable share of the recoverable oil or gas in the unitized pool or combination of two pools, and (iv) at least three-fourths of the owners in interest as determined under (iii) hereof, shall have approved the plan and terms of unit operation, such approval to be evidenced by a written contract or contracts covering the terms and operation of said unitization signed and executed by said three-fourths in interest of said owners and filed with the Commission on or before the day set for said hearing. The order requiring the unit operation shall designate a unit operator and shall also make provision for the proportionate allocation to the owners, lessees or owners of unleased interests, of the costs and expenses of the unit operation, which allocation shall be in the same proportion that the separately owned tracts share in unit production. The cost of capital investment in wells and physical equipment and intangible drilling costs, in the absence of voluntary agreement among the owners to the contrary, shall be shared in like proportion; provided that no such owner who has not consented to the unitization shall be required to contribute to the costs or expenses of the unit operation, or to the cost of capital investment in wells and physical equipment and intangible drilling costs, except out of the proceeds of production accruing to the interest of such owner out of production from such unit operation. Provided, however, no well costs credit allowable shall be adjusted on the basis of less than the average well costs within the unitized area. Provided, further, that the order requiring unit operation shall not vary nor alter any of the terms of the above required written contract or contracts evidencing approval nor impose any terms or operations upon the non-signers of said contract or contracts that are stricter than the terms and operations set out in said contract or contracts. No order of the Commission

entered pursuant hereto shall have the effect of enlarging, displacing, varying, altering or in any way modifying or changing contracts in existence on the effective date of this Act concerning the unitization of any pool (reservoir) or pools (reservoirs) or field as defined in said contract for the production of oil or gas, or both.

§ 27. Allocation of production.—Whenever the Commission limits the total amount of oil or gas which may be produced, it shall allocate the allowable production among the fields. This allocation shall be made on a reasonable basis, giving, to each field with small wells of settled production, an amount which will prevent a general premature abandonment of the wells in the field.

§ 28. Limit on pool production.—The Commission may limit the production of a pool to an amount less than that which the pool could produce if no restriction were imposed. This limitation may be imposed either as an incident to or without a limitation of the total amount of oil or gas which may be produced in this State. The Commission shall prorate the allowable production among the producers in the pool on a reasonable basis so as to prevent or minimize avoidable drainage from each developed area which is not equalized by counter drainage, and so that each producer will have the opportunity to produce or receive his just and equitable share, subject to the reasonable necessities for the prevention of waste.

§ 29. Effective date and limit on production.—After the effective date of a rule, regulation, or order of the Commission fixing the allowable production of oil or gas, or both, for a pool, no person shall produce from a well, lease, or property more than the allowable production which is applicable, nor shall the amount be produced in a different manner than that authorized.

§ 30. Civil penalty; effect of penalty payment.—The Commission may impose and collect a fine of not more than one thousand dollars per day for each separate day of violation and for each separate act of violation upon any person who knowingly and willfully violates a provision of this Act.

A. Suit shall be instituted by the Commission by the issuance of a rule.

B. The payment of any penalty shall not have the effect of changing illegal oil into legal oil, illegal gas into legal gas, or an illegal product into a legal product, nor shall payment have the effect of authorizing the sale, or acquisition, or the transportation, refining, processing, or handling in any other way, of the illegal oil, illegal gas, or illegal product, but, to the contrary, the penalty shall be imposed for each prohibited transaction relating to the illegal oil, illegal gas, or illegal product.

C. Whoever knowingly and willfully aids or abets a person in the violation of a law of this State relating to the conservation of oil or gas, or the violation of a provision of this Act, or any rule, regulation, or order made thereunder, shall be subject to the same penalties provided herein for the principal violator.

2. That this act shall be effective upon a proclamation of the Governor issued subsequent to a decision in favor of Virginia regarding the dominion and control of the Outer Continental Shelf adjacent to Virginia's coast in the matter of *United States v. Maine et al.*, now pending before the United States Supreme Court.

3. That subsequent to the proclamation by the Governor making this act effective, the Virginia Code Commission shall codify this act in Title 12.1 of the Code of Virginia.

#

SENATE JOINT RESOLUTION NO. 93

Commending the Governor and State Energy Office for the work they have done on energy related matters and continuing the State Energy Office.

WHEREAS, the Governor created the State Energy Office in May of 1974 by Executive order pursuant to his emergency powers; and

WHEREAS, the State Energy Office has been charged with: administering the State Set-Aside program; promulgating and implementing energy allocation and conservation programs; and coordinating and encouraging cooperative efforts in energy related activities between agencies of the federal, State and local governments, and Virginia business, industry, utilities and the academic community; and

WHEREAS, because of the continuing energy problem, an increased effort in State energy planning, and coordinating is necessary; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Governor and the State Energy Office are commended for the work they have done both on fuel allocation during the gasoline shortage of last winter and for the establishment and coordination of the State energy program; and be it

RESOLVED FURTHER, That the State Energy Office be continued under its emergency funding and executive order with periodic evaluation by the Governor until the nineteen hundred seventy-six Session of the General Assembly when its further continuance shall be examined.

#

AMENDMENT IN THE NATURE OF A SUBSTITUTE

FOR SENATE JOINT RESOLUTION NO. 97

SENATE JOINT RESOLUTION NO. 97

Continuing the Commission to study the energy problems of the Commonwealth.

WHEREAS, the Commonwealth and the nation experienced an energy crisis in the winter of 1973-1974; and

WHEREAS, this crisis precipitated a study that was set out in Senate Joint Resolution No. 128 by the General Assembly in 1973 which led to an interim report (SD #6, 1974) and a final report (January 1975) by the Energy Crisis Study Commission; and

WHEREAS, the energy crisis has become an energy problem predicted to be of long-term duration; and

WHEREAS, although the Commission worked diligently, work remains to be done; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Commission to Study the Energy Crisis in the Commonwealth is hereby continued and renamed the Energy Study Commission. The Commission shall study ways in which the State can take action on energy problems, including specific suggestions and legislative recommendations on the State setting the example for increasing energy supply and decreasing energy demand, requesting and encouraging voluntary conservation, requesting or requiring localities to enact energy and conservation measures, and requiring State energy conservation measures. Along with the recommendations the Commission shall submit means for implementation and note expected benefits.

The present eleven members of the Commission shall continue to serve, and the Commission shall be increased to fourteen members, five appointed by the Speaker of the House of Delegates from the membership thereof, three appointed by the Committee on Privileges and Elections of the Senate from the membership of the Senate and six appointed by the Governor, to include: one from an established Virginia environmental group; one from Virginia industry; two from local government, including one from a rural area and one from an urban area of the State; and two from the State at large. If a vacancy occurs for any reason, the appropriate above named person or persons shall appoint a successor.

Members of the Commission shall serve without compensation but shall be reimbursed for the expenses incurred by them in the performance of their duties in the work of the Commission. For

such other expenses as may be required, including secretarial and other professional assistance, the balance of the funds previously allocated to the Commission from the contingent fund of the General Assembly are hereby reallocated for the purposes of this study. All State agencies shall assist the Commission in its work.

The Commission shall submit to the Governor and the General Assembly an interim report no later than November one, nineteen hundred seventy-five, and a final report no later than November one, nineteen hundred seventy-six, of its findings along with recommendations to be considered in establishing an energy policy for the Commonwealth designed to meet the energy problem.

#

Appendix V -- POSSIBLE ALTERNATE ENERGY SOURCES FOR VIRGINIA

Energy source	Stage of technology development	Potential importance to Virginia	Time span for introduction	Recommended State interest in adaptative technology	Recommended State interest in R & D Support
Recycled solid waste					
Supplement boiler fuel	Intermediate	Significant	Late 70's	High	High
Supplement gas fuel					
Nuclear fission reactors:					
U^{235} Convertor	Advanced	Significant	Any time	High	Low
Fast breeder	Intermediate	Some	1990	Low	Intermediate
Nuclear fusion reactors:					
Magnetic field	Exploratory	Slight	2000	Low	Low
Pulsed laser	Exploratory	Some	2000	Low	Low
Coal Gasification and Liquification	Intermediate	Significant	1980	High	High
Hydroelectric	Advanced	Some	Any time	Intermediate	Low
Waves	Exploratory	Slight	Early 80's	Low	Low
Tides	Advanced	Slight	Any time	Low	Low
Wind	Intermediate	Some	Late 70's	Intermediate	Intermediate
Solar:					
Thermal collectors	Intermediate	Significant	Late 70's	High	High
Bioconversion	Exploratory	Significant	Late 70's	High	Low
Geothermal:					
Conventional (steam or hot water)	Intermediate	Slight	Late 70's	Low	Low
Second generation (injection or fracturing)	Exploratory	Some	Mid 80's	Low	Intermediate
Molten magma	Exploratory	Some	1990-2000	Low	Low
Energy distribution through:					
Alcohol	Intermediate	Some	Mid 80's	High	Low
Hydrogen	Exploratory	Significant	2000	High	Low

APPENDIX VI
TABLE I

CONSERVATION BY GOVERNMENT
-SETTING AN EXAMPLE-

Ranked by order of decreasing "doability"

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
1	Reduce use of official vehicles and aircraft and other official travel by at least 30%	X		Executive Order, Systematic monitoring and enforcement.	Reduction in fuel used and State transportation costs.
2.	Reduce home retention and personal use of government-owned vehicles	X		Executive Order, Penalties for violation.	Reduction in fuel used and transportation costs.
3	Encourage the use of car pools by State employees	X		Provide car pool locators in all State buildings. Grant parking priority to employees traveling in car pools.	Gasoline savings.
4	Provide routine tune-up and maintenance care for government vehicles and vehicles regularly used for government business.	X		Post schedules in all public buildings. Maintain schedules.	Gasoline, oil, and efficiency savings.
5	Reduce lighting levels in all government buildings.	X		Remove light bulbs to reduce lighting to the following levels: (FC = Foot Candles) Corridors, elevators, stairways and other non-work areas 10-15 FC	Reduction of electrical load. Also, will reduce the heat load on buildings, making air conditioning more efficient This will increase the amount of heating needed in the winter, but will still have

*NF - Near Future **LT - Long Term

Table I - Conservation by Government

Ranked by order of decreasing "doability"

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
5 (contd)				General office work, rough bench and machine work 20-40 FC. Accounting, bookkeeping, medium to fine bench and machine work 40-70 FC. Severe working requirements, precision work and hazard areas 80-100 FC	a positive net energy effect, because lights are inefficient heaters.
6	Change to four-day, 40-hour week (excepting essential safety and health services)		X		Savings of potentially 23 million gallons of gasoline per year (based on recent State consumption figures) plus natural gas, electricity and fuel oil savings.
7	Reduce the number of State agency meetings	X	X	Request department heads and unit chiefs to emphasize use of telephone, encourage the use of conference calls, video taped presentations, etc. to reduce the need for State agency meetings.	Reduced travel by State employees, gasoline savings
8	Require all new publicly-owne buildings be constructed with energy-conserving features; maximum insulation, thermo-glass, minimum lighting, etc.		X	Executive Order or legislation.	Ref: U.S. Dept. of Commerce, "Design & Evaluation Criteria for Energy Conservation in Ne Buildings", NBSIR 74-452, 2 27 74

(more)

Table I - Conservation by Government

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
9	Develop and implement comprehensive energy conservation plans at State, county, and local level.	X	X	Official request, Executive Order, legislation.	Uniform total energy conservation planning, savings in all scarce resource areas.
10	Conduct a State energy audit of government, business, and industry; use the results to develop an energy supply and demand model for the State.	X		Official request	Provide tool for future planning of scarce resources.
11	Reduce water usage and eliminate leaks in water systems to reduce energy using pumping and aeration requirements in both water and sewer systems.		X	Directives to cognizant agencies.	Water savings, fuel savings from assuring more efficient systems.
12	Establish cooperative regional waste collection practices		X	Subsidies or grants, legislation.	Reduction of gasoline consumption, reduced costs of operation.
13	Institute statewide resource recovery system.		X	Technical support, grants,	Reuse of resources instead of increased demand on new; recycling often less energy intensive than production of new materials.

CONSERVATION BY REQUEST
-ENCOURAGEMENT FOR VOLUNTARY ACTION-

Ranked by order of decreasing "doability"

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
1	Encourage individual auto fuel conservation in everyday driving.	X		Dept. of Transportation write in tips in new drivers manual and include in drivers' examination. Expand public information program.	Increased awareness by driving-public of fuel conservation driving habits, behavior changes, gasoline savings. Individual cost savings.
2	Reduce lighting levels in businesses and homes	X		Government request. Promulgate business lighting standards.	Reduction of electric consumption. Reduced utility bills.
3	Encourage youth support of energy conservation.	X		Official request of Board of Education to endorse program. Provide special recognition, awards, and prizes; e.g., at science fairs.	Reduction of energy at school facilities. Reduction of energy use at home (on a lesser basis). Increased awareness of energy conservation by upcoming generations.
4	Establish bus (Greyhound, Trailways) pickup points at Atlanta Perimeter (I-75 and I-85 at I-285)	X		Request action from bus companies. Request city and counties involved to provide adequate automobile parking areas at pickup sites.	Reduction of gasoline consumption for long trips, encourage use of buses for trips by suburbanites.
5	Encourage major recreation operators and large shopping and industrial complexes to set up public transit system from convenient outlying pick up sites to their locations.	X		Request cooperation of management of complexes. Request city & counties to provide parking areas at pickup sites Possibly use same sites men-in 4 above. Publicize effective systems.	Reduction of gasoline consumption. Reduction of traffic in congested areas and during peak periods.

*NF - Near Future **LT Long Term

(more)

Table II. Conservation by Request

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
6	Encourage public transportation companies (Greyhound, Trailways) to provide"package" excursions to and from tourist attractions inside and outside Georgia (perhaps in conjunction with motels and attractions).	X		Seek cooperation and action from public transportation, tourist attractions and hotel and motel officials. Publicize responsive actions.	Decrease gas consumption by providing mass transportation for recreational purposes. Provide needed boost for tourist and motel industries.
7	Give encouragement to industry, public and energy producing organizations for conservation ideas and improvements.	X	X	Promote through all news media. Offer cash awards and public recognition, tax rebates, and grants. Long range may take legislation.	Gain new ideas for savings in energy. Influence behavior changes, conservation mindedness.
8	Reduction of nighttime business.	X	X	Request action through business and industry leaders. Possible legislation (longer range). [Sunday closing laws set precedence.]	Reduction of energy consumption by businesses and gasoline consumption by buying public.
9	Custodial service during day, insofar as possible during regular daylight business hours.	X		Request maintenance companies and businesses to allow earlier services.	Reduction of energy consumption in evening hours.
10	Stagger working hours for businesses in major cities.	X		Request action through business and industry leaders. Publicize effective response. Provide technical assistance.	Reduce gasoline consumption due to better traffic flow.

(more)

Table II. Conservation by Request

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
11	Four day work week or work-at-home day. (Perhaps by large buildings as well as main businesses.)	X		Request action through business and industry leaders. Publicize response. Provide technical assistance in scheduling.	Reduced consumption of gaso line. Reduced energy consumption from shut-down buildings and energy related activities.
12	Encourage replacement of incandescent with flourescent or mercury lighting in new construction.		X	Encouragement through news media and utilities, grants, tax rebates, etc. Force compliance through codes.	Reduction of electric consumption.
13	Provide support for pilot projects to recycle waste and/or generate energy resource.		X	Publicity and cash awards, grants, tax rebates, site and opportunity studies.	Reduce demand on new energy resources. Also, recycling of materials is often less energy intensive than production of "new" materials.
14	Encourage industry to use rai shipments instead of truck where fuel would be conserved both incoming shipments of supplies and materials and outgoing shipments of finished products.	X		Request action through industry and business. Aid in working out details. Publicize benefits.	Use of most energy efficient systems and most available resources.
15	Encourage reduction in needless packaging.		X	Inform public and industry of wasteful energy practices involved with much convenience packaging.	Reduction of petroleum based raw materials and other energy used in manufacture of packaging.

(more)

TABLE III

CONSERVATION BY GOVERNMENT REGULATION, CONTROL, OR OTHER FORCING ACTION

Ranked by order of decreasing "doability"

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
1	Improve traffic flow:				
	A. Eliminate on-street parking on major thoroughfares.	X	X	Official State request through new media. City and county ordinances.	Improve traffic flow especially during peak periods thus reducing gasoline consumption. Reduce aggravation and fuel cost to daily drivers.
	B. Change traffic lights to flashing red during light load periods (nights, etc) and reduce number of lights.	X	X	City and county traffic engineers after approval by city councils and county commissioners.	
	B. Right turn on red light.		X	Legislation amending present law which permits right turn on red only if posted sign so directs.	
	D. Synchronize traffic lights		X	City and county traffic engineers after approval by city councils and county commissioners.	
	E. Set up reversible traffic lanes on key arteries for peak loads.		X	City and county traffic engineers after approval by city councils and county commissioners.	
	F. In peak hours, ban trucks or restrict to right lane	X		Legislation	

*NF - Near Future ** - Long Term

(more)

Table III. Conservation by Government Regulation, Control, etc.

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
2	Strict enforcement of 55 mph speed limit by setting high, prohibitive fines for violations. Example: Minimum $50 or $100 fine for exceeding limit.	X	X	Promote through all news media. Notify AAA and all motor clubs. Warning signs on all roads at points where they enter State. Short range - Governor's proclamation. Long range - Legislation.	Decrease gasoline consumption. Fewer accidents.
3	Eliminate back-door garbage service. Provide curb service twice per week.	X		City and county official action.	Less gasoline will be used since trucks will not have to idle as long at each stop.
4	Require manufacturers to institute energy consumption and efficiency labeling.			Technical assistance, grants, tax rebates, publicity to encourage public awareness of savings in both energy and money. Legislation requiring such labeling (at least on equipment purchased by government).	Reduced use of electric energy (and the materials used to produce the energy) Influence more efficiency in appliance production.
5	Expand State vehicle inspection system to include check for fuel wasting conditions and an "unbiased" estimate of the cost of a tune-up, if required.	X		Car owners keep cars in tune. Revise entire inspection system.	Reduction in oil, gasoline consumption, cars in better running order, safety, better mileage, reduced cost to drivers.

(more)

Table III - Conservation by Government, Regulation, Control, etc.

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
6	Limit unnecessary student driving to school with a permit system.	X		Request cooperation from local school boards, parents, and students to utilize school buses and bicycles.	Reduce gasoline consumption.
7	Establish bikeways and sidewalks as an integral part of the city (urban area) development process to encourage energy saving transportation.		X	Comprehensive planning	Less use of energy based transportation.
8	Provide incentives to builder/developers for energy conserving construction.		X	Technical assistance, tax rebates. Change building codes, design and apply energy indices. Publicize special efforts.	Reduced use of space heatin cooling energy. Behavior changes.
9	Provide incentives to individuals engaged in home improvement or new home purchases to consider energy saving construction.		X	Technical assistance, tax write-offs, guaranteed or low-interest loans. Change building codes, design and apply energy index idea.	Reduced use of space heatin cooling energy. Behavior changes. Utility savings.

(more)

Table III. Conservation by Government Regulation, Control, etc.

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
10	Provide better (more complete coverage) public transportation in central cities and reduce automobile usage in the central city area.		X	Provide cross-town bus service and/or shoppers' and businessmen's mini-bus service. Provide high density bus service from municipal parking lots to offices and stores. Restrict parking, charge high parking rates, increase taxes on parking lots and garages, require special permits or licenses to have autos in central city during the day, etc.	Reduced autos in central cities, reduced congestion, gasoline consumption.
11	Develop and enforce outdoor lighting standards	X		Request through news media, elimination of all outdoor lighting that does not affect safety or security. Includes all decorative lighting and advertising lighting except identification sign for business locations (gas stations, motels, etc.). Municipal and county ordinances providing for penalties for violations.	Reduce electric energy consumption.

(more)

Table III. Conservation by Government Regulation, Control, etc.

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
12	Reduce unnecessary street lighting where safety and security are not involved.	X		Action by county and city officials.	Reduce electric energy consumption.
13	Provide state supported inexpensive tune-up stations (perhaps in conjunction with State operated inspection centers).	X	X	Establish new inspection system.	Reduction in gasoline consumption. Increased safety.
14	Public Utilities Commission study changing rate schedules for electricity and gas pricing to encourage conservation and the leveling of demand.		X	Governor call for study.	Using less costs less.
15	Reduce State environmental constraints that are more stringent than federal standards for power plants outside populous areas.		X	Change State regulations.	Shift use from scarce high quality fuels where feasible and environmentally acceptable to more abundant lower quality fuels (such as high sulfur coal). Reduced use of oil.

(more)

Table III. Conservation by Government Regulation, Control, etc.

ITEM	CONSERVATION MEASURES	IMPACT NF*	IMPACT LT**	MEANS FOR IMPLEMENTATION	EXPECTED BENEFITS
16	Define energy use indices and implement use in new construction.		X	Make public aware of indices as a measure of energy consumption in homes and apartments. Provide technical assistance to builders and developers to use indices. Provide tax write-offs for use. Change codes and permit regulations. Require reporting of indices for new developments and structures as part of permit system.	Reduced use of space heating/ cooling energy. Change behavior.
17	Reduction (or elimination) of night sports activities that require massive lighting.	X	X	Short range - Request from State to promoters to keep lighting at minimum and to reschedule events to afternoon or early evening (twilight) hours when possible. Long range - Official State proclamation or perhaps legislation to ban all night events.	Save energy through eliminated lighting.

APPENDIX VII