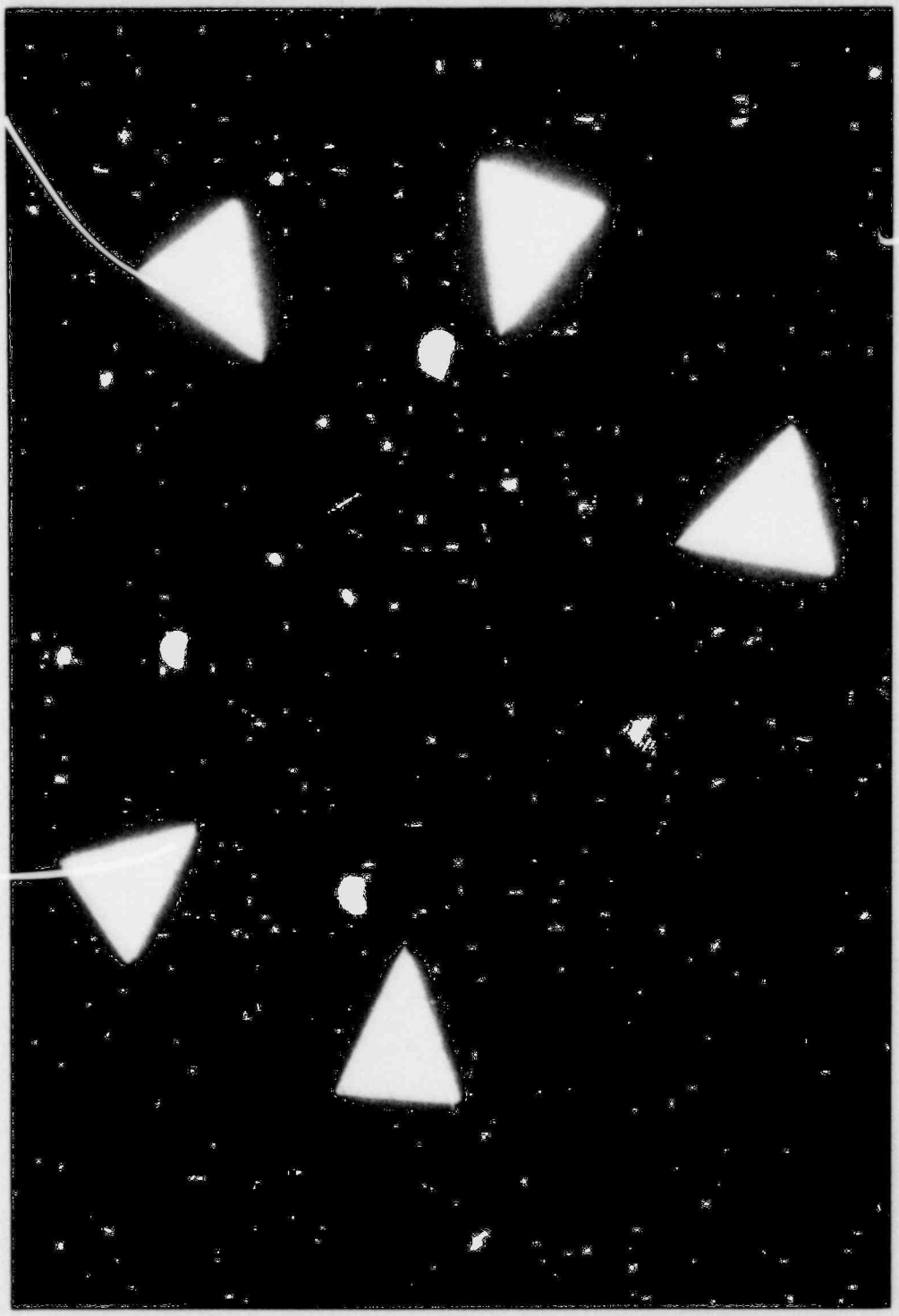
MMWEC 1979



ANNUAL REPORT

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POOR ORIGINAL

Planning for future electric supply: economic baseload power is essential. In 1979, member managers and commissioners inspected jointly-owned nuclear power plants under construction in New England.

On the cover: a temporary geodesic dome covering the Seabrook nuclear containment building offered winter protection for construction activity in 1979.

1979: Challenge and accomplishment

Dear members,

A decade ago MMWEC was established as a bulk power supply agency intended to serve Massachusetts municipal electric systems. During its ten-year history, MMWEC has changed from a struggling infant agency to a rapidly advancing power supply agency, and from a non-profit hybrid electric company to a public corporation. MMWEC's goals are simple and direct: To provide an adequate power supply for Massachusetts municipal electric systems at the lowest possible cost, consistent with sound public policy.

MMWEC has realized success in meeting its goals. It is now well on its way toward furnishing its members with adequate bulk power supplies and, by the end of 1979, MMWEC member systems realized savings totaling $11,800,000.

The Stony Brook Project

Construction of the Stony Brook Project was suspended for the first five months of 1979. On June 1, the Department of Energy determined that the Intermediate unit was exempt from certain fuel use restrictions, and construction resumed immediately. At year end, the project was on schedule and within budget.

The $150,000,000 1979 Series A Bonds, MMWEC's first long-term financing for the Stony Brook Intermediate unit, issued in August, received a favorable net interest rate of 7.0069%. In late 1979, MMWEC issued $35 million in short-term notes to finance construction of the Stony Brook Peaking unit.

Baseload power supply progress

Twenty MMWEC member systems and ten non-member systems executed Power Sales Agreements with MMWEC in September, 1979, for participation in power supply from the Seabrook nuclear power project. The recent participant commitment of 138 megawatts represents an added 6% of the project, bringing MMWEC's total commitment to 11.59% of the project.

MMWEC is currently involved in final negotiations with the New Brunswick Power Commission for 100 MW of contract power from its Point Lepreau nuclear power plant. The term of the contract will be six to nine years beginning in 1981.

Regulatory approval of energy forecast

MMWEC's 1978 Annual Supplement to the Long-Range Forecast was approved in January 1979. The decision was conditioned upon an expanded staff effort to produce a significantly improved data gathering system and methodology for forecasting the load growth of MMWEC's 31 varied member systems. During 1979, MMWEC's staff endeavored to develop accurate forecasts of future electric demand for each town. A decision on the 1979 supplement is anticipated in 1980.

Alternate energy resource development

As energy costs increased, hydroelectric power and resource recovery (refuse-burning) plants became increasingly attractive and possibly cost effective. In September, the Board of Directors approved a $5 million "renewable resources" fund, a portion of which is intended to develop potential hydro sites in the region. MMWEC has received proposals from interested developers of resource recovery plants in 1979, and ownership interest in wood-burning plants is also being studied.

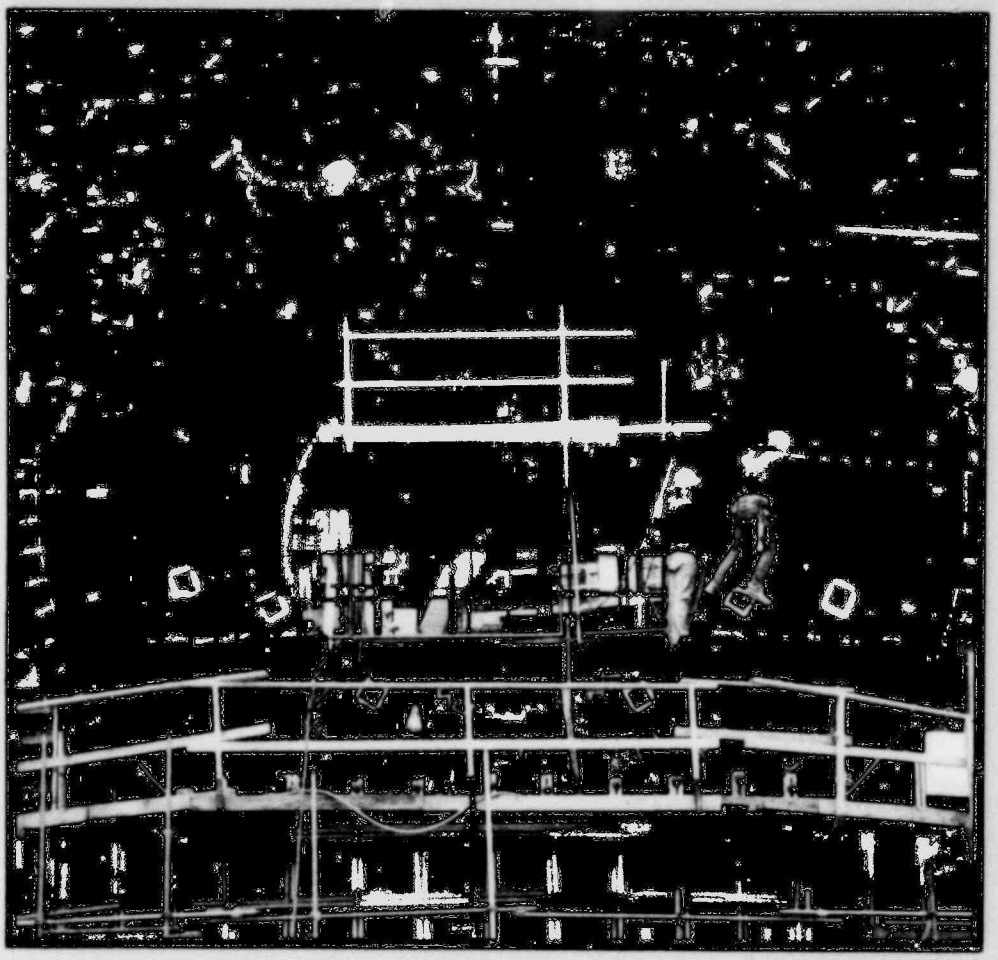
Increased membership

On October 19, 1979, the Merrimac Municipal Light Department formally joined MMWEC as the 31st member community and will continue to receive staff support in 1980 to evaluate power supply requirements and power supply alternatives. MMWEC's membership now accounts for approximately 75% of the peak load of all the municipal electric systems in Massachusetts.

With the cooperation of the membership, MMWEC looks forward to meeting future challenges with continued success. Through the development of an economic and dependable power supply program, the annual savings in power costs will continue to increase as the advantages of MMWEC's program are realized.

Francis H. King, *President*

James E. Baker, *Chairman*



Tremendous manpower and materials are needed to build projects the scale of the 1,150 MW Millstone 3 nuclear power plant. The project will provide member participants with 35 MW of baseload power.

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The power of cooperation

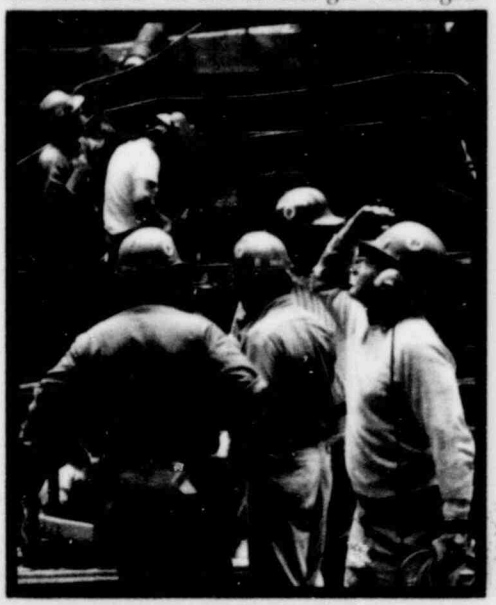
Economic electricity is essential to municipal development. Since its inception, MMWEC's primary goal has been to develop an economic power supply mix for each individual member system. In order to realize that goal, several objectives were originally set: to participate fully in the New England Power Pool (NEPOOL); to minimize power costs through long-term contracts and joint ownership interests in regionally planned generating units; and to arrange the orderly replacement of expensive wholesale power purchases with electric power resources financed by MMWEC. These objectives have successfully been met through the cooperation and dedication of the membership and MMWEC staff.

Individually, Massachusetts municipals are limited in what they can accomplish. Collectively, they have proven the effectiveness of joint action and cooperation.

The 1979 climate

Uncertain energy resources, rising energy costs, public reaction to higher electric bills and new emphasis on conservation and load management have significantly changed the focus of the electric power industry.

Dramatic shifts in national energy policy in the past two decades highlight the challenges to power supply planning MMWEC now faces. The use of "cheap and inexhaustible" oil and natural gas was urged throughout the booming '60's. Nuclear power, once viewed as the solution to economical, clean and safe power supply, has lost its original public favor. A lack of coordinated government decisions has resulted in nuclear waste disposal and nuclear plant siting problems, while federal and state red tape continue to increase the cost and delay the construction of nuclear power plants. The cost of building nuclear power plants has increased seven-fold while planning and construction time has doubled in the past twelve years. Financing nuclear power plants has become more difficult, and delays in on-line dates add to the difficulty of planning optimum power supply mixes for MMWEC members.



The federal government has urged the electric utility industry to shift to coal as a prime fuel source. In the industrial northeast, the conversion to coal will require considerable expense for pollution equipment and transportation of fuel. Efficient oil-fired power plants will contribute to electric energy supplies in the northeast for many years.

The purpose of Stony Brook

Located in Ludlow, Massachusetts on a 470 acre former military weapons storage site, the Stony Brook power plant is the cornerstone of the MMWEC power supply program.

The oil-fired intermediate and peaking units are now under construction. The intermediate unit will produce 30-40% more power by capturing gas turbine exhaust heat and converting the heat into steam, which is used to generate electricity without the use of additional fuel. While oil is one of the most efficient fuels to use in a combined-cycle unit, the power plant has been designed to utilize natural gas or synthetic fuels when available.

Stony Brook is intended to fulfill a specific role in meeting municipal power needs. Of the total 511,000 kilowatts of power Stony Brook will produce, 341,000 kilowatts is termed "intermediate" power — power normally used on weekdays when demand is fairly high. 170,000 kilowatts of "peaking" power is intended to be used at times of high demand. Stony Brook will replace wholesale power which has been traditionally the most expensive power to purchase from an investor-owned utility.

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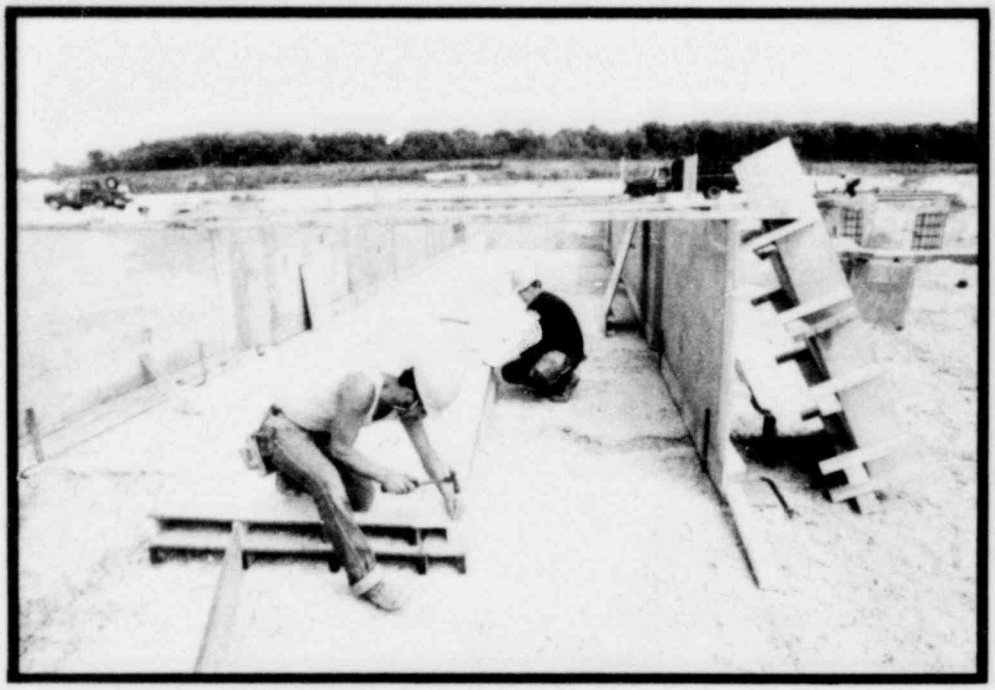


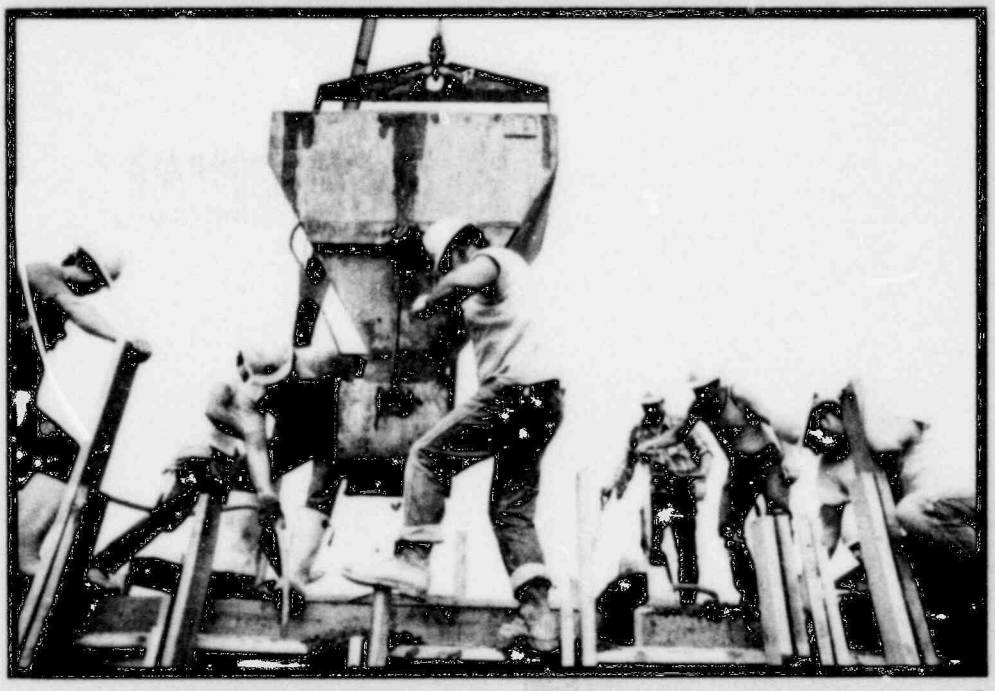
At the Stony Brook Project, foundation construction began in early June, 1979. Steel circulating water pipes were encased in rebar during the summer. Approximately 38% of the project's 18,000 cubic yards of concrete were poured by year end.

POOR ORIGINAL

Stony Brook: dramatic progress

On December 21, 1978, the MMWEC Board of Directors suspended construction at Stony Brook pending the appeal of the initial negative decision of the Department of Energy. On June 1, 1979, the DOE announced its decision to classify Stony Brook as an "existing" power plant. The favorable decision was the welcome culmination of seven long months of intensive staff efforts to demonstrate to the federal government the crucial role Stony Brook plays in MMWEC power supply development.

After the five month construction delay, construction activity resumed at a dramatic pace. The current status of the Stony Brook Project is a source of pride to MMWEC and a credit to the construction workforce. The overall construction progress of the Intermediate and Peaking project was estimated at 14% at year end. Despite the construction delay, Stony Brook will meet its projected commercial on-line dates. Out of 89 contracts necessary to complete the project, thirteen remain to be awarded in 1980.



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Construction at Stony Brook was dramatic as the structural steel skeleton of the power plant took shape.

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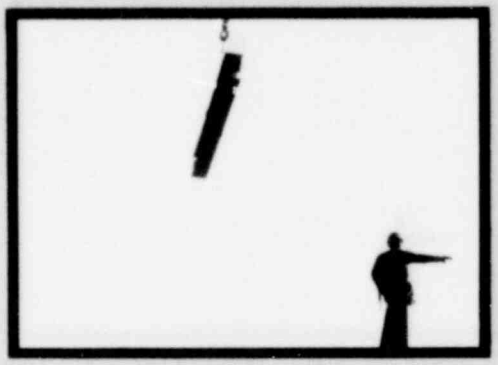

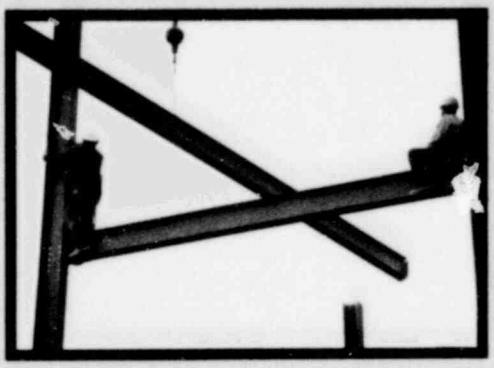

Major licensing activities complete

By mid-year, all of the major licenses for the construction of Stony Brook were received. The Massachusetts Department of Environmental Quality Engineering construction permit was received on January 31, 1979. On April 18, the U.S. Environmental Protection Agency determined that the units met the Federal Clean Air Act requirements and issued a Prevention of Significant Deterioration permit which acknowledged that the air quality in the vicinity of the power plant will meet federal standards. On July 25, the Massachusetts Department of Public Utilities granted authority to MMWEC to construct and use the 345 kV transmission line planned to interconnect the project with the New England transmission network. Further licenses and permits will be applied for as construction activity progresses.

Project engineering in final stages

Bechtel Power Corporation is the architect-engineer for the Stony Brook units. At year end, Bechtel estimated power plant engineering to be 87% complete. All major purchase orders had been placed and mechanical and civil drawings were 95% complete by December 31, 1979.

R.W. Beck and Associates is architect-engineer for the switchyard and transmission line at Stony Brook. The 115/345 kV switchyard will be located immediately east of the plant on approximately eight acres. R.W. Beck and Associates is estimated to be 65% complete on engineering for the switchyard.

The planned transmission line route will connect the Stony Brook switchyard to the New England Power Pool's transmission facilities in Ludlow, Massachusetts. R.W. Beck and Associates is estimated to be 65% complete on engineering for the transmission line.

Construction activity vigorous

There were approximately 120 construction workers on site in 1979. Progress was rapid and highly visible.

Following the site preparation work of 1978, construction focused on the foundation of the powerblock area, the water storage tanks, fuel oil tanks and fuel oil day tank. The foundation for the powerblock area was virtually complete and 38% of the project's 18,000 cubic yards of concrete had been poured by the end of the year.

The structural steel that provides the skeleton for the power plant was 35% complete on December 31, 1979. Complete steel erection in the area of the major generating equipment was finished in early December. The Intermediate unit gas turbines, generators and related accessories were placed on their respective foundations. The steam turbine pedestal, peaking unit gas turbine foundations and major tank foundations were also complete in 1979.

A railroad line planned to bring major generating equipment on site and serve as backup for fuel delivery was completed in late November. Repeated equipment deliveries were made by rail, including three gas turbines, associated generators and the three heat recovery steam generators.

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Complete steel erection in the area of major generating equipment allowed for the placement of gas turbines and generators.

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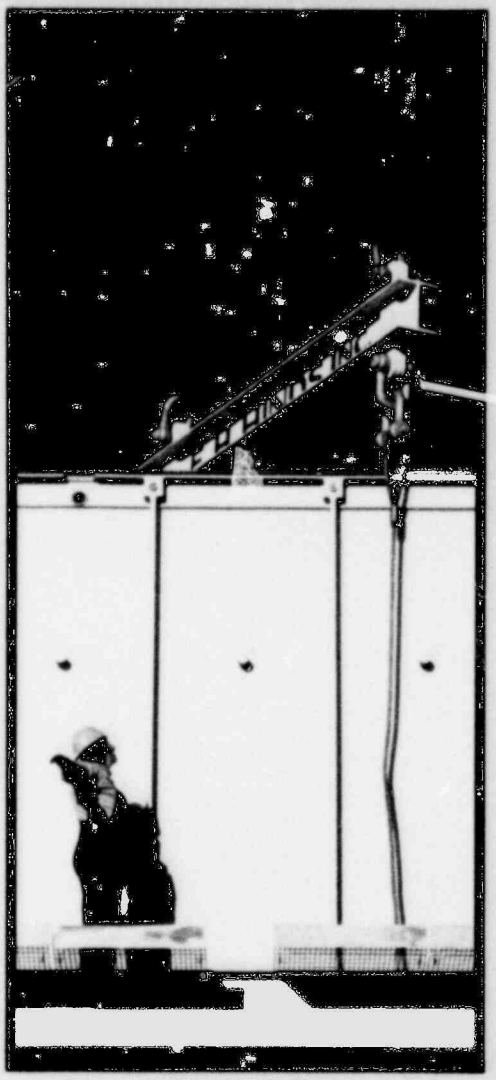

Fuel supply under negotiation

Long-term sources of No. 2 fuel oil were investigated extensively in 1979. Invitations to bid were mailed to potential oil suppliers in September. Responses from several firms have been positive and contract negotiations are proceeding. MMWEC's primary objective is to have more than one oil supplier with a secure source of crude oil and refinery capability. A principal concern is that any source of fuel be independent from existing supply in New England.

Supplying MMWEC's oil requirements will depend upon market conditions and government regulations; because of the uncertainty of oil supply, MMWEC is strengthening its commitment to study alternate fuel sources, including surplus natural gas and synthetic fuels. A preliminary study of alternate fuels was completed in 1979.

MMWEC is negotiating for the transport of fuel oil through two common carrier pipelines. The location of the Stony Brook Project allows inexpensive delivery since both pipelines are in the plant vicinity. One pipeline originates in the port of New Haven, Connecticut and another pipeline extends from the port of East Providence, Rhode Island. Dedicated storage capacity and terminalling services are anticipated in New Haven, with alternate capacity in East Providence. The offsite storage capacity will be in addition to the 400,000 barrels of storage at Stony Brook.

Overleaf: In early December, the three mammoth heat recovery steam generators which will utilize exhaust heat, producing 30-40% more power, were carefully assembled within the structural steel skeleton.

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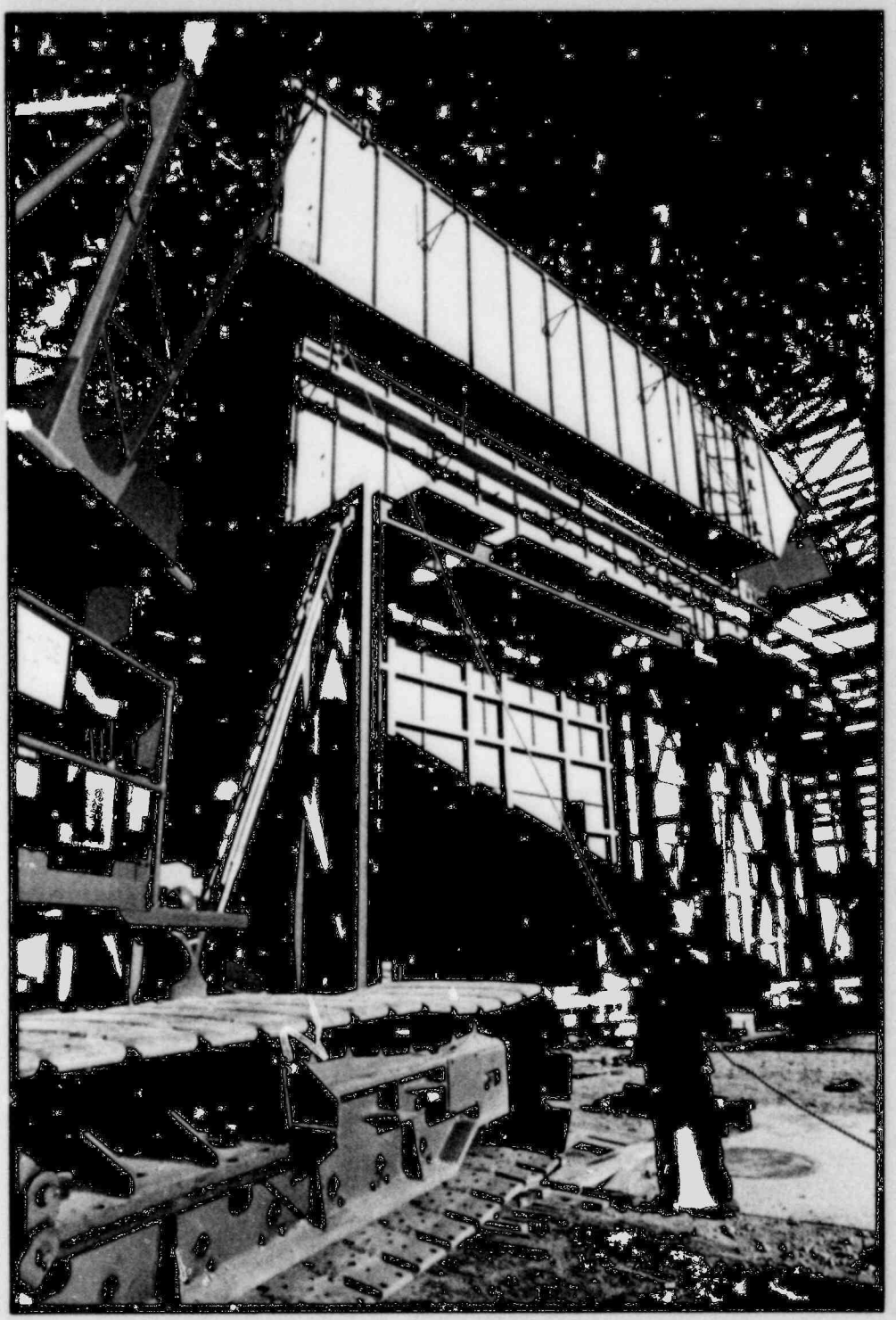

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REPRODUCIBILITY

Financing the Stony Brook Project

Bechtel Power Corporation estimates the project to cost $155.7 million. The Intermediate unit is expected to cost $109,008,000 and the Peaking unit is expected to cost $46,692,000. R.W. Beck and Associates estimates the transmission line and switchyard to cost $8.5 million. The total estimated financing required for the project is $251.3 million including interest during construction, allowances for contingencies, reserve fund requirements, financing costs and administrative expenses. Contracts or purchase orders for equipment, construction and site work through 1979 totaled $130,540,000 or 80% of the total cost of the units.

In August 1979, MMWEC closed a bond issue of $150 million to finance a substantial portion of the construction of the Stony Brook Intermediate unit. The net interest cost of the 1979 Series A bond issue was 7.0069%. Viewed as favorable when first issued, the Series A interest rate appeared much more favorable when the market later deteriorated substantially. A portion of the proceeds was used to pay $64 million of notes issued for the Intermediate project.

On December 4, MMWEC issued $35 million in short-term notes to finance construction of the Peaking project. The new loan was issued at 60% of the prime rate and matures January 2, 1981. Five million dollars in notes were repaid from the proceeds. Long-term financing of the Peaking project is anticipated during 1980.

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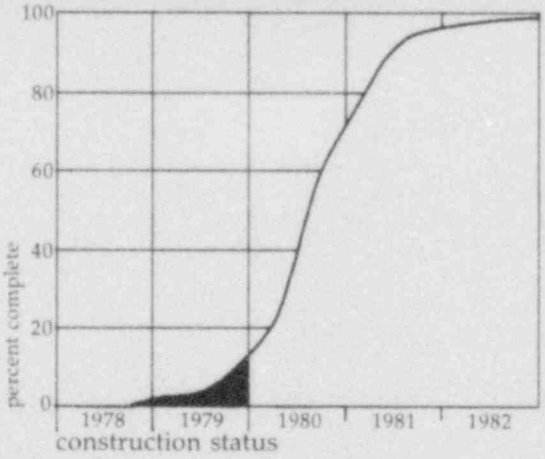
Despite a five month construction delay, Stony Brook was on schedule and within budget. The oil-fired combined-cycle power plant will provide members and the region with a secure source of electric energy to meet their needs efficiently and economically during a time when many units have faced substantial delays.



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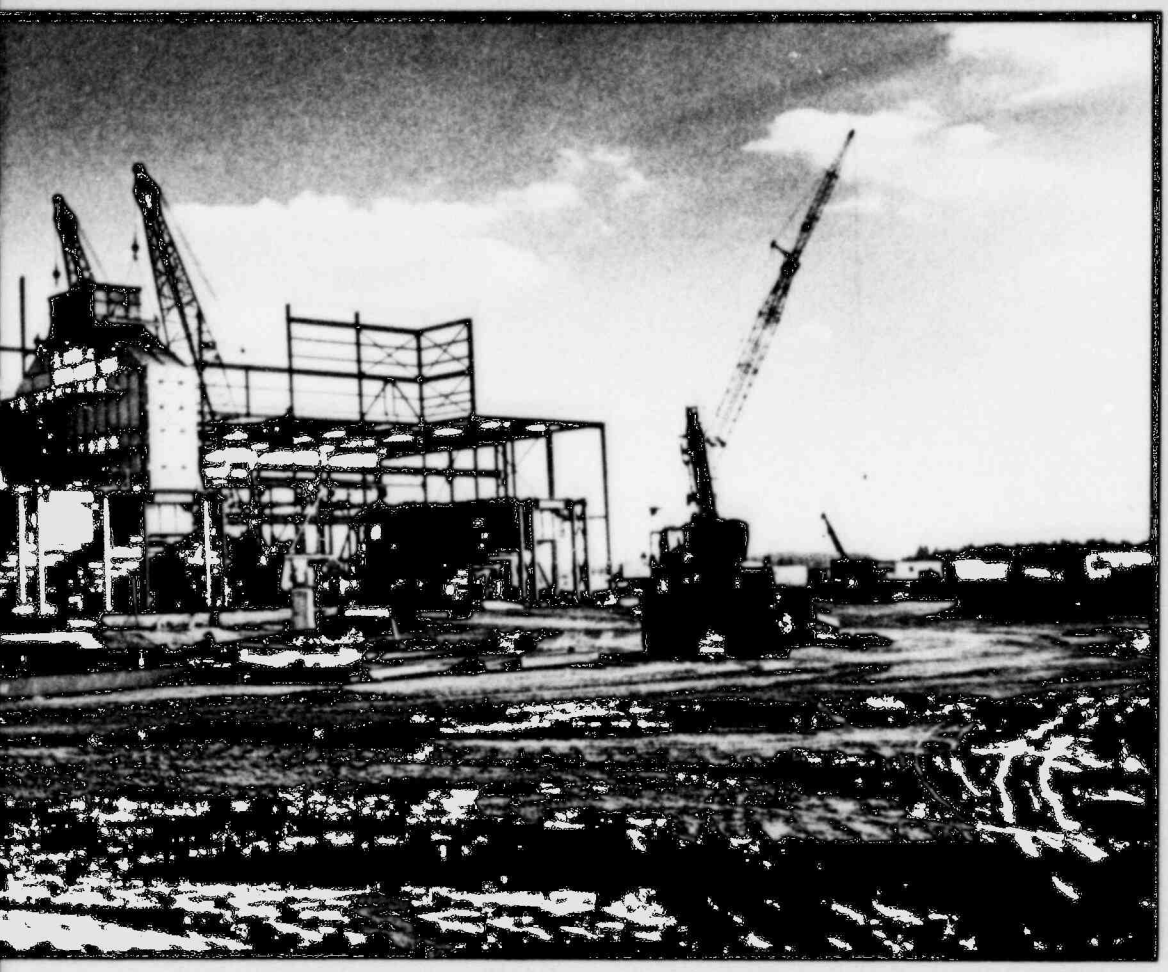

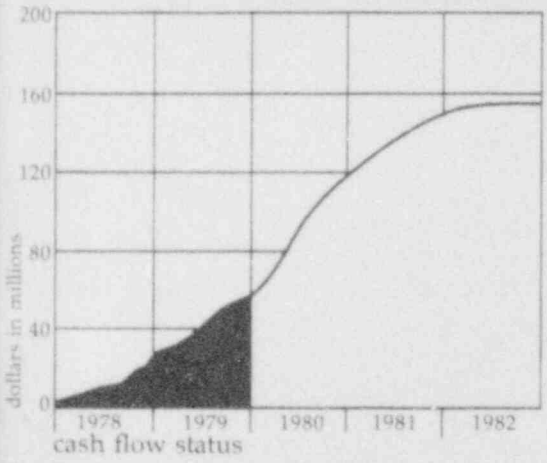

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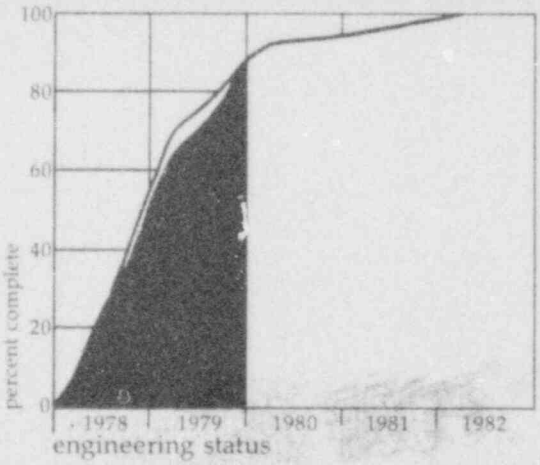

engineering status

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Electric power supply

MMWEC offers its members centralized and coordinated planning, and provides professional services at low cost with attention to diverse local requirements. In 1979, MMWEC planning engineers helped members to improve agreements with their existing suppliers and make short-term purchases where appropriate.

Savings to members

Through careful monitoring of each member system's seasonal power requirements, and analysis of capacity offerings throughout NEPOOL, MMWEC was able to recommend several short-term unit power contracts which produced substantial power cost savings to the members.

During 1979, MMWEC initiated short-term contracts for capacity from Vermont Yankee, Canal 2, Middletown 4 and Montville 6, as well as surplus capacity within the MMWEC systems. These contracts, combined with existing long-term contracts and service contracts with each system's major supplier, produced approximately $1,500,000 in power cost savings in 1979.

The Vermont Yankee purchase of 28 megawatts for the summer periods of 1979, 1980 and 1981 resulted in nearly $100,000 in energy savings in 1979.

Capacity exchanges between members effectively balanced the surpluses and deficiencies in power requirements within MMWEC. An average of 23 megawatts of capacity was exchanged in 1979, resulting in approximately $340,000 in savings.

Total savings to MMWEC members since entering into the Power Supply Program are approximately $11,800,000.

Forecasting future electric demand

Accurate forecasting of members' energy requirements is fundamental to MMWEC's power supply development. The task of projecting the future electric demand of diverse member systems located across the state is complex. In 1979, special emphasis was placed on forecasting the effects of potential conservation and load management programs.

Historically, MMWEC members' growth has been somewhat higher than other regional utilities. Since 1974 and the Arab oil embargo, the average annual demand growth rate has been 3.7%. Events following the oil embargo have radically affected forecasting methods, however.

The forecast proposed in 1979 is based on a significantly improved data gathering system and methodology. With the projected effects of greater energy conservation measures on electric demand, the forecast averages 2.2% growth after 1985. Approval of MMWEC's forecast is anticipated in 1980.

Baseload power acquisitions

MMWEC power planning engineers study the long-term requirements of the members and the resources in the region available to meet those requirements. Joint action is the most effective and mutually beneficial way to plan for, acquire and finance generating capacity.

On September 27, 1979, twenty MMWEC members signed Power Sales Agreements for additional output from Public Service of New Hampshire's Seabrook nuclear power project. This purchase, known as Project 6, includes 28 MW for ten non-member participants and 110 MW for member participants. With the addition of Project 6, MMWEC's ownership share in Seabrook will be 11.6% or 267 MW. The additional Seabrook interest included an agreement between MMWEC and PSNH which will permit members, at their option, to sell capacity which is surplus to their needs to PSNH during a specified period of time. This agreement will increase member flexibility in planning future power supply by allowing members to tailor their mix of resources to their best advantage.

The Massachusetts Department of Public Utilities hearings will begin in mid-March 1980 on MMWEC's petition to finance Project 6. When this approval is obtained, MMWEC will finance and acquire ownership of the project.

Interim power supply

MMWEC has been searching for interim power supplies to offset the delayed schedules of New England baseload units. The New Brunswick Electric Power Commission has entered into final negotiations that are expected to lead to a contract in early 1980 for the purchase of 100 MW of power to be supplied between 1981 and

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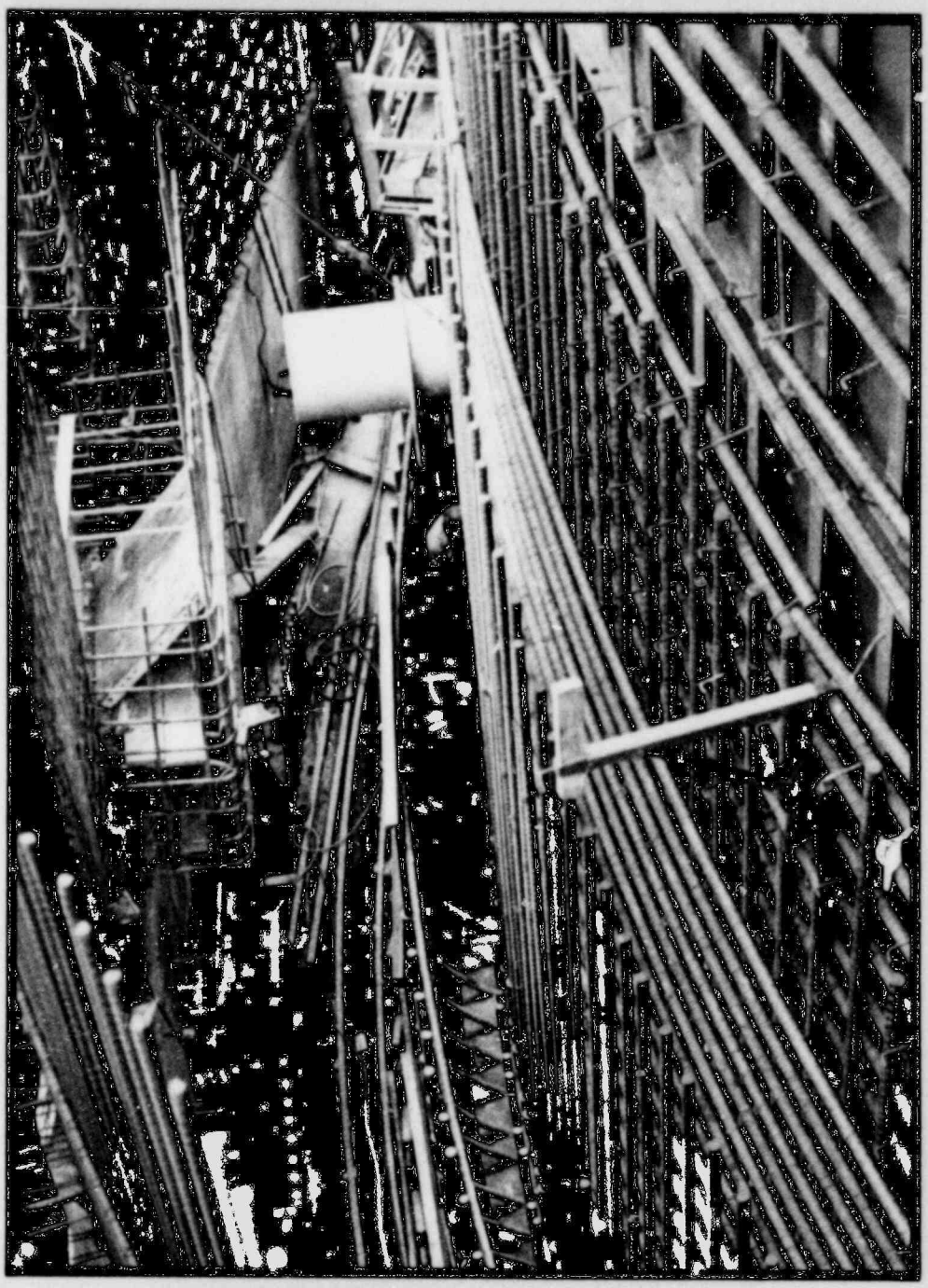

To offset delayed schedules of baseload units such as Seabrook, MMWEC has been negotiating for interim power from Canada and long-term power from hydro and resource recovery projects in the region.

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The power supply program

Ownership Interest	% of Total Unit	Proposed Capacity	Operation Date/ Status
Fossil-fueled resources			
W.F. Wyman Unit 4 *(oil)*	3.67	22.0 MW	on-line
Stony Brook Peaking Units *(oil)*	100.00	170.0 MW	1982
Stony Brook Intermediate Units *(oil)*	90.76	309.1 MW	1981
Sears Island Unit 1 *(coal)*	13.90	78.9 MW	1987
TOTAL		**580.0 MW**	
Nuclear resources			
Seabrook Units 1 & 2	11.59*	266.6 MW*	1983/85
Millstone Unit 3	4.80	55.0 MW	1986
Pilgrim Unit 2	13.24	152.3 MW	1985
Montague Units 1 & 2	1.45	33.3 MW	indefinite
TOTAL		**507.2 MW**	
Total resources		**1087.2 MW**	

**includes 28 MW contracted for by ten non-member participants.*
138 MW or 6.0091% of Seabrook is pending regulatory approval and financing.

1989 from the Point Lepreau Unit 1 nuclear power plant.

Additional analyses are also underway at the New England Power Pool (NEPOOL) for obtaining additional Canadian power, including surplus hydro from Quebec. MMWEC would have the opportunity to participate in any NEPOOL purchase.

Activities also proceeded on MMWEC's application for an allocation of the Power Authority of the State of New York's Niagara hydro power project. This baseload hydro power would be purchased under a long-term contract.

Alternative energy sources

As fuel costs escalated in 1979, the economic viability of alternate fuel sources increased. Significant progress was made in the analyses of hydro, resource recovery and wood-fired power resources.

In July of 1979, the Board of Directors announced its commitment to spend up to $50 million for the development of hydroelectric power. Subsequently, MMWEC authorized funding for a $5 million renewable energy resources development program as part of Project 6.

In 1979, MMWEC performed a siting study to identify potential sites for hydro development. Thirty-one sites were identified and proposals for feasibility study work were solicited. Five categories were described in the invitation to bid announced in November. The categories range from small hydro projects of one-half to five MW each to a major joint ownership development of 30 MW.

MMWEC has also been negotiating for up to 15 MW of the Lowell hydro project planned for development on the Merrimac River.

Trash, wood and wind were studied as fuel sources in 1979. Several refuse burning power plant proposals were analyzed and consultants with expertise in state-of-the-art technology were retained to provide technical guidance. Action is expected in 1980 on one or more of the trash proposals currently under analysis.

The possibility of joint ownership or a long-term purchase from a 50 MW wood-burning power plant proposed in Burlington, Vermont is under investigation.

MMWEC also began planning wind data collection studies for members in 1979.

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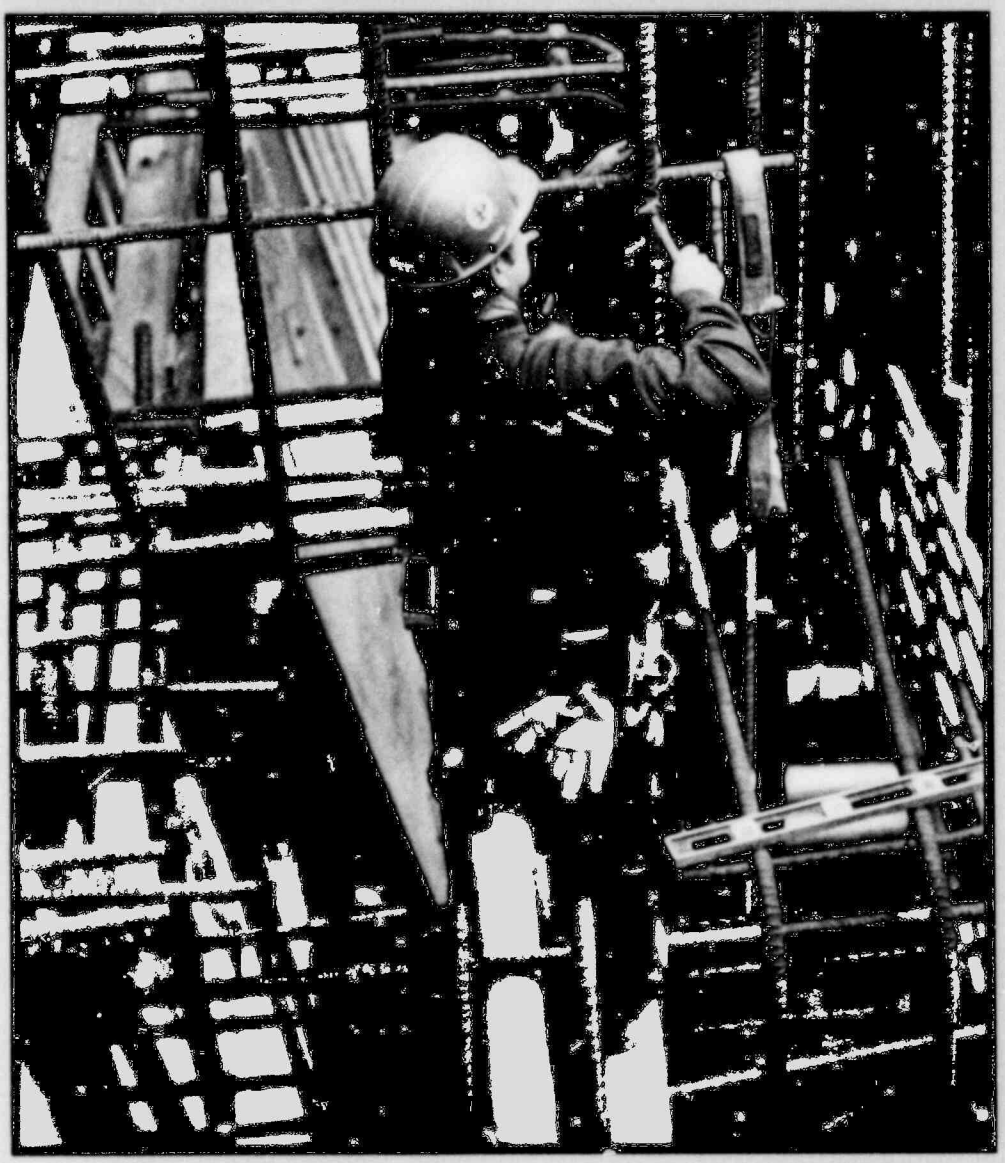

Through a program of joint action, short-term contracts and capacity exchanges, MMWEC has saved its members $11,800,000 in total to date.

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The financing program

In order to finance construction or ownership interests in joint electric generating projects, MMWEC issues electric revenue bonds. The authority to issue revenue bonds is granted by Chapter 775 of the Massachusetts Acts of 1975. A total of $595.5 million in outstanding revenue bonds and notes have been issued to provide capital for the purchase of generating resources. The estimated financed cost of 1,060 MW of generating capacity in the power supply system is in excess of $1.5 billion.

After take-or-pay power sales agreements have been signed by interested participants, the Massachusetts Department of Public Utilities must approve financings. To date, $1,085 billion in revenue bonds have been approved by the DPU.

Because of the successful electric department operations and excellent credit of the members, MMWEC has one of the best joint action municipal system bond ratings in the nation: "A+" by Standard & Poors and "A" by Moody's.

It is anticipated that the 1980 financing program will include funds to complete the financing of the Stony Brook Project and the initial financing for Project 6. In addition, funds may be obtained for other possible nuclear ownership interests and alternative energy resource development programs such as hydro, resource recovery and wood-burning power plants.

Administrative accomplishments

In order to achieve the substantial accomplishments of 1979, considerable staff expertise was required. Since December 31, 1978, the MMWEC staff more than doubled from thirty-five employees to eighty by the end of 1979. The staff additions are primarily professional, including engineering, accounting and management personnel.

The increased staff and expanded responsibilities of MMWEC called for a rearrangement of functions to improve efficiency and management effectiveness. In June, three key division manager positions were created: Finance and Treasury, Power Management, and Support Services. The Construction Department, Communications Department and Staff Legal Counsel were also organized to improve functional accomplishments.

By the end of 1980, 114 employees, including nine positions for plant operators, are expected to be on the staff. The Board of Directors authorized MMWEC to build a new, energy efficient and economical office building to accommodate the expanded staff. The building is scheduled for completion in late 1980.

The 1980 goals

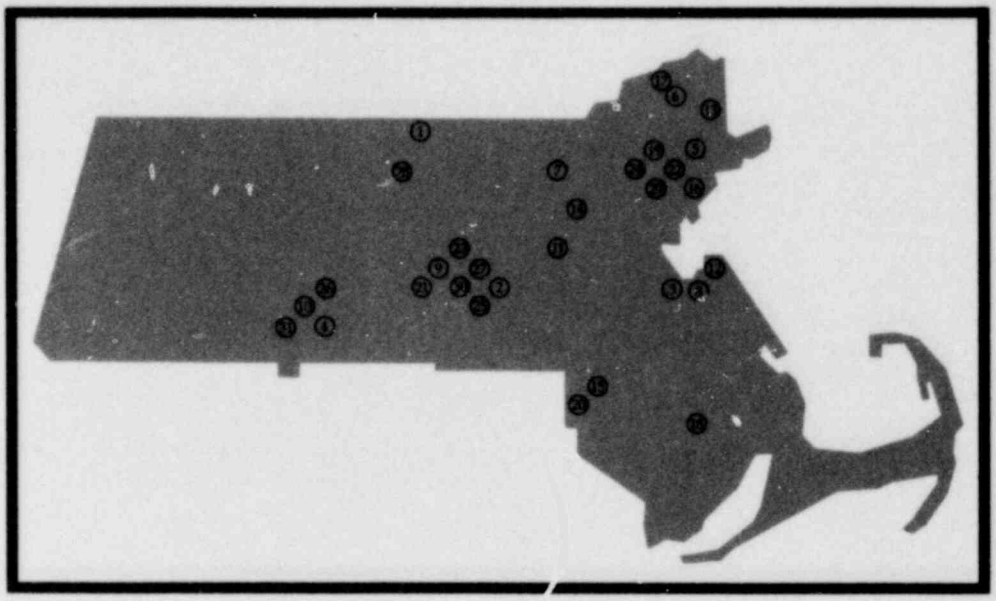
The following represent key goals which we expect to achieve during the coming year:

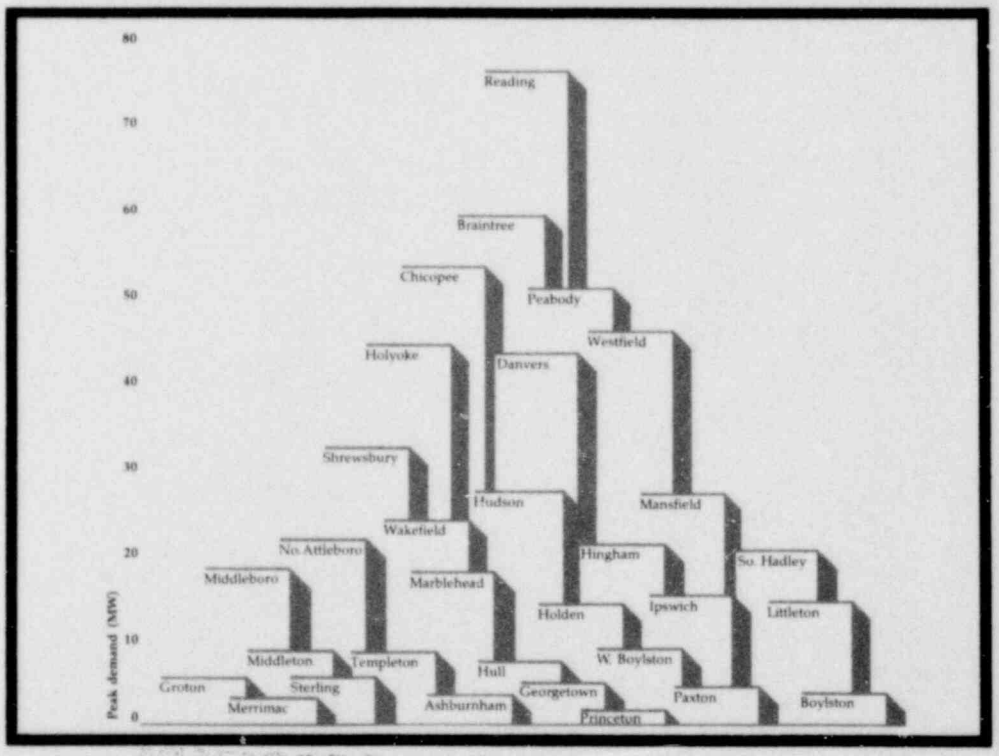
1. Receive regulatory approvals and finance Project 6, the Stony Brook Peaking project and other possible power projects.
2. Acquire power resources as needed to meet member needs in the most economic manner possible.
3. Make definitive progress in hydro, resource recovery, and other alternatives, where economic.
4. Assist members in establishing an active conservation program.
5. Contract for secure fuel sources for the Stony Brook Project.
6. Acquire the necessary permits for project activities.
7. Begin a siting study for a coal plant and prepare an overall siting program.
8. Complete the new administrative building.

I would like to express my appreciation to the members, the Board of Directors and the employees for their support during this past year. I look forward to continued challenges and accomplishments in 1980. The goals set for the coming year will require considerable effort; I am confident that the challenges will be met.

Phillip C. Otness

Phillip Otness, *General Manager*





The diversity of the MMWEC membership is apparent in a comparison of 1979 peak demand.

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The MMWEC membership

The Massachusetts Municipal Wholesale Electric Company is a political subdivision of the Commonwealth of Massachusetts inaugurated May 27, 1976 as a public corporation.

The MMWEC member municipals were established between 1889 and 1915. They are among the oldest, most experienced public electric utilities in the nation.

Any Massachusetts municipal electric department may become a member of MMWEC following authorization by a town meeting or city governing body.

At the close of 1979, the thirty-one member cities and towns provided electric power to well over half a million people.

(1) **Ashburnham Municipal Light Plant**
Robert Gould, Manager

(2) **Boylston Municipal Light Department**
Edward Kimball, Manager

(3) **Braintree Electric Light Department**
Donald Newton, Manager

(4) **Chicopee Municipal Lighting Plant**
Herve Plasse, Manager

(5) **Danvers Electric Department**
John Finocchio, Superintendent

(6) **Georgetown Municipal Light Department**
James Hazen, Manager

(7) **Groton Electric Light Department**
Roger Beeltje, Manager

(8) **Hingham Municipal Light Plant**
Clyde Curtis, Manager

(9) **Holden Municipal Light Department**
Neil Murray, Manager

(10) **Holyoke Gas & Electric Department**
George Leary, Manager

(11) **Hudson Light & Power Department**
Horst Huehmer, Manager

(12) **Hull Municipal Lighting Plant**
Everett Lutzy, Manager

(13) **Ipswich Municipal Light Department**
Robert O'Meara, Manager

(14) **Littleton Electric Light & Water Department**
Curtis Lanciani, Manager

(15) **Mansfield Municipal Light Department**
James Hall, Director

(16) **Marblehead Municipal Light Department**
Richard Bailey, Manager

(17) **Merrimac Municipal Light Department**
Theodore Van Nahl, Manager

(18) **Middleborough Gas & Electric Department**
Clifford Engstrom, Manager

(19) **Middleton Municipal Light Department**
Mark Kelly, Manager

(20) **North Attleborough Electric Department**
Harold Payne, Manager

(21) **Paxton Municipal Light Department**
Harold Smith, Manager

(22) **Peabody Municipal Light Plant**
Edward McCarthy, Manager

(23) **Princeton Electric Light Department**
Richard Wheeler, Manager

(24) **Reading Municipal Light Department**
Norbert Rhinerson, Manager

(25) **Shrewsbury Electric Light Department**
James Baker, Manager

(26) **South Hadley Electric Light Department**
Wardman Brooksbank, Manager

(27) **Sterling Municipal Electric Light Department**
Frederick Gurney, Manager

(28) **Templeton Municipal Lighting Plant**
Gerald Skelton, Manager

(29) **Wakefield Municipal Light Department**
William Wallace, Manager

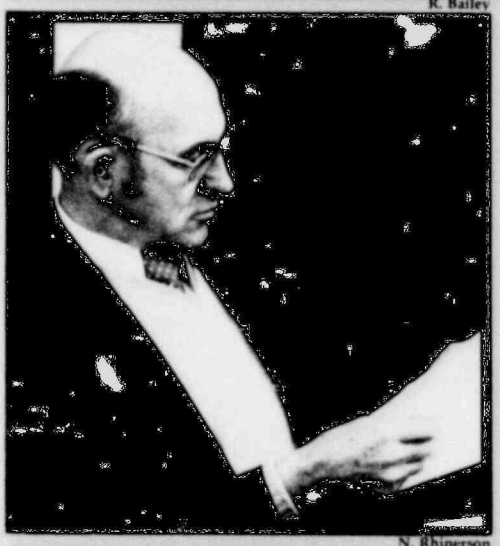
(30) **West Boylston Municipal Lighting Plant**
Charles Coughlin, Manager

(31) **Westfield Gas & Electric Light Department**
Don Duperrault, Manager

POOR ORIGINAL

R. Bailey

H. Payne



N. Rhinerson

N. Paven

Board of Directors

Richard Bailey
Manager, Marblehead

James E. Baker
Manager, Shrewsbury

James F. Hall
Director, Mansfield

Horst Huehmer
Manager, Hudson

Francis H. King*
Holyoke

Neil E. Murray
Manager, Holden

Nathan S. Paven*
Attorney, Boston

Harold G. Payne
Manager, North Attleborough

Norbert D. Rhinerson
Manager, Reading

Officers

James E. Baker
Chairman of the Board

Francis H. King
President

George E. Leary
Treasurer

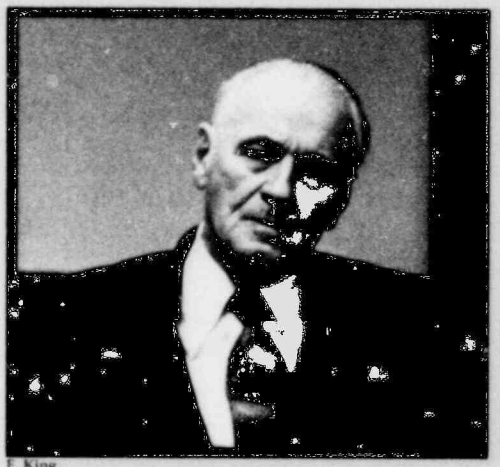
Maurice J. Ferriter
General Counsel/Assistant Secretary

Phillip C. Otness
General Manager/Secretary

Walter Gaebler II
Assistant Treasurer

**Appointed by the Governor of the Commonwealth*

POOR ORIGINAL



F. King

P. Otness

M. Ferriter H. Huehmer J. Baker

N. Murray

J. Hall

REPRODUCED FROM POOR ORIGINAL

The Treasurer's statement

MMWEC continued the financing of the projects in its Power Supply Program during 1979 through issuance of bonds and notes. On January 1, 1979 MMWEC had notes outstanding, primarily issued to finance the Stony Brook Projects, amounting to approximately $70 million. On August 16, 1979, MMWEC sold $150,000,000 1979 Series A Bonds for the Stony Brook Intermediate Project. Primarily through the application of a portion of the bond proceeds, notes outstanding were reduced to $5,000,000 issued for the Stony Brook Peaking Project. Notes outstanding at December 31, 1979 amounted to $35,000,000, all of which were issued for the Peaking Project.

The 1979 Series A Bonds were MMWEC's fifth bond issue. Total revenue bonds issued and outstanding at December 31, 1979 amounted to $560,870,000. MMWEC's bonds are rated "A" by Moody's and "A+" by Standard & Poor's.

As a result of MMWEC's conservative financing practices with respect to permanent financing for projects under construction, in most cases estimated construction cash flow requirements and the interest requirements on long-term debt issued for such projects have been funded through 1981 or longer. This policy provides flexibility with respect to future financings which is advantageous, particularly in light of money market conditions in the latter part of 1979 and continuing into 1980.

The Board of Directors continued the appointment of Arthur Andersen & Co. as independent certified public accountants for the corporation. The Auditor's opinion and MMWEC's financial statements for the years ended December 31, 1979 and 1978 are included as a separate section of this Annual Report.

George E Leary

George Leary, *Treasurer*

G. Leary

W. Gaebler

Bonds Issued

Issue	Principal Amount (000)	Sale Date	Net Interest Cost %
1976 Series A	$ 75,000	8-26-76	7.234
1977 Series A	177,370	7-27-77	6.359
1977 Series B	83,500	12-7-77	6.127
1978 Series A	75,000	9-13-78	6.824
1979 Series A	150,000	8-16-79	7.006
	$560,870		

Project Financing Status

Project	Bonds Issued (000)	Estimated Construction Cash Flow Requirements	Interest Requirements Outstanding Bonds
Nuclear Mix 1	$180,200	10-1-83	1-1-82
Nuclear Mix 2	10,060	(1)	1-1-82
Nuclear Project 3	52,690	7-1-83	1-1-82
Nuclear Project 4	118,500	7-1-83	7-1-83
Nuclear Project 5	30,500	7-1-83	7-1-83
Wyman Project	9,420	(2)	(2)
Sears Island	9,500	4-1-84	7-1-82
Stony Brook Int.	150,000	10-1-81	1-1-82
	$560,870		

(1) Project is in early development stage and presently inactive.
(2) In commercial operation.

POOR ORIGINAL

MMWEC 1979

POOR ORIGINAL

FINANCIAL STATEMENTS

Table of Contents

Consultants and Financial Advisors	2
Auditor's Report	3
Balance Sheets	4
Statements of Operations	5
Statements of Changes in Financial Position	6
Statements of Changes in Special Funds	7
Statements of Long-Term Debt and Notes Payable	9
Notes To Financial Statements	10

POOR ORIGINAL

Consultants and Financial Advisors

Bond Fund Trustee
Continental Illinois National Bank and Trust Company of Chicago, Illinois

Paying Agents
Continental Illinois National Bank and Trust Company of Chicago, Illinois
1976 Series A Bonds
1977 Series A Bonds
1977 Series B Bonds
1978 Series A Bonds
1979 Series A Bonds

Citibank, N.A., New York
1976 Series A Bonds
1977 Series A Bonds
1977 Series B Bonds
1978 Series A Bonds
1979 Series A Bonds

New England Merchants National Bank, Boston, Massachusetts
1976 Series A Bonds
1977 Series A Bonds
1977 Series B Bonds

Shawmut Bank of Boston, N.A., Boston, Massachusetts
1978 Series A Bonds
1979 Series A Bonds

Construction Fund Trustees
Continental Illinois National Bank and Trust Company of Chicago, Illinois
Nuclear Mix No. 1
Nuclear Mix No. 2
Nuclear Project No. 4

Shawmut Bank of Boston, N.A., Boston, Massachusetts
Nuclear Project No. 3

Third National Bank of Hampden County, Springfield, Massachusetts
Wyman Project
Nuclear Project No. 5
Sears Island Project
Stony Brook Intermediate Project

Financial Advisor
Lazard Freres & Co., New York

Bond Counsel
Wood and Dawson, New York

POOR ORIGINAL

Auditor's report

To the Board of Directors of
MASSACHUSETTS MUNICIPAL WHOLESALE ELECTRIC COMPANY:

We have examined the balance sheets and statements of long-term debt and notes payable of MASSACHUSETTS MUNICIPAL WHOLESALE ELECTRIC COMPANY (a Massachusetts public corporation) as of December 31, 1979 and 1978, and the related statements of operations, changes in financial position and changes in special funds for the years then ended. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements referred to above present fairly the financial position of Massachusetts Municipal Wholesale Electric Company as of December 31, 1979 and 1978, and its results of operations and changes in its financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

Arthur Andersen & Co.

ARTHUR ANDERSEN & CO.

Boston, Massachusetts,
March 3, 1980

POOR ORIGINAL

Balance Sheets

December 31, 1979 and 1978

(Dollars in Thousands)

	1979				1978
ASSETS	Service	Projects Under Construction	Wyman Project	Total	Total
Electric Plant					
In Service	$ –	$ –	$ 7,045	$ 7,045	$ 6,462
Less Accumulated Depreciation *(Note3)*	–	–	(227)	(227)	(16)
	–	–	6,818	6,818	6,446
Under Construction *(Notes 2 and 7)*					
Jointly-Owned	–	130,634	–	130,634	70,869
MMWEC Projects	–	62,941	–	62,941	26,667
	–	193,575	–	193,575	97,536
Total Electric Plant	–	193,575	6,818	200,393	103,982
Other Property and Equipment	469	1,258	–	1,727	1,589
Less Accumulated Depreciation *(Note 3)*	(156)	(60)	–	(216)	(131)
	313	1,198	–	1,511	1,458
Total Property, Plant and Equipment	313	194,773	6,818	201,904	105,440
Special Funds *(See separate statement)*	–	374,502	2,033	376,535	351,666
Current Assets					
Cash	351	–	–	351	122
Accounts Receivable	440	228	203	871	101
Unbilled Receivables *(Note 2)*	208	–	–	208	15
Inventories, principally fuel oil	–	–	368	368	186
Advances to or (from) Projects	248	(244)	(4	–	–
Prepaid Expenses	31	183	–	214	16
	1,278	167	567	2,012	440
Deferred Charges					
Unamortized Debt Discount and Expenses *(Note 4)*	–	16,698	196	16,894	9,739
Costs Recoverable in the Future Under Terms of the Power Sales Agreements *(Notes 2 and 6)*	–	2,703	490	3,193	64
Other	–	1,636	–	1,636	177
	–	21,037	686	21,723	9,980
	$ 1,591	$590,479	$ 10,104	$602,174	$467,526
LIABILITIES					
Long-Term Debt *(See separate statement)*	$ –	$551,450	$ 9,420	$560,870	$410,870
Advances from Members *(Note 1)*	131	–	–	131	128
Current Liabilities					
Working Capital Advances	750	(723)	(27)	–	–
Notes Payable *(See separate statement)*	–	35,000	–	35,000	54,250
Accounts Payable	543	3,859	638	5,040	639
Accrued Expenses	167	240	20	427	1,571
Contractors' Retention	–	653	–	653	65
	1,460	39,029	631	41,120	56,525
Deferred Revenues	–	–	53	53	3
Commitments and Contingencies *(Note 7)*					
	$ 1,591	$590,479	$ 10,104	$602,174	$467,526

The accompanying notes are an integral part of these financial statements.

POOR ORIGINAL

Statements of Operations

For the years ended December 31, 1979 and 1978

(Dollars in Thousands)

	1979				1978
	Service	Projects Under Construction	Wyman Project	Total	Total
Revenues:					
Electric Sales For Resale *(Note 2)*	$387	$ –	$1,007	$ 1,394	$ 88
Service Revenues	594	–	–	594	455
Interest Income	–	27,362	221	27,583	22,996
Total Revenues and Interest Income	$981	$27,362	$1,228	$29,571	$23,539
Operating and Service Expenses:					
Fuel Used in Electric Generation	$ –	$ –	$ 385	$ 385	$ 72
Purchased Power *(Note 2)*	387	–	–	387	–
Other Operations and Maintenance –					
Payroll and Related	296	–	30	326	197
Other	271	–	384	655	253
Depreciation *(Note 3)*	25	–	211	236	37
Taxes Other Than Income	2	–	78	80	6
	981	–	1,088	2,069	565
Interest Expense:					
Interest Charges	–	32,891	575	33,466	25,948
Interest Charged to Projects During Construction *(Note 2)*	–	(5,529)	–	(5,529)	(2,910)
	–	27,362	575	27,937	23,038
Loss on Cancelled Units *(Note 6)*	–	2,703	–	2,703	–
Total Expenses	981	30,065	1,663	32,709	23,603
Less – Costs Recoverable in the Future Under Terms of the Power Sales Agreements *(Notes 2 and 6)*	–	(2,703)	(435)	(3,138)	(64)
	$981	$27,362	$1,228	$29,571	$23,539

POOR ORIGINAL

The accompanying notes are an integral part of these financial statements.

Statements of Changes in Financial Position

For the years ended December 31, 1979 and 1978

(Dollars in Thousands)

	1979				1978
	Service	Projects Under Construction	Wyman Project	Total	Total
SOURCES OF FUNDS:					
Operations and Services –					
Revenues and Income	$ 981	$ –	$ 1,228	$ 2,209	$ 549
Expenses	(981)	–	(1,663)	(2,644)	(613)
Charges Not Involving Funds:					
Depreciation and Amortization *(Notes 3 and 4)*	25	–	216	241	37
Increase in Deferred Revenue	–	–	50	50	3
Interest Expense Previously Funded	–	–	285	285	47
From Operations and Service	25	–	116	141	23
Financing and Investments –					
Bond Proceeds	–	150,000	–	150,000	75,000
Interest Income	–	27,362	–	27,362	22,990
Interest Expense	–	(32,891)	–	(32,891)	(25,900)
Charges Not Involving Funds:					
Depreciation and Amortization	–	444	–	444	382
Interest charged to Projects During Construction	–	5,529	–	5,529	2,910
Loss on Cancelled Units *(Note 6)*	–	2,703	–	2,703	–
From Financing and Investments	–	153,147	–	153,147	75,382
Total Sources of Funds	$ 25	$153,147	$ 116	$153,288	$ 75,405
USE OF FUNDS:					
Additions to Electric Plant	$ –	$ 98,743	$ 570	$ 99,313	$ 54,654
Additions to Other Property and Equipment	4	134	–	138	73
Additions to Debt Discount and Expenses *(Note 4)*	–	7,544	–	7,544	2,281
Increase in Costs Recoverable in the Future Under Terms of the Power Sales Agreements *(Notes 2 and 6)*	–	2,703	435	3,138	64
Increase in Other Deferred Charges	–	1,459	–	1,459	148
Other	(3)	–	(147)	(150)	(20)
	$ 1	$110,583	$ 858	$111,442	$ 57,200
CHANGE IN WORKING CAPITAL, INCLUDING NOTES PAYABLE AND SPECIAL FUNDS	$ 24	$ 42,564	$ (742)	$ 41,846	$18,205
CHANGE IN WORKING CAPITAL CONSISTS OF:					
Increase (Decrease) in Special Funds	$ –	$ 25,393	$ (524)	$ 24,869	$62,215
Increase (Decrease) in Current Assets –					
Cash	229	–	–	229	67
Accounts Receivable	363	228	179	770	75
Unbilled Receivables	193	–	–	193	(35)
Inventories	–	–	182	182	186
Prepaid Expenses	22	183	(7)	198	(28)
Advances to Projects	221	(221)	–	–	–
	1,028	25,583	(170)	26,441	62,480
(Increase) Decrease in Notes Payable	–	19,250	–	19,250	(44,300)
(Increase) Decrease in Current Liabilities –					
Working Capital Advances	(350)	340	10	–	–
Accounts Payable	(517)	(3,322)	(562)	(4,401)	966
Accrued Expenses	(137)	1,301	(20)	1,144	(876)
Contractors' Retention	–	(588)	–	(588)	(65)
	(1,004)	16,981	(572)	15,405	(44,275)
	$ 24	$ 42,564	$ (742)	$ 41,846	$18,205

The accompanying notes are an integral part of these financial statements.

POOR ORIGINAL

Statements of Changes in Special Funds

For the two years ended December 31, 1979

(Dollars in Thousands)

	Construction and Construction Interest Funds							
	Nuclear Mix No.1	Nuclear Mix No.2	Nuclear Project No.3	Nuclear Project No.4	Nuclear Project No.5	Sears Island Project	Stony Brook Intermediate Project	Wyman Project
Balances, January 1, 1978	$133,859	$6,597	$42,239	$ 77,459	$ –	$ –	$ –	$3,459
Add:								
Bond proceeds	–	–	–	32,008	27,893	8,686	–	–
Note proceeds	–	–	–	–	10,000	2,000	–	–
Interest income	8,348	444	2,344	6,410	966	231	–	183
Electric sales for resale	–	–	–	–	–	–	–	–
Inter-fund transfers	–	–	–	–	–	–	–	(774)
	142,207	7,041	44,583	115,877	38,859	10,917	–	2,868
Deduct:								
Construction expenditures	14,098	354	13,459	57	8	1,169	–	1,126
Debt issue costs	–	–	1	768	225	79	–	–
Other property acquisitions	–	–	–	–	–	–	–	–
Operating purchase and expenses	–	–	–	–	–	–	–	–
Note retirements	–	–	–	–	10,000	2,000	–	–
Interest payments – notes	–	–	–	–	232	57	–	–
Interest payments – bonds	11,818	692	3,276	6,230	681	213	–	570
Working capital advances	2	29	10	23	36	46	–	(77)
	25,918	1,075	16,746	7,078	11,182	3,564	–	1,619
Balances, December 31, 1978, consisting of:								
Construction fund	$ 80,834	$3,890	$18,009	$ 75,621	$18,488	$ 5,121	$ –	$ 964
Construction interest	35,455	2,076	9,828	33,178	9,189	2,232	–	285
	$116,289	$5,966	$27,837	$108,799	$27,677	$ 7,353	$ –	$1,249
Add:								
Bond proceeds	–	–	–	–	–	–	139,871	–
Note proceeds	–	–	–	–	–	–	–	–
Interest income	8,783	511	2,143	6,697	1,769	607	2,673	81
Electric sales for resale	–	–	–	–	–	–	–	–
Inter-fund transfers	1,061	49	275	377	95	30	15,500	15
Other receipts	–	–	–	–	–	–	408	–
	126,133	6,526	30,255	115,873	29,541	7,990	158,452	1,345
Deduct:								
Construction expenditures	7,914	245	3,288	37,709	9,540	139	6,774	610
Debt issue costs	1	–	–	3	3	1	7,284	–
Operating purchases and expenses	–	–	–	–	–	–	–	–
Note retirements	1,250	–	–	–	–	–	64,000	–
Interest payments – notes	–	–	–	–	–	–	429	–
Interest payments – bonds	11,818	692	3,276	7,373	2,042	638	4,137	285
Working capital advances	46	34	12	25	(19)	(15)	257	(10)
Other	7	–	–	1,300	229	–	–	–
	21,036	971	6,576	46,410	11,895	763	82,881	885
Balances, December 31, 1979, consisting of:								
Construction fund	$ 81,460	$4,171	$17,127	$ 43,658	$10,499	$ 5,633	$ 55,714	$ 460
Construction interest	23,637	1,384	6,552	25,805	7,147	1,594	19,857	–
	$105,097	$5,555	$23,679	$ 69,463	$17,646	$ 7,227	$ 75,571	$ 460

The accompanying notes are an integral part of these financial statements.

POOR ORIGINAL

Bond Fund	Bond Reserve Fund	Total Trusteed Funds	Reserve and Contingency Fund	Stony Brook Peaking Project	Stony Brook Intermediate Project	Nuclear Mix No. 1 (Seabrook)	Revenue Fund	Total Non-Trusteed Funds	Total Special Funds
$ –	$21,777	$285,390	$ 102	$ 350	$ 3,609	$ –	$ –	$ 4,061	$289,451
–	5,023	73,610	–	–	–	–	–	–	73,610
–	–	12,000	–	4,800	48,200	1,250	–	54,250	66,250
–	1,747	20,673	7	239	2,063	12	2	2,323	22,996
–	–	–	–	–	–	–	91	91	91
–	–	(774)	–	–	–	–	774	774	–
–	28,547	390,899	109	5,389	53,872	1,262	867	61,499	452,398
–	–	30,271	–	1,129	20,173	660	–	21,962	52,233
–	–	1,073	–	3	33	6	–	42	1,115
–	–	–	–	(279)	276	–	–	(3)	(3)
–	–	–	–	–	–	–	295	295	295
–	–	12,000	–	1,230	8,720	–	–	9,950	21,950
–	–	289	–	133	1,240	–	–	1,373	1,662
–	–	23,480	–	–	–	–	–	–	23,480
–	–	69	–	1	(70)	–	–	(69)	–
–	–	67,182	–	2,217	30,372	666	295	33,550	100,732
$ –									
–									
$ –	$28,547	$323,717	$ 109	$ 3,172	$ 23,500	$ 596	$ 572	$ 27,949	$351,666
–	9,929	149,800	1,000	–	–	–	–	1,000	150,800
–	–	–	–	40,000	64,000	–	–	104,000	104,000
6	2,547	25,817	45	493	1,124	28	76	1,766	27,583
–	–	–	–	–	–	–	1,007	1,007	1,007
279	(1,612)	16,069	28	–	(15,500)	(307)	(290)	(16,069)	–
–	–	408	–	–	4,540	–	471	5,011	5,419
285	39,411	515,811	1,182	43,665	77,664	317	1,836	124,664	640,475
–	–	66,219	–	2,939	25,772	246	–	28,957	95,176
–	–	7,292	–	17	182	1	–	200	7,492
–	–	–	–	–	–	–	1,035	1,035	1,035
–	–	65,250	–	9,800	48,200	–	–	58,000	123,250
–	–	429	–	487	3,469	70	–	4,026	4,455
285	–	30,546	–	–	–	–	–	–	30,546
–	–	330	–	–	–	–	20	20	350
–	–	1,636	–	–	–	–	–	–	1,636
285	–	171,702	–	13,243	77,623	317	1,055	92,238	263,940
$ –	$39,411	$344,109	$1,182	$30,422	$ 41	$ –	$ 781	$ 32,426	$376,535

POOR ORIGINAL

Statements of Long-term Debt and Notes Payable

December 31, 1979 and 1978

(Dollars in Thousands)

	1979				1978
	Redeemable Beginning	Projects Under Construction	Wyman Project	Total	Total
Power Supply System					
Revenue Bonds *(Note 5)*					
1976 Series A					
Serial Bonds, 5.60% – 6.75%, $840 due in 1985 increasing to $1,635 in 1996		$ 14,240	$ –	$ 14,240	$ 14,240
Term Bonds, 7.25%, due 2014, sinking fund requirement of $1,745 in 1997 increasing to $5,735 in 2014	1986 at 103%	60,760	–	60,760	60,760
		75,000	–	75,000	75,000
1977 Series A					
Serial Bonds, 4.20% – 6.10%, $130 due in 1981 increasing to $4,500 in 1998		38,540	3,680	42,220	42,220
Term Bonds, 6.375%, due 2015, sinking fund requirement of $4,760 in 1999 increasing to $11,925 in 2015	1987 at 103%	129,410	5,740	135,150	135,150
		167,950	9,420	177,370	177,370
1977 Series B					
Serial Bonds, 5.10% – 5.80%, $1,090 due in 1988 increasing to $1,870 in 1998		15,855	–	15,855	15,855
Term Bonds, 6.125%, due 2017, sinking fund requirement of $1,980 in 1999 increasing to $5,770 in 2017	1987 at 103%	67,645	–	67,645	67,645
		83,500	–	83,500	83,500
1978 Series A					
Serial Bonds, 5.80% – 6.60%, $765 due in 1988 increasing to $1,795 in 2000		16,400	–	16,400	16,400
Term Bonds, 6.125%, due 2018, sinking fund requirement of $1,915 in 2001 increasing to $5,475 in 2017 and $700 in 2018	1988 at 103%	58,600	–	58,600	58,600
		75,000	–	75,000	75,000
1979 Series A					
Serial Bonds, 6.00% – 6.70%, $2,660 due in 1984 increasing to $4,855 in 1994		40,035	–	40,035	–
Term Bonds, 5.00% – 7.20%, $10,620 due in 1996 increasing to $67,360 in 2008, sinking fund requirement of $5,180 in 1995 increasing to $11,740 in 2008	1989 at 103%	109,965	–	109,965	–
		150,000	–	150,000	–
		551,450	9,420	560,870	410,870
Notes Payable *(Note 5)*					
Nuclear Mix No. 1 – Seabrook		–	–	–	1,250
Stony Brook Peaking Project		35,000	–	35,000	4,800
Stony Brook Intermediate Project		–	–	–	48,200
		35,000	–	35,000	54,250
		$586,450	$9,420	$595,870	$465,120

The accompanying notes are an integral part of these financial statements.

POOR ORIGINAL

Notes to Financial Statements
December 31, 1979 and 1978

(1) Massachusetts Municipal Wholesale Electric Company (MMWEC)

MMWEC is a political subdivision of the Commonwealth of Massachusetts, authorized to issue revenue bonds secured by power sales agreements with its members and other electric systems to finance the construction and ownership of electric power facilities.

Any Massachusetts city or town which has a municipal electric department and which is authorized by majority vote of such city or town may become a member by applying for admission to MMWEC and agreeing to comply with such reasonable terms and conditions of membership as the By-Laws of MMWEC may fix from time to time. As of December 31, 1979, thirty-one Massachusetts municipalities had received votes of their respective city councils or town meetings authorizing membership by their respective municipal electric systems.

Power Supply System

MMWEC is obtaining power supply capacity by acquiring interests in various generating units from certain investor-owned utilities and by constructing its own electric power facilities. See *Note 7* for information with respect to MMWEC's construction program and commitments. In addition, MMWEC negotiates power purchases on behalf of its members.

Advances from Members

MMWEC is authorized to assess each member to provide working capital. Advances may be returned to the members upon approval by MMWEC's Board of Directors or the dissolution of MMWEC.

Advances from Projects

The Board of Directors has authorized working capital advances of up to $750,000 from Project Construction Funds. Such advances had been drawn from individual project funds based on the ratio of estimated administrative expenditures for each project for the period to the total of estimated project administrative expenditures for the period. At December 31, 1979 and 1978 the amounts of the advances were $750,000 and $400,000, respectively.

(2) Significant Accounting Policies

Interest Charged to Projects During Construction

MMWEC capitalizes interest as an element of the cost of constructed electric plant. A corresponding amount is reflected as a reduction of interest expense. The amount of interest capitalized is based on the cost of debt, including amortization of debt discount and expenses related to each project, net of investment income derived from project funds not yet expended for construction.

Special Funds

Proceeds from the sales of Revenue Bonds are deposited with Trustees to be invested until they are required for construction or debt service payments. Note proceeds are placed with Depositories and are similarly invested by MMWEC. Investment securities consist of U.S. Government securities, Federal agency obligations, and bank certificates of deposit in accordance with the provisions of the Bond Resolution. The investments are carried at cost, adjusted for amortization of premium or discount.

POOR ORIGINAL

Notes to Financial Statements
December 31, 1979 and 1978

(2) Signifcant Accounting Policies, cont'd

Revenue and Costs Recoverable in Future Under Terms of the Power Sales Agreements

Electric Sales for Resale

Under the terms of the Power Sales Agreements with Project participants, revenues include billings to participants for debt principal and interest payments in the period in which they are due. However, for financial reporting purposes, MMWEC recognizes currently the depreciation and amortization expense of assets financed by bond principal. The excess of current expenses over amounts billed currently under terms of the Power Sales Agreements is deferred to the future periods in which these amounts will be recovered through revenues.

Electric Sales for Resale and Purchased Power reflected in the column headed Service, represent power purchases made by MMWEC for resale to contracting participants. In addition to these arrangements, MMWEC serves as an agent for certain participants, whereby MMWEC is billed for the costs of power purchased or received by the participants under other contracts and agreements. Such costs are expenses of the participants and, accordingly, are not reflected in the accompanying statements of operations.

Service Revenues

Under terms of the Service Agreement, MMWEC bills its members for costs incurred in providing services on their behalf. Service revenues are recorded in the accounts as the corresponding expenses are incurred. Amounts which are not yet billed are included in Unbilled Receivables in the accompanying balance sheets.

(3) Depreciation

Property, plant and equipment in service is depreciated using the straight-line method over the estimated useful lives of the respective assets. Depreciation of electric plant in service amounted to $211,000 using a composite rate of 3%. Depreciation of other property and equipment aggregated $85,000, of which $60,000 was allocated to projects under construction and represents a composite rate of 16%. Depreciation of electric plant in service in 1978 was $16,000 and other property was $78,000, of which $57,000 was allocated to projects under construction.

(4) Unamortized Debt Discount and Expenses

Debt discount and expenses are amortized to interest expense over the life of the related outstanding debt. Additions to and amortization of discount and expenses are summarized below:

(Dollars in Thousands)

	Balance Jan. 1	Additions	Amortization	Balance Dec. 31
1978				
1976 A Bonds	$2,126	$ –	$ (58)	$ 2,068
1977 A Bonds	3,812	1	(102)	3,711
1977 B Bonds	1,823	44	(47)	1,820
1978 A Bonds	–	2,135	(15)	2,120
1977 A Notes	22	–	(22)	–
1978 A Notes	–	95	(80)	15
1978 B Notes	–	6	(1)	5
	$7,783	**$2,281**	**$(325)**	**$ 9,739**
1979				
1976 A Bonds	$2,068	$ –	$ (58)	$ 2,010
1977 A Bonds	3,711	–	(102)	3,609
1977 B Bonds	1,820	–	(47)	1,773
1978 A Bonds	2,120	3	(54)	2,069
1979 A Bonds	–	7,496	(85)	7,411
1978 A Notes	15	–	(15)	–
1978 B Notes	5	1	(6)	–
1979 A Notes	–	20	(20)	–
1979 B Notes	–	24	(2)	22
	$9,739	**$7,544**	**$(389)**	**$16,894**

POOR ORIGINAL

Notes to Financial Statements
December 31, 1979 and 1978

(5) Debt

Power Supply System Revenue Bonds

In order to finance construction or ownership interests in joint electric generating projects, MMWEC issues, pursuant to its Bond Resolution and Chapter 775 of the General Laws, Power Supply System Revenue Bonds. The Bonds are secured by a pledge of the revenues derived by MMWEC, under terms of power sales agreements, from the ownership and operation of its power supply system. Pursuant to the power sales agreements with the participants, each participant is obligated to pay its share of the actual costs relating to the generating units under construction or for planned construction. The participants' obligations are not contingent upon the completion or operational status of the units.

Notes Payable

Under terms of the resolution covering this borrowing, the notes are issued in anticipation of MMWEC's intended issuance of revenue bonds in 1980 to provide long-term financing of the project. The notes, which mature on January 2, 1981, bear interest at a rate equal to sixty percent of the bank's prime rate, payable semi-annually. The notes are subject to redemption and prepayment prior to maturity and, in the event that the notes are not repaid at the maturity date, the rate of interest increases to eighty percent of the bank's prime rate.

Line of Credit

MMWEC has a $2,000,000 revolving line of credit which is used to temporarily finance certain power purchases for itself and certain of its members. Borrowings under this line are at an interest rate approximating 50% of the prime rate and are secured by the receivables corresponding to the amounts taken-down.

(6) NEP Units 1 and 2 Cancellation

MMWEC's Nuclear Mix No. 2 was originally comprised of the New England Power Company nuclear units NEP 1 and 2 and Northeast Utilities Montague units 1 and 2 *(See Note 7)*.

The New England Power Company efforts to locate the NEP units in Charlestown, Rhode Island were unsuccessful and the units were cancelled on December 17, 1979. At December 31, 1979 MMWEC recorded its investment of $2,703,000, including interest charged during construction, as a charge to expense and deferral of that loss was recorded as "Costs Recoverable in the future under terms of the Power Sales Agreements". In accordance with the terms of these power sales agreements, the loss plus all costs associated with the Montague facility will be recoverable from the participants in Nuclear Mix No. 2 over the period in which the related debt principal and interest are due.

(7) Construction and Financing

Construction Program

MMWEC's plans for construction and acquisition of ownership interests in additional generating capacity are under continuing review and revision. Currently, forecasted expenditures for the generating facilities as shown below, amount to approximately $1.1 billion, including estimates for contingencies, interest, and MMWEC costs charged to projects during construction, including approximately $107 million for 1980.

POOR ORIGINAL

Notes to Financial Statements
December 31, 1979 and 1978

(7) Construction and Financing, cont'd

Construction Program

(Dollars in Thousands)

Unit (Lead Participant) – Estimated Completion Date*	Proposed MMWEC Capability (MW)	Expended To December 31, 1978	Expended To December 31, 1979	Total Estimated MMWEC Expenditures
Nuclear Mix No. 1				
Pilgrim Unit No. 2 (Boston Edison)-1988	152.3	$37,795	$ 45,032	$392,370
Millstone Unit No. 3 (Northeast Utilities)-1986	18.4	8,927	11,025	47,642
Seabrook Units Nos. 1 and 2 (Public Service Co. NH)-1984-1986	3.7	833	1,795	9,438
	174.4	$47,555	$ 57,852	$449,450
Nuclear Mix No. 2				
NEPCO Units Nos. 1 and 2 (New England Power) *See Note 6*	–	$ 2,368	$ –	
Montague Units Nos. 1 and 2 (Northeast Utilities) – *Uncertain***	33.3	645	688	Indeterminable
	33.3	$ 3,013	$ 688	
Nuclear Project No. 3				
Millstone Unit No. 3 (Northeast Utilities)-1986	36.8	$20,199	$ 24,409	$ 81,505
Nuclear Project No. 4				
Seabrook Units No.1 and 2 (Public Service Co. NH)-1984 – 1986	99.6	$ (913)	$ 36,888	$168, 931
Nuclear Project No. 5				
Seabrook Units Nos. 1 and 2 (Public Service Co. NH)-1984-1986	25.3	$ (164)	$ 9,494	$ 46,355
Total Nuclear Units	**369.4**	**$69,690**	**$129,331**	
Sears Island Project				
Sears Island Coal Unit No. 1 (Central Maine Power)-1988	78.9	$ 1,179	$ 1,303	$127,136
Stony Brook Peaking Project				
Phase I Peaking Units (MMWEC) - 1982	170.0	$ 1,836	$ 5,123	$ 63,964
Stony Brook Intermediate Project				
Phase I Intermediate Units (MMWEC) - 1981	309.1	$24,831	$ 57,818	$150,463
Total Fossil-Fueled Units	558.0	$27,846	$ 64,244	
Total		$97,536	$193,575	

*Completion dates are estimates for MMWEC's planning purposes and may vary from those indicated by the lead participant.

**Commercial operation dates are uncertain and the lead participant has not made a current cost estimate.

The estimate of total expenditures was made by MMWEC and its Consulting Engineer based on information available during the second half of 1979. Estimates for jointly-owned facilities are made by MMWEC's Consulting Engineer based on those of the electric utility company having primary responsibility for the construction of each unit (the "lead participant") and on other available data.

The complex process of obtaining the numerous regulatory approvals and permits to construct the Seabrook units has been lengthy and has resulted in considerable increase in their cost. Public Service Company of New Hampshire ("PSNH") is

POOR ORIGINAL

Notes to Financial Statements December 31, 1979 and 1978

(7) Construction and Financing, cont'd

Construction Program

presently experiencing difficulties in obtaining external financing for its construction program, a major portion of which is its 50% ownership in Seabrook, and maintaining adequate cash flow to fund that program and current operations. PSNH has proposed to reduce its ownership in Seabrook by approximately 15% and other utilities, including MMWEC to the extent of approximately 6%, have committed to a like amount subject to certain conditions, primarily regulatory approvals which could involve an extended period of time to obtain. PSNH has indicated that adequate permanent rates, timely regulatory approvals allowing a reduction in its Seabrook ownership by not significantly less than 15%, the continued availability to it of external financing and the ability of other Seabrook owners to obtain necessary and timely financing are all essential to avoid suspension of construction or other measures which might adversely affect the completion and cost of Seabrook. In December 1979, the New Hampshire Public Utilities Commission ("NHPUC") granted PSNH emergency rate relief, under bond, which represents a portion of a permanent retail rate increase presently pending before the NHPUC. MMWEC cannot predict what effect the foregoing financing and regulatory problems may have on the completion or cost of the Seabrook units.

The electric utility industry has experienced and may continue to experience a number of problems including financing large construction programs during an inflationary period, obtaining sufficient capital, compliance with environmental regulations, delays in constructing new facilities, delays in licensing, particularly nuclear facilities since the Three Mile Island incident, high fossil fuel costs and obtaining adequate rate relief.

Financing Program

To finance its ownership share of the costs of these projects, MMWEC intends to issue additional series of revenue bonds, the timing and size of which will be based upon construction cash flow requirements and bond market conditions prevailing at the time.

(8) Retirement Plan

Retirement benefits are provided to MMWEC's eligible employees through its participation in the Retirement and Security Program sponsored by the National Rural Electric Cooperative Association. Pension costs were $48,082 for 1979 and $33,942 for 1978.

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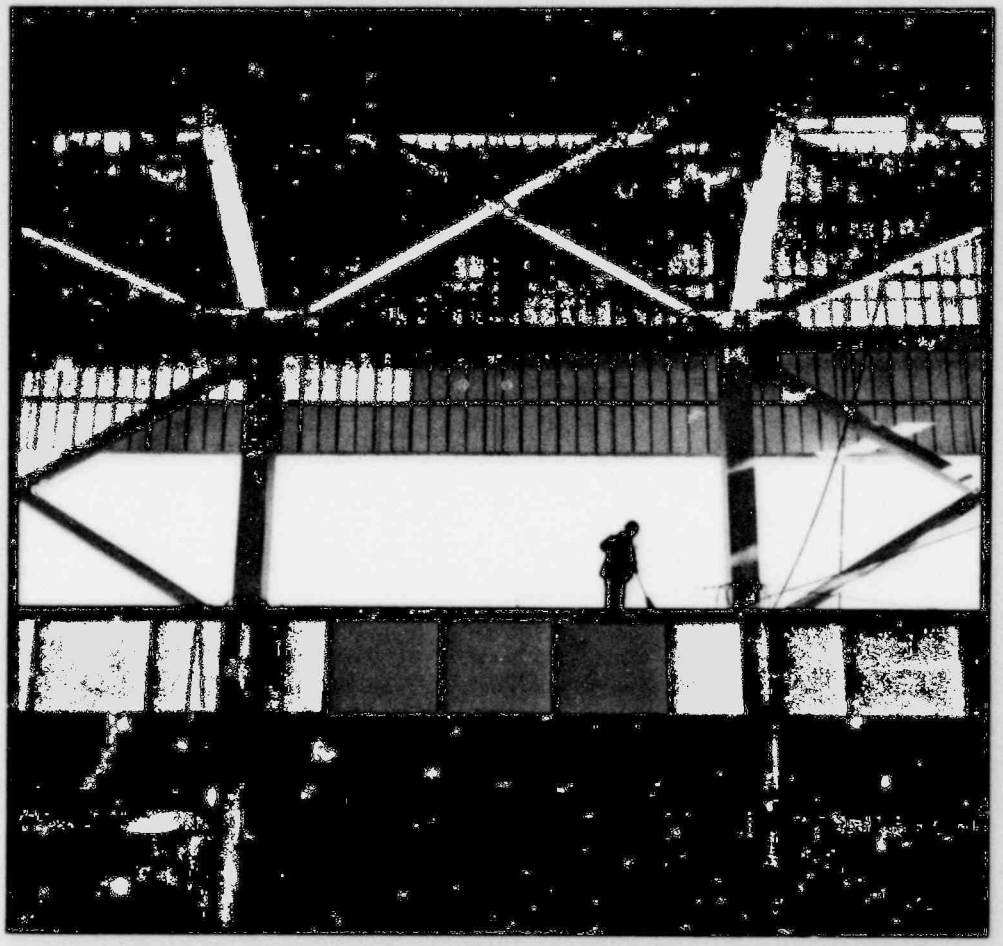

MMWEC's annual report is available without charge upon written request to the administrative offices:
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