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SITE CERTIFICATION APPLICATION AND ENVIRONMENTAL ANALYSIS

SEMINOLE PLANT UNITS NO. 1 & NO. 2

SEMINOLE ELECTRIC COOPERATIVE, INC.

VOLUME I

SITE CERTIFICATION APPLICATION

AND

ENVIRONMENTAL ANALYSIS

FOR

SEMINOLE PLANT UNITS NO. 1 AND NO. 2

SEMINOLE ELECTRIC COOPERATIVE, INC.

TAMPA, FLORIDA

PREPARED BY

DAMES & MOORE

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August 4, 1978

Mr. Hamilton "Buck" Oven
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Mr. William Dalton
Director - Southeast Area
U.S. Department of Agriculture
Rural Electrification Administration
Washington, D.C. 20250

Gentlemen:

Transmitted with this letter are copies of "Site Certification Application and Environmental Analysis for Seminole Plant Units No. 1 and No. 2".

In compliance with responsibilities under the National Environmental Policy Act, Florida Electric Power Plant Siting Act, and Executive Order 11991: Protection and Enhancement of Environmental Quality, Dames & Moore is pleased to submit a consolidated environmental assessment on behalf of Seminole Electric Cooperative, Inc. in the matter of the licensing of a proposed 1,200 megawatt coal-fired steam electric generating station in northeast Florida.

To coordinate the review of this document, all questions should be directed to:

Mr. Robert W. Claussen, Director of Engineering
Seminole Electric Cooperative, Inc.
2410 East Busch Boulevard
Tampa, Florida 33612
Telephone: (813) 933-7406

As appropriate, in response to questions, this document will be updated by amended pages with instructions to delete and replace original pages.

Completion of the work necessary for the preparation of a document of this size and complexity is a significant accomplishment by many people. Contributions from people outside of Dames & Moore include staff members of Seminole Electric Cooperative, Inc. who provided information concerning their operations, and staff members of Burns and Roe, Inc., the project architect-engineer consultant, who provided information about the plant engineering systems. Guidance concerning the regulatory process provided by many regulatory agencies, both federal and state, are also acknowledged.

We are also indebted to Mr. James J. Miller of Cultural Resources Management, Inc. who conducted the cultural resources survey of the Putnam site. A special acknowledgement is made of the contributions of Mr. Kenneth W. Prest, Jr., President of The Environmental Licensing Group, Inc., who assisted in an untold number of ways throughout the project from development of the Plan of Study through assistance in preparation of the final document.

Internally, within Dames & Moore, scores of people have contributed to this effort. Their work and dedication have not gone unnoticed. Key personnel who have made significant contribution to the project are included herein.

The persons whose technical expertise have provided the substance of this document are as follows:

Technical Specialty	Name
Terrestrial Ecology	Derry Stockbridge Steve Cox
Aquatic Ecology	Wayne S. Lifton Thomas E. Simpson Charles J. Zimmerman
Surface Water Hydrology	William L. Hall
Ground Water Hydrology	F.L. Doyle
Geology/Soils	Ian Watson
Meteorology/Air Quality	James W. Little
Acoustics	Brown Yue
Land Use/Demography	Marvin Smith
Socioeconomics	Robert T. Mott
Transmission Line Study	William T. White

Technical review was provided by the following individuals:

Biology	James B. Knauss
Surface Water Hydrology	Steve H. Blair
Ground Water Hydrology	Porter-C. Knowles
Geology/Soils	Charles P. Gupton
Meteorology/Air Quality	Robert G. Allen
Acoustics	Frederick M. Kessler
Land Use/Demography	William T. White
Socioeconomics	Harry M. Bridgeman
Transmission Line Study	John Matthews

Several key individuals were responsible for final document preparation including coordinating, editing, and production. They are:

Document Coordination	Vicki J. Anderten
Editing	Vicki J. Anderten Andrew Fabian
Word Processing	Pamela Garrett
Technical Illustration	James Corcoran

Dames & Moore appreciates the opportunity to have been able to work closely with Seminole Electric Cooperative, Inc., and participating state and federal agencies throughout the preparation of the document. We feel that the open interactions among participants from the early stages of the proposed project have resulted in a proposal founded on responsible decision consistent with the policy set out in Section 1500.2 of the proposed Council on Environmental Quality Regulations.

We look forward to your review and comments.

Respectfully submitted,

DAMES & MOORE

Vicki J. Anderten

Vicki J. Anderten
Assistant Project Manager

Timothy J. Doyle, P.E.
Project Manager

Hubert B. Visscher
Principal-In-Charge

VJA:TJD:HBV:tr
Enclosures

PERTINENT APPLICANT INFORMATION

Legal Name

Seminole Electric Cooperative, Inc.

Mailing Address

Suite 200, 2410 East Busch Boulevard
Tampa, Florida 33612

Address of Official Headquarters

Same as Above.

Business Entity

The applicant is a generation and transmission cooperative organized and existing as a corporation under the Laws of the State of Florida.

Name and Title of Chief Executive Officers

Vern Eveland, President
Harry Wright, Executive Vice-President and General Manager

Name, Title, Address, and Phone Number of Official Representative Responsible For Obtaining Certification and To Whom Questions Concerning the Application Should Be Addressed

Robert W. Claussen, Director of Engineering
Seminole Electric Cooperative, Inc.
2410 East Busch Boulevard
Tampa, Florida 33612
Telephone Number: (813) 933-7406

Professional Engineer Submitting Application

Robert W. Claussen, Florida Registration Number 20459

Site Location

The preferred site for Seminole Plant Units No. 1 and No. 2 is located in Putnam County, Florida.

Nearest Incorporated City

Palatka, Florida

Latitude and Longitude

The preferred site is located at 29°44'N latitude and 81°38'W longitude.

Coordinates

The Universal Transverse Mercator (UTM) coordinates are:

3289200 North

438800 East

Proposed Nameplate Generating Capacity

Seminole Plant Unit No. 1 will have a nameplate generating capacity of 600 megawatts (MW), and is scheduled for commercial operation in June 1983. Seminole Plant Unit No. 2 will have a nameplate generating capacity of 600 MW, and is scheduled for commercial operation in June 1985.

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NEED FOR POWER

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1.0 NEED FOR POWER
(Prepared by Seminole Electric Cooperative, Inc.)

1.1 THE APPLICANT

Seminole Electric Cooperative, Inc. (Seminole) of Tampa, Florida, is thirty years old as a corporation, but only four years old as an active utility.

Seminole's purpose is to provide reliable electric power at the lowest possible cost to its eleven distribution member systems. This objective is accomplished by generating, transmitting, purchasing, selling, exchanging, etc., electric power and energy, and constructing, owning, leasing, etc., such facilities as required to meet Seminole's stated purpose.

1.1.1 Member Companies

Seminole's eleven distribution cooperative member systems serve almost 300,000 individual meter locations or an estimated 1,000,000 persons, with a system demand in an excess of 1,000 megawatts (MW). Seminole has only approximately 14 MW of self-generation.

The Seminole member cooperatives are as follows:

- Central Florida Electric Coperative, Inc.
  Chiefland, Florida
- Clay Electric Cooperative, Inc.
  Keystone Heights, Florida
- Glades Electric Cooperative, Inc.
  Moore Haven, Florida
- Lee County Electric Cooperative, Inc.
  North Fort Myers, Florida
- Okefenoke Rural Electric Membership Corporation
  Nahunta, Georgia
- Peace River Electric Cooperative, Inc.
  Wauchula, Florida
- Sumter Electric Cooperative, Inc.
  Sumterville, Florida

- Suwannee Valley Electric Cooperative, Inc.
  Live Oak, Florida

- Talquin Electric Cooperative, Inc.
  Quincy, Florida

- Tri-County Electric Cooperative, Inc.
  Madison, Florida

- Withlacoochee River Electric Cooperative, Inc.
  Dade City, Florida

These member systems serve in 47 of the 67 Florida counties, as shown on Figure 1.1-1.

1.1.2 Suppliers

Seminole receives power from six suppliers. Of these six, Florida Power Corporation and Florida Power & Light supply more than 90 percent of the purchased power. This power is purchased through rate tariffs filed with the Federal Energy Regulatory Commission. The remaining power suppliers to Seminole are Tampa Electric Company, Gainesville Regional Utilities Board, Jacksonville Electric Authority, and the Southeastern Electric Power Administration. These remaining power suppliers supply power and energy to Seminole by wholesale power contracts.

Seminole and its member cooperatives own and operate a combined total of approximately 650 miles of 138-, 115-, and 69-kV transmission line. Typically, much of this transmission is radial in nature, from a tap or breaker on the State bulk transmission grid to a member-owned substation. The majority of this transmission is in northeast Florida and belongs to Clay Electric Cooperative, Inc., or is in southwest Florida and belongs to Lee County Electric Cooperative, Inc. Seminole owns approximately 31 miles of 69-kV line from Cedar Key to Otter Creek, and then to Bronson, in Levy County, Florida. In addition to these two lines, Seminole has eight transmission projects, 69 and 115 kV, in various states of design and construction, for a total of approximately 75 miles. These lines will be operated and maintained by the Seminole member served by the line. The transmission required for the proposed two 600-MW, coal-fired units is discussed in Chapter 10.0 of this document.

1.1.3 Operations and Financing

Seminole's Executive Vice President and General Manager implements the policies adopted by the Board of Trustees of Seminole. Seminole's Board of Trustees consists of two voting delegates from each member cooperative, one of whom must be the General Manager, and the other a Trustee. An alternate from each member cooperative also sits on the Board as a non-voting member.

Seminole's staff is responsible to the Executive Vice President and General Manager. Functional responsibilities are broken down into the following areas:

- Engineering
- Project
- Finance and Accounting
- Procurement
- Member and Public Information Services

At this time, Seminole employs twenty-eight professional and non-professional personnel.

Seminole obtains its long-term funds for capital projects primarily by securing guaranteed loans from the Federal Finance Bank. The guaranteed loan is not funded by Federal tax money. These loans are administered by the Rural Electrification Administration and guaranteed to be repaid by the Government if the Mortgagee defaults. These guaranteed loans are similar in form to FHA loans for homes. The interest rate obtained is very similar to an AAA rated First Mortgage Bond sold by a private utility.

Seminole does have other means of financing. In addition to local bank lines of credit, Seminole can obtain funds from the Cooperative Finance Corporation, the Bank for Cooperatives, and from the sales of pollution control bonds in the private bond market.

Seminole operates under By-Laws of Seminole Electric Cooperative, Inc., originally adopted by the membership, December 4, 1974. The members of Seminole entered into a wholesale power contract with Seminole in May and June of 1975. The contract basically indicates that the

member desires to purchase electric power and energy from Seminole and that Seminole agrees to provide such power and energy either by self-generation or purchase. The term of this contract is for not less than 45 years. After 45 years the contract is automatically renewed unless either party provides at least a three year written notice to the other party of its intention to terminate the contract.

Seminole does coordinate the planning needs of the members as well as those member needs with other utilities. Seminole is an active member of the Florida Coordinating Group (FCG) and actively participates on such committees as the Executive Committee, Technical Advisory Group, System Planning Committee, Operating Committee, etc.

Seminole is a generation and transmission cooperative and one of fifty-three such cooperatives in the country. Seminole has a responsibility by contract to provide the power and energy to the distribution system members' points of connection. The distribution system member in turn has the responsibility of delivering that power and energy to its members through a system owned and operated by the distribution system cooperative. It is through the member system that the power ultimately gets to its consumers. In the case of the distribution cooperative, the ultimate consumer elects its Board of Trustees and controls its own system. Seminole, in turn, is controlled by a Board of Trustees elected by its member systems. The investor-owned power systems and many municipally-owned power systems that also serve the same functions, i.e., generation-transmission and distribution, are not totally controlled by the ultimate consumer. The Seminole member distribution cooperatives, Seminole as a generation-transmission cooperative, and the municipals do not pay Federal or State income tax due to their non-profit status. Of course, the investor-owned utilities are subject to Federal and State income tax. The cooperatives, distribution and generation-transmission, and the investor-owned systems pay all other taxes as opposed to the municipal systems, who do not pay such other taxes as property taxes, etc. It should be noted that municipal systems do make a contribution generally, to the "general fund," and this contribution may be used to offset the need for increased taxes.

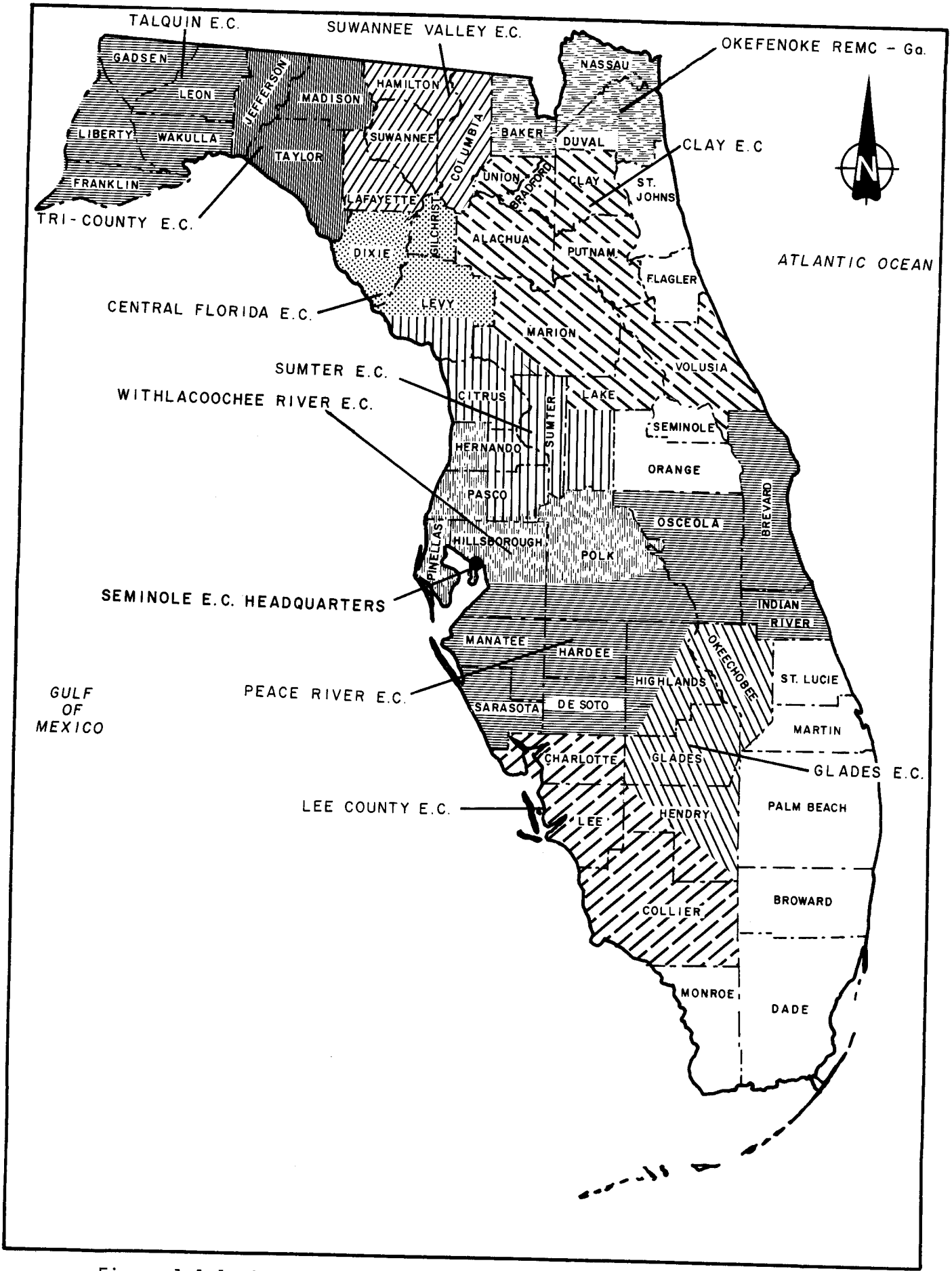

Figure 1.1-1. Seminole Electric Cooperative, Inc., Cooperative Member Systems and Office Headquarters.

1.2 SYSTEM PLANNING

1.2.1 General

Seminole planning process calls first for the development of a load forecast, identified by the Rural Electrification Administration as a Power Requirements Study, which develops the expected demand and energy requirements of each of Seminole's member systems, which in turn, defines the overall load requirements for the Seminole system. The term "system" is underlined due to the fact that Seminole member systems are not directly tied together by a transmission system owned by Seminole, but are in fact radial systems which tap the State of Florida's bulk power supply system owned primarily by the privately owned utilities. Due to the fact the Seminole system is dependent on other systems' transmission, it requires close coordination with these systems. The future will see some changes to the cooperative transmission system due to the proposed plant in Putnam County which will require 230-kV transmission lines to be tied into the bulk power grid in Florida. However, it is not Seminole's intent to duplicate facilities but to jointly plan transmission facilities with the other utilities in Florida, either through direct study with a given utility or through the Florida Coordinating Group.

The second step in the Seminole planning process is to address the future needs of the member systems. The member systems define their needs, new points of delivery, etc., through their own planning studies. Seminole in turn reviews these needs and determines the best method of serving them after considering those needs from a single system point of view. The criteria used for these studies is basically the same as defined in Section V of the FCG System Planning Committee Handbook, where practicable.

The third step in the planning process is actually performed in parallel with step two. This third step requires the review of the way in which Seminole will continue to meet its responsibility under the power contract, that is, how it will provide adequate power and energy

to its members at the least possible cost and in a reliable manner. This third step requires the review of power resources available to Seminole along with the expected cost from each of these power resources. Due to the fact that power resources include purchasing from others by contract or from a tariff offered by another utility, a considerable amount of work is required in developing the expected cost from these power resource alternatives, since rate making assumptions, construction programs, forecasts, etc., are required before the cost can be estimated. Along with other power resource alternatives such as self-generation, simulations of various scenarios are investigated.

These simulations are performed using reserve criteria of the power supplier in which load is anticipated to be served by a Seminole-owned power resource. Pricing of power purchases from other systems is based on the cost developed from the assumptions discussed earlier but is based also on the type of purchase power required, i.e., base, intermediate, peaking, reserves, etc.

The load forecast for Seminole was developed by taking into consideration two basic forecasting methods. The first method is based on analytical trend analysis of prior historic growth patterns. The time frame selected is analyzed in order to evaluate the sensitivity to historic growth patterns based on various years of history. The second method is a "grass roots" approach. Each member of Seminole develops a forecast by customer class based on customer growth and customer usage parameters. The results of the customer class forecast are summed to obtain the total energy requirements and expected customers. The total demand for each member is then developed based upon the expected load factor and upon an analysis of historic and anticipated future customer use characteristics. The key factors analyzed by member system personnel included population growth, anticipated economic development, customer income, the effect on usage due to cost of electricity, and the weather. The cooperatives have seen a continual migration from the urban areas to the rural areas in ever increasing numbers. Those moving to the rural areas are building larger homes and installing electrical equipment such

as air conditioning, heat pumps, resistance heating, etc. In addition to the impact of the migration from urban to rural areas, the cooperatives are also being impacted by the influx from outside the State. These trends seem to be reflected in the Projections of Florida Population for 1978 - 2020, Division of Population Studies, Bureau of Economic and Business Research, College of Business Administration, University of Florida. A composite of the individual system analysis has been reviewed by Seminole and the basic assumptions for the Seminole Forecast of Power Demand are the aggregate of each of the member system assumptions. The results of this load forecast have been reviewed and approved by the Rural Electrification Administration of the United States Department of Agriculture.

1.2.2 Peak Demand

Seminole has been a summer peaking system (the prior summer peak exceeds the following winter peak) until 1975 at which time it became a winter peaking system. The determination of the peaking season is correlated very closely with the weather conditions for that year. Winter peak demand was usually caused by an unseasonably cold period of short duration. While this has a great effect on this demand, little or no increase in kilowatt-hour (kWh) usage has been noticed. It is felt that the trend towards a winter peaking system has greatly contributed to the decreasing annual load factor. It is believed that the future peaking season will also be dependent upon the prevailing weather factors and will probably shift from year to year. It should be noted that when the individual projected peak demands of the member cooperatives were collected, no diversity factor was applied to any system before a summation. Seminole member systems are located in 47 of the 67 counties of Florida, and stretch from the Georgia border south through Fort Myers, Florida. Based on studies by the Florida Coordinating Group, it was noted that little diversity existed between utility systems within peninsula Florida. We believe that this basically correlates with the Seminole system and is why, for a given period, the individual systems' peaks were summed to obtain the Seminole peak.

When the total kWh purchased for Seminole member cooperatives was collected for the historical years 1967 through 1977, it was found that Seminole grew at an annual compound growth rate of 15.1 percent for this period. For the year 1977, the growth rate was 11.2 percent over 1976. The projected annual kWh compound growth rate for the period year end 1977 to year end 1982 is 10.6 percent and 10.4 percent for the period year end 1972 through 1992.

When the total kW purchased for Seminole member cooperatives was collected for the historical years 1967 through 1977, it was found that Seminole grew at an annual compound growth rate of 17.58 percent for the winter peak and 16.06 percent for the summer peak. The projected 1977-1987 annual compound growth rate for the winter peak is 10.20 percent and 10.99 percent for the summer peak.

Table 1.2-1 sets forth the history and forecast of seasonal peak demand and annual energy requirements and is followed by Table 1.2-2, which provides a two-year forecast of peak demand and energy requirements by month for 1978 and 1979. Figure 1.2-1 is a graph of the history and forecast of energy use from 1967 through 1986.

1.2.3 Forecast Update

Seminole reviews its load forecast after its winter and summer peaks. The review process involves an analysis of the differences between the forecast and actual demand and energy figures. After the analysis is complete, the forecast is modified if required.

1.2.4 Conservation and Load Management

Seminole Electric Cooperative occupies a somewhat unusual position compared to other Florida utilities in relation to conservation and load management. As a generation and transmission cooperative, we have control over service only up to the point where the energy enters the system of a distribution cooperative. These distribution cooperatives, eleven in number, established Seminole as an alternative energy resource to be under their control. It was a joint effort to help meet their need for electric power, which formerly came only as wholesale purchases from other utilities, about 90% of them investor owned. They have now banded together to assure themselves economical and reliable power supplies.

Conservation and load management efforts under these circumstances require coordinated and cooperative planning between Seminole as energy supplier and each system member as a distributor. Such coordination presents special challenges. But, it also creates beneficial opportunities. Multiple conservation programs and approaches can be introduced, tested and evaluated by various cooperative members. The results can then be documented and shared throughout the system. The improved information and planning interchange created by this Seminole "link" has in itself become a significant factor in progress towards sound conservation programs and load management research.

One example of this effect involves an energy conservation survey commissioned by Seminole. The interviews covered a comprehensive range of conservation and load management possibilities. They included questions about energy conservation programs, program staffing, home weatherization promotion and assistance, conservation information efforts, incentive rates, master metering, system load analysis, load control research and load management programs with commercial, industrial or other large customers. The findings provided valuable information on the general status of conservation efforts by various Seminole cooperatives. And, since the survey results were also communicated to all system members, this data from numerous sources provided comparative guidelines, measurements and incentives for future program development by them.

Seminole system members already have complied an impressive record in instituting and expanding conservation programs. As a group, they are involved in extensive and diverse efforts, as indicated by some of the areas listed below:

I. Program administration

   A. Assigning of qualified personnel with responsibility for directing and coordinating conservation efforts.
   B. Establishment of conservation program concepts, objectives, research and control.

II. Energy consumer conservation information

A. Bill stuffers, publication articles, releases from news media.

B. Conservation posters, displays and demonstrations.

C. Local meetings, seminars, workshops, including films, speakers and printed materials.

III. Conservation assistance and education

A. Programs for home weatherization and insulation.

B. Consultation services on insulation weatherization materials and installation.

C. Informational guides on insulation terminology, resistance values and economic benefits.

D. Supplying consumers with appliance efficiency ratings and definition of terms.

E. Promotion of "energy efficient homes" design and recognition programs through builders.

IV. Load Management

A. Rate analysis for load management applications.

B. System load analysis to determine major peak contributors.

C. Research into load control devices and management techniques.

D. Comparative studies of load management approaches and advantages.

E. Planning for elimination of master metering.

F. Utilization of major media (letters, publications, news outlets) to alert members about measures needed to cut usage during peak demand periods.

Seminole has adopted an energy conservation policy approved by its Board of Trustees. It includes provisions for the promotion of conservation activities and energy awareness among member systems. It also calls

for energy management, conservation and education programs directed at these cooperatives. Research is now underway into system-wide energy conservation and load management techniques most suitable within the system and member cooperative relationship.

Seminole also has participated on other levels in energy conservation and load management efforts. On a national basis, Seminole is a contributing member of the National Rural Electric Cooperatives Association (NRECA). This organization provides information, educational and supportive programs for cooperatives throughout the country, including Seminole and all its member systems. A typical function of this type occurred last year when NRECA conducted a load management seminar, attended by a Seminole Staff member.

Seminole also belongs to a statewide group, the Florida Rural Electric Cooperative Association (FRECA). FRECA provides broad support programs in the area of conservation. In January of 1979, for example, FRECA held a state home energy audit seminar for the training of cooperative personnel with responsibilities in this area. Representatives from the Seminole system attended this seminar.

Another important FRECA accomplishment has been the development of an Energy Efficient Home program. It sets standards for home builders to reduce energy consumption by about 30% compared to usage in a normally constructed home. Seminole's member cooperatives have instituted this program.

Only homes meeting the standards receive certification as "Energy Efficient." Three sets of criteria are involved in the efficiency evaluation: 1) general illegibility requirements, 2) specific minimum prerequisites, and 3) a score of 100 points or more on a checklist of energy-saving features. The "checklist and builders certification sheet" provides the basis for this evaluation. The certification is made after an inspection by a utility representative verifies the qualifications and a score of 100

or more points. If the home passes this inspection, the cooperative posts at the location a sign which reads, "This Residence Qualifies As An Energy Efficient Home". The builder is also furnished with a certificate for presentation to the home buyer at closing.

Another major Seminole affiliation has been the Florida Elecric Power Coordinating Group (FCG), a consortium of all state utilities - investor-owned, municipal and cooperative. This group has gained recognition as a national leader in the development of coordinated policy, power brokerage and joint system programs. Seminole has representatives on various FCG committees, including the Energy Conservation Committee. The Energy Conservation Committee in January submitted to the Governor of Florida a comprehensive energy conservation plan for residential consumer service. It incorporates a broad range of progressive energy conservation provisions. It provides for home energy audits, insulation and home weatherization assistance by utilities, research programs for conservation incentives and load management techniques, and broad consumer information and education programs through a variety of media. This document earned Florida utilities the distinction of being the first in the United States to file a conservation plan as required under the draft National Energy Act. The FCG committee is now in the process of developing similar conservation plans for state adoption in the commercial and industrial customer areas. In addition, a representative of one Seminole system member is included in the program of featured spakers on load management for a March, 1979, FCG system planning seminar.

One consequence of the FCG-drafted residential conservation plan will be energy audits by Seminole cooperative members. These audits, provided to requesting home owners, will involve checks by cooperative representatives to determine possible energy conservation measures, costs and savings. The program also includes assistance from the cooperative in selecting qualified contractors to perform selected work and in arranging for financing.

Even now, under a separate program, one of Seminole's members is participating in an Federal Housing Administration (FHA) plan for home weatherization loans for lower income households. The cooperative acts as an agent for the qualified homeowner - helping deterine insulation needs, recommending contractors, inspecting completed jobs, obtaining the necessary financing and handling paperwork and administrative details. The cooperative also services these loans, for up to $1500 over five years, by billing the borrower monthly and forwarding payments to the FHA. All funds come from the FHA.

This same cooperative began this year to provide loans of its own for up to $300 over three years to help home owners for the cost of installation and weatherization. The cooperative provides similar consulation and assistance for this program as for the FHA loans.

Another area receiving extensive study relates to special circumstances within the Seminole system, as mentioned previously. At present, almost all the electric power for our distribution cooperatives comes by wholesale purchases from investor-owned utilities. The rates for these purchases are established by the utility supplier, based on factors that do not provide credit for load management equipment by the wholesale purchaser. In effect, the benefits of any cooperative efforts to reduce peaks will be distributed among all rate payers at the time of a rate increase. Under these circumstances, other wholesale purchasers can realize benefits resulting from load management by our cooperatives.

The impact of these factors on load management efforts is of very serious concern at this time. When Seminole begins providing substantial amounts of electric power and supplies an increasing proportion of member system needs, this impact will be lessened but not eliminated. A system of credits within the wholesale rate structure must be developed by the outside suppliers to create appropriate incentives and proper equity for load management on the part of our cooperatives. Seminole is now in the process of developing and proposing such a system.

It should be noted that, despite the problem discussed above, one of Seminole's members already has developed a test program for load management. Others also have similar programs under consideration. Seminole and its members are interested in evaluating potential alternatives to peak load control even if the proper mechanisms for rate credit do not now exist.

The advanced load management effort by a Seminole member involves residential service. The research is designed to determine potential for load reduction during peak demand periods. Some 500 different pieces of equipment at homes of volunteers participating in the program are hooked into load control system. The equipment includes the major residential energy consumers - water heaters, air conditions and electric heat. Individual switches can be controlled at load center to connect or disconnect each electrical appliance. The entire system is automated and under computer control. The switching devices disconnect loads in a programmed pattern of predetermined load levels. Water heaters will be dropped first - because of their heat storage capability prevents any residential inconvenience for several hours. If the electric demand continues to climb, a percentage yet to be determined of air conditioning or heating load can be cycled off on a five minute rotating basis. As demand drops to the pre-set levels, loads are returned to service in reverse order. The switching activity and effects are constantly monitored and recorded. The resulting data will be used to direct future load management efforts.

With respect to the impact on the Power Requirements Study, Seminole and its members took conservation and load management effects into account. The real impact, however, on future load and energy requirements cannot be fully evaluated at this time. A test program now underway and others to be initiated later will be closely evaluated. The potential for partially meeting power requirements through conservation and load management can then be assessed more accurately.

Table 1.2-1

History and Forecast of Seasonal Peak Demand and Annual Energy Requirements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Summer Peak Demand Net MW					Winter Peak Demand Net MW	
Year	Interruptible	Total	Net Energy For Load - GWH	Factor (%)	Year	Interruptible	Total
1968	0	220	1020.4	52.9	1968-69	0	230
1969	0	268	1210.5	51.6	1969-70	0	305
1970	0	320	1441.2	51.4	1970-71	0	351
1971	0	365	1676.6	52.4	1971-72	0	371
1972	0	466	2000.9	49.0	1972-73	0	519
1973	0	556	2462.0	50.5	1973-74	0	589
1974	0	602	2598.4	49.3	1974-75	0	650
1975	0	628	2818.9	51.2	1975-76	0	802
1976	0	702	3104.8	50.5	1976-77	0	952
1977	0	767	3452.0	51.4	1977-78	0	1030
1978	0	883	3807.4	49.2	1978-79	0	1104
1979	0	982	4216.4	49.0	1979-80	0	1228
1980	0	1093	4669.4	48.8	1980-81	0	1366
1981	0	1206	5171.0	48.9	1981-82	0	1507
1982	0	1330	5706.6	48.9	1982-83	0	1663
1983	0	1468	6297.6	48.9	1983-84	0	1835
1984	0	1620	6949.8	48.9	1984-85	0	2025
1985	0	1788	7669.6	48.9	1985-86	0	2235
1986	0	1973	8464.0	48.9	1986-87	0	2466
1987	0	2177	9340.6	48.9	1987-88	0	2721

Table 1.2-2

Two-Year Forecast of Peak Demand
and Energy Requirements by Month

(1)	(2)	(3)	(4)	(5)
		Peak Demand - Net MW		
Year	Month	Interruptible	Total	Net Energy For Load - GWH
1978	Jan	0	992	381
	Feb	0	927	320
	Mar	0	737	251
	Apr	0	647	267
	May	0	640	267
	Jun	0	722	286
	Jul	0	844	354
	Aug	0	883	358
	Sep	0	832	358
	Oct	0	785	381
	Nov	0	817	267
	Dec	0	941	317
	TOTAL			3807
1979	Jan	0	1104	422
	Feb	0	1031	354
	Mar	0	820	279
	Apr	0	720	295
	May	0	712	295
	Jun	0	804	316
	Jul	0	940	392
	Aug	0	982	396
	Sep	0	926	396
	Oct	0	873	422
	Nov	0	910	295
	Dec	0	1048	354
	TOTAL			4216

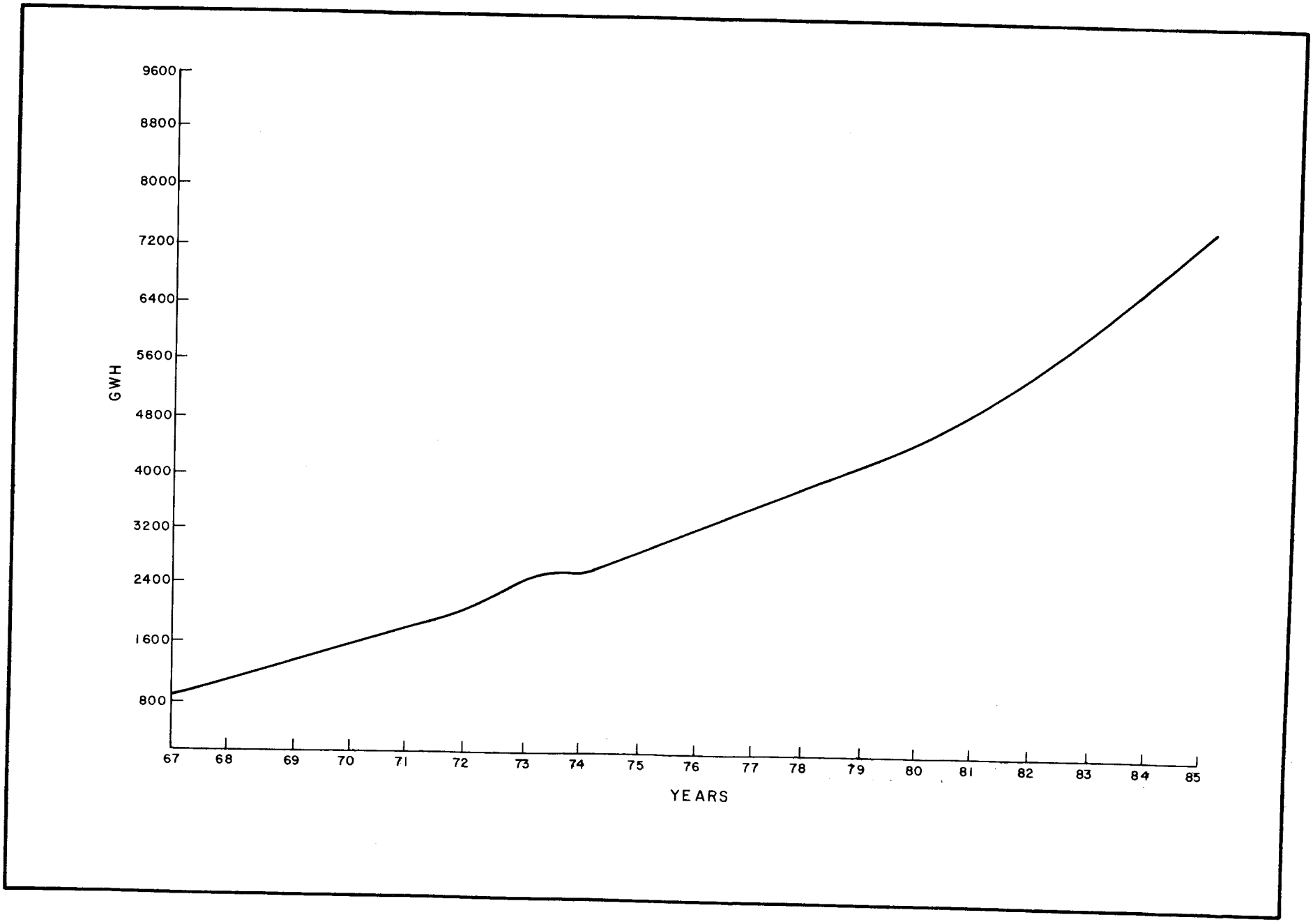

Figure 1.2-1. History of Forecast of Energy Use. (Gigawatt Hours).

1.3 POWER SUPPLY ALTERNATIVES

In July of 1973, Seminole began its present efforts at developing its own future power supply by initiating an investigation of possible power supply programs. Since that time, considerable activity has taken place in the direction of defining the power supply program to be sought. In January, 1975, Florida Power Corporation offered for sale 10 percent of Crystal River Unit #3 Nuclear Unit as well as capacity from other units under construction. On July 31, 1975, Seminole purchased 1.6994 percent ownership in Crystal River Unit #3. This capacity represents approximately 1.3 percent of the 1977/78 winter peak of 1030 megawatts (MW).

In 1976 the Seminole staff prepared a power supply plan with an objective of supplying reliable electric power at the lowest possible cost to its members by:

1. Substituting lower-cost Seminole capital for higher-cost investor company capital to be used in the construction of generating stations and transmission lines.
2. Eliminating income taxes as a cost by substituting cooperative non-profit ownership for investor-owned ownership of generation and transmission facilities.

The power supply plan reviewed fuel choices available, discussed the advantages and disadvantages of each, and concluded that basically, the only viable fuel sources available to Seminole would be coal and nuclear.

Because of the lead time required for construction of power plants, alternatives available to Seminole until mid-1983 were joint ownership in units under construction and those scheduled for commercial operation prior to the middle of 1983. Alternatives available to Seminole subsequent to mid-1983 were joint ownership and/or total ownership of

generating units. The Seminole staff was directed by a Resolution passed by the Seminole Board of Trustees on July 8, 1976, to investigate the possibilities of joint onwership in existing projects consisting of the following:

1. Tampa Electric Company 425-MW, coal-fired unit scheduled for commercial operation in 1981. (Commercial data now changed to March, 1985, per a response to the Federal Power Commission Order 383-4, dated April 1, 1978.)
2. Florida Power Corporation scheduled 600-MW, coal-fired unit scheduled for commercial operation in 1981. (Commercial date now changed to October, 1982, per a response to the Federal Power Commission Order 383-4, dated April 1, 1978.)
3. Joint participation in the Florida Power & Light Company St. Lucie II Nuclear Unit scheduled for commercial operation in 1981. (Commercial date now changed to 1983, per a response to the Federal Power Commission Order 383-4, dated April 1, 1978.)
4. Joint participation in the proposed 1140-MW nuclear units to be built at South Dade.
5. Joint participation in a nuclear plant to be located in Central Florida.

Seminole was also directed to investigate the feasibility of constructing its own generating plant subsequent to 1982.

The Seminole staff began investigating the possibilities of joint ownership.

Tampa Electric company (TECO) was approached by Seminole concerning the possibility of increasing the unit size of their proposed 1981, 425-MW, coal-fired unit to a 600-MW range with a 200-MW ownership share for Seminole and the balance of ownership with TECO. For their own business reasons, TECO declined the offer.

Seminole and Florida Power Corporation (FPC) have studied two scenarios per a letter agreement of December, 1976, concerning joint ownership by Seminole in Crystal River Unit #4 and Unit #5 with unit power sales to FPC from two 600-MW coal-fired units owned by Seminole. FPC is considering unit power purchases from the proposed Seminole Unit No. 1 scheduled for commercial operation in June, 1983, and Seminole Unit No. 2 scheduled for commercial operation in June, 1985. However, FPC has decided not to offer joint ownership in Crystal River Unit #4. FPC is still considering the joint ownership of Crystal River Unit #5.

Seminole has reached agreement with Florida Power & Light Company (FP&L) for a 6-percent entitlement share (48 MW) of St. Lucie Unit #2 Nuclear Unit (802 MW). Negotiations are proceeding on a participation agreement and the associated back-up services and transmission services. St. Lucie Unit #2 is scheduled for commercial operation in May, 1983.

Seminole expressed an interest to FP&L in the proposed 1140-MW nuclear units to be constructed at a site called "South Dade." FP&L refused to offer an ownership share to Seminole. Seminole entered into an antitrust action against FP&L along with other parties who had also been denied an ownership share in the South Dade units. In 1977, FP&L announced that the South Dade units would not be built as proposed due to changes in their load forecast which indicated that FP&L would not need the units as initially planned. There has been no indication as to when the South Dade project may be reactivated, but Seminole will again indicate an interest, if and when the project is activated.

Seminole participated in discussions of a nuclear plant that was proposed to be located in Central Florida. Seminole was a member of a Steering Committee formed by a group of interested utilities and continued to participate until it became obvious that the intent of certain utilities was not to actively work toward the goal of jointly constructing a nuclear power plant.

In addition to the possibilities in joint ownership investigated by the Seminole staff under directon from the Seminole Board of Trustees, Seminole has investigated the possibility of joint ownership in Deerhaven Unit #2 proposed for commercial operation in 1981 with the Gainesville Regional Utilities Board. Due to the cost involved, this project did not appear feasible for Seminole. Seminole has also discussed the possibility of joint ownership of coal and nuclear projects in the 1980's with Orlando Utilities Commission, and also considered the possibility of rejuvenating the Jackson Bluff Hydro Electric project (approximately 9-MW capacity) on Lake Talquin, northwest of the City of Tallahassee.

Seminole has also offered to Jacksonville Electric Authority (JEA) and FP&L unit power from the proposed Seminole Units No. 1 and No. 2, but as of the date of preparation of this document, no interest has been expressed by FP&L. Jacksonville Electric Authority has expressed, by letter, an interest in a unit power purchase of up to 250 MW from 1983 thru 1985.

Studies have been made for Seminole to determine the most economical and reliable means of providing power necessary to meet the requirements of the member cooperatives. The studies included the following alternatives:

1. Purchase of all power requirements.
2. Self-generation by unit facility owned by Seminole.
3. Joint ownership of generating unit(s).
4. Sale and purchase of generating capacity.
5. Combination of the above alternatives.

These studies have concluded that:

1. A combination of purchase power and generation owned by Seminole is the optimum way to meet the power requirements of the member cooperatives.

2. It is more economical for Seminole to enter into a joint ownership arrangement for incremental capacities in large base units than entering into generation with a number of small units.

3. It appears economical for Seminole to add to its system up to 700 MW of nuclear capacity within the next decade. However, this amount is not attainable due to the practical consideration of Seminole not being lead agent for a nuclear project.

4. The Seminole power supply program should include ownership of two 600-MW units, scheduled for commercial operation in June, 1983, and 1985, with associated unit power sales.

Based on studies made to date, Seminole's planned and prospective generating facility additions are as shown on Table 1.3-1, and are also shown on Table 1.3-2 and Table 1.3-3, which reflect the forecast of capacity, summer and winter peak demand in MW, and expected scheduled maintenance during the summer and winter peak periods respectively. Figure 1.3-1 and Figure 1.3-2 reflect Table 1.3-2 and Table 1.3-3 graphically.

Unit power sales from Seminole Units No. 1 and No. 2 are being offered to interested utilities. The maximum anticipated unit power sales available from Seminole Units No. 1 and No. 2, are shown on Table 1.3-4. Unit power sales are being offered to improve the economics of installing two 600-MW units on the Seminole system and are intended to integrate the retained capacity into the Seminole system in the most economical fashion.

Table 1.3-1

Planned and Prospective Generating Facility Additions and Changes

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
				Fuel					Net Capability	
Plant Name	Unit No.	Location	Type	Pri	Alt	Const. Start Mo/Yr.	Com'l In-Service Mo/Yr.[a]	Gen Max Nameplate KW	Summer MW	Winter MW
St. Lucie	2	St. Lucie	N	N	-	-	7/83	-	48.1[b]	48.1[b]
Seminole[c]	1	Palatka	F	C	C	12/79	6/83	671,000	600	600
Seminole[c]	2	Palatka	F	C	C	12/81	6/85	671,000	600	600

[a]This column is to be used for dates of retirements and changes.

[b]An entitlement amount has been agreed to by the parties, a participation agreement and generation support services agreement is being negotiated at this time.

[c]A sell back arrangement of capacity from each unit for a period of ten years is now under discussion.

Table 1.3-2

Forecast of Capacity, Demand, and Scheduled Maintenance
At Time of Summer Peak[a]

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Total Installed Capacity	Firm Capacity Import	Total Available Capacity	Peak Demand	Margin Before Maint.		Sched. Maint.	Margin After Maint.	
Year	MW	MW	MW	MW	MW	% of PK.	MW	MW	% of PK.
1978	13.8	Will vary as needed to provide a minimum of 15% reserve above system peak	-	883		15	0		15
1979	13.8		-	982		15	0		15
1980	13.8		-	1093		15	0		15
1981	13.8		-	1206		15	0		15
1982	13.8		-	1330		15	0		15
1983	61.9		-	1468		15	0		15
1984	661.9		-	1620		15	0		15
1985	661.9		-	1788		15	0		15
1986	1261.9		-	1973		15	0		15
1987	1261.9		-	2177		15	0		15

[a]Capacity additions and changes must be made by May 31 to be considered in effect at the time of the Summer peak. All values are Summer Net MW.

Table 1.3-3

Forecast of Capacity, Demand, and Scheduled Maintenance
At Time of Winter Peak[a]

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year	Total Installed Capacity MW	Firm Capacity Import MW	Total Available Capacity MW	Peak Demand MW	Margin Before Maint. MW	Margin Before Maint. % of PK.	Sched. Maint. MW	Margin After Maint. MW	Margin After Maint. % of PK.
1978-79	13.8	Will vary as needed to provide a minimum of 15% reserve above system peak	-	1104		15	0		15
1979-80	13.8		-	1228		15	0		15
1980-81	13.8		-	1366		15	0		15
1981-82	13.8		-	1507		15	0		15
1982-83	13.8		-	1663		15	0		15
1983-84	661.9		-	1835		15	0		15
1984-85	661.9		-	2025		15	0		15
1985-86	1261.9		-	2235		15	0		15
1986-87	1261.9		-	2466		15	0		15
1987-88	1261.9		-	2721		15	0		15

[a]Capacity additions and changes must be made by November 30 to be considered in effect at the time of the Winter peak. All values are Winter Net MW.

Table 1.3-4

Seminole Electric Cooperative, Inc.
Maximum Anticipated Unit Power Sales
Available From Seminole Unit 1 and Unit 2

YEAR	SEMINOLE UNIT NO. 1	SEMINOLE UNIT NO. 2
1983	400	-
1984	400	-
1985	400	400
1986	300	400
1987	300	400
1988	300	300
1989	200	300
1990	200	300
1991	100	200
1992	100	200
1993	-	100
1994	-	100

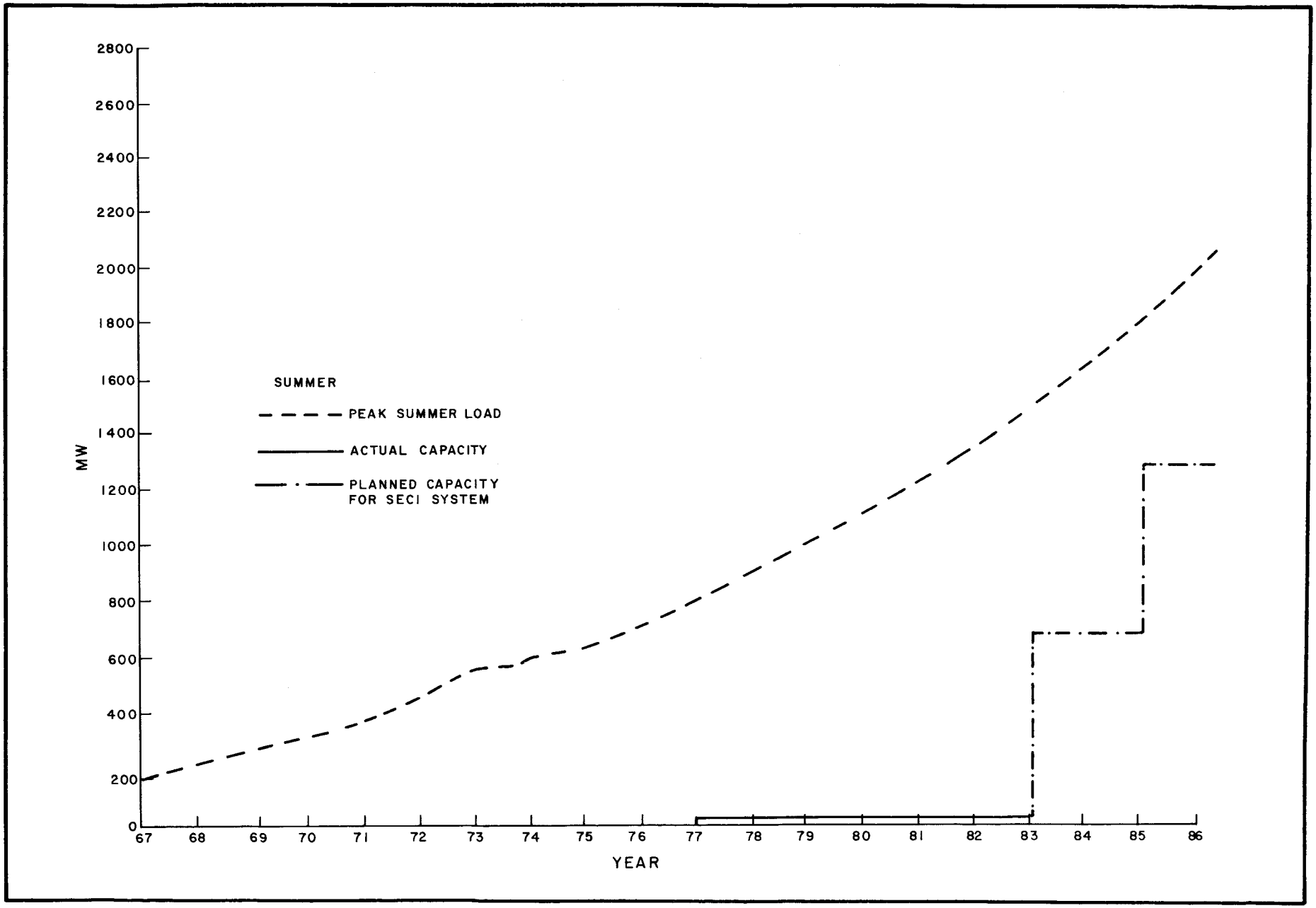

Figure 1.3-1. SECI History and Forecast of Load and Capacity Additions --Summer.

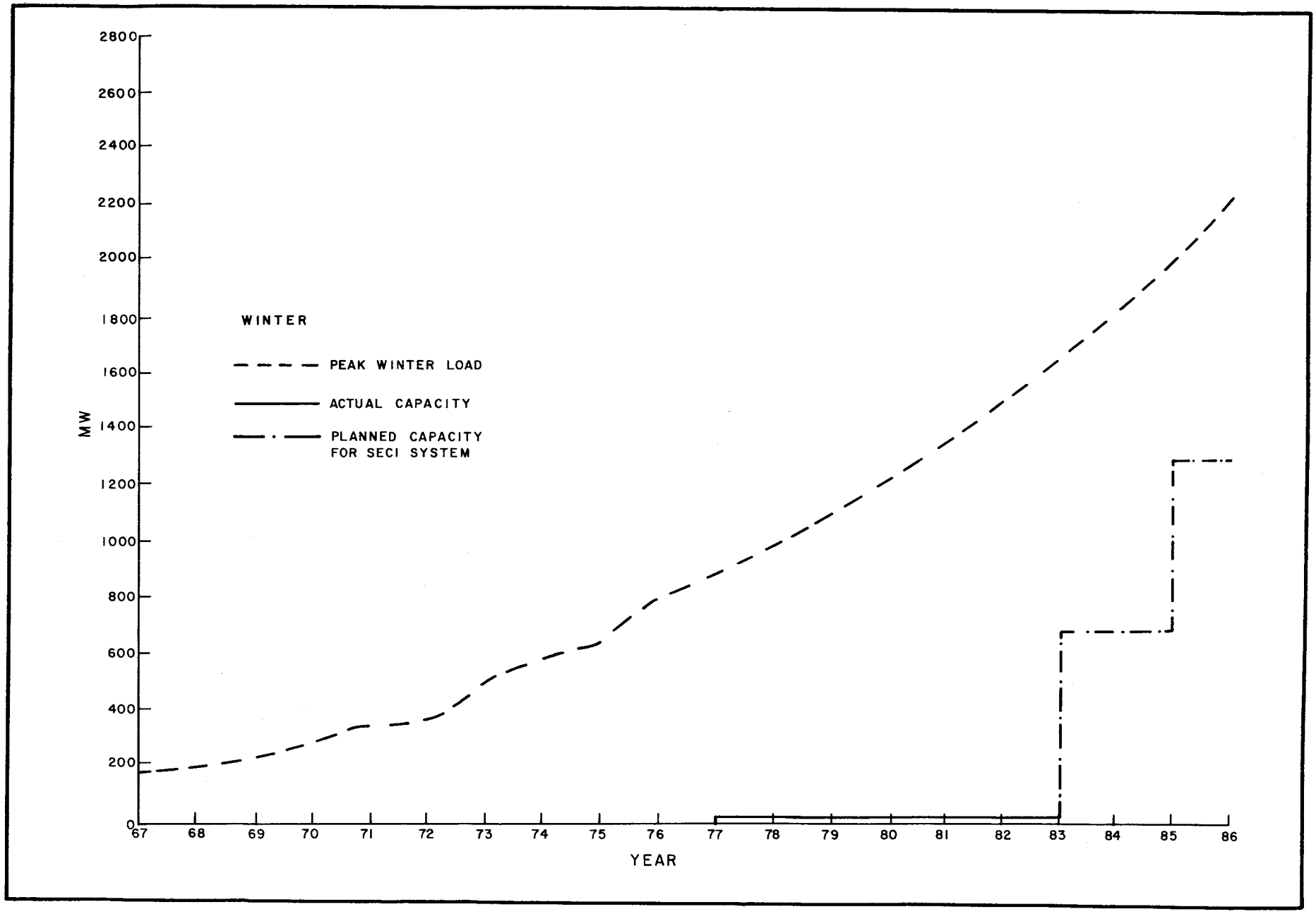

Figure 1.3-2. SECI History and Forecast of Load and Capacity Additions --Winter.

1.4 CONSEQUENCES OF DELAY OR NO ACTION

Seminole is concerned about its ability to adequately provide power and energy to its members in the future, due to the fact that more than 90 percent of its power requirements are purchased under a rate tariff and not under a purchase power contract. Only a year ago, when a combination of frigid weather and mechanical problems crippled the State's largest electric utility, we learned that the remaining generating facilities could not carry the electric load that people placed on the system. We had our first cold weather blackout. Radio and TV stations were silent, schools were urged to close, thousands of citizens rose to an icy chill. In February there was an emergency alert by Florida Power Corporation, and although no customers were disconnected, we were very close to that point. This illustrates vividly the thin margin between supply of, and demand for electric power in Florida at this time. Private electric utilities in the State are projecting low growth, as low as 5 percent per year, even though this is only half of their recent historic average growth rate. This compares to Seminole's growth rate of slightly better than 10 percent per year. At the present time, about half the generation in the State is oil; roughly 20 percent is nuclear, and 20 percent coal; the balance is natural gas and a very small amount of hydroelectric. Even if the low projection of growth rate by the private utilities is correct, and they are able to build generating units on the schedule that they have projected - how secure is the State's power supply? Our oil supply depends primarily on the OPEC nations. There are problems with two of the major nuclear units located at Turkey Point. It appears that both of these units have to shut down for an extended period for repair of steam generator tubes. The nuclear plant at Crystal River is now out of operation and under repair. It appears that it may be as much as nine months before this unit again is capable of producing energy. FPC is at this time experiencing environmental permitting problems with the new oil units at Anclote. Seminole, now buying most of its power wholesale from various companies, does not feel very secure in the power supply it is now receiving, even if everything goes as planned by its vendor companies.

Let's suppose it does not go by plan, and the growth rate for electric demand for these companies is 10 percent instead of 5 percent. Let's say that they do not bring the scheduled generating units in on time, as has been normal in the last five years; or what if there is another oil embargo; or what if the nuclear units cannot be repaired or repairs take much longer than anticipated? If any of these things should happen, we would have a critical power shortage in Florida. As a wholesale purchaser of power from these companies, we are very nervous about a decision the power supplier would have to make "Which customers are to be without service - the wholesale or the retail, or a combination?" Therefore, it is our opinion that delay of Seminole's two proposed 600-MW, coal-fired units would compound the already questionable power availability situation and greatly increase Florida's exposure to power shortages.

In addition to the overall impact of potential power shortages, no action on Seminole's proposed project would have a substantial financial impact on Seminole and its members. Over the initial 12-1/2 years of operation, the anticipated savings associated with this project will be close to $300,000,000. No action on this project would have substantial economic consequences and would place Seminole in a very questionable position with respect to its ability to provide adequate power and energy to its members.

1.5 NEED FOR POWER

The facts, simply stated, are that Seminole had a system demand of 1030 MW in February 1978, with 13.8 MW of self-generation. If Seminole grows at the rate discussed earlier, by the time the first Seminole 600-MW unit goes into commercial operation in June 1983, the expected '83/'84 winter peak demand will be 1835 MW, and the expected installed capacity will be 661.9 MW, assuming Seminole purchases 48.1 MW of St. Lucie Unit #2. By commercial operation of Seminole Unit No. 2 in June 1985, Seminole's '85/'86 winter peak demand will have grown to 2235 MW, and the expected installed capacity will be 1261.9 MW. If Seminole grows at one-half the predicted growth rate, the demand will be 1384 MW for the '83/'84 winter peak compared to an installed capacity of 661.9 MW. At one-half the growth rate, the '85/'86 winter peak will grow to 1532 MW compared with an installed capacity of 1261.9 MW. Either way, there can be no question about the need for power.