REPORT OF THE MAINE

LEGISLATIVE POWER

STUDY COMMITTEE

STATE OF MAINE

102nd LEGISLATURE

REPORT OF THE

LEGISLATIVE POWER STUDY COMMITTEE

January 16, 1967

Senators -
- Elmer H. Violette, Chairman
- Carlton D. Reed, Jr.
- Romeo T. Boisvert
- Dwight A. Brown
- Floyd L. Harding

Representatives -
- Joseph A. D'Alfonso
- Dana W. Childs
- Nicholas W. Danton
- William W. Eustis
- Alfred M. Haynes
- Emilien Levesque

Consultants

R. W. Beck and Associates
200 Tower Building
Seattle, Washington

Wood, King, Dawson & Logan
Attorneys and Counsellors at Law
48 Wall Street
New York, N. Y.

Authorized by the 102nd Legislature
Report to the 103rd Legislature

COMMITTEE RECOMMENDATIONS

The Maine Legislative Power Study Committee was created by the 102nd Legislature and charged with the responsibility of studying the general power requirements of the State of Maine as to generation and transmission and the possible methods of meeting these requirements. It was directed to hold hearings, as it deemed necessary, to engage consultants, and to report the findings of the committee, its conclusions and recommendations to the 103rd Legislature.

Following its initial organization period, the committee on April 27, 1966 interviewed four engineering firms that expressed an interest in making a professional study of Maine's power requirements and supply. The committee on May 18, 1966 voted to retain the firm of R. W. Beck and Associates of Seattle, Washington, a nationally recognized firm in the field of power studies and consulting, to study all phases of the state's present and future power needs and the present power supply and to make recommendations by which these needs could be met most efficiently.

Pursuant with the legislative directive, the committee held several meetings with representatives of the consulting firm and also held public hearings (see chronology of committee's actions) to discuss the state's power requirements with businessmen, manufacturers and representatives of the private and public power interests.

The conclusions of the Maine Legislative Power Study Committee and its recommendations to the 103rd Legislature are based on the conferences with and the work done by the consultants as well as the information supplied at the public hearings from persons interested in the development of the Maine power supply.

Following submission of the report of R. W. Beck and Associates, the committee voted to accept this report. The committee is in agreement with the conclusions of the report and feels that it represents a thorough, factual and soundly based study of Maine's present and future power requirements. Both the R. W. Beck study and the work of the committee were directed toward complying with the legislative order and determining in broad scope the power requirements of the state and the manner in which a power supply and transmission system could be most effectively and economically developed to meet these requirements and stimulate the economic and industrial growth of Maine.

The committee feels that Plan C (see Page I-6 of the Summary of the R. W. Beck report) represents the most feasible plan to meet the future power needs of the state at the lowest possible cost. This plan combines the development of base load nuclear power in Maine under a state agency in conjunction with the Dickey-Lincoln School Project as authorized by Congress. Under this plan a single one million kilowatt nuclear plant would be located along the central coastal area of Maine and would be in full operation by 1972. The combination of this plant and the half million kilowatts of capacity from the Dickey-Lincoln School Project would be adequate to meet the projected loads of the State of Maine until about 1980. This plan also includes a Extra High Voltage transmission system to connect the nuclear plant with the load centers in southern and northern Maine.

The committee is in agreement with the opinion of the consulting firm that the advantages of coordinating the transmission facilities for the Dickey-Lincoln School Project with those of the state are substantial. Such coordination would result in reducing the initial total capital cost for the transmission facilities

for the two projects and would minimize the annual costs of owning and operating the transmission system.

The committee strongly urges the 103rd Maine Legislature to create a state agency for the generation and transmission of nuclear power. The facts as presented in the R. W. Beck report (a summary is included with this report and complete copies of the maps, statistics and tables may be obtained through the Maine State Library) speak for themselves. Maine can best meet its present and future power requirements, can best achieve low-cost power and fully develop its economic and industrial potential through the creation of such a state agency. There is ample evidence in many other states to indicate the benefits that would accrue to Maine through the creation of such an agency just as there is ample evidence to indicate that such an agency can and will work closely with the existing electric power companies for the benefit of the entire state.

Finally, following the submission and acceptance of the R. W. Beck and Associates report, the committee felt its specific recommendations for the establishment of a Maine Power Commission, its duties, responsibilities, authority and how it shall be constituted should be embodied into a proposed law which could be submitted at the 103rd Legislature. The committee in addition to continuing to retain R. W. Beck and Associates as consultants, further retained the law firm of Wood, King, Dawson and Logan of New York City -- a firm widely experienced in legislation affecting public power agencies and power development -- to assist the committee in drafting the proposed law. A copy of the proposed law, the details of which have been reviewed and accepted by the committee, is included in this report. The committee recommends that this law be enacted by the 103rd Maine Legislature.

The Legislature and the people of Maine now have an opportunity that may not exist again, to create a public agency that can develop a nuclear power plant working in conjunction with the Dickey-Lincoln project to make low-cost power, and full development of Maine's economic and industrial potential a reality and not a hope.

CHRONOLOGY OF COMMITTEE'S ACTIONS

February 1, 1966	Legislative Order creating the committee and authorizing the power study passed in the Legislature.
April 27, 1966	Committee interviewed four engineering firms interested in making a study of Maine's power requirements and supply. The committee hired Edward Schlick as executive secretary.
May 18, 1966	The committee voted to hire R. W. Beck and Associates of Seattle, Washington, to conduct the power study. The cost of the study was estimated at $25,000.
June 17, 1966	Chairman Elmer H. Violette, acting on behalf of the committee, signed the contract with R. W. Beck and Associates to conduct the power study.
August 23, 1966	The committee and consultant Herbert Westfall held an evening public meeting at Augusta to hear testimony from representatives of industry and business on their power requirements.
September 23, 1966	The committee heard testimony from representatives of the Maine Yankee Atomic Company and testimony from the Citizens for Public Power, an organization advocating creation of a Maine Power Authority.
October 26, 1966	The committee received and accepted the final report of R. W. Beck and Associates on State of Maine Electric Power Requirements and Supply. The committee also voted to work further with consultants from R. W. Beck to draft legislation to be submitted to the 103rd Legislature.
November 22, 1966	The committee met and discussed proposed legislation carrying out some of the recommendations of the R. W. Beck report and voted to hire an attorney experienced in this field.
December 27, 1966	The committee met for a final discussion of legislation.

STATE OF MAINE

In Senate February 1, 1966

WHEREAS, in order to assist in the industrial and commercial development of the State of Maine, thereby promoting the general welfare of the people of Maine, it is the belief of the 102nd Legislature that there should be full development of the resources of this State; and

WHEREAS, the cost of electric power in all its various forms and uses has become a major factor in commercial, industrial and residential expansion, in the use of resources, and a necessity for economic development as has been shown in the growth of the southeastern and northwestern United States; and

WHEREAS, there has been presented to the 102nd Legislature, and to prior Legislatures, various proposals calling for the creation of a Maine Power Authority, and there has also been proposed legislation to authorize a Maine Power Authority to construct, operate and maintain a thousand megawatt nuclear power facility on the Maine coast in Knox County to generate power for nonprofit distribution and sale to purchasers for resale, to rural electric power systems, to any privately, municipally or cooperatively owned electric power systems, and to certain wholesale users under certain prescribed conditions; and

WHEREAS, there has been created a Maine corporation known as the Maine Yankee Atomic Power Company, composed of the three major electric utilities serving electric customers in Maine, together with eight companies in the other five New England States for the announced purpose of constructing a nuclear power plant of approximately 700,000 killowatts, for the purpose of providing electric energy to users in Maine and New England; now, therefore, be it

ORDERED, the House concurring, that there is created a special committee of the 102nd Legislature, to consist of 4 Senators, to be appointed by the President of the Senate, 5 Representatives, to be appointed by the Speaker of the House, and the President of the Senate and the Speaker of the House who shall serve as ex officio members, to study the general power requirements of the State of Maine as to generation and transmission, and the possible methods of meeting those requirements, including an analysis of the concept of a Maine Power Authority or other state agency created for the generation and transmission of power, and including an analysis and evaluation of the aforementioned specific proposals for the construction, operation and maintenance of a nuclear power facility; to be given custody of all reports, documents and any other information concerning the subject presently in the files of the appropriate committees, namely, the legislative leadership screening committee, the Allagash - St. John Rivers special committee and the joint public utilities committee; to hold further hearings if deemed necessary; to appoint advisory committees, to engage professional consultant or consultants; to confer when and if deemed appropriate with staff members of the Public Utilities Commission and other state departments, with staff and members of appropriate federal commissions, departments and agencies, and nongovernmental research sources, for specific information; and to report the special committee findings, conclusions and recommendations to a special session of the 102nd Legislature or to the 103rd Legislature; and be it further

ORDERED, that the members of the committee shall serve without compensation, but shall be reimbursed for their expenses incurred in the performance of their duties under this order; and be it further ordered that there is appropriated to the committee from the Legislative Appropriation the sum of $75,000 to carry out the purposes of this order.

PROPOSED LEGISLATION

TO CREATE

A MAINE POWER COMMISSION

CHAPTER _____

AN ACT Creating the Maine Power Commission

Be it enacted by the People of the State of Maine, as follows:

Section 1. Maine Power Commission Created. In order to provide an adequate supply of electric power and energy for the residents of this State as a whole, and particularly the rural and domestic consumers and industrial users, at the lowest possible cost consistent with sound utility practices; for the purpose of developing the natural resources of the State; stimulating the agricultural, recreational, general economic and industrial growth of the State, and thereby promoting the general health and welfare of the people of the State, there is hereby created the Maine Power Commission with the powers and duties hereinafter set forth.

Section 2. Definitions. As used in this Act the following words and terms shall have the following meanings unless the context shall indicate another or different meaning or intent;

(a) The word "Commission" shall mean the Maine Power Commission created by this Act, or, if the Commission shall be abolished, the board, body, commission or agency succeeding to the principal functions thereof, or upon whom the powers given by this Act to the Commission shall be conferred by law.

(b) The words "Commission System" shall mean any or all facilities for the generation, transmission and delivery of electric power and energy purchased, constructed and otherwise acquired by the Commission pursuant to the provisions of this Act and all extensions, improvements and betterments thereof.

(c) "Project" shall mean any single facility constituting a part of the Commission's System, as described in the resolution providing for the construction thereof, including extensions, improvements and betterments thereof.

(d) The word "Cost" as applied to any Project shall include the cost of purchase, construction or other acquisition thereof, the cost of acquisition of all land, rights-of-way, property rights, easements and interests acquired by the Commission for such construction; landscaping and conservation; the cost of demolishing or removing any buildings or structures on land so acquired, including the cost of acquiring any lands to which such buildings or structures may be moved; the cost of all machinery and equipment; financing the charges; interest prior to and during construction and for a period of time after completion of construction as deemeded advisable by the Commission; cost of estimates of revenues and income; engineering and legal services; plans, specifications, surveys and all other expenses necessary or incidental to the determination of the feasibility or practicability of constructing the Project, administrative expenses; initial working capital; debt service reserves and the repayment to the State of any obligation or expense incurred or paid by the State before or after the effective date of this Act for engineering, legal or other professional or technical services, reports, studies and data in connection with the construction of a Project, shall be included as a part of the cost of the Project.

(e) The words "Public Highways" shall include highways, roads and streets either maintained by the State or any of its political subdivisions.

(f) The word "Bonds" or the words "Revenue Bonds" shall mean revenue bonds and refunding revenue bonds, and notes, certificates of indebtedness or any

other evidences of indebtedness issued by the Commission under the provisions of this Act.

(g) The word "Owners" shall include all individuals, partnerships, associations, organizations and corporations and all public agencies and instrumentalities having any title or interest in and to any property, rights, easements and interests therein authorized to be acquired by the Commission by this Act.

(h) The word "Revenues" shall mean any and all fees, tolls, rents, rates, receipts, moneys and income derived by the Commission through the ownership and operation of the Commission System.

(i) The word "State" shall mean the State of Maine.

Section 3. Creation of the Commission. There is hereby created a public body corporate and politic, and an agency of the State to be known as the "Maine Power Commission" consisting of five (5) members who are residents of the State and not officers, agents or employees of any publicly, cooperatively or privately owned electric utility system. The members of the Commission shall be appointed by the Governor by and with the advice and consent of the Council. The members so appointed initially shall be for terms of 2, 3, 4, 5 and 6 years from the date of their appointment and until their respective successors shall be duly appointed and qualified, the term of each member to be designated by the Governor at the time of appointment. Successor commissioners shall be appointed for a term of six years, except any commissioner appointed to fill a vacancy shall serve only for the unexpired term of the member creating the vacancy. Commissioners shall be eligible for reappointment. The Commission so appointed shall enter upon the performance of its duties as soon as practicable after the members thereof shall have been appointed

and qualified, and shall initially and biennially thereafter elect one of its members as chairman and another as vice-chairman, and shall also elect annually a secretary and treasurer or a secretary-treasurer who need not be a member of the Commission. The chairman, or in his absence the vice-chairman, shall preside at all meetings of the Commission, and in the absence of both the chairman and vice-chairman the Commission shall elect a chairman pro tempore who shall preside at such meetings. Three commissioners shall constitute a quorum and all action by the Commission shall require the affirmative vote of a majority of the commissioners. Commissioners shall be entitled to reimbursement for expenses incurred in attendance upon meetings of the Commission or while otherwise engaged in the performance of their duties, and each commissioner shall also be paid the sum of $50.00 a day for each day or the portion thereof during which he is engaged in the performance of his duties. Such expenses and compensation shall be paid out of the treasury of the Commission in such manner as shall be prescribed by the Commission.

Section 4. Powers of the Commission. In order to obtain the benefits and extend the services provided by Section 1 of this Act and to otherwise contribute to the economy, industrial and agricultural development and welfare of the State, the Commission shall have the following powers:

(1) To contract and be contracted with; to sue and be sued; to adopt and use a seal and to alter the same at its pleasure; to adopt and amend from time to time by-laws covering proceedings of the Commission, and to adopt and amend from time to time rules and regulations governing the sale and delivery of all services sold, furnished or supplied by the Commission System.

(2) To acquire and hold real or personal property necessary or convenient for its purposes;

(3) To sell, lease or otherwise dispose of any personal or real property or rights, easements or estates therein deemed by the Commission not necessary for its purposes;

(4) To purchase, construct or otherwise acquire, maintain, repair and operate, or cause to be repaired, maintained and operated a nuclear generating plant or plants at a location or locations to be determined by the Commission, together with a system of extra high voltage transmission lines as may be required to deliver the power from such plant or plants to load centers within the State, and to enable inter-connection of such plants and inter-connections with other electric utility systems, both publicly and privately owned, within or without the State, including such systems in Canada and any of the Provinces therein, together with substations, transformers and other equipment and accessories as may be necessary or convenient for the delivery of power to such systems; to purchase, construct or otherwise acquire, maintain, repair and operate, or cause to be repaired, maintained and operated such additional power plants as may be deemed necessary to supplement the power generated by the atomic energy plant or plants referred to above, and to provide additional power required as a result of load growth and increased demand for power from the Commission System;

(5) To apply to any Federal or state board, agency or commission having authority to make or issue rulings, licenses, orders or decisions deemed by the Commission to be necessary or convenient to enable the Commission to

perform the powers herein conferred upon the Commission;

(6) To acquire by the exercise of the power of eminent domain any lands, property, rights, rights-of-way, franchises, easements and other property, including public lands, parks, playgrounds, reservations, highways or parkways, or parts thereof or rights therein, or of any person, copartnership, association, railroad or any other corporation, or of any municipality, county or other political subdivision as to such property owned by them, whenever the Commission cannot agree on the terms of purchase or settlement with such public agencies or other owners because of the incapacity of such owners, or because of the inability to agree on the compensation to be paid or other terms of settlement or purchase, or because such owners are non-residents of the State, or are unknown, or are unable to convey valid title to such property; provided, however, that the Commission shall not have power to condemn any generating, transmission or distribution facilities of any publicly, cooperatively or privately owned electric utility system, except easements for rights-of-way for the construction of transmission lines by the Commission. Title to property acquired hereunder shall be taken in the name of the Commission, and such proceedings shall be instituted and conducted in accordance with, and subject to the provisions of, Chapter 263 of Title 35 Maine Revised Statutes, and the Commission shall pay the costs and expenses of such proceedings as a part of the cost of construction or acquisition of the property so acquired as a part of the cost of acquisition of the Project in connection with which such proceedings were instituted.

The acquisition of any property by the Commission by condemnation or by the exercise of the power of eminent domain is hereby declared to be for a public use of such property.

(7) To make and enter into all contracts and agreements necessary or incidental to the performance of its duties and the execution of its powers under this Act, including (a) contracts for the purchase, sale and exchange of power and energy with the United States of America or any instrumentality or agency of the United States of America; (b) contracts for the purchase, sale or exchange of power and energy with Canada and any of its Provinces; (c) contracts for the purchase, sale or exchange of power and energy with the State or any of its agencies or instrumentalities, municipalities, public corporations or public bodies within or without the State; (d) contracts for the sale or exchange of power and energy with electric utility systems, either privately, cooperatively or publicly owned, within and without the State; and (e) contracts for the sale of power and energy to private corporations, partnerships and associations for industrial use within and without the State; provided, however, that the Commission shall have no power to engage in the general distribution of electric power and energy at retail to consumers within the State.

(8) To apply for and accept grants or loans and the cooperation of the United States of America or any agency thereof, or the State or any of its agencies or instrumentalities, for the purpose of purchasing, constructing or acquiring the Commission System and the operation, management and financing thereof, and to do any and all things necessary to obtain such aid and cooperation;

(9) To fix, establish, revise, maintain, charge and collect rates or charges for electric power and energy and all other services, facilities and commodities sold, furnished or supplied by the Commission;

(10) To employ a general manager or executive director and such assistants, agents and employees, engineering, architectural and construction supervisors, inspectors, trustees, depositaries, paying agents, attorneys and such other employees as it shall deem necessary or desirable to properly perform the duties imposed on the Commission by this Act, and to fix their compensation;

(11) To enter upon any lands, waters and premises for the purpose of making such surveys, soundings, borings, and examinations as the Commission may deem necessary or convenient in the exercise of its powers, and such entry shall not be deemed a trespass, nor shall an entry for such purposes be deemed an entry under any condemnation proceedings; provided, however, the Commission shall pay any actual damage resulting to such lands, water and premises as a result of such entry and activities;

(12) To borrow money and issue bonds, notes, certificates or other evidences of indebtedness for any of its purposes as provided in this Act, payable solely from the Revenues pledged for the payment of such bonds, notes, certificates or other evidences of indebtedness; and

(13) To do all other acts or things necessary or convenient to carry out the powers expressly granted in this Act.

Section 5. Issuance of Revenue Bonds. The Commission is hereby authorized to provide by resolution for the issuance from time to time of Revenue Bonds of the Commission for the purpose of paying all or any part of the cost of the Commission System or any Project or portion of such System. The principal of and interest on such bonds shall be payable solely from the Revenues and other available moneys of the Commission pledged for such payment. The bonds of each issue or series shall be dated, shall bear interest at such rate or rates not exceeding six per centum (6%) per annum, shall mature at such time or times not exceeding fifty years from the date or dates thereof, as may be determined by the Commission and may contain provisions reserving the right of the Commission to redeem such bonds before maturity at such price or prices and upon such terms and conditions as may be fixed by the Commission in the resolution authorizing such bonds. Such bonds may be issued in coupon or registered from, or both, as prescribed by the Commission, and provisions may be made for the registration of coupon bonds as to principal only or as to both principal and interest and for the reconversion of registered bonds into coupon bonds. Such bonds may be issued in any denomination or denominations and may be made payable at any bank or trust company within or without the State as the Commission may determine. Such bonds and the coupons attached to coupon bonds shall be signed in such manner either manually or by facsimile signature as shall be determined by the Commission, and sealed with the seal of the Commission or a facsimile thereof. In case any officer whose signature or facsimile thereof shall appear on any bonds or coupons shall cease to be such officer before the delivery of such bonds, such signature or such facsimile

signature shall nevertheless be valid and sufficient for all purposes, the same as if such officer or officers had remained in office until the delivery thereof. The Commission may sell such bonds in such manner either at public or private sale and for such price or prices as the Commission may determine, but no such sale shall be made at a price so low as to require the payment of interest on the money received therefrom at more than six per centum per annum, computed with relation to the absolute maturity of the bonds in accordance with standard tables of bond values, excluding, however, from such computation the amount of any premium to be paid on the redemption of any bonds prior to maturity. Prior to the preparation of definitive bonds, the Commission may, under like restrictions, issue interim receipts or temporary bonds, with or without coupons, exchangeable for definitive bonds when such bonds shall have been executed and are available for delivery. The Commission may also provide for the replacement of any bonds which shall have become mutilated or shall be destroyed or lost.

Revenue Bonds issued under the provisions of this Act shall not be deemed to constitute a debt of the State or of any political subdivision or instrumentality thereof, but shall be obligations of the Commission only and payable solely from the funds provided for the payment thereof from the Revenues and other available moneys of the Commission.

Section 6. Rates and Charges. Whenever the Commission shall have constructed or otherwise acquired any part of the Commission System and has issued Revenue Bonds for such purpose, the Commission shall fix, revise, charge and collect fees, tolls, rents, rates and other charges for electric power and energy

and all other services, facilities and commodities sold, furnished or supplied by the Commission from such System and the different parts or sections thereof, sufficient, together with any other moneys made available and used for that purpose, to pay the principal of and interest on such bonds, together with reserves for such purposes, and to maintain and operate such System and to keep the same in good condition and repair. Such fees, rates and other charges shall not be subject to supervision or regulation by any commission, board, bureau or agency of the State or of any municipality, county or other political subdivision of the State, and all revenues, when collected, and the proceeds from the sale of Revenue Bonds, shall be held by the Commission in trust for the benefit of the holders of bonds of the Commission issued for the construction or acquisition of the Commission System and for the proper maintaining, operating and repairing of the Commission System.

Section 7. Refunding Bonds. The Commission is hereby authorized by resolution to provide for the issuance of refunding Revenue Bonds with which to refund outstanding Revenue Bonds or any issue or series of such outstanding bonds, which refunding Revenue Bonds may be issued at or before the maturity or redemption date of the bonds to be refunded, and to include different issues or series of such outstanding Revenue Bonds by a single issue of refunding Revenue Bonds, and to issue refunding Revenue Bonds to pay any redemption premium and interest to accrue and become payable on the outstanding Revenue Bonds being refunded to the date of payment or redemption, and to establish reserves for such refunding Revenue Bonds. Such refunding Revenue Bonds shall be payable solely from all or that portion of the revenues of the Commission System pledged to the

payment thereof in the bond resolution pursuant to which said bonds were issued. Such refunding Revenue Bonds may, in the discretion of the Commission, be exchanged at par for the Revenue Bonds which are being refunded, or may be sold at public or private sale in such manner and at such price or prices as the Commission shall deem for the best interests of the Commission, but no such sale shall be made at a price so low as to require the payment of interest on the money received therefor at more than six per centum per annum, computed with relation to the absolute maturity of the Revenue Bonds in accordance with standard tables of bond values, excluding, however, from such computation the amount of any premium to be paid on the redemption of any bonds prior to maturity, and may be issued and delivered at any time prior to the date of redemption or maturity date of the bonds to be refunded as the Commission determines to be in the best interests of the Commission. The interest rate or rates on refunding Revenue Bonds shall not be limited by the interest rate or rates borne by any of the Revenue Bonds to be refunded thereby. The proceeds derived from the sale of refunding Revenue Bonds issued under this Act may be invested in obligations of or guaranteed by the United States Government pending the application of such proceeds to the purpose for which such refunding Revenue Bonds have been issued, and to further secure such refunding Revenue Bonds the Commission may contract with the purchasers thereof with respect to the safekeeping and application of the proceeds thereof and the safekeeping and application of the earnings of such investments. The determination of the Commission with respect to the financial soundness and advantage of the issuance and delivery of refunding Revenue Bonds authorized under this Act shall be conclusive, but nothing herein contained shall require the holders

of any outstanding Revenue Bonds being refunded to accept payment thereof otherwise than as provided in said outstanding Revenue Bonds.

Section 8. Trust Agreement. In the discretion of the Commission any Revenue Bonds issued under the provisions of this Act may be secured by a trust agreement or indenture by and between the Commission and a corporate trustee, which may be any trust company or bank having the powers of a trust company within or without the State to be selected by the Commission in such manner as it may elect. Such trust agreement or the resolution providing for the issuance of such bonds may pledge or assign all or any portion of the Revenues to be received by the Commission from the ownership and operation of the Commission System; but shall not convey or mortgage any Commission System or any part thereof. It shall be lawful for any bank or trust company incorporated under the laws of this State which may act as depositary of the proceeds of Revenue Bonds or of Revenues to furnish such indemnifying bonds or to pledge such securities as may be required by the Commission. Any such resolution, trust agreement or indenture may set forth the rights and remedies of the bondholders and of the trustee; and may restrict the individual right of action by bondholders. In addition to the foregoing, any such resolution, trust agreement or indenture may contain such other provisions as the Commission may deem reasonable and proper for the security of the bondholders. All expenses incurred in carrying out the provisions of such trust agreement or resolution may be treated as a part of the cost of the operation of the Commission System or portion thereof.

Section 9. Security for Revenue Bonds. All or any portion of the Revenues derived from the ownership and operation of Commission System, as may be provided

for in the resolution authorizing the issuance of Revenue Bonds or in the trust agreement or indenture securing the same, may be pledged to, and charged with, the payment of the principal of and the interest on such bonds as the same shall become due, and the redemption price or the purchase price of such bonds retired by call or purchase as therein provided. Such pledge shall be valid and binding from the time when the pledge is made; the revenues or other moneys so pledged and thereafter received by the Commission shall immediately be subject to the lien of such pledge without any physical delivery thereof or further act, and the lien of any such pledge shall be valid and binding as against all parties having claims of any kind in tort, contract or otherwise against the Commission, irrespective of whether such parties have notice thereof. Neither the resolution nor any trust agreement nor indenture by which a pledge is created need be filed or recorded except in the records of the Commission.

Section 10. Convenants to Secure Bonds. Any resolution, trust agreement or indenture authorizing the issuance of Revenue Bonds of the Commission may, for the benefit and security of the holders from time to time of such bonds, contain covenants by the Commission for said purpose, including convenants as to, among other things:

(a) The operation, maintenance and repair of the Commission System;

(b) The purpose or purposes to which the proceeds of the sale of such bonds may be applied and the use and disposition thereof;

(c) The use and disposition of the Revenues of the Commission derived from the ownership or operation of Commission System and additions, betterments and extensions thereof, including the investment thereof and

the creation and maintenance of reserve funds and funds for working capital and all renewals and replacements to Commission System;

(d) The amount, if any, of additional Revenue Bonds payable from such Revenues which may be issued and the terms and conditions on which such Additional Revenue Bonds may be issued;

(e) The fixing, maintaining, collection and deposit of rates and other charges for all the services sold, furnished or supplied by the Commission System;

(f) The operation, maintenance, repair, management, accounting and auditing of the Commission.

(g) Limitations upon the right of the Commission to dispose of the Commission System or any part thereof without providing for the payment of the outstanding Revenue Bonds;

(h) The appointment of trustees, depositaries and paying agents within or without the State to receive, hold, disburse, invest or reinvest the proceeds derived from the sale of Revenue Bonds and all or any part of the Revenues derived by the Commission from the operation, ownership and management of the Commission System; and

(i) Such other convenants and agreements as may be determined necessary in the discretion of the Commission to advantageously market the Revenue Bonds of the Commission.

Section 11. Revenue Bonds Eligible for Investment. Revenue Bonds issued by the Commission under the provisions of this Act are hereby made securities in which all public officers and public bodies of the State and its political subdivisions,

all insurance companies, trust companies, banks, banking associations, investment companies, executors, administrators, trustees and other fiduciaries may properly and legally invest funds, including capital, in their control or belonging to them. Such bonds are also hereby made securities which may properly and legally be deposited with and received by any State or municipal officer or any agency or political subdivision of the State for any purpose for which the deposit of bonds or obligations is now or may hereafter be authorized by law.

Section 12. Authority Obligations to be Negotiable Instruments - Enforcement of Bonds. Notwithstanding the provisions of this Act, or any provisions of the laws of the State, and any recitals in any Revenue Bonds, or any other obligations issued under the provisions of this Act, all such Revenue bonds, or other obligations shall be deemed to be negotiable instruments under the laws of this State.

Section 13. Contract with Bondholders. The provisions of this Act, and of any resolution or resolutions or indentures providing for the issuance and security of any Revenue Bonds, or other obligations issued as herein set forth, shall constitute a contract with the holder or holders of any such Revenue Bonds, or other obligations, and the agreements and convenants of the Commission under this Act and under any such resolution, resolutions or indentures shall be enforceable by any holder or holders of Revenue Bonds, or other obligations issued under the provisions of this Act and any representative of such holder or holders, and any trustee appointed under the bond resolution and authorized so to do may, by suit, action, injunction, mandamus or other proceeding issued by a court of

competent jurisdiction, enforce any and all rights of such holders under the laws of the State or granted by this Act and in any such bond resolution or indenture, and may compel performance of all duties required to be performed by this Act and by such bond resolutions or indenture by the Commission or by any officer or agent thereof, including the fixing, charging and collecting of rates and other charges for the services sold, furnished or supplied by the Commission System.

Section 14. Exemption from Taxation. All property, real and personal, and all rights and interests therein, the income of the Commission, the Revenue Bonds and the interest thereon, and the transfer thereof and any profit made on the sale thereof, shall at all times be free from taxation or assessment by the State or by any municipality, county or other political subdivision thereof; provided, however, that the Commission shall pay to the general fund of the State in lieu of taxes, within sixty days after the close of each fiscal year of the Commission, an amount equal to ten per cent (10%) of the gross revenues received by the Commission from the sale of power and energy during the preceding fiscal year.

In order that the counties, municipalities and other political subdivisions of the State having power to levy ad valorem taxes shall not suffer the loss of revenues through the acquisition of taxable property by the Commission, the State Treasurer shall, from the moneys paid into the general fund as aforesaid, for so long as the Commission is the owner of such property, pay annually to the counties, municipalities and other political subdivisions in which such property is located, sums equal to the amounts which the counties, municipalities and other political subdivisions received from the taxation from such property from the person, firm or corporation owning same during the year immediately preceding the purchase or

acquisition of such property. Seventy-five per cent (75%) of the balance of such moneys remaining after making the payments as aforesaid is hereby dedicated to, and shall be set aside and used solely for the support of, elementary and secondary education in the State, including the construction of school buildings and the furnishing and equipping of same.

Section 15. Powers of State Agencies. Any municipal corporation, county or other political subdivision of the State, and any agency or instrumentality of the State, are hereby authorized and empowered to enter into and perform contracts or agreements with the Commission providing for furnishing to the Commission any one or more of the following cooperative undertakings or any combination thereof:

(a) The preparation, acquisition, loan or exchange of surveys, engineering data and other technical reports, studies and plans;

(b) The providing of engineering, planning and other professional and technical services, labor or other things of value;

(c) The construction in whole or in part of any works or facilities to facilitate the construction of the Commission System and the purchase, sale or exchange of power and energy with said System;

(d) The providing of funds in lump sums or installments to assist in paying the cost of any part of the Commission System or the operation and maintenance thereof;

(e) The acquisition and transfer to the Commission of land easements, rights-of-way or other property useful in the construction, operation and maintenance of the Commission System; and

(f) The purchase, sale or exchange of power and energy with the Commission.

Section 16. Consent to Use State Lands. The State hereby consents, subject to the approval of the Governor by and with the advice and consent of the Council, to the use by the Commission of any lands or property owned by the State, including public highways and lands lying under water, which are deemed by the Commission to be necessary or convenient for the construction, maintenance and operation of the Commission System.

Section 17. Miscellaneous

(a) Any money set aside for the payment of the principal of or interest on any Revenue Bonds issued by the Commission not claimed within two years from the day the principal of such bonds is due by maturity or by call for redemption shall be paid into the treasury of the State. No interest shall accrue on such principal or interest from the day the same is due as aforesaid. The Controller of the State shall keep an account of all money thus paid into the treasury, and it shall be paid to the individual copartnership, association or corporation entitled thereto upon satisfactory proof that such individual, copartnership, association or corporation is so entitled to such money. If the claim so presented is rejected by the Controller, the claimant may proceed against the Controller for recovery in the Superior Court of Kennebec County in the City of Augusta. An appeal from the judgment of the court shall lie to the Law Court as in actions at law, and all laws and rules relating to practice and procedure in actions at law shall apply to proceedings authorized hereunder. No such proceedings shall be filed after ten years from the day the principal of or interest on such bonds is due as aforesaid; provided, if the individual having such claim is

an infant or insane person or is imprisoned at such due date, such proceedings may be filed within five years after the removal of such disability, notwithstanding the fact that such ten year period shall have expired.

(b) All actions at law and suits in equity and other proceedings, actions and suits against the Commission, or any other person, firm or corporation, growing out of the construction, maintenance, repair, operation and use of any Commission System, or growing out of any other circumstances, events or causes in connection therewith, unless otherwise provided herein, shall be brought and conducted in the court or courts having jurisdiction of such actions, suits and proceedings in Kennebec County, in the City of Augusta, and jurisdiction is hereby conferred on such court or courts for that purpose. All such actions, suits and proceedings on behalf of the Commission shall be brought and conducted in the Superior Court of Kennebec County in the City of Augusta, except as otherwise provided, and exclusive jurisdiction is hereby conferred on such courts for the purpose.

(c) On or before the ninety days after the close of each fiscal year of the Commission, the Commission shall prepare a report of its activities for the preceding fiscal year and shall file a copy thereof with the Governor and the Legislature. Each such report shall set forth an operating and financial statement covering the Commission's operations during the period covered by such report. The Commission shall cause an audit of its books and accounts to be made at least once in each year by certified public accountants to be selected by the Commission and the cost thereof shall be treated as a part of the cost of construction and operation of the Project.

(d) The records, books and accounts of the Commission shall be subject to examination and inspection by duly authorized representatives of the Governor or of the Legislature, and any bondholder or bondholders, at any reasonable time, provided the business of the Commission is not unduly interrupted or interfered with thereby.

(e) Any member, agent or employee of the Commission who contracts with the Commission or is interested, either directly or indirectly other than as a holder of a security interest in the contracting corporation, in any contract with the Commission or in the sale of any property, either real or personal, to the Commission shall be guilty of a misdemeanor and shall be subject to a fine of not more than one thousand dollars or imprisonment in jail for not more than 11 months, either or both. Exclusive jurisdiction for the trial of such misdemeanors is hereby conferred upon the District Courts; provided, that the term "contract" as used herein, shall not be held to include the depositing of funds in, or the borrowing of funds from, or the serving as agent or trustee by, any bank in which any member, agent or employee of the Commission may be a director, officer or employee or have a security interest, or the purchase of services from, or other transactions in the ordinary course of business with, public service corporations.

Section 18. Appropriation for Preliminary Expenses. There is hereby appropriated from the general fund of the State to be expended by the Commission for the payment of preliminary expenses and the preparation of plans for the initial Projects of the Commission and engineering and legal services, the sum of $50,000 or so much thereof as may be necessary for such purposes, all sums withdrawn as aforesaid to be repaid into the general fund by the Commission from the proceeds

received from the sale of the first Revenue Bonds issued to pay the cost of construction of said Project.

Section 19. Construction - Inconsistent Laws. This Act shall be liberally construed to effectuate the purposes hereof, and the foregoing sections of this Act shall be deemed to provide an additional and alternative method of doing the things authorized thereby, and shall be regarded as supplemental and additional to powers that may be conferred upon the Commission by other provisions of law; provided, however, the issuance of Revenue Bonds under the provisions of this Act need not comply with the requirements of any other law applicable to the issuance of bonds, and, except as otherwise expressly provided in this Act, none of the powers granted to the Commission under the provisions of this Act shall be subject to the supervision or regulation or require the approval or consent of any commission, board, bureau, official or agency of the State.

Section 20. Constitutional Construction. The provisions of this Act are severable, and if any of its provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the other provisions of this Act.

Section 21. Inconsistent Laws Inapplicable. All other general or special laws, inconsistent with any provision of this Act are hereby declared to be inapplicable to the provisions of this Act and to any project constructed by the Commission pursuant to this Act.

A COPY OF THE
SUMMARY AND CONCLUSIONS ONLY

ENGINEERING REPORT

ELECTRIC POWER

REQUIREMENTS AND SUPPLY

STATE OF MAINE

STUDY COMMITTEE
ON
POWER

R. W. BECK AND ASSOCIATES
SEATTLE, WASHINGTON

INTRODUCTION

The following pages have been reproduced from the R. W. Beck and Associates' study of Maine's Electric Power Requirements and Supply by the Maine Legislative Power Study Committee for the convenience of those who are interested only in the summary of the complete report.

A number of copies of the full 120-page report have been deposited with the Maine State Library and may be obtained from that agency.

SUMMARY AND CONCLUSIONS

Introduction

Electric power has become a major factor in economic growth and development throughout this nation. Regions which enjoy abundant supplies of low-cost power are similarly enjoying a healthy expansion in industry and commerce which, in turn, promotes the general welfare of the people. The dominant role of electricity in an affluent economy is demonstrated in the growth which has occurred during the last decade in the southeastern and northwestern United States.

The State of Maine, with its abundance of natural resources, holds virtually unlimited opportunities for development. The fact that this potential has not been fully achieved is due, in part, to the high cost of electric power. The cost of electric power in Maine is among the highest in the United States and has undoubtedly served to retard the growth of the State.

Motivated by the belief that there should be full development of the resources of the State of Maine, and by the necessity for low-cost electric power, the Legislature, on February 1, 1966, created, by its Order, a special Committee of the Legislature to study the general power requirements of the State of Maine and the possible method of meeting those requirements, to engage consultants and to take such other actions as it deems appropriate for its purposes.

Pursuant to such authority, the Committee, on June 17, 1966, entered into an Agreement with R. W. Beck and Associates, Analytical and Consulting Engineers, to undertake studies and related services, including consultation with the Committee, which are required to assist the Committee in carrying out its duties and responsibilities as set forth in the Order, the text of which is included as Appendix A to this report.

Purpose and Scope of Report

This report is directed to the concept of comprehensive development of electric power supply and transmission to most economically and adequately serve the present and future needs of the people of the State of Maine, and to serve as a basis for stimulating economic and industrial growth. It is preliminary in nature and broad in scope to provide basic data and information which can serve as a basis for policy decisions and action.

It is not possible, nor is it intended in this report, to define, in extensive or specific detail, the ultimate system of power supply and transmission which will best serve the future needs of the State. Such detail may depend upon, or be influenced by, legislative action or authorities not yet defined.

The scope of the studies presented herein includes, in general, a study of the present and future power requirements of the State, an evaluation of the present sources of power supply, and the development of alternative plans of generation and transmission which may be constructed to serve present and future needs. The detailed scope of service, as set forth in the agreement between the Committee and our Firm, is included as Appendix B to the body of this report.

Consistent with the objectives set forth in the Order pursuant to which this report has been prepared, our studies have been predicated on the development of future power resources and transmission facilities in coordination with existing facilities to achieve the most effective and economical power supply to serve future loads.

Our studies, which are preliminary in nature, include the determination of the types and sizes of generating and transmission facilities which will most economically serve the future power requirements of the State, preliminary estimates of the cost of constructing the facilities, and the annual costs and resultant cost of power under each of the alternative plans studied (1) if those facilities were owned and operated by an agency of the State of Maine, and (2) if the facilities were owned and operated by a private utility organization. Of necessity, the alternative plans of development, construction cost estimates and estimates of annual cost are based on broad assumptions which must be refined or modified through detailed study, to be consistent with the final authorities or conditions prior to their formal adoption and implementation.

Summary

The electric power requirements of the State of Maine are served by three major private utility companies and a number of municipal, cooperative and private utility systems. In addition, and contrary to the general practice in other areas, industry continues to supply large quantities of power to serve its own needs.

The generally isolated and fragmental manner in which both utilities and industries operate in Maine has contributed to the installation of numerous small generating plants. These small units do not provide the economies of large units which are being used extensively in other areas, and the consequence has been high-cost power.

Although major strides have been taken during the very recent years to construct larger units and to develop more extensive transmission systems, the State faces serious deficiencies in its power supply during the years immediately ahead. It will be necessary to import major quantities of power or to restrict or inhibit economic growth.

Existing Power Resources

The facilities now serving the power requirements in Maine consist of approximately 1,398,500 kilowats of thermal, hydroelectric and internal-combustion generating capacity, of which 935,068 kilowatts, or 66.9 percent, is owned by utilities and 463,432 kilowatts, or 33.1 percent, is owned by industry. During 1965, the peak demand from all sources was approximately 1,211,000 kilowatts, or 86.6 percent of the installed nameplate capacity of all generating equipment in the State. Considering that a substantial part of the present generating capacity consists of small steam and internal-combustion (diesel) units, the adequacy of present sources to meet present loads can only be considered as marginal.

During 1965, these sources generated approximately 5,985,209,000 kilowatt-hours of energy, which was 97.4 percent of the State's total energy requirements. The balance was purchased from outside the State.

Due in large part to the relative isolation of the various systems, the cost of power supply varies materially across the State. It is not possible to determine accurately the total cost of power supply; however, based on data taken from reports prepared by the various generating utilities, the average annual cost of operation and maintenance of generating facilities for 1965, EXCLUSIVE of the cost of ownership, taxes, and similar costs, was as follows:

Central Maine Power Company . . .	0.36¢ per kwh
Bangor Hydro-Electric Company *.	0.44¢ per kwh
Maine Public Service Company . . .	0.95¢ per kwh
Total	0.40¢ per kwh

* - Includes Eastern Maine Electric Cooperative.

The foregoing may be compared to operation and maintenance costs in the order of 0.25 cents per kilowatt-hour for a modern steam-electric plant. Similarly, the cost of ownership, taxes and related costs could be expected to be proportionately higher than for a modern, large generating plant.

Power Requirements

The total peak-capacity requirment for the State of Maine was estimated to be 1,425,000 kilowatts in 1965. The information available indicates that the load has been growing since 1961 at an average rate of 4.3 percent per year. This growth rate is well below the national average growth rate; this, we believe, is largely due to the high cost of power in Maine.

A projection of the total load, based on existing trends, has been reviewed and found to be very conservative when consideration is given to the effect of availability of low-cost power in large quantities from a large thermal installation. The response to this lower-cost power will, we believe, be an increase in the power consumption of all types of customers.

The major effect of low-cost power in the State will be a changeover in industry from self-generation to purchase of power. This changeover will probably include higher usage of power by industry and the retirement of much of the industry-owned high-cost thermal generating facilities.

The historical and projected capacity and energy requirements for the State, which we have estimated and used in this report, are as follows:

Year	Energy Requirements (Kilowatt-hours) (000)	Capacity Requirements* (Kilowatts)
1961	5,060,000	1,206,000
1962	5,291,000	1,259,000
1963	5,510,000	1,292,000
1964	5,773,000	1,347,000
1965	6,154,000	1,425,000
1970	7,807,000	1,805,000
1975	9,594,000	2,302,000
1980	11,755,000	2,946,000
1985	14,377,000	3,771,000

* - Includes 15 percent reserve capacity requirement.

Potential Resources

We have studied the power resources which appear to be available to meet the long-range power requirements of the State and those which may be available to meet the large deficiency in generating capacity expected to exist by 1972. This review has included the information available on existing hydroelectric sites in Maine, including the Dickey-Lincoln School Project and the possible development of pumped storage. In view of the magnitude of the future requirements, particularly the need for a large quantity of low-cost energy, the major emphasis in our studies has been dedicated to a review of the costs associated with nuclear and conventional fossil fuel (coal, oil or gas) thermal generating stations located within the State.

On the basis of our studies and other available information, there appears to be little doubt that power resource plans for the State should include a major nuclear generating plant at an early date. Advances in the field of nuclear power during recent years have developed the nuclear generation of electric energy to a point where, we believe, it will result in the lowest-cost major generating project available to meet the projected power requirements of Maine.

Our studies also indicate that a pumped-storage project of 500,000 kilowatts, if development costs are reasonable, could be a good source of peaking power for the State if developed jointly with a large nuclear plant.

Alternative Plans of Development

The alternative plans for future electric power supply for the State of Maine which have been investigated pursuant to this report have been developed with a view to presenting relative values which can serve as a guide to the Committee and other Legislative bodies of the State in determining future legislative actions which may be appropriate to ensure the best and most economical source of power supply for the State of Maine.

In a preliminary report such as this, it is not practical to develop detailed data on all of the potential alternatives because the plan or plans ultimately adopted must take into consideration factors and decisions which reflect the conditions, legal authorities or limitations of the agency ultimately charged with the responsibility for implementing those plans. However, with the assumptions and criteria adopted herein, the plans of power supply presented in this report do, in our opinion, represent the most feasible and economical sources available to meet the future power needs of the State.

In order to evaluate the various alternative sources and combinations of sources, three basic plans were investigated. Each plan includes an EHV (extra-high-voltage) transmission system to deliver the power from the generating plant or source to the load centers of the State and to interchange reserve capacity and secondary energy through the proposed power grids of New England and Canada. The plans studied herein represent three concepts of development, and their order of presentation is in no way indicative of their order of preference. The desired order of preference must be dictated by the economic results which are subsequently presented.

Plan A - Total Nuclear - Plan A. assumes the construction of two 700,000-kilowatt nuclear generating units in a plant located along the central coastal area of Maine. The first unit would be completed and available to serve the State's power requirements by 1972, and the second unit would become available in 1974. The initial development would be adequate to serve the expected loads of the State until approximately 1979, when a third nuclear generating station with a capacity of approximately 1,000,000 kilowatts would be constructed.

Plan A includes an EHV transmission system which initially would connect the generating plant to the load centers in the central and southern portions of the State and the New England power grid. Subsequent additions to the transmission system include an EHV transmission line into the northern portion of the State.

Plan B - Base-Load Nuclear Plus 500,000 Kilowatts of Peaking Capacity - Plan B assumes that up to 500,000 kilowatts of peaking capacity would be available, either through purchase or through construction of hydroelectric peaking resources, to supplement and coordinate with a base-load nuclear plant. We have not, as a part of our investigations under this plan, attempted to determine specifically the source or sources for such peaking capacity; however, our investigations indicate that these three possible alternatives may be available:

1. A pumped-storage development.
2. Peaking capacity from New Brunswick of up to 500,000 kilowatts.
3. Peaking capacity from lower New England.

Plan B assumes, in addition to the peaking sources outlined above, construction of a single-unit, 700,000-kilowatt nuclear generating station as the first increment of the base power supply. This initial unit would be located along the central coastal area of Maine and would be available for full commercial operation by 1972. The nuclear plant, together with the 500,000 kilowatts of peaking capacity, is assumed to be adequate to meet the expected loads until approximately 1978, when a second nuclear unit with a capacity of approximately 1,000,000 kilowatts would be installed at the plant site.

Plan B. includes an EHV transmission system which would connect the generating plant to the load centers of the State and interconnection points with both New England and New Brunswick power grids.

Plan C - Base-Load Nuclear Plus Dickey-Lincoln School Project - Plan C assumes the construction of the Dickey-Lincoln School Project, as authorized by the U. S. Congress and presently under study for construction by the U. S. Army Corps of Engineers. We have assumed that approximately 100,000 kilowatts of "load factor" power and additional amounts of peaking capacity, up to approximately 400,000 kilowatts, could be made available in the State of Maine from this project to supplement other sources which could be developed within the State. For purposes of our studies, we have assumed that power from this source would be available by 1975.

Under Plan C, a single-unit, 1,000,000-kilowatt nuclear plant would be located along the central coastal area of Maine as the first increment of generating capacity. This unit is assumed to be constructed and in full operation by 1972. The combination of a 1,000,000-kilowatt nuclear plant and 500,000 kilowatts of capacity from the Dickey-Lincoln School Project would be adequate to meet the projected loads of the State of Maine until approximately 1980, when it is assumed, for purposes of comparability, that a second nuclear generating unit with a capacity of approximately 700,000 kilowatts of capacity would be constructed.

Plan C includes an EHV transmission system which would connect the generating plant to the load centers in the southern and northern portions of the State, and, in cooperation with assumed Federal transmission construction, provide for the exchange of capacity with lower New England. This transmission system also includes transmission lines to northern Maine, where facilities could be constructed to interconnect with New Brunswick and Quebec.

The advantages of coordinating the transmission facilities for the Dickey-Lincoln School Project with those of the State are, we believe, substantial. Such coordination would result in reducing the initial total capital cost for transmission facilities for the two projects and would minimize the annual costs of owning and operating the transmission system.

COMPARISON OF PLANS

Capital Costs

The following table presents in summary form the installed nuclear generation, the miles of EHV transmission line, the total construction costs and the total project investment required for each plan described above:

	Plan A	Plan B	Plan C
Installed Capacity (kilowatts)	2,400,000	1,700,000	1,700,000
EHV Transmission Lines (circuit miles)	830	765	705
Total Construction Cost (1)			
Initial	$215,200,000	$237,200,000	$246,200,000
Subsequent	266,400,000	190,900,000	171,600,000
Total	$481,600,000	$428,100,000	$417,800,000
Total Project Investment (2)			
State Development	$686,800,000	$523,800,000	$511,300,000
Private Development	$652,700,000	$497,800,000	$485,900,000

(1) - Total construction cost includes the direct cost of construction, engineering cost, indirect costs, sales tax and allowances for contingencies and escalation.

(2) - Total project investment includes total construction cost; funds for working capital; overhead, financing, legal and administrative costs; bond expense; interest during construction; and, for State financing, funds to establish the required bond reserve fund and reserve and contingency fund.

Cost of Power Supply

The true measure of the economics of any plan of power supply development is its effect on the cost of power supply to the State. Such a comparison must take into account the cost of existing resources, purchases from or sales to utilities outside the State, and the cost of the new facilities. These costs may vary between plans from year to year; therefore, realistic comparisons must cover a sufficient span of years to reflect comparable alternatives.

Presented in the following summary is a comparison of the cumulative cost of power supply to the State of Maine for the 14-year period, 1972 through 1985, under the three alternative plans studied. The costs shown herein include the cost of operation and maintenance of existing generating resources, the cost of power purchased from other sources outside the State (other than purchases from the primary sources included in each plan), and the total cost, including the cost of ownership, of the new generation and transmission facilities under each plan. Also shown is a comparison of the cost of the new generation and transmission facilities if developed by an agency of the State with the cost thereof if the facilities are constructed by a private utility company.

Comparative Cost of Power Supply to the State of Maine
Cumulative Annual Costs - 1972 through 1985(1)

	Plan A	Plan B	Plan C
Existing Resources:			
Hydroelectric	$ 64,933,000	$ 64,933,000	$ 64,933,000
Steam	28,469,000	88,465,000	55,306,000
Internal-Combustion	1,779,000	3,414,000	4,113,000
Total	$ 95,181,000	$ 156,812,000	$ 124,352,000
Purchased Power	5,447,000	11,483,000	13,712,000
New Generation and Transmission Facilities (2):			
Private Development	1,174,075,000	920,006,000	866,738,000
State Development	861,014,000	671,724,000	635,790,000
Less Credit for Sale of Excess Nuclear Energy(3)	(151,869,000)	(41,364,000)	(43,543,000)
Total Comparative Cost of Power Supply to State of Maine:			
Private Development	$1,122,834,000	$1,046,937,000	$ 961,259,000
State Development	809,773,000	798,655,000	730,311,000
Savings with State Development	$ 313,061,000	$ 248,282,000	$ 230,948,000
Comparative Average Cost per Kilowatt-Hour (Mills)(4):			
Private Development	6.62	6.17	5.67
State Development	4.77	4.71	4.31

(1) - For existing resources, only the cost of operation and maintenance is included. The cost of ownership, including taxes and related items, would be the same under all plans.

(2) - Includes costs of ownership, operation and maintenance of generation and transmission facilities described hereinbefore for each alternative plan and the cost of purchased power from primary sources included in each plan.

(3) - Assumed sale of surplus nuclear energy, generated at average plant factor of 80 percent, at three mills per kilowatt-hour.

(4) - Based on the total of 169,561,000,000 kilowatt-hours which we estimate will be required in Maine during the 14-year period.

Findings and Conclusions

Following are our findings and conclusions which have resulted from the studies and analyses incident to this report:

1. In the usage of electric power and growth in power requirements, the State of Maine has lagged materially behind virtually all other areas of the nation. This is attributable in large part to the high cost paid for electricity in Maine when measured against the cost paid in other areas. Power costs paid by Maine residents rank among the highest paid in any state.

2. The State's vast natural resources offer enormous potential for economic and industrial growth. The extent to which this potential will be realized, and the time when development may occur, will be materially influenced by the availability, or lack, of an abundant supply of electric power at reasonable costs. There is ample evidence in other areas of the nation that low-cost power is a major factor in stimulating economic and industrial growth.

3. Essentially all of the power supply in Maine is owned and operated by three electric utility companies which serve consumers at retail and which also supply at wholesale most of the needs of the several relatively small municipal, cooperative and private utility systems in the State; the Eastern Maine Electric Cooperative, which generates a portion of its requirements and purchases power from the New Brunswick Electric Power Commission, is the principal exception. Industry owns and operates for its own use approximately one-third of the State's total generating capacity -- a very unusual condition which has undoubtedly been motivated in part by the high cost of power supply from the utilities. A major portion of the generating capacity of both the utilities and industry is made up of relatively small generating units, a large number of which are old and inefficient.

4. The present transmission system, which consists of 115-kv and lower-voltage facilities, is not adequate to allow operation of the existing generating plants in the State on a fully coordinated and integrated basis, nor will it adequately serve the near-future loads which may be expected. The facilities now under construction or planned for early development (based on information supplied to us by the major utilities) represent what we consider to be a minimum system of questionable adequacy.

5. Current growth rates can be expected to increase substantially as lower-cost power is made available. Forecasts of power requirements indicate that electric power demands will more than double within the next 15 years and should reach approximately 3.2-million kilowatts by 1985. Large supplies of low-cost power could accelerate growth rates beyond those indicated herein.

The State is faced with an almost immediate shortage of generating capacity within the State to meet expected demands, and by 1972, the time when construction of a major new plant could be completed, an estimated 500,000 kilowatts of additional capacity must be available to the State of Maine if load growth is not to be curtailed.

6. Major new sources of power supply must be developed at an early date. As a result of rapid advances in nuclear technology and due to the high cost of fossil fuels in Maine, the development of a large nuclear generating plant appears to offer the greatest opportunities for low-cost power supply. A large nuclear plant is most efficient and economical if operated in coordination with other sources which provide the necessary "peaking" capacity, either present sources or hydroelectric peaking sources or sources outside the State. Studies and related actions should be initiated soon to investigate such sources, not only as a complement to a major nuclear plant, but also as a means of making up the expected deficiencies in State resources to serve State loads prior to construction of a major nuclear source.

7. An extra-high-voltage transmission system for the State of Maine will be essential to realizing low-cost power throughout the State. Such a system should be at a voltage of not less than 345 kv and should be planned to interconnect with the EHV transmission systems existing and proposed in lower New England and in Canada. Maine is favorably situated for interconnection with the systems of the provinces of New Brunswick and Quebec and with the major systems of the entire northeastern United States for the exchange, sale and transfer of large blocks of power between regions to the mutual benefit of all concerned. The use of voltages in the 500-kv class appears to offer major advantages, particularly if the inter-regional interconnections can be realized, and the State of Maine should take a leading role in investigating this potential.

8. The three alternative plans which were investigated during the course of our studies represent, within the limits of the assumptions and criteria used in their evaluation, the most economical alternatives for providing low-cost power to serve the present and future requirements of Maine. The final selection and refinement of the plan to be adopted will require detailed study and may depend upon actions or conditions not resolved as of the date of this report. On the basis of the criteria and assumptions used in our studies, we conclude that the lowest-cost power supply to serve the needs of Maine can be obtained through a combination of a large nuclear plant located in the south-central coastal area and a large block of power from the proposed Dickey-Lincoln School Project, together with an EHV transmission system to interconnect those sources with the load centers of the State and with the transmission systems in the neighboring states and provinces. Such a system should be operated in coordination with the existing generating sources within Maine and with those of the neighboring regions. We further conclude that substantial savings, aggregating to the order of $225,000,000 during the period through 1985, can be realized if the facilities are financed and constructed by an agency of the State of Maine. Stated in another way, the cost of power and energy from a large nuclear plant and associated EHV transmission system, if financed, constructed and operated by an agency of the State, would be approximately 26 percent less than the cost if the same facilities were developed by a private utility organization.

Our studies, and the foregoing conclusions, are predicated upon the agency of the State serving primarily in the capacity of providing wholesale power to utilities and, as appropriate, to major industries. If conditions or factors yet to be resolved preclude adoption of the foregoing plan, the alternative plans presented in our report afford benefits which are only slightly lower.