



**New York Power  
Authority**

Annual Report  
for 1985

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*Cover: The Niagara Falls rainbow symbolizes the New York Power Authority's commitment to delivering low cost, reliable electricity to the people of this State. The vast majority of this economical power is produced at its hydroelectric facilities. This year, the Power Authority is celebrating the many advantages of water power, the great resource that enables this energy corporation to fulfill its rainbow commitment to the residents and job producing industries of New York State.*

## Message from the Chairman

**P**ioneers, pilgrims, painters and poets—all have seen an emblem of the unique destiny of this great nation in the Eternal Rainbow that arches over Niagara Falls.

For the New York Power Authority, the rainbow also holds special meaning. This year we are celebrating the 25th anniversary of our Niagara Power Project. To us the rainbow reflects the promise we have made to the people of New York State to provide them with reliable, low-cost electricity.


In this, the first annual message I am writing as chairman, I am pleased to report that in 1985 we at the Power Authority have once again kept our rainbow promise. Again, our outstanding performance has saved New Yorkers close to one billion dollars in energy costs. It is my primary goal as chairman to continue providing the citizens and job-producing industries of New York with this billion-dollar advantage.

Water, New York's abundant natural endowment, has been the major fuel of the Power Authority's progress. Seventy-five percent of the electricity we provided in 1985 came from hydroelectric sources. Twenty-four billion kilowatt hours were produced at our two premier hydro facilities—the St. Lawrence-Franklin D. Roosevelt and Niagara Power Projects.

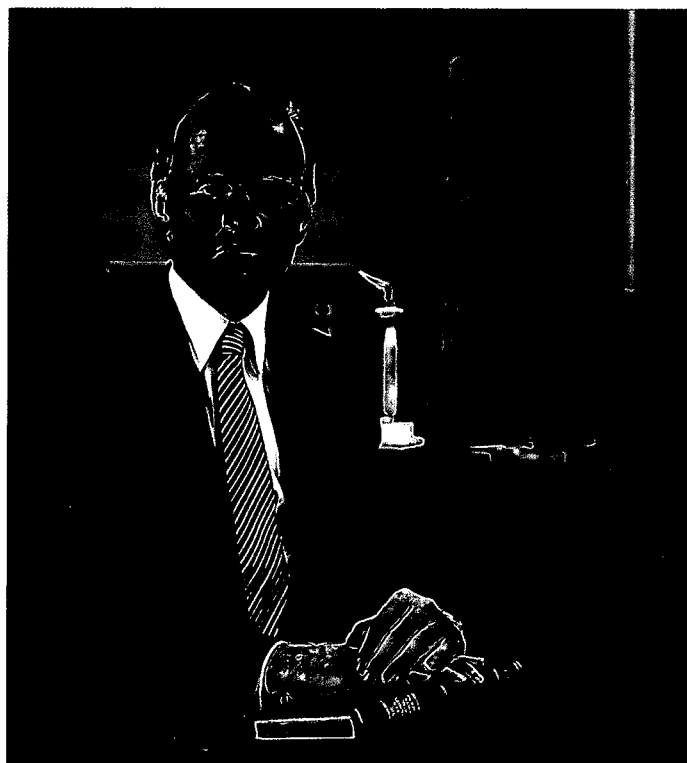
These facilities rank as two of New York's most vital energy assets. To assign a dollar value to their worth is impossible. Indeed, like great works of art—such as the Thomas Hart Benton paintings that hang in two of our Visitors' Centers, or Frederic Church's *Niagara*—these facilities have become priceless. And the people of New York State are their very fortunate owners.

While this annual report celebrates the many contributions hydropower has made to our success, particularly at Niagara, the Power Authority is also a proficient user of other energy resources. In addition to our hydro projects, we operate two nuclear plants and one fossil fuel project. The electricity generated by these projects is essential to our continuing role as New York's largest supplier of low-cost electricity.

Our new corporate mission statement affirms the high standard of excellence that has been the hallmark of our past and present undertakings. By pursuing the course of excellence that this mission statement charts, we will continue to keep the rainbow promise to contribute to the prosperity and progress of New York State.



Richard M. Flynn  
Chairman



Chairman Richard M. Flynn

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## Our Mission

**T**he New York Power Authority's primary business is to provide lower cost energy for the benefit of the people of New York State. We do so by constructing, owning and safely operating electric generation and transmission facilities, purchasing lower cost out-of-state energy, and promoting conservation of scarce energy resources. Our facilities are financed independently of tax revenues, state funds or credit. As a state-owned energy corporation, we sell energy to industries, to utilities for resale to their customers, and to authorized public bodies.

We will develop and operate our facilities and set our rates using prudent business judgment and practices to sustain our financial position and to protect our bondholders and customers.

We will work to foster a positive business climate by targeting the allocation and pricing of energy and the development of new energy sources to stimulate the creation and retention of jobs:

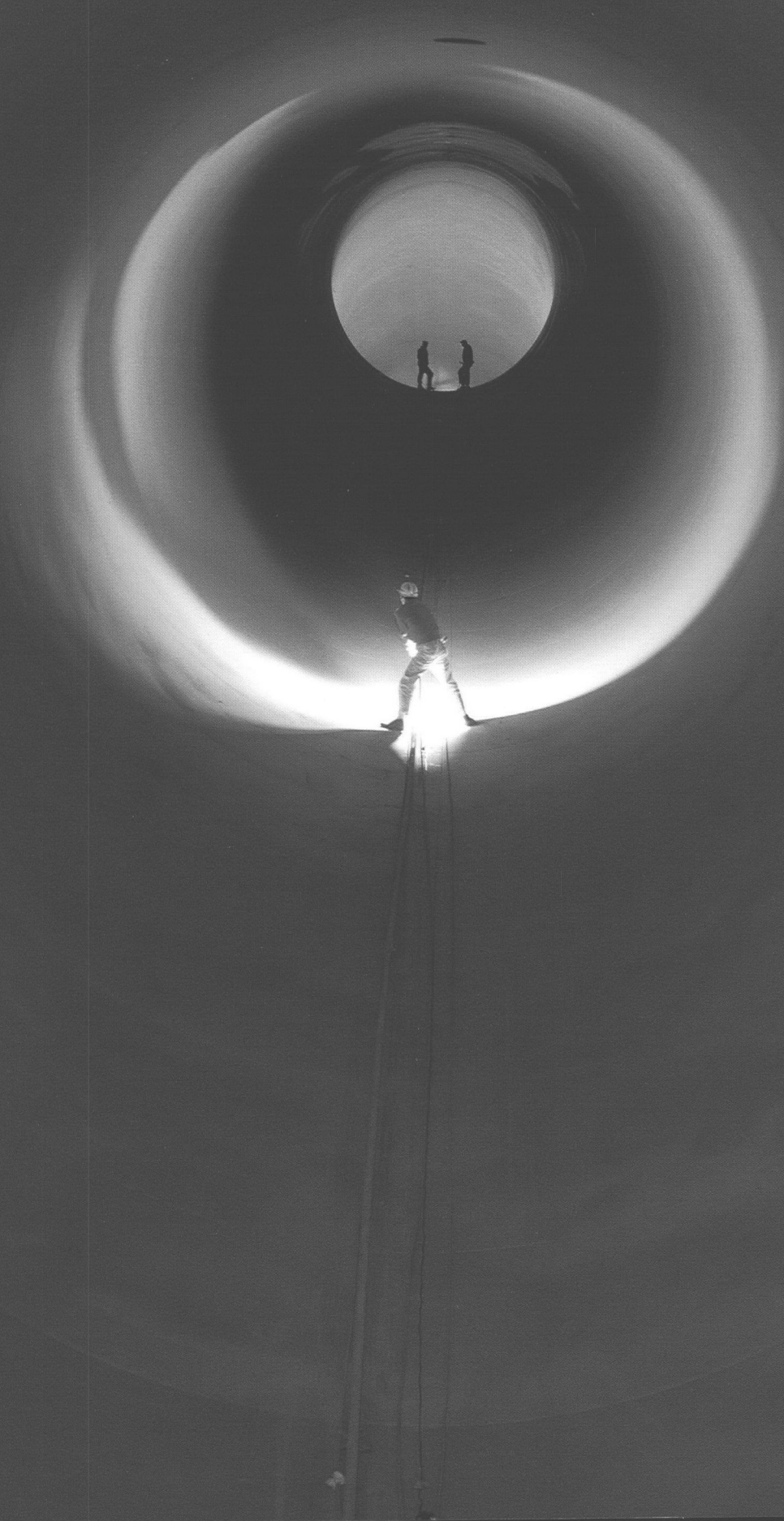
Each of our employees contributes to achieving our mission. We seek to attract, retain and promote high-quality employees in order to insure maximum productivity and efficiency by rewarding performance through competitive compensation and benefit programs, comprehensive management skills training, and opportunities for career development.

We are committed to be a good neighbor in the communities in which we operate and to construct and operate our facilities in an environmentally sound manner.

We will strive to communicate effectively with our employees and the public, including public officials, customers and the financial community, to fulfill our stated mission.



**Building the Dream:  
Hydropower  
for New York State**

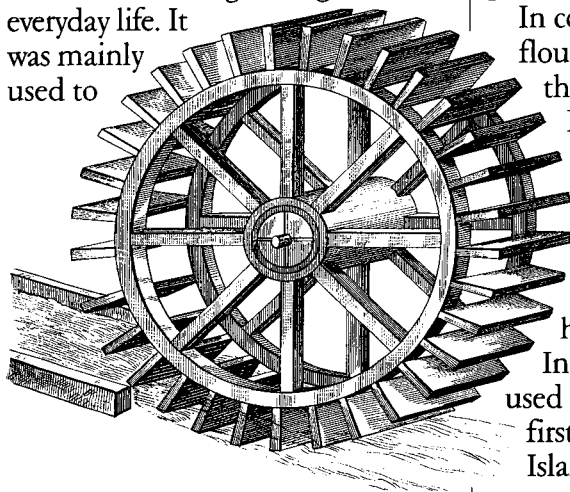


# Nature's Great Gift

**W**ater. Since the beginning of time, it has supported all life. It covers nearly three-quarters of the earth's surface and fills the lakes, rivers and oceans of the world. It is clean, odorless, tasteless and colorless. It can be endlessly recycled, and, above all, it is never still.

Because of these extraordinary properties, water has been the single most important agent in shaping and reshaping geological and human history. Since the dawn of civilization, the thought of harnessing water to do work has challenged the human imagination. The waterwheel, developed during the first century B.C., marked man's first successful attempt to control the power of moving water—hydropower.

By the Middle Ages, the waterwheel had made an enormous contribution to easing the rigors of everyday life. It was mainly used to



*The ancient waterwheel is the ancestor of the enormous turbines that power today's most advanced hydroelectric projects.*

saw wood, mill flour and help tan hides. But Europe, limited in water resources, ultimately turned to coal as well as steam to power her industrial development.

## Water Power in America

In contrast to the European continent, the New World abounded in rapidly flowing, fresh water. America's eastern seaboard was richly endowed with natural water supplies that were matched in abundance by endless forests and rich farmlands. These generous geographical gifts helped set the young continent on a course that would someday bring unparalleled growth and industrial prosperity.

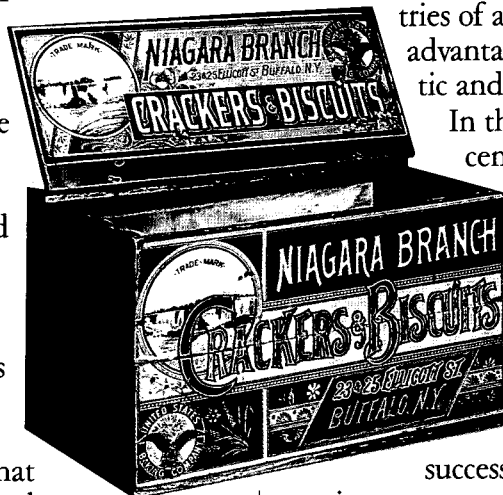
In colonial days, lumber and flour mills quickly grew up along the many riverbanks of the Northeast. Indeed, water, along with wood and muscle power, was the chief source of power for America's emerging industries and determined the locations of her towns and cities.

In the late 1700s, water was used to power the new nation's first successful factory—a Rhode Island textile mill. By the 1830s, a more complex and fully integrated system was developed at the famous Lowell textile manufacturing center in Lowell, Mass. Some 11 different mills—all related to making cloth—were coordinated under a single water-powered system.

New York State's earliest manufacturers also relied heavily on water power. The waterfalls on the Oswego and Genesee Rivers were harnessed to mill grain; the

Mohawk rapids were channeled to power the textile mills of Cohoes. But nowhere in New York was water more abundant than at Niagara. The Falls there attracted industries of all kinds to take advantage of their majestic and mighty waters.

In the late nineteenth century, the advent of the electrical age inspired even greater interest in harnessing the Niagara River's magnificent waterfalls. The success of early electrical innovators and entrepreneurs



*Many turn-of-the-century products used the Niagara Falls name and logo.*

ushered in a new age of technological growth at Niagara—growth powered by hydroelectricity.

Once again, water helped “fuel” the nation's progress as America fulfilled her early promise of becoming the industrial leader of the world. In the future, as in the past, water will play a critical role in ensuring that we flourish as a nation. And water power, clean, low-cost and renewable, will contribute to the high-tech revolution of the 1980s... and far beyond.

## The Hydropower Imperative

Some of the most abundant and accessible supplies of fresh running water in the nation, perhaps in the world, are found in New York State. To protect and develop this generous natural endowment in the public's best interest, Governor Franklin D. Roosevelt and the State Legislature created the New York Power Authority in 1931.

Ensuring that the people of New York State be the chief beneficiaries of this abundant water power supply, Roosevelt structured the Power Authority as a non-profit, public benefit agency. Its projects are funded by the sale of bonds to private investors and operating revenues, not through tax dollars. The Power Authority sells its economical power to job-producing industries, public electric systems, governmental agencies and New York's seven investor-owned utilities, as well as to neighboring states as required by law.

When FDR signed the bill establishing the Power Authority, he charged it with "the creation and development of hydroelectric power in the interest of the people of this State . . . for the benefit of the people of the State as a whole . . ."

For more than a half-century, the Power Authority has carried out its commitment to developing hydroelectric power, a commitment that remains as strong today as it was in 1931. For in this day no less than in Roosevelt's, water remains New York's most economical and plentiful energy resource.

Although the Power Authority's mandate has been expanded to include other energy resources, nearly 70% of the power it generates currently comes from its four baseload hydroelectric projects: St. Lawrence-Franklin D. Roosevelt, Niagara, Ashokan and Kensico. Together, these projects generate approximately one-fifth of the State's entire electric supply, making the Power Authority one of the most important hydroelectric producers in the world.

This year, the Power Authority is celebrating the silver anniversary of its proudest hydroelectric achievement—the Niagara Power Project. After 25 years, it remains the State's largest electricity resource, producing billions of kilowatts of low-cost electricity every year.

a new line now under construction from central to southeastern New York will permit the increase of Canadian purchases upon its scheduled completion in 1988.

The ceaseless energy with which the Power Authority has worked to provide the citizens of New York

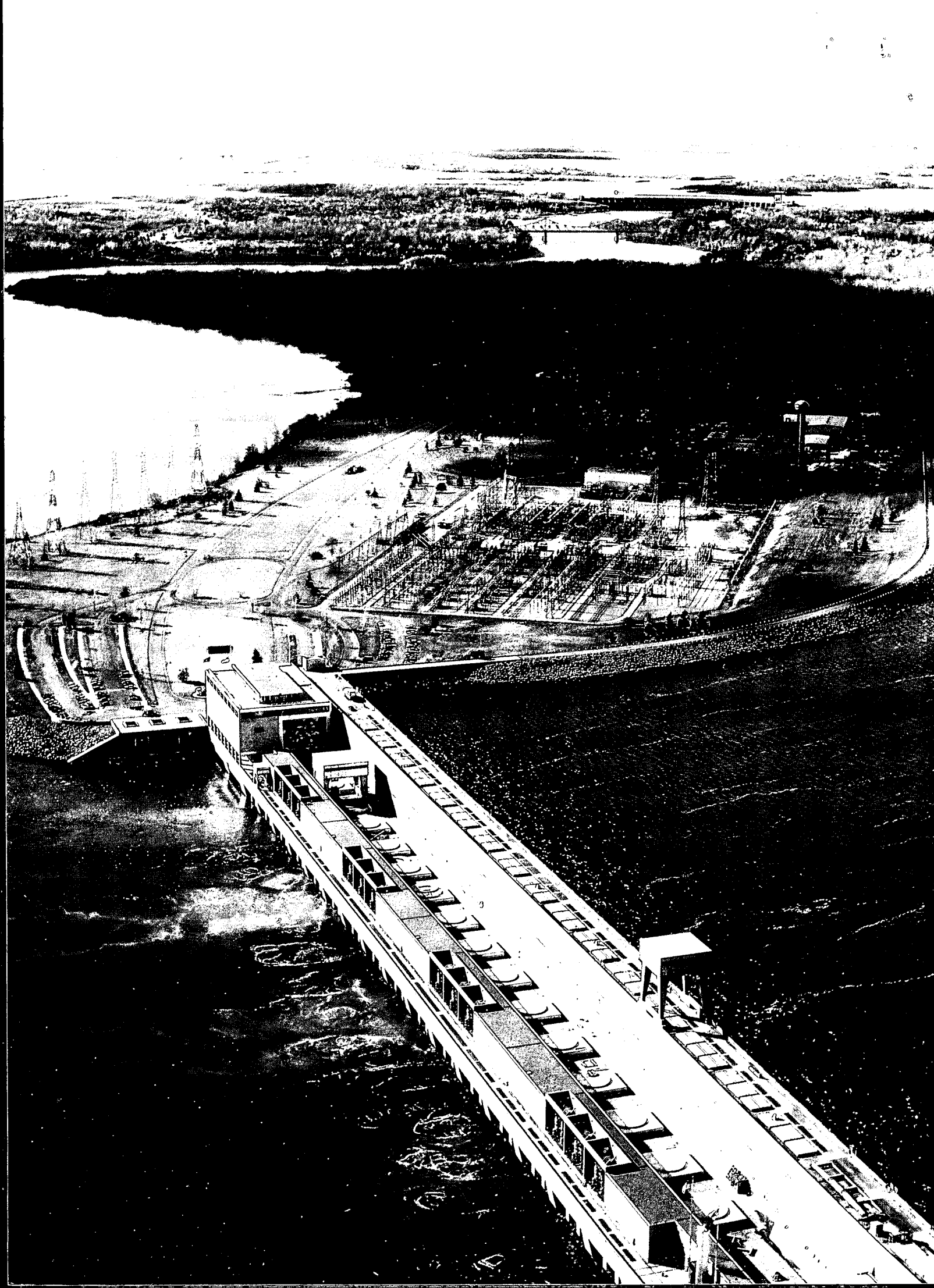


*Governor Franklin D. Roosevelt founded the Power Authority to develop hydropower for all New Yorkers. Here, in the Albany Executive Mansion, he is sworn in for a second term, 1931.*

In addition to Niagara and its other hydroelectric facilities, the Power Authority has become a leading hydropower importer. Its 765-kilovolt transmission line brought in over eight billion kilowatt hours of economical hydropower from Canada's Hydro-Quebec in 1985 alone. Moreover,

with the most reliable, least costly electricity has long been its trademark. Its success in developing New York's hydroelectric resources has surpassed even FDR's vision when he delivered his mandate so many years ago.

With low-cost hydroelectric power reflecting such a high percentage of its energy mix, the Power Authority can virtually guarantee its long-term contribution to



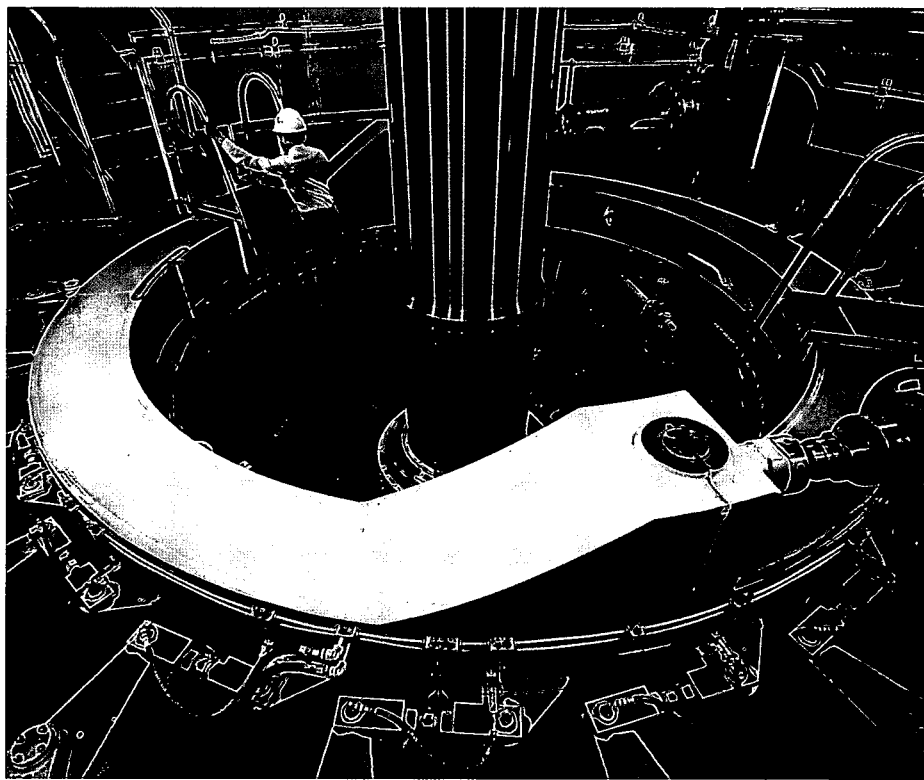


the State's economic health. In the years ahead, its electricity promises to keep New York at the cutting edge of technological advance while affording the people of the State thousands of jobs and the opportunity to lead prosperous, fulfilling lives.

### **Building Experience at St. Lawrence**

The magnitude of the Power Authority's hydroelectric achievement cannot be assessed without understanding the contributions of its first major construction success—the St. Lawrence-Franklin D. Roosevelt Power Project.

The St. Lawrence River is North America's longest east-west river. Fed by all five Great Lakes, it stretches some 750 miles, originating in Lake Ontario and emptying through the Gulf of St. Lawrence into the Atlantic Ocean. Not only is it among the world's mightiest rivers, but it is also one of its most



*At St. Lawrence, a vertical shaft links the turbine with a 618-ton generator as part of the water-powered system that generates 7 billion kilowatt hours of electricity each year.*

stable. Its uniformity of flow, unusual for rivers of its size, makes the St. Lawrence an ideal resource for hydroelectric development.

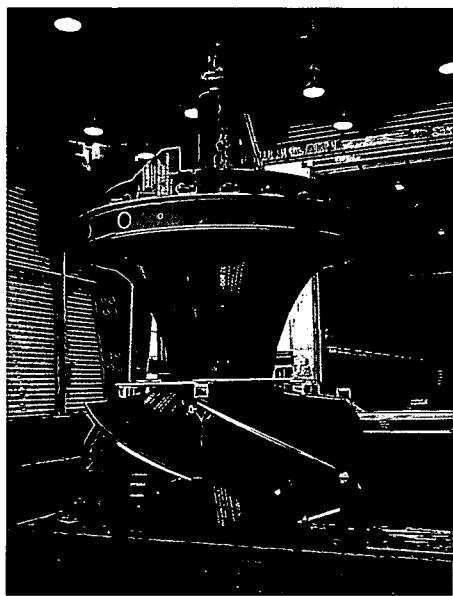
Until the early 1900s, however, the St. Lawrence River was used mainly for navigation, with an extensive system of canals and locks that had evolved over many years. By the turn of the century, increasing travel and trade demands were beginning to outgrow the existing canals. At the same time, the arrival of the electrical era sparked interest in the river's tremendous electricity-producing potential.

### **The Double Mission**

The signing of the Boundary Waters Treaty in 1909 formed the basis upon which Canada and the U.S., the nations sharing sections of the St. Lawrence, would ultimately accomplish a twofold task: harnessing the river to produce electricity and creating a modernized seaway stretching from the Great Lakes to the Atlantic Ocean.

However, pressure from special interest groups, as well as two World Wars and the Great Depression, delayed these two projects for nearly half a century.

In 1954, the United States Congress passed an act creating the St. Lawrence Seaway Development Corp. to work with a similarly appointed Canadian counterpart on all Seaway construction efforts. One year earlier, the Federal Power Commission had granted the New York Power Authority the license to work jointly with Ontario Hydro to build the St. Lawrence Power Project (later renamed the St. Lawrence-Franklin D. Roosevelt Power Project to honor the man who helped make this achievement possible).



*On the U.S. side of the Moses-Saunders dam, left, 16 turbines, like the one above, spin St. Lawrence's hydropower into economical electricity.*

## Power Project Construction

To accomplish this immense task, more than 7,000 people had to be relocated, and seven Canadian villages had to be moved. During construction enough earth was excavated to fill railway cars stretching eight times across the continent. Enough concrete was poured to build a two-lane highway from Massena to Washington, D.C. More than 22,000 workers

came to build the two countries' St. Lawrence project, at a total cost of \$650 million.

Construction of the hydroelectric power-producing facilities was divided into four separate projects: the Robert Moses-Robert H. Saunders Power Dam, housing 32 generators with an installed capacity of 1,824,000 kilowatts, shared equally by Canada and the U.S.; two upstream control dams—the Long

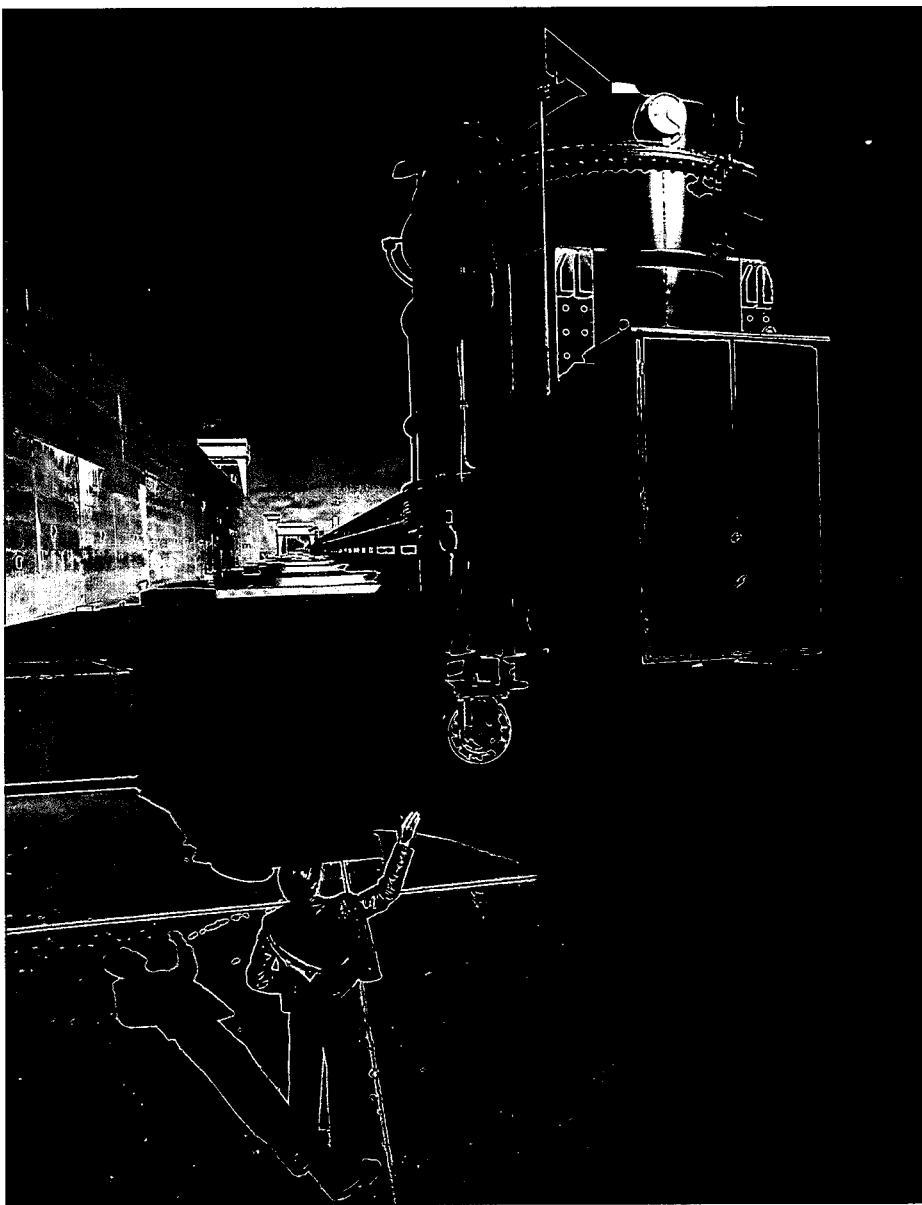
Sault and Iroquois; and the Massena Intake, specifically designed to supply water to the local Town of Massena and to one of its principal industries, Alcoa.

## The Master Builder

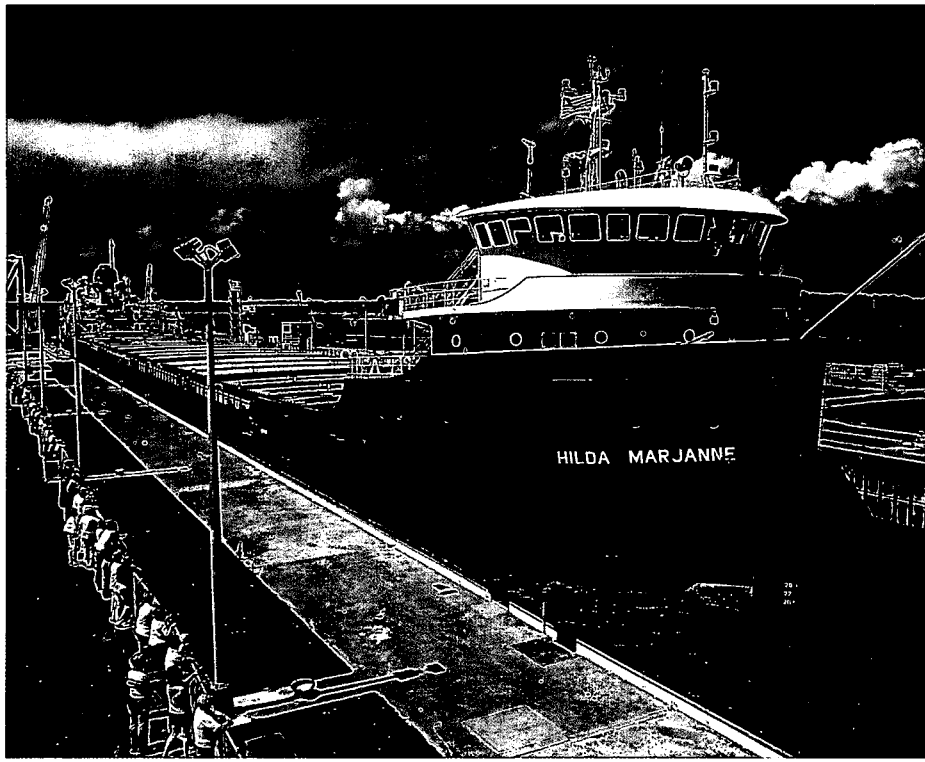
The U.S. portion of the project was an enormous undertaking for the Power Authority. Although the agency had no previous major construction to its credit, it had the great fortune of having as its chairman that veritable construction genius, Robert Moses. Prior to St. Lawrence, Mr. Moses, the self-proclaimed "Parks Man," had created hundreds of thousands of acres of park and recreational lands throughout New York City and State. His construction record also included building the Triborough and Whitestone Bridges, the Queens-Midtown Tunnel and the Brooklyn Battery Tunnel, as well as countless highways and the New York Coliseum. These achievements have led some historians to proclaim Mr. Moses the most prolific builder in the history of the world, with the possible exception of the Pharaohs.

When Mr. Moses undertook the enormous task at St. Lawrence in August 1954, he immediately displayed the boldest confidence. He decided to cut the construction schedule. The entire project was built in only five years, two years ahead of plan.

One of the most intricate challenges of the undertaking was to build the mammoth structures the power project required while at the same time maintaining navigation. In addition, construction of the power dam and two other large dams had to be done in a two-step operation. In each instance, two temporary dams (cofferdams) were built so that construction could proceed on dry land.



*Transformers, like this one at the Moses-Saunders power dam, increase the voltage of St. Lawrence-generated electricity for long-distance transmission.*



*The St. Lawrence Seaway, built simultaneously with the power project, made navigation on the Great Lakes possible for oceangoing ships.*

### **An International Feat**

The blasting of the final cofferdam and the production of first power truly symbolized the spirit of the St. Lawrence experience. Some 50,000 people from both nations watched as the water flowed into the newly created Lake St. Lawrence. The triumph in international relations was matched by what some considered one of the greatest engineering accomplishments of its day. The St. Lawrence project was hailed as the Eighth Wonder of the World.

The terrain of this section of New York's North Country was altered forever. A 27-mile-long lake was created; the St. Lawrence River was raised 90 feet at the site of the power dam; and in some areas the

river had been widened to span seven miles instead of its natural half-mile width.

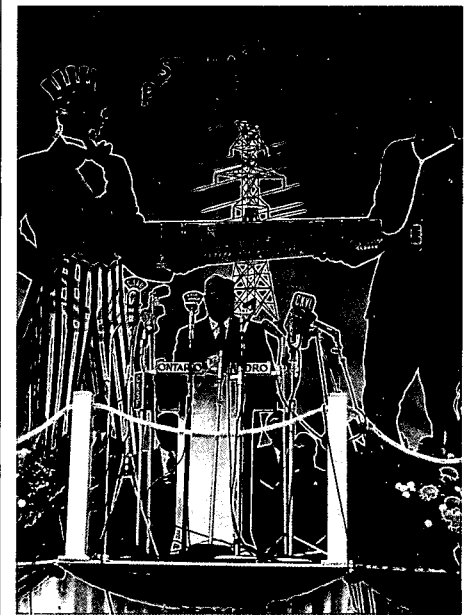
### **St. Lawrence Contributions**

Today, Canada's Ontario Hydro and the New York Power Authority still equally share the water at the Moses-Saunders powerhouse. The low-cost hydropower generated there has proved to be a continuing bargain for almost three decades. Residential customers pay less than one-half-cent per kilowatt hour for their electricity.

This inexpensive electric power has long served as the economic backbone for northern New York State. More than half the project's electricity still serves the area's three main industries—Alcoa, Reynolds Aluminum and General Motors. These companies have created thousands of jobs for North Country residents. The rest of the power is distributed to public electric systems throughout the State, to neighboring states, to the Metro-

politan Transportation Authority and to private utilities for resale to their customers without profit.

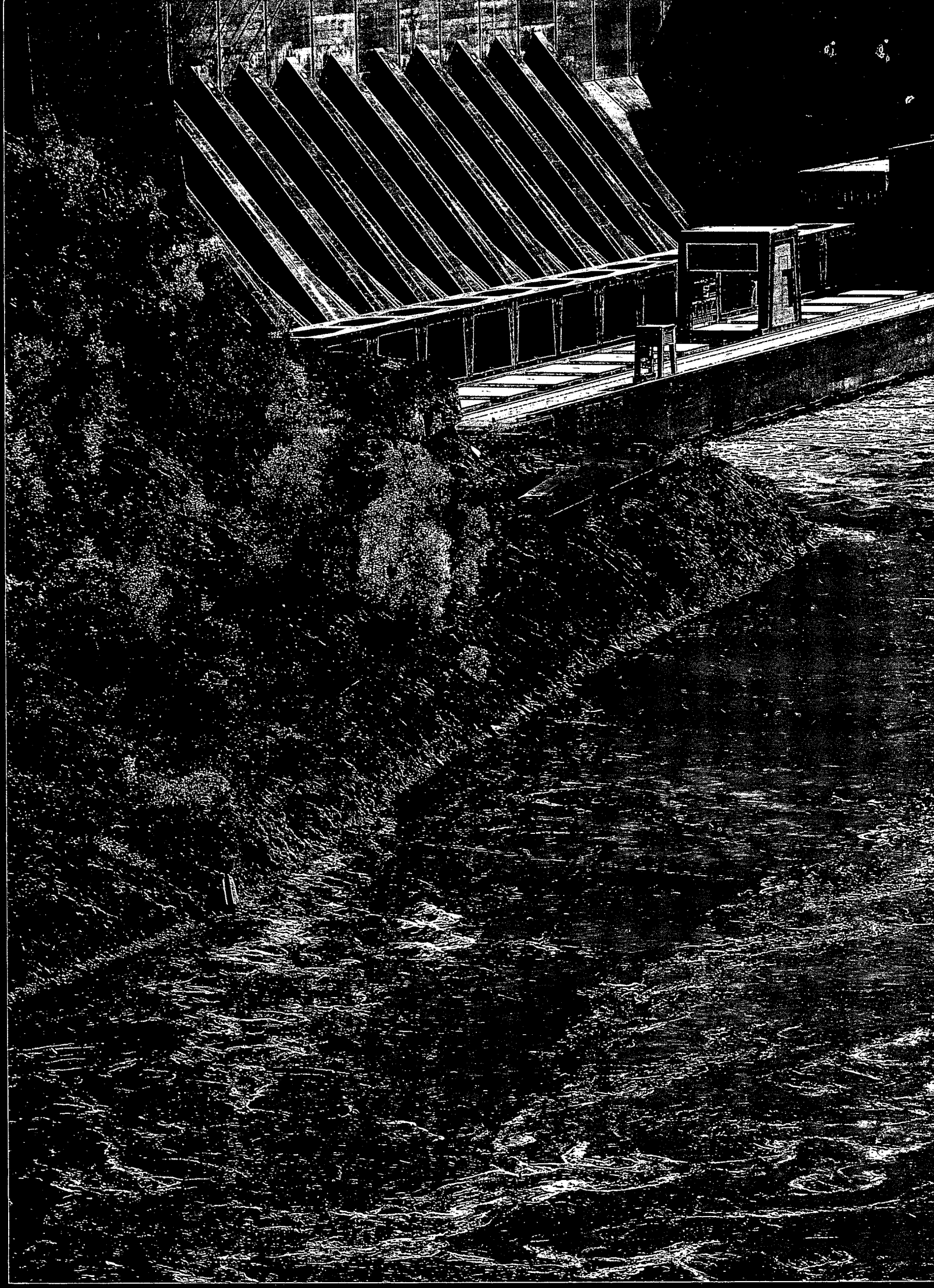
Apart from creating the joint power-waterway system, "Parks Man" Moses left behind another great legacy. He turned the adjacent portion of the St. Lawrence Valley into a haven for vacationers by creating a 2,900-acre park along with extensive recreational facilities and a Visitors' Center. He also improved the area's highways and



*Power Authority Chairman Robert Moses at the ground-breaking ceremony for one of the great international achievements of its day, 1954. Overleaf, Niagara Power Project.*

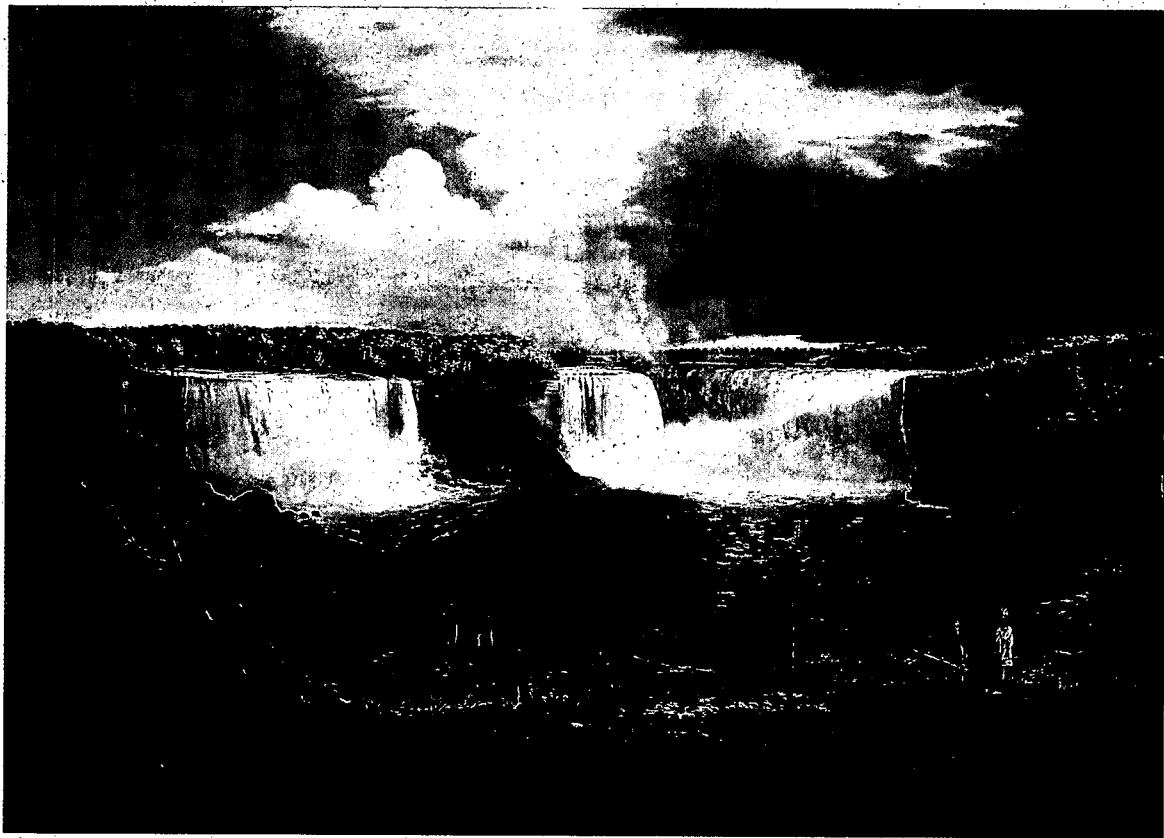
bridges and relocated numerous railroad lines.

One of the greatest benefits of the overall construction effort, however, was the engineering expertise gained by all involved. The Power Authority could then translate its unforgettable St. Lawrence experience into its next great success—the Niagara Power Project.





# Niagara: New York's Gift to the World



*"A General-View of the Falls of Niagara" by Alvan Fisher, 1820.*

*"I wished an hundred times that somebody  
had been with us, who could have  
describ'd the Wonders of this prodigious frightful Fall,  
so as to give the Reader a just and natural  
Idea of it, such as might satisfy and create in him  
an Admiration of this Prodigy of Nature  
as great as it deserves."*

*Father Louis Hennepin, the first European to  
describe Niagara Falls at length —1679*

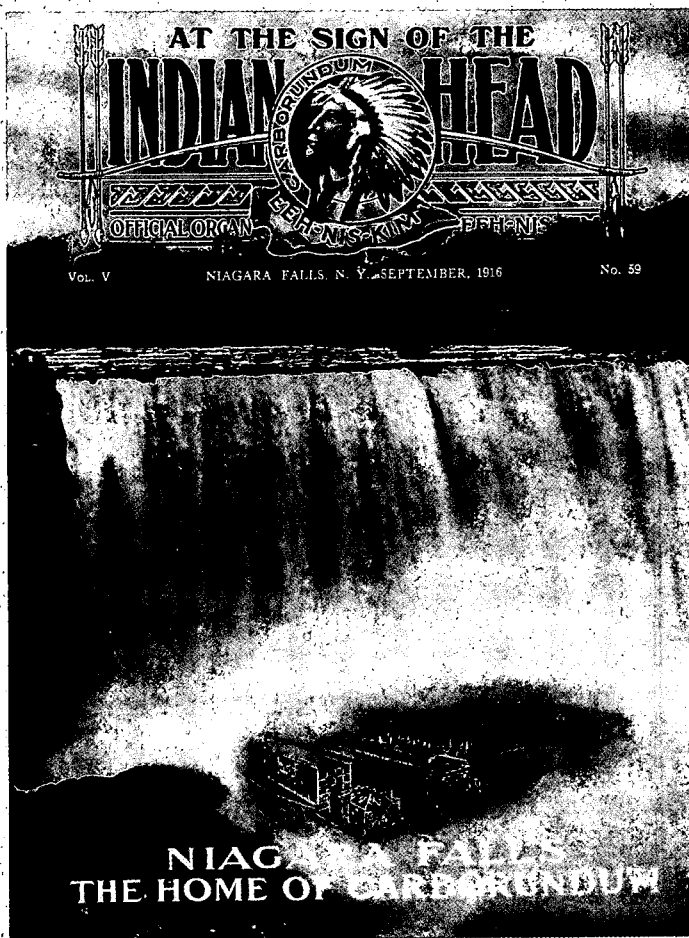
Niagara Falls have long haunted the human spirit. To the Iroquois Indians who first beheld them, the Falls were a place of great reverence. To the European settlers after them, Niagara Falls symbolized nature at its most sublime. To both Indian and European, however, interest in the area's abundant water centered far more upon the Niagara River, the source of the great Falls, than upon the thun-

*"... all-powerful, obedient and ready-formed agent of nature, which requires no care, and is subject to no expense. . . ."*

*Guidebook description of Niagara Falls—1840s*

During the 100 years after Joncaire, saw-mills, flour mills, paper mills, textile mills and tool factories sprang up along the banks of the Niagara. All were attracted to its abundant hydropower. By 1847, to meet the area's emerging energy needs, an ambitious hydraulic canal was designed. Although construction was halted several times for lack of funds, the canal was finally completed in 1875. Two years later, it was purchased by Jacob Schoellkopf, a Buffalo businessman.

This latest effort to harness the Niagara coincided almost perfectly with the birth of the electrical age, and on July 4, 1879 the Niagara River's first hydroelectricity was generated at Schoellkopf's plant. Two years later, this hydroelectric power was put to its first commercial use, supplying several local mills and businesses with electricity.



*Niagara powered Carborundum and other early industries.*

dering cascades themselves. Throughout the early 1700s, settlers and Indians used the river as a waterway for their profitable fur trade, unaware of its potential as a power source.

In 1757, a young Frenchman, Daniel Joncaire, became the first to harness the Niagara River's raging waters. Joncaire, who built a simple waterwheel to saw the lumber he needed to build two boats, ushered in a new age of water power development at Niagara.



*Niagara Falls inspired many musical compositions.*

In the meantime, a competing company, the Niagara Falls Power Company, was formed. It produced electricity on a scale that Niagara's industries could not immediately

absorb. The technical problem of transmitting the abundant electricity to more populous Buffalo became a major challenge.

The finest European and American scientists debated the long-distance transmission problem. In 1893, a decision to use alternating current was made. Three years later, the first long-distance relay from Niagara Falls to Buffalo proved a brilliant success.



Niagara mills discharge water into gorge, 1891.

*"The harness was buckled that hitches the factory wheels of Buffalo to the greatest cataract on earth. . . ."*

Niagara Falls Gazette—November 16, 1896

The success of long-distance transmission led the two power companies to expand on both the upper and lower banks of the river and created abundant supplies of low-cost hydroelectricity. As a result, Niagara attracted many new industries—in particular, pioneering electrochemical and electrometallurgic companies, which needed huge amounts of electricity to fuel their operations. The companies manufactured aluminum, carborundum, carbide, bleaches, alloys and gases.

By the turn of the century, Niagara had become a premier industrial center, reflecting America's emergence as the world's preeminent industrial power. The 1901 Pan American Exposition, held in Buffalo, was above all else a celebration of a nation's ingenuity—particularly its mastery of electric power. In-

deed, both Niagara's and America's futures shone as brilliantly as the lights that nightly flooded the exposition grounds.

*"Unless the power companies are controlled by law, they will dry up the Falls in the name of prosperity. . . ."*

Elbert Hubbard, "Power" pamphlet—early 1920s.

On the darker side of progress, however, loomed the growing controversy over what many considered to be rampant exploitation of the river. Concerned citizens feared the magnificent waterfall itself was in danger of slowing to a trickle, unless its use was somehow restricted.



The Pan American Exposition, Buffalo, NY, 1901.

In 1906, these "Friends of Niagara" scored a legislative victory over the industrialists who lobbied for unrestrained use of the Niagara. That year the Congress of the United States passed the Burton Act, limiting the amount of water that could be diverted from the upper Niagara. In 1909, the first joint regulation between the U.S. and Great Britain, acting on behalf of Canada, was adopted. However, full Niagara power development was curtailed for nearly 50 years, because the U.S. and Canada had to further define acceptable uses of this international river.

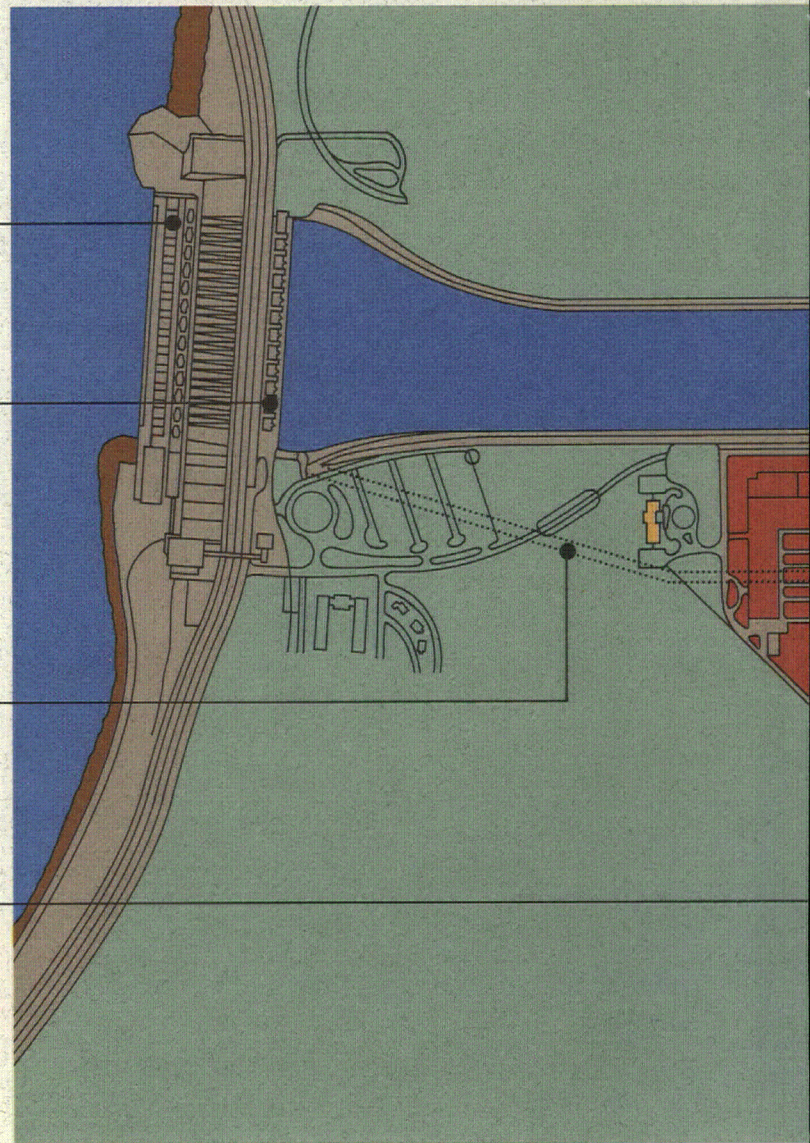


Water flows into the lower Niagara River after it is discharged from the Robert Moses Niagara Power Plant. The water then travels north to Lake Ontario.

At the Robert Moses Niagara Power Plant, water falls 305 feet to turn 13 enormous turbines, which then spin 13 electric generators.

The power tunnel carries electricity produced at the power plant from transformers located at the powerhouse to the switchyard.

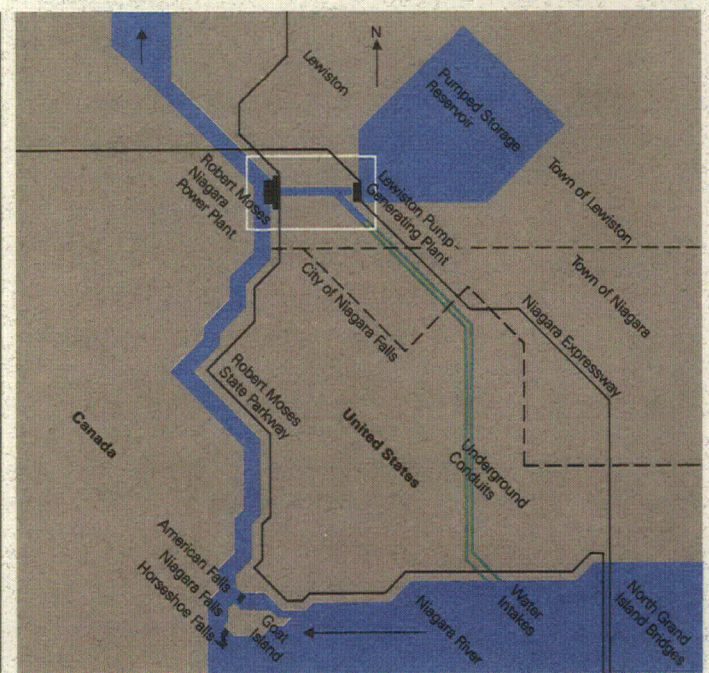
At the switchyard, transformers step up most of Niagara's electricity to the much higher voltages used for long-distance transmission; some of this electricity is switched into local circuits.



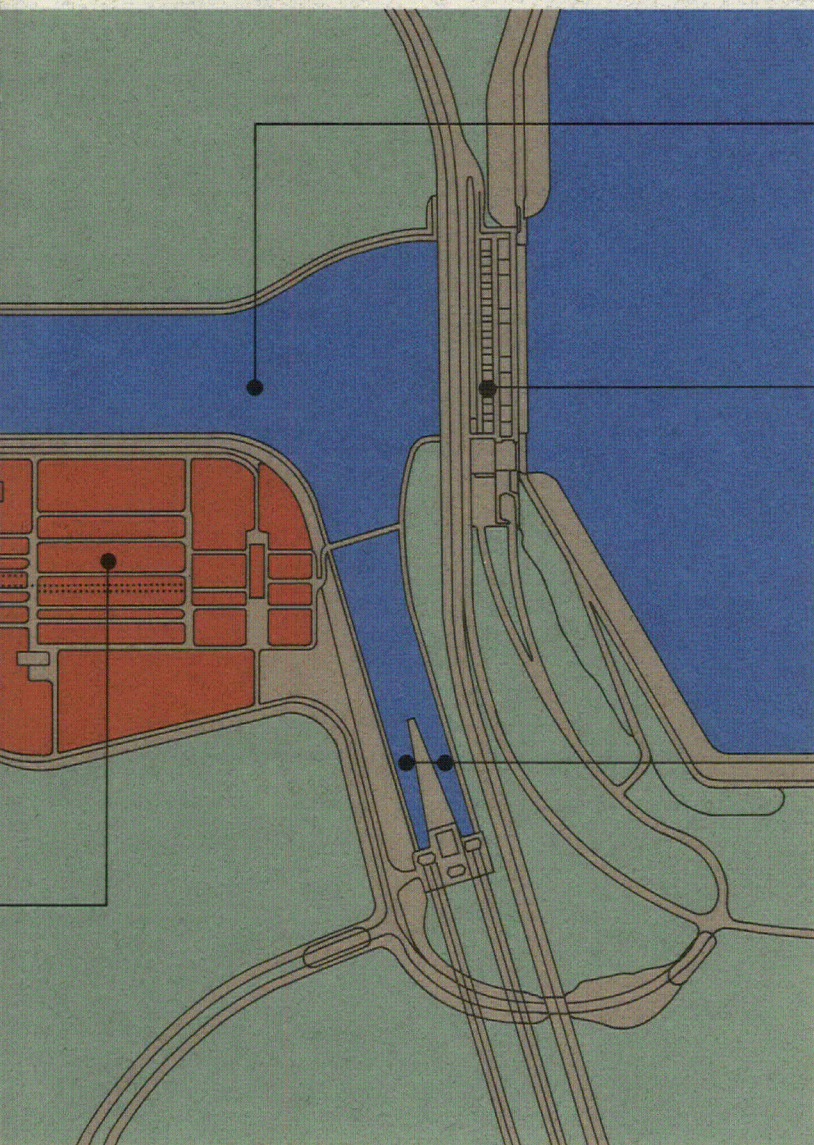
Finally, in 1950, the U.S. and Canada entered into a treaty that is still in effect today. The 1950 treaty requires that 100,000 cubic feet of water per second (cfs) flow over the Falls during daylight hours throughout the tourist season, and at least 50,000 cfs during the rest of the year. Thus, Niagara could be harnessed for electricity without endangering the beauty of the Falls.

In the wake of the treaty, the United States Congress had to choose among three groups to develop Niagara's full hydropower potential: a consortium of private utilities, the federal government and the New York Power Authority.

Right, an overview of the Niagara Falls area, pinpointing the location of the Niagara Power Project in Lewiston, N.Y.







*The forebay is an open canal connecting the twin conduits with the Lewiston Pump-Generating Plant or directly with the Robert Moses Niagara Power Plant.*

*The Lewiston Pump-Generating Plant regulates Niagara power production to meet varying energy demand. It stores water at night for power production during peak hours.*

*The 4-mile-long twin underground conduits carry water from the upper Niagara River, 2½ miles above Niagara Falls, to twin exits at the forebay.*

A natural disaster ultimately settled all disputes. On June 7, 1956, a rockslide demolished two-thirds of the Niagara Mohawk Power Corp.'s Schoellkopf plant. With a power emergency looming on the Niagara Frontier, most agreed the Power Authority should undertake construction. Congress enacted compromise legislation, and the Power Authority began to build.

*"During construction this whole area looked like an ant hill. . . . They worked 24 hours a day, seven days a week. People were swarming all over everything you could see. . . . It was like a Cecil B. De Mille production."*

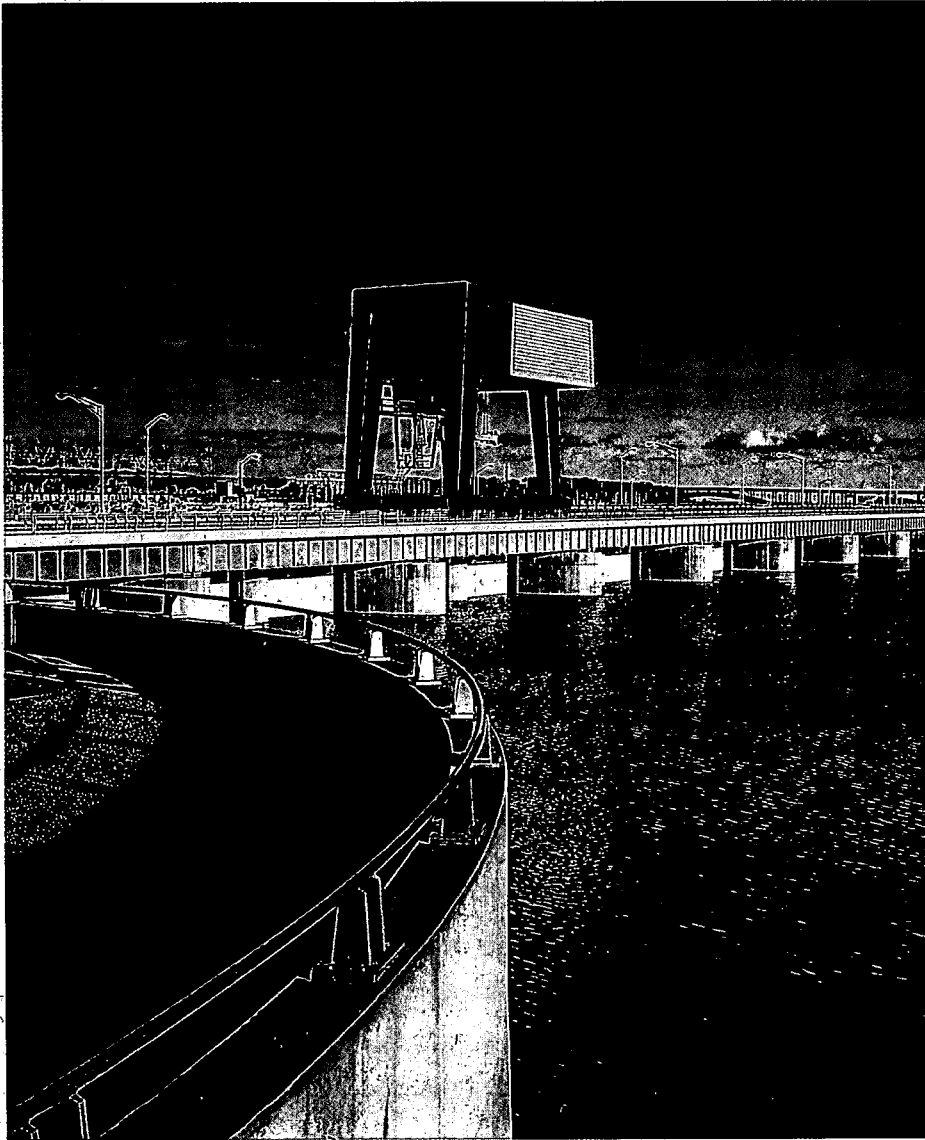
*Ed Fitzgerald, mechanical engineer, currently Niagara's Resident Manager*

Excavation for the Niagara Power Project began in March 1958, about the same time Chairman Robert Moses was completing construction on the Power Authority's first great hydro project at St. Lawrence. In fact, many dedicated St. Lawrence workers moved directly to Niagara to build what would become the world's largest hydroelectric project.

At Niagara, however, Mr. Moses faced one dramatically new challenge. Construction in Massena had taken place in a sparsely settled area; at Niagara, in contrast, construction demanded maneuvering thousands of men and pieces of machinery through a densely populated urban center.

But this did not deter Mr. Moses. He completed the job on time, adhering to the high-





## Niagara Building Statistics

*The following list of Niagara construction figures dramatizes the enormous scope of the project:*

### **Earth Excavated**

34 million cubic yards

### **Steel Placed**

248 million pounds

### **Concrete Poured**

3½ million cubic yards

### **Turbine-Generators**

13 at Robert Moses Niagara Power Plant  
12 at Lewiston Pump-Generating Plant

### **Capability**

2,400,000 kw

### **Annual Electric Production**

13-17 billion kwh

### **Oil Savings**

26 billion gallons of oil since 1961

### **1985 \$ Savings**

\$500 million

*Niagara maintenance continues around the clock. Left, a gantry crane atop the plant helps keep generators running smoothly, while switchyard crews work to insure uninterrupted power service, right.*

est quality and safety standards, while causing as little inconvenience as possible to the residents of Niagara.

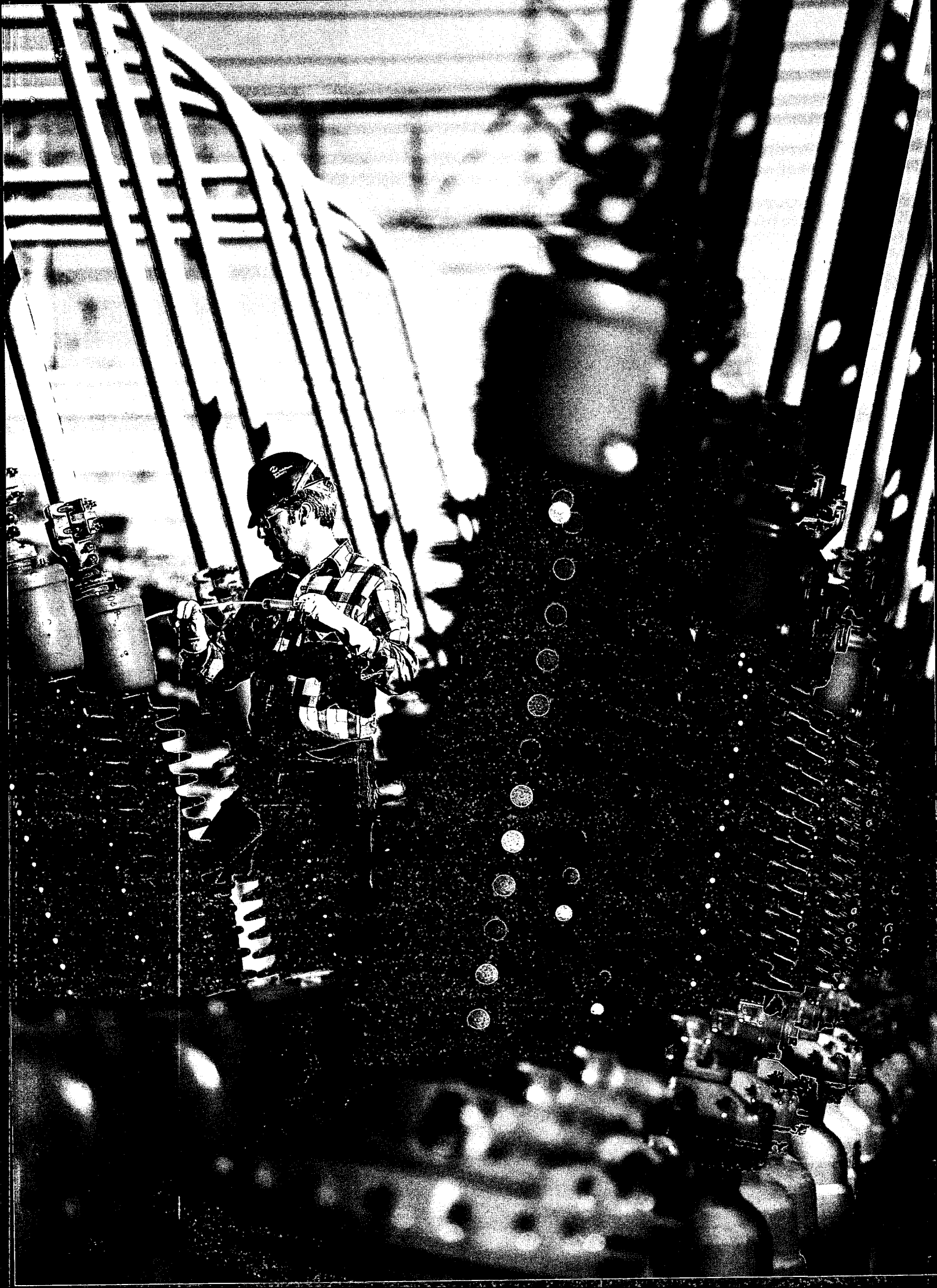
Twenty-five years ago, on January 28, 1961, a record-breaking three years after the first contract was signed, the Niagara project produced its first electricity.

This year, the Power Authority is celebrating the Niagara Power Project's silver anniversary. It is honoring the construction miracle that occurred 25 years ago, and more importantly, Niagara's 25 years of excellence.

The Niagara project is still the State's largest electricity resource, producing between 15 and 17 billion kilowatt hours of electricity in recent years. For 25 years it has provided New Yorkers with some of the lowest cost electricity

in the United States. This infusion of low-cost power to industry has helped preserve and create more than 100,000 jobs for New York State residents. In 1985 alone, the Niagara Power Project saved New Yorkers approximately a half-billion dollars.

To commemorate the project's completion, Mr. Moses commissioned the composition of the Niagara Suite by Ferde Grofé. He also chose the great American artist Thomas Hart Benton to create a mural painting for the Niagara project's magnificent Visitors' Center. Benton's masterpiece, depicting Father Louis Hennepin's first sight of Niagara Falls, recalls the earliest settlers' sense of awe-filled wonder.



## The Pumped Storage Advantage

The Blenheim-Gilboa Pumped Storage Power Project serves as another example of the Power Authority's commitment to using water to help generate low-cost electricity.

Located in scenic Schoharie County, Blenheim-Gilboa is one of the country's largest self-contained pumped storage plants. It has the capacity to generate one million kilowatts of electricity. Since it first produced power 12 years ago, its economical use of electricity has helped bring substantial savings to the people of New York State. In addition, its quick-starting

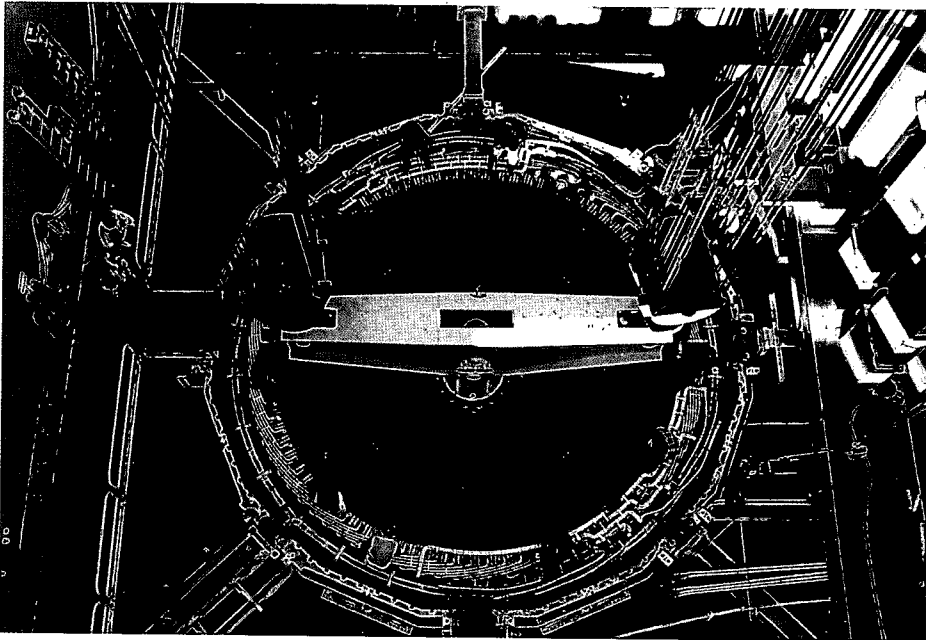
tricity for use during periods of peak consumer demand. Water is recycled between two reservoirs—one located 1,000 feet above the powerhouse on Schoharie Creek and one just below it.

At times of minimum power demand, water is pumped into the upper storage reservoir by means of the most economical electricity available from other sources. At times of peak power demand, the pumps are reversed to become turbine-generators. Water then flows downhill and generates electricity.

In addition to the contribution it makes toward meeting New York's energy needs, Blenheim-Gilboa stands out as one of the na-

## The Canadian Power Connection

Since the oil crisis of the mid-1970s, the Power Authority has been untiring in its efforts to reduce the State's dependence on costly foreign oil. One of its most successful inroads against oil has been the forging of a Canadian power connection.



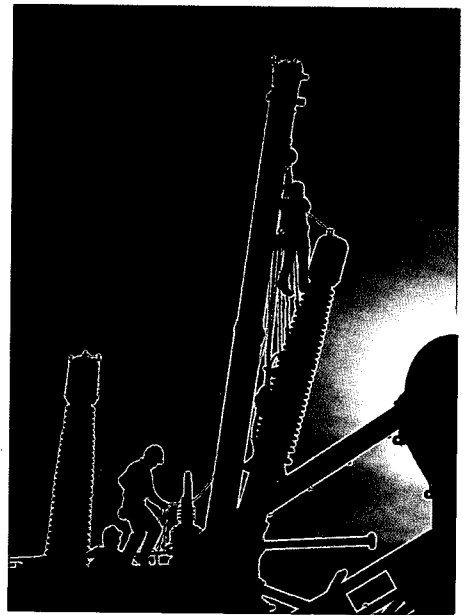
*Dual-purpose motor generators at Blenheim-Gilboa pump water into the upper reservoir or produce electricity at times of peak consumer demand.*

capabilities make it a vital asset to the State during possible power supply emergencies.

Blenheim-Gilboa, like other pumped storage projects, works like a giant storage battery. It stores the water needed to generate elec-

tion's most beautiful power projects. The facility reflects the Power Authority's continuous concern for the environment.

In fact, the Department of the Interior honored this facility with its highest outdoor recreation award. Its Visitors' Center is housed in a restored nineteenth-century barn on the grounds of the historic Lansing Manor. The entire complex is adjacent to scenic Mine Kill State Park.

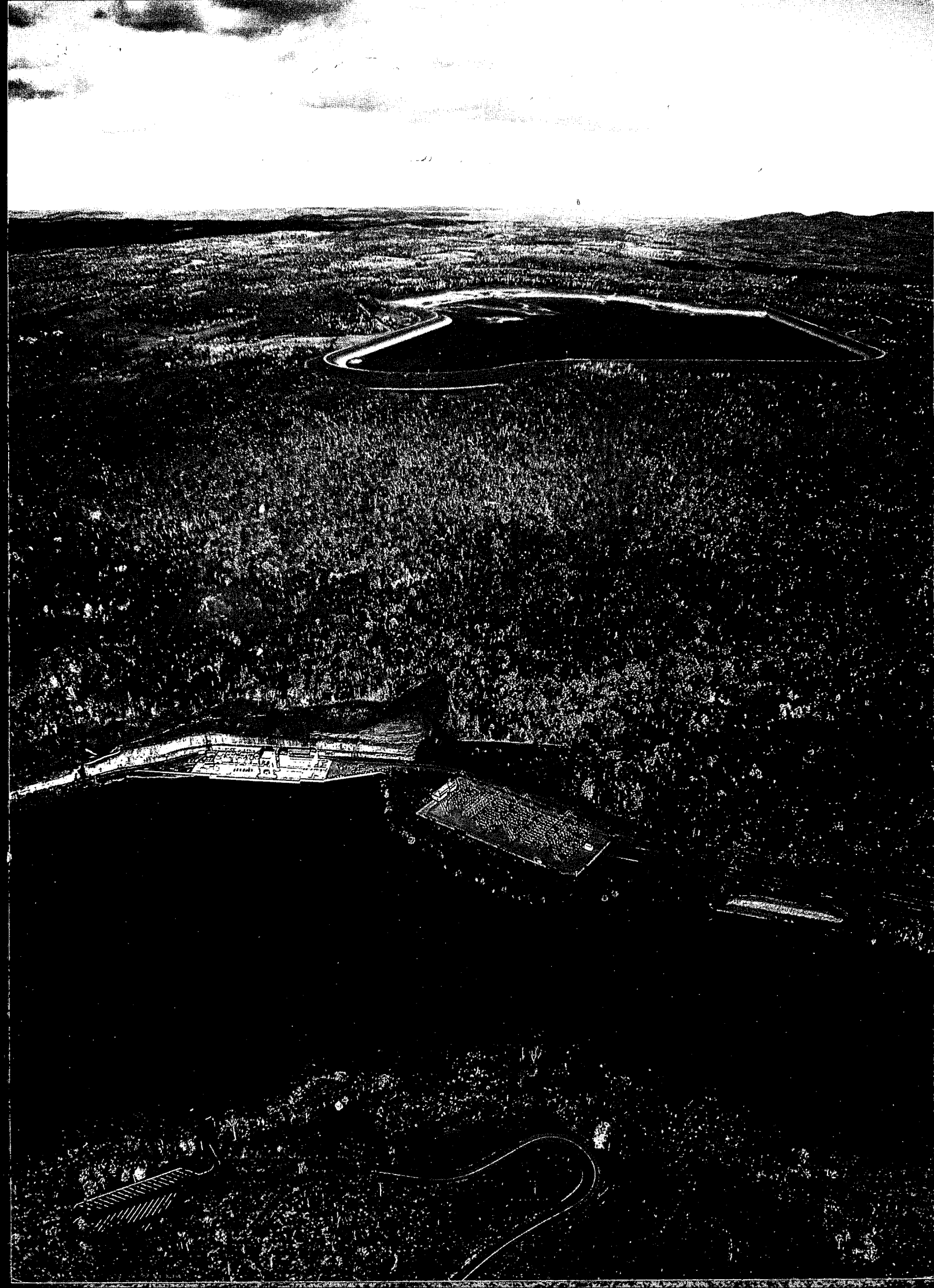


*Maintenance at Blenheim-Gilboa, above. Nestled in the Schoharie County countryside, this project is the State's only self-contained pumped storage system, right.*

When the Power Authority completed its 765-kilovolt transmission line in December 1978, it was able to purchase less expensive electricity from Canada in large quantities for the first time. Some of this economical electricity now comes from Hydro-Quebec's James Bay hydroelectric facility.

The 155-mile, 765-kilovolt line runs from the Canadian border to Marcy. Since the line was fully activated, the Power Authority has imported more than 60 billion kilowatt hours of lower cost Canadian power. In the process, it has saved





the people of New York nearly 100 million gallons of oil, translating into substantial dollar savings.

### **Marcy-South**

To provide even more low-cost Canadian and upstate power to the parts of New York State that need it most—the heavily populated and industrialized southeastern corner—the Power Authority has begun building a new high-voltage transmission line called Marcy-South. In January 1985, the Public Service Commission licensed the New York Power Authority to build this 200-mile line. It will stretch from Marcy near Utica—where the

765-kilovolt line ends—to East Fishkill in Dutchess County.

The Power Authority projects that once Marcy-South is completed in 1988, it will save consumers across the State 13 million barrels of oil a year. In addition, by connecting with existing switching stations along its route, Marcy-South will help strengthen and improve the reliability of the State's entire transmission network.

### **Small Hydro Development**

Furthering its efforts to reduce dependence on foreign oil, in the late 1970s the Power Authority embarked on a program to develop

small hydroelectric facilities in New York State.

The first two projects built under this hydroelectric expansion program were the Ashokan and Kensico Projects, located in Ulster and Westchester Counties, respectively.

While the annual energy output of each facility is relatively small, over a period of years their combined contributions can be significant. For instance, since the Ashokan Project was put into operation in November 1983, the 4,750-kilowatt project has replaced approximately 3.5 million gallons of oil.

The next small hydroelectric facility to go on line will be the 9,000-kilowatt project at Hinckley Dam and Reservoir, located 15 miles north of Utica. Hinckley produced first power on December 31, 1985 on a test basis, and will be completed in early 1986.

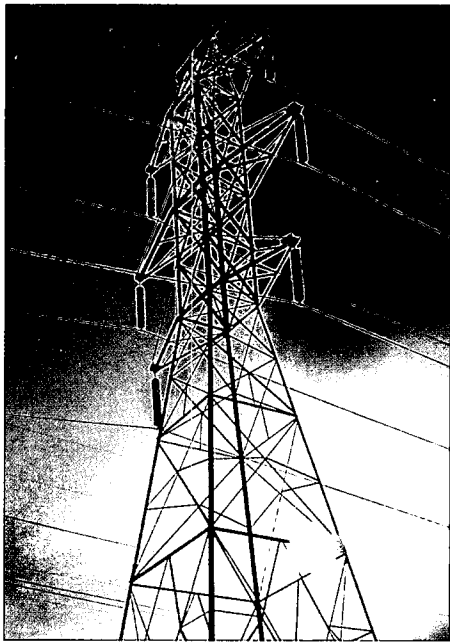
The Power Authority has also received licenses from the Federal Energy Regulatory Commission to expand existing hydroelectric facilities at Crescent and Vischer Ferry Dams on the Mohawk River near Albany. The proposal calls for an additional 6,000 kilowatts of generating capacity at both locations. When completed in 1988, this will more than double the capacity of the present facilities operated by the Niagara Mohawk Power Corp.

The Power Authority also plans to build a new small hydro project on the Waterford Dam near Troy. In addition, a license is currently pending to begin construction of still another small hydro unit at the Delta Dam and Reservoir in Oneida County.

Small hydropower projects share with their larger counterparts the merits of nature's great gift of water. Renewable, virtually inflation-proof and pollution-free, they will produce electricity long after the oil wells have run dry.



*Blenheim-Gilboa's two-way switchyard brings in low-cost electricity to pump water for storage; it also transmits power produced at the project.*



*The Power Authority's transmission network sends its own power, as well as Canadian imports, throughout the State.*

### **Niagara Expansion Plans**

The challenge to increase New York State's use of its vast water resources for energy production has brought the Power Authority back to Niagara Falls.

Proposals are currently being revised for Niagara Expansion. The goal is to increase the project's electricity-producing capacity during periods of greatest consumer need, making even fuller use of the Niagara River's tremendous power. The future of this expansion project, however, is fraught with complex licensing, engineering, environmental and economic issues. But, as the lessons of history demonstrate, power development at Niagara has never proceeded without impediment.

### **The Rainbow Prophecy Comes True**

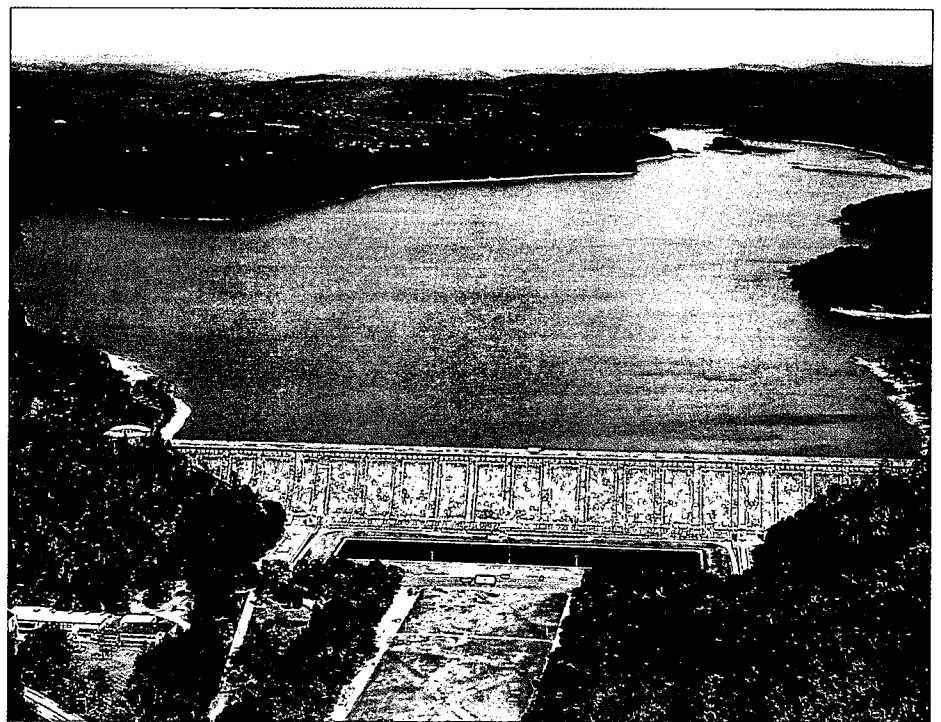
Americans have long perceived the rainbow that arcs over Niagara Falls as a special symbol of the unique

destiny of their great nation. Over the course of several centuries, America has fulfilled the rainbow's prophecy of prosperity and progress unbounded. The country's unparalleled success comes from the wise use of an incomparably rich endowment of natural resources—in particular, an abundance of fresh running water.

The Niagara Power Project, which stands four miles below the

For today, while virtually every other kind of fuel has been subject to volatile price fluctuation, water has proved essentially inflation-proof. And in 1985, nearly 70% of all the electricity the Power Authority generated was produced at its hydroelectric projects, with the rest coming from its two nuclear plants and its single fossil fuel facility.

For the future, the Power Authority will continue to carry out



*The Power Authority remains committed to developing small hydro projects like this one at Kensico in Westchester County.*

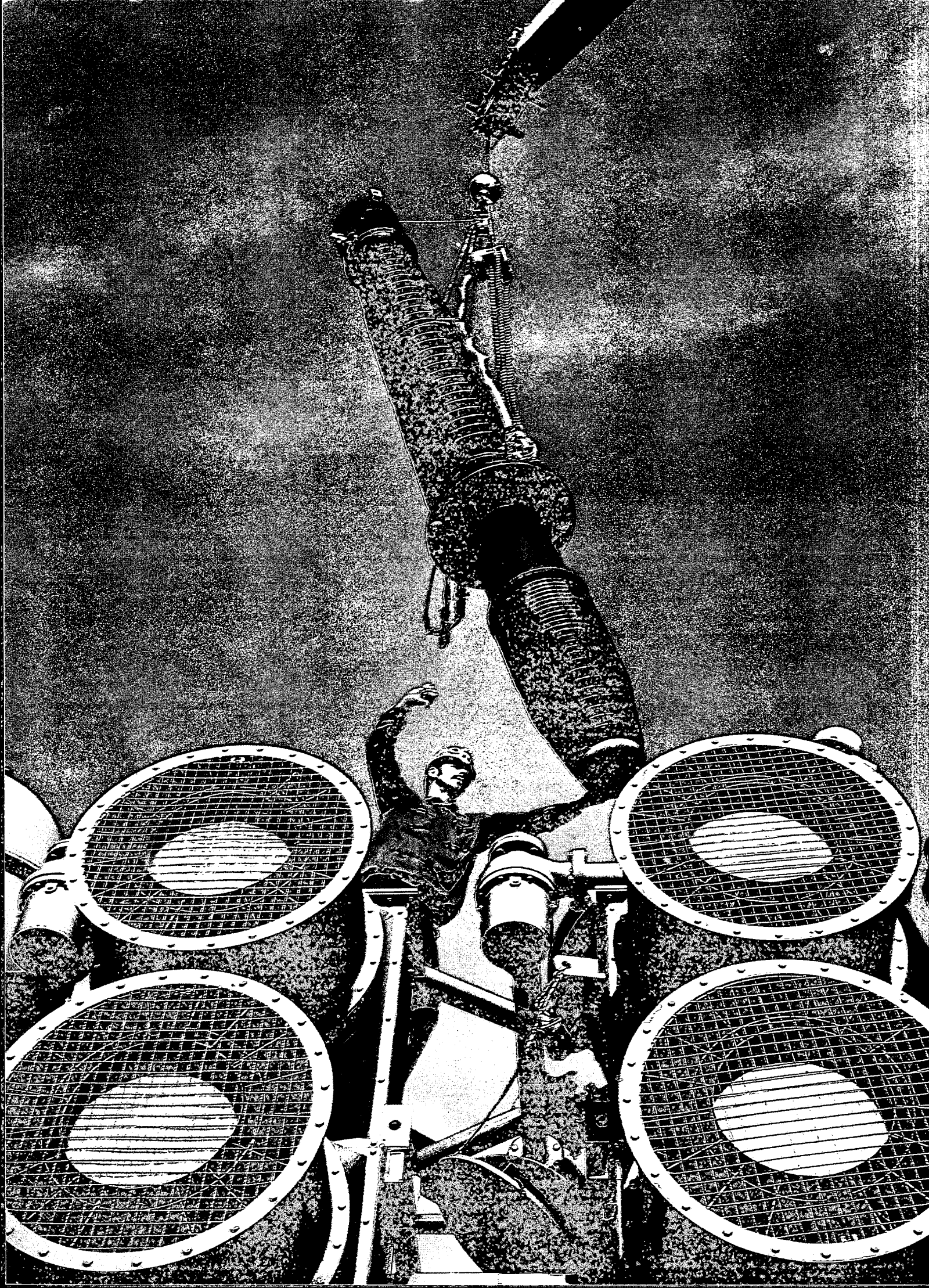
Falls, testifies to a nation's destiny fulfilled. It was engineered not only to preserve the beauty of Niagara Falls, but also to produce some of the world's least expensive electricity.

In 1986, the New York Power Authority will hold a year-long celebration in honor of the Niagara Power Project's production of first power. Indeed, the Niagara project reflects the Power Authority's long-standing tradition of prudent energy management and environmental concern.

its original hydropower mandate issued by Franklin D. Roosevelt in 1931. It pledges to keep finding ways to develop the State's hydroelectricity production, making sure water power continues to dominate the Power Authority's total energy supply.

Moreover, the New York Power Authority will work for the people of New York State to help them realize even more fully the promise of Niagara's rainbow, the promise of still greater prosperity and progress for all.







# Highlights of the Year

**A**s the largest supplier of electricity in the State of New York, the Power Authority provided more than 42.5 billion kilowatt hours (kwh) of electricity in 1985, meeting more than one-third of the State's needs for electric power.

Hydroelectric sources accounted for about 75% of all the energy the Authority provided during 1985 (56% from its own facilities and 19% from Canadian imports). The Niagara and St. Lawrence-Franklin D. Roosevelt projects generated more than 24 billion kwh, and 8 billion kwh were imported from Canada's hydroelectric projects.

The Authority's two nuclear plants, the Indian Point 3 Nuclear Power Plant and the James A. FitzPatrick Nuclear Power Plant, represented 21% of the power mix, producing 9 billion kwh. The Charles Poletti Power Project, the Authority's only oil-and-gas fueled facility, provided 4% of the power, producing 2 billion kwh.

## Transmission

*Marcy-South.* The Power Authority began constructing its 345-kilovolt (kv), 200-mile-long Marcy-South transmission line after receiving necessary federal and State approvals in 1985. Scheduled for completion in 1988, the line will extend from Marcy near Utica to East Fishkill in Dutchess County. It will deliver lower cost electricity from Canadian and upstate sources to replace oil-fired electricity, saving millions of dollars for New York State consumers.

*765-kv Line.* The Authority's 765-kilovolt line from the New York/Canadian border to Marcy delivered about 8 billion kwh of Canadian electricity in 1985. Since its start in 1978, the line has

brought in more than 60 billion kwh, saving consumers almost \$600 million.

### *New FitzPatrick Plant Line.*

Authority employees designed, engineered and managed through construction a one-mile-long, 345-kilovolt transmission line from the FitzPatrick nuclear power plant to a substation at Scriba near Oswego. The line was completed on schedule and under estimated cost.

### *Long Island Sound Crossing.*

The Authority began full-scale feasibility studies needed to support federal and State license applications to build an underground and underwater transmission cable from Westchester County to Long Island. The applications are scheduled to be filed by the end of 1986, and the line completed by October 1991. The line will carry lower cost electricity to Long Island from upstate and Canadian sources and improve the reliability of the State's electric transmission system.

## Hydroelectric Projects

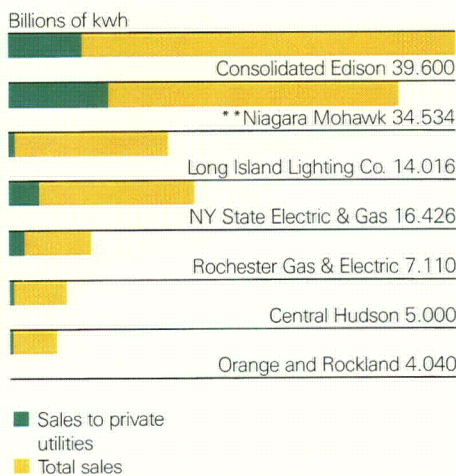
This year the Authority's hydroelectric projects generated 56% of the overall power mix, an increase of 5% from 1984. Production at both the Niagara and St. Lawrence-FDR projects, the two major hydroelectric facilities, increased slightly due to higher than normal flows. The Blenheim-Gilboa Pumped Storage Power Project generated 2 billion kwh to meet peak consumer demand. Production at Kensico, a small hydro project, increased; however, at Ashokan, another small hydro project, production was adversely affected by a severe drought in southern New York.

## Electric energy sales

Billions of kwh	
1985	42.742
1983	39.392
1981	39.671
1979	38.164
1977	31.997
1975	25.410



**1985 electric sales to New York State private utilities in relation to each utility's total sales\***



\*Power Authority sales totaled 23.721 billion kwh, which included 4.248 billion kwh sold to the New York Power Pool (NYPP). The NYPP used this electricity to supply the utilities as needed.

\*\*Power Authority sales to Niagara Mohawk include .136 billion kwh associated with sales to reallocated expansion customers.

The Authority's newest small hydro project at Hinckley, near Utica, moved toward 1986 completion by generating the first power for testing in December 1985. Its two turbine-generators have a 9,000-kilowatt (kw) capacity.

At Vischer Ferry and Crescent Dams, where the Authority has a federal license to build its fourth and fifth small hydro facilities, environmental studies continued. The Authority received a license to add 3,000 kw of capacity at Waterford Dam on the Hudson River.

**Nuclear Plant Performance**

The Indian Point 3 and FitzPatrick plants continued to generate electricity at highly productive levels in 1985. Despite the fact that the plants were out of service for a combined total of 277 days for scheduled refueling and maintenance, they produced 9 billion kwh, only 6% below the generating record set in 1984. During the shutdowns, inspection and maintenance procedures were carried out to insure the high efficiency of both plants.

At Indian Point, increased plant efficiency contributed to the decision to reduce rates in southeastern New York and resulted in two rebates totaling \$33 million in 1984 and 1985.

In April, the Federal Emergency Management Agency (FEMA) decided that an emergency-preparedness exercise at the Indian Point 3 plant in Westchester was successful. FEMA also approved State and county emergency plans for the FitzPatrick plant in Oswego County. The U.S. Nuclear Regulatory Commission gave both the Indian Point 3 and FitzPatrick plants high ratings in evaluating safety, management and other plant activities.

**Energy Conservation/Research and Development**

Two Power Authority projects—the Metropolitan Area Load Management System (MALMS) and the retrofitting of large fans with variable speed drives at Poletti—were among the ten winners selected for Energy Innovation by the State Energy Office. The MALMS project also won a U.S. Department of Energy national award in 1985.

The MALMS system will electronically monitor electricity use by government agencies served by the Indian Point 3 plant and the Poletti project, enabling the Authority to serve these agencies as economically as possible and help cut their electricity use.

Analyses completed on the fan drive retrofit at the Poletti project indicate a significant saving in the amount of energy required to operate the project at both full load and partial load. Poletti is a cycling plant that is scheduled to operate at full load only when there is peak demand for electricity. The estimated payback period of the fan drive is three years.

**Lower Power Rates**

A \$22.2 million rate reduction for New York City and Westchester customers, starting in January 1986, resulted from continued strong performance of the Indian Point 3 Nuclear Power Plant during the past year. Since the rates were set in 1984, the plant has consistently performed beyond expectations.

Customers in New York City and Westchester have saved \$1.5 billion on electric bills since the start of Authority service in 1976.

**New Customers**

*Municipal Distribution Agencies.* Service began to the first six of the 52 Municipal Distribution Agencies (MDAs) voted into existence in



local elections to qualify as preference customers for Authority power, together with the existing municipal utilities. Under federal law and licenses, a portion of power from the Niagara project is allocated to preference customers. The first group of MDAs to receive Authority power—New York City and Westchester, Orange, Rockland, Nassau and Suffolk Counties—reduced customers' bills by almost \$15 million in 1985. Service will begin to the remaining 46 when they complete delivery arrangements with local utilities. About 95% of New York residents are now represented by MDAs and about 2% by municipal utilities and rural cooperatives.

#### *Sales to Neighboring States.*

In 1985, the Power Authority commenced sales of 296,000 kw to the neighboring states of Connecticut, Massachusetts, New Jersey, Ohio, Pennsylvania, Rhode Island and Vermont under a new allocation plan. The Authority is required by the federal government to sell a portion of its hydro projects' output to neighboring states.

### **Power Allocations Spur Industry to Expand**

#### *2,000 Jobs for Upstate New York.*

Five hydropower allocations to industry this year protected or created about 2,000 jobs in western New York. About \$133 million will be invested in new facilities as a result of allocations to five firms: Al Tech Specialty Steel of Dunkirk and Watervliet; Russer Foods Division of ZEMCO Industries of Buffalo; Sohio Engineered Materials Company (formerly the Carborundum Company) of Amherst; and a joint venture between E.I. DuPont

de Nemours & Company and the Olin Corporation of Niagara Falls.

#### *Nuclear Power for Jobs.*

A 10,000-kw allocation of Fitz-Patrick plant nuclear power, effective July 1, helped to protect more than 4,000 jobs and save \$1 million annually for the General Motors Corp. automobile assembly plant in North Tarrytown. In return for the power, General Motors agreed to maintain that number of jobs and to assemble cars that are expected to be in demand into the 1990s. The allocation is part of a local, State and Power Authority package of incentives that produced a commitment by General Motors to long-term operation of the plant.

The allocation was made under 1984 legislation authorizing Fitz-Patrick power sales to three southeastern New York companies. Gov. Mario M. Cuomo has approved contracts with Shearson Lehman Brothers in New York City and Grumman Corp. on Long Island for allocations resulting in a total of about 3,500 jobs.

### **Election of New Chairman**

Richard M. Flynn, a Power Authority trustee for ten years, was elected Chairman and Chief Executive Officer on June 28, 1985, becoming the ninth chairman of the Authority in its 54-year history.

Mr. Flynn replaced John S. Dyson, who remained as a trustee while resigning as chairman to devote more time to his family and business interests.

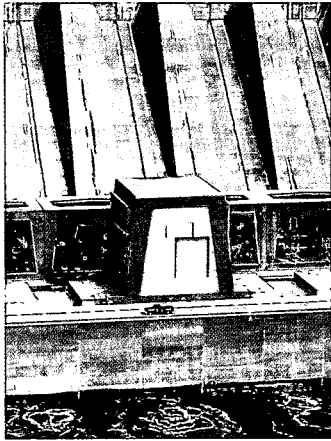
Mr. Flynn was appointed an Authority trustee by Gov. Hugh L. Carey in October 1975, and was reappointed for his third term by Gov. Mario M. Cuomo. He is a senior partner in the Manhattan law firm of Pryor, Cashman, Sherman & Flynn. He specializes in the fields of telecommunications and investment banking.

**Electric sales to New York State municipal systems and rural electric cooperatives**

Billions of kwh	
1985	3.518
1983	3.228
1981	3.163
1979	2.833
1977	2.123
1975	1.713

# Power Authority Project Profiles

## Niagara Power Project



Location: Lewiston on the Niagara River

Type: Hydro

Capability: 2,400,000 kw

Construction Cost: \$737 million

First Power: January 28, 1961

Generation through 1985: 362.8 billion kwh

Oil Savings through 1985: 604.8 million barrels (25.4 billion gallons)

1985 Generation: 17.1 billion kwh

1985 Oil Savings: 28.5 million barrels (1.2 billion gallons)

Principal Features:

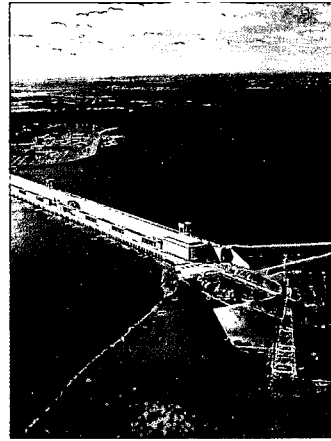
At Moses plant 13 turbine-generators, each rated at 150,000 kilowatts. Length, 1,840 feet; height, 389 feet; width, 580 feet. Hydraulic head: 305 feet.

The auxiliary Lewiston plant, with 12 pump-generators, each rated at 20,000 kw, and a 1,900-acre storage reservoir.

Two water intakes on the Niagara River 2 1/2 miles upstream from the Falls.

Two underground conduits, each 46 feet by 66 feet, carry water four miles under the City of Niagara Falls to a forebay connecting the Moses and Lewiston plants.

## St. Lawrence-Franklin D. Roosevelt Power Project



Location: Massena on the St. Lawrence River

Type: Hydro

Capability: 800,000 kw

Construction Cost: \$650 million, divided between the Authority and Ontario Hydro

First Power: July 17, 1958

Generation through 1985: 185.9 billion kwh

Oil Savings through 1985: 309.8 million barrels (13.0 billion gallons)

1985 Generation: 7.3 billion kwh

1985 Oil Savings: 12.1 million barrels (510 million gallons)

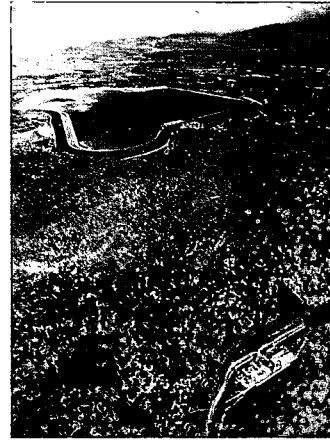
Principal Features:

*Robert Moses-Robert H. Saunders Power Dam:* Barnhart Island in the United States to Cornwall, Ontario. 32 generators, 16 on each side of the international boundary. Length, 3,300 feet; height, 167 feet; width, 184 feet. Hydraulic head: 81 feet.

*Long Sault Dam:* Extends 2,960 feet from the New York mainland to Barnhart Island.

*Iroquois Dam:* 25 miles upstream from Long Sault Dam near Iroquois Point in Canada. Controls outflow from Lake Ontario. Length, 2,335 feet; height 67 feet; width, 80 feet.

## Blenheim-Gilboa Pumped Storage Power Project



Location: Towns of Blenheim and Gilboa, Schoharie County, about 40 miles southwest of Albany

Type: Pumped Storage Hydro

Capability: 1 million kw

Construction Cost: \$149 million

First Power: July 5, 1973

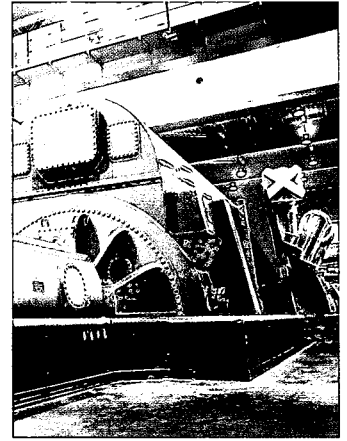
Generation through 1985: 18.5 billion kwh

1985 Generation: 2 billion kwh

Principal Features:

Lower Reservoir: 430 acres on Schoharie Creek. Upper Reservoir: 360 acres on Brown Mountain. Connecting Tunnel System: Vertical shaft and a horizontal tunnel branching into four penstock tunnels. Powerhouse: Four reversible pump-generators, each rated at 250,000 kw.

## Charles Poletti Power Project



Location: Astoria, New York City, on the East River

Type: Oil and Natural Gas

Capability: 825,000 kw

Construction Cost: \$420 million (including purchase price)

First Power: February 12, 1977

Generation through 1985: 20.4 billion kwh

Oil Savings through 1985 (through use of natural gas): 11.6 million barrels (487 million gallons)

1985 Generation: 2.1 billion kwh

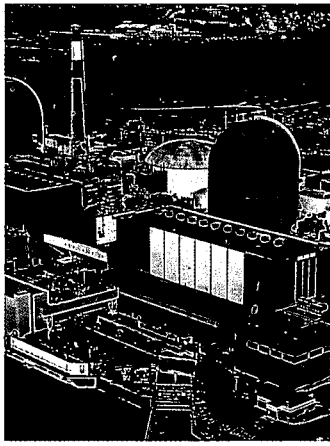
1985 Oil Savings: 2.9 million barrels (122 million gallons)

Principal Features:

Balanced-draft boiler, 175 feet high, modified to burn natural gas as well as oil. It delivers 6.6 million pounds of steam per hour to revolve the turbine-generator 3,600 times a minute. Oil storage tank farm with 36 million gallon capacity. Discharge canal lowers temperature of cooling water returned to East River.



### Indian Point 3 Nuclear Power Plant



Location: Buchanan, on the Hudson River

Type: Pressurized Water Reactor

Capability: 965,000 kw

Construction Cost: \$560 million (including purchase price)

First Power: April 25, 1976

Generation through 1985: 37.3 billion kwh

Oil Savings through 1985: 62.2 million barrels (2.6 billion gallons)

1985 Generation: 4.7 billion kwh

1985 Oil Savings: 7.9 million barrels (331 million gallons)

Principal Features:

Pressurized Water Reactor, weighing 433 tons and holding 111 tons of uranium fuel; operates at temperatures of 547°F and pressures of 2,250 pounds per square inch. A heat exchanger transfers the heat to a separate steam generator system.

Generator uses steam from the system to revolve 1,800 times a minute to produce electricity at 22,000 volts.

Condenser Cooling System uses Hudson River water to condense the steam back to water for reuse in the separate steam generator system. The water is returned to the Hudson via a discharge canal that limits its temperature rise at the return point to no more than 12°F.

### James A. FitzPatrick Nuclear Power Plant



Location: Scriba, on the south shore of Lake Ontario

Type: Boiling Water Reactor

Capability: 800,000 kw

Construction Cost: \$430 million

First Power: February 1, 1975

Generation through 1985: 45.1 billion kwh

Oil Savings through 1985: 75.2 million barrels (3.2 billion gallons)

1985 Generation: 4.2 billion kwh

1985 Oil Savings: 6.9 million barrels (292 million gallons)

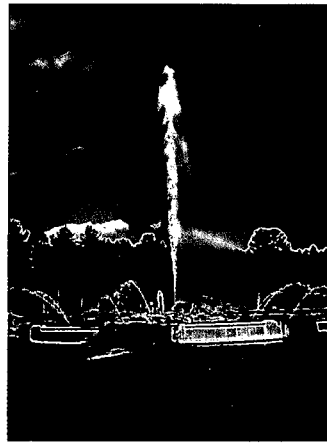
Principal Features:

Boiling Water Reactor, weighing 503 tons and holding 115 tons of uranium fuel; operates at a temperature of 545°F to deliver 10.4 million pounds of steam per hour.

Generator with rotating weight of 180 tons; uses steam produced by the reactor to revolve at 1,800 revolutions per minute to produce electricity at 24,000 volts.

Condenser Cooling System uses Lake Ontario water to cool the steam back to water for recycling through the reactor. None of the cooling water goes through the reactor; it is returned to the lake via a unique underwater fountain that limits its temperature rise to less than 3°F.

### Ashokan Project



Location: Ashokan Reservoir in Town of Olive

Type: Small Hydro

Capability: 4,750 kw

Construction Cost: \$10.6 million

First Power: October 22, 1982

Generation through 1985: 51.8 million kwh

Oil Savings through 1985: 86,410 barrels (3.6 million gallons)

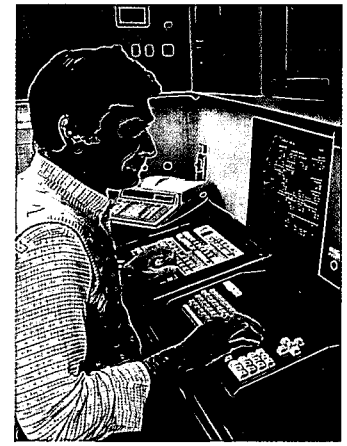
1985 Generation: 14.4 million kwh

1985 Oil Savings: 24,000 barrels (1.0 million gallons)

Principal Features:

Underground powerhouse with two 2,375-kw turbine-generators. A 240-foot-long penstock from the reservoir. Remote-control equipment via telephone lines from the Blenheim-Gilboa project.

### Kensico Project



Location: Kensico Reservoir in the Village of Valhalla

Type: Small Hydro

Capability: 3,000 kw

Construction Cost: \$5.4 million

First Power: January 20, 1983

Generation through 1985: 37.8 million kwh

Oil Savings through 1985: 62,970 barrels (2.6 million gallons)

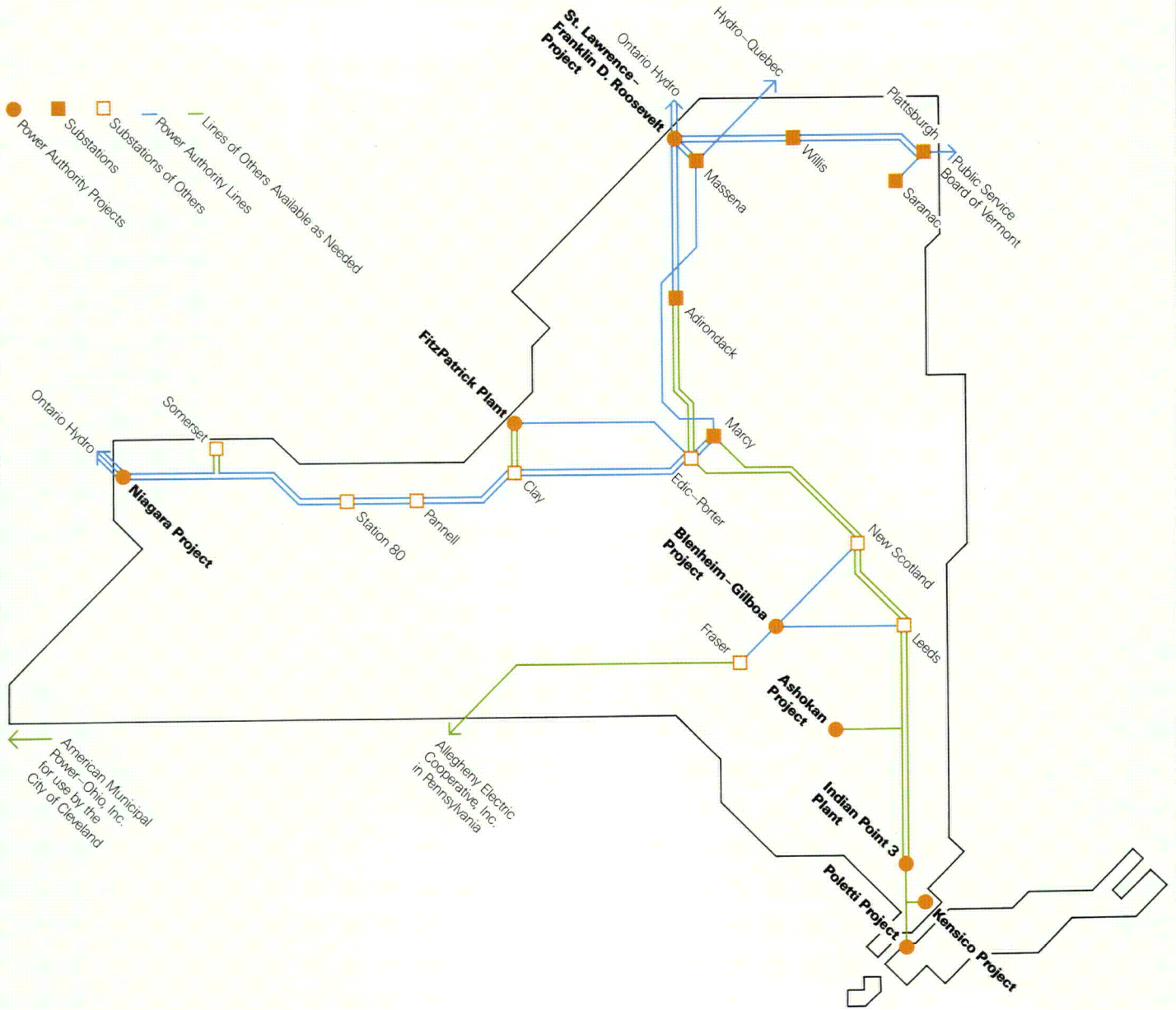
1985 Generation: 16.9 million kwh

1985 Oil Savings: 28,090 barrels (1.2 million gallons)

Principal Features:

Turbine-generators: three 1,000-kw units installed below ground in the reservoir's lower effluent chamber. Remote-control equipment from the Blenheim-Gilboa project.

# Power Authority Network



# Financial Statements



## Power Authority of the State of New York

# Finances

Revenue received during 1985 totaled \$1,254,016,000. The revenues consisted of \$1,182,061,000 from the sale of power, transmission and wheeling and \$71,955,000 of earnings on investments. Of these revenues, \$926,082,000 was allocated to the Operating Fund for operating expenses and fuel. A total of \$17,294,000 was deposited in the Projects' Study Fund for research expenditures to determine appropriate methods to fulfill the purposes of the Authority. Interest of \$207,204,000 was paid from the Bond Service Account. In addition, \$6,477,000 was paid to retire \$6,500,000 principal amount of General Purpose Bonds and \$32,205,000 was deposited in the Bond Reserve Account to meet bond resolution requirements. During the year, \$63,735,000 was deposited into the General Reserve Account.

On February 26, 1985, the Authority sold \$270,385,000 principal amount of General Purpose Bonds, Series S. The proceeds from the sale of the Series S Bonds, together with monies applicable to the Series M Bonds, were invested in direct obligations of the United States of America, the maturing principal of and interest on which will be sufficient to pay, when due, the \$250,000,000 principal amount of General Purpose Bonds, Series M.

These bonds bring the total amount of bonds issued under the General Purpose Bond Resolution to \$3,705,810,000 of which \$2,730,475,000 remain payable from revenues of the Authority. The Series S Bonds were Rated A1, A+ by the major rating services as are all the outstanding Authority bonds except all series of Revenue Bonds and the Series C and M General Purpose Bonds, which were refunded by the Authority and will be paid in accordance with their terms from U. S. Treasury Securities irrevocably deposited with an escrow agent.

During 1985 the Authority sold two types of notes to provide a portion of the costs of construction of its projects: On April 30, 1985 the Authority sold \$200,000,000 of Adjustable Rate Tender Notes. Pursuant to their terms, the interest rates and the dates on which the interest rates may be adjusted can vary based on the recommendation of the Remarketing Agent. The Notes may be tendered to the Authority by the holders on any adjustment date. The initial adjustment period for the Notes maturing March 1, 2007 was September 3, 1985. Pursuant to the Remarketing Agent's recommendation, the next adjustment period for these Notes is one year ending September 3, 1986.

The Notes maturing March 1, 2016 and March 1, 2020 have an initial adjustment period ending March 3, 1986.

On April 30, 1985, the Authority authorized the issuance of up to \$50,000,000 of tax exempt commercial paper notes. Interest on the notes may not exceed a specified percentage of the agent bank's prime commercial lending rate as in effect from time to time. At December 31, 1985, the Authority had \$50,000,000 of commercial paper notes outstanding.

In addition, \$78,265,000 of Master Notes remain outstanding.

To provide support for these financing programs, the Authority has revolving credit agreements with a bank in the amount of \$330,000,000.

Indian Point 3's better than anticipated operating performance during 1985 enabled the Authority to rebate \$22,200,000 during 1985 bringing the total amount returned to customers over the past two years to \$33,300,000 and to provide a 5.2% reduction in 1986 rates charged to its Poletti and Indian Point 3 customers. Additional savings continue to accrue to these metropolitan New York City area customers through a reduction in the amount of the monthly energy adjustment component of their bills.

Projections of expenses at the Authority's other facilities, bond service and reserve requirements and amounts necessary for operating reserves indicated that no increase in revenues would be required for 1986. Thus, there has been no increase in the rates established for customers served from the James A. FitzPatrick plant and the Blenheim-Gilboa pumped storage facility since 1982 and a reduction in those for the Poletti and Indian Point 3 plants in effect since 1983. Rates to customers served by the Niagara and St. Lawrence-FDR plants have remained unchanged since the reduction retroactive to January 1, 1982.

The Authority's financial statements, reported by independent certified public accountants, Arthur Young & Company, follow.

# Balance Sheet

December 31, 1985

(In thousands)

## Assets

### Utility Plant:

Electric plant in service		\$3,266,675
Less accumulated depreciation		(856,497)
		<u>2,410,178</u>
Construction work in progress		234,757
Nuclear fuel less accumulated amortization of \$138,908		260,249
		<u>2,905,184</u>

### Restricted Funds:

Cash (including time deposits)	\$ 8,033	
Investment in U.S. Government securities, at cost	501,026	509,059

### Construction Funds:

Cash	2,068	
Investment in U.S. Government securities, at cost	698,200	
Interest receivable on investments	22,381	722,649

### Current Assets:

Cash	5,433	
Investment in U.S. Government securities, at cost	445,734	
Interest receivable on investments	28,521	
Receivables—customers	54,581	
Materials and supplies, at average cost:		
Plant and general	36,769	
Fuel	735	
Prepayments and other	3,882	575,655

### Deferred Charges and Other Assets:

Preliminary investigations	25,064	
Unamortized debt expense	40,335	
Other	10,745	76,144

Total Assets \$4,788,691

## Liabilities and Capital

Long-term debt (Notes D and E)	\$2,883,165
Accumulated net revenues employed in the business	1,401,464
	<u>4,284,629</u>

### Current Liabilities:

Short-term debt (Note F):		
Notes payable	\$ 78,265	
Commercial paper	50,000	
Accounts payable and accrued liabilities	149,678	
Customer advance billings	45,089	323,032

### Deferred Credits and Other Long-Term Liabilities:

Nuclear fuel disposal and decommissioning (Note G)	117,837	
Deferred revenue	63,193	181,030

### Commitments and contingencies (Note H)

Total Liabilities and Capital \$4,788,691

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

# Statement of Net Revenues and Accumulated Net Revenues Employed in the Business

Year Ended December 31, 1985

(In thousands)

## Operating Revenues:

Power sales	\$ 901,850
Transmission charges	47,393
Wheeling charges	199,924
Total Operating Revenues	1,149,167

## Operating Expenses:

Operations	213,052
Nuclear fuel	76,110
Fuel oil and gas	93,310
Purchased power—Hydro-Quebec	205,368
—Others	5,287
Maintenance	82,855
Wheeling	199,924
Depreciation	80,136
Total Operating Expenses	956,042

## Net Operating Revenues

193,125

## Other Income:

Interest	84,279
Other	1,153
Total Other Income	85,432

## Other Deductions:

Interest on long-term debt	234,325
Interest on notes	7,716
Interest capitalized	(54,937)
Amortization of debt discount and expense	4,462
Total Other Deductions	191,566

## Revenues, net before advance bond refunding charge

86,991

## Advance bond refunding charge (Note D)

(37,302)

## Net Revenues

49,689

## Accumulated net revenues employed in the business at January 1, 1985

1,351,775

## Accumulated Net Revenues Employed in the Business at December 31, 1985

\$1,401,464

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



# Statement of Changes in Financial Position

Year Ended December 31, 1985

(In thousands)

## Funds Provided by:

Net revenues		\$ 49,689
Items not affecting funds:		
Provision for depreciation		80,136
Amortization of nuclear fuel		52,761
Provision for spent nuclear fuel disposal and nuclear plant decommissioning		39,212
Provision for deferred revenues		11,621
Amortization of debt discount and expense		4,462
Preliminary investigations expensed		3,977
Advance bond refunding charge (Note D)		37,302
		<hr/>
Sale of bonds—Series S (\$270,385 principal amount) (Note D)		279,160
Sale of adjustable rate tender notes (\$200,000 principal amount) (Note E)		255,638
Sale of commercial paper (Note F)		199,246
		50,000
		<hr/>
Total funds provided		784,044

## Funds Applied to:

Additions to—Utility plant		166,633
—Nuclear fuel		55,805
Refunding of bonds—Series M (Note D)		276,903
Retirement of bonds		6,478
Preliminary investigations		1,808
Nuclear fuel disposal payments		7,810
Increase in restricted funds		65,260
Increase in construction funds:		
Proceeds from sale of adjustable rate tender notes	\$179,246	
Proceeds from sale of commercial paper	50,000	
Other decreases—net	(88,008)	141,238
		<hr/>
Increase (decrease) in working capital (excluding cash and investments):		
Interest receivable on investments	8,292	
Receivables—customers	(8,990)	
Materials and supplies	(16,913)	
Short-term debt—notes payable	1,735	
Accounts payable and accrued liabilities	(30,209)	
Customer advance billings	2,093	(43,992)
		<hr/>
Other—net		3,057
		<hr/>
Increase in cash and investments		681,000
Cash and investments, January 1, 1985		103,044
		<hr/>
Cash and investments, December 31, 1985		348,123
		<hr/>
		\$451,167

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

# Summary of Funds (cash basis)

Year Ended December 31, 1985

	Revenue	Operating
<b>Available Funds, January 1, 1985</b>	\$ —0—	\$ 332,166
<b>Cash Receipts:</b>		
Sale of power, transmission and wheeling	1,182,061	
Earnings on investments	71,955	
Sale of bonds—Series S		
Accrued interest on bonds sold		
Sale of adjustable rate tender notes		
Administrative expenses reimbursed from other funds		5,742
Utility plant additions reimbursed from other funds		26,760
Sale of land		
<b>Total Receipts</b>	<u>1,254,016</u>	<u>32,502</u>
<b>Total Available</b>	1,254,016	364,668
Transfer of funds—revenue	(1,254,016)	797,922
	<u>\$ —0—</u>	<u>1,162,590</u>
<b>Cash Disbursements:</b>		
Interest on bonds and notes		432
Payment of notes		
Deposit of \$276,903 with Escrow Agent to refund Series M Bonds		
Retirement of bonds—(\$6,500 principal amount)		
Utility plant additions		16,351
Nuclear fuel		
Fuel oil and gas		
Operations and maintenance		314,580
Purchased power—Hydro-Quebec		222,582
—Others		6,113
Wheeling		196,441
Bond discount		
Bond financing costs		
Administrative expenses chargeable to other funds		547
Utility plant additions reimbursed to the operating fund		
Preliminary investigations		
Costs transferred to utility plant		
Administrative expenses reimbursed to the operating fund		
<b>Total Disbursements</b>		<u>757,046</u>
<b>Available Funds, December 31, 1985</b>		<u>\$ 405,544</u>
<b>Distributed as follows:</b>		
Cash (including time deposits)		\$ 5,229
Investment in U.S. Government securities		400,315
		<u>\$ 405,544</u>

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



(In thousands)

Fuel Reserve Account	Projects Study	Restricted				Note Debt Service Reserve (Note E)	Advance Bond Refunding (Note D)
		General (Held by Bond Trustee)					
		Bond Service	Bond Reserve	General Reserve	Temporary Interest Fund		
\$ 97	\$15,860	\$ —0—	\$302,150	\$ 94,141	\$ 47,508		
	1,988						\$270,385
		3,274				\$20,000	
			293				
	1,988	3,274	293			20,000	270,385
97	17,848	3,274	302,443	94,141	47,508	20,000	270,385
128,160	17,294	214,700	32,205	63,735			
128,257	35,142	217,974	334,648	157,876	47,508	20,000	270,385
		207,204			21,278		1,590
		4,770	18,841	1,735			253,292
		6,000	477				
54,342							8,130
73,818							7,373
				8,642			
	10,939						
	(21,450)						
	127						
128,160	(10,384)	217,974	19,318	10,377	21,278		270,385
\$ 97	\$45,526	\$ —0—	\$315,330	\$147,499	\$26,230	\$20,000	\$ —0—
\$ 97	\$ 107		\$ 7,970	\$ 13	\$ 50		
	45,419		307,360	147,486	26,180	\$20,000	
\$ 97	\$45,526		\$315,330	\$147,499	\$26,230	\$20,000	

# Summary of Funds (cash basis) (continued)

Year Ended December 31, 1985

	Poletti	Indian Point 3	Massena-Marcy Line	J.A. FitzPatrick Blenheim-Gilboa	Kensico	Ashokan
<b>Available Funds, January 1, 1985</b>	\$20,298	\$11,660	\$2,617	\$6,892	\$1,998	\$1,734
<b>Cash Receipts:</b>						
Earnings on investments	1,861	1,042	309	506	146	129
Sale of adjustable rate tender notes						
Sale of commercial paper						
<b>Total Receipts</b>	1,861	1,042	309	506	146	129
<b>Total Available</b>	22,159	12,702	2,926	7,398	2,144	1,863
<b>Cash Disbursements:</b>						
Interest on notes						
Utility plant additions	106	382	940	1,151	114	313
Utility plant additions reimbursed to other funds						
Project termination costs						
Administrative expenses reimbursed to the operating fund	5	45		19		25
Financing costs						
<b>Total Disbursements</b>	111	427	940	1,170	114	338
<b>Available Funds, December 31, 1985</b>	\$22,048	\$12,275	\$1,986	\$6,228	\$2,030	\$1,525
<b>Distributed as follows:</b>						
Cash	\$ 65	\$ 73	\$ 93	\$ 49	\$ 34	\$ 88
Investment in U.S. Government securities	21,983	12,202	1,893	6,179	1,996	1,437
	\$22,048	\$12,275	\$1,986	\$6,228	\$2,030	\$1,525

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

(In thousands)

Arthur Kill	Construction		Indian Point 3 Project Improvement Fund		Small Hydro	Niagara Project Expansion	Marcy-South Line	Total
	J.A. FitzPatrick Project Improvement Fund		No. 1	No. 2				
	No. 1	No. 2						
\$4,865	\$53,587	\$14,611	\$77,927	\$29,961	\$75,530	\$150,698	\$115,039	\$567,417
329	4,716	1,268	6,014	2,615	6,896	14,946	18,203	58,980
							180,000	180,000
							50,000	50,000
329	4,716	1,268	6,014	2,615	6,896	14,946	248,203	288,980
5,194	58,303	15,879	83,941	32,576	82,426	165,644	363,242	856,397
	13,555	452	41,520	247	3,081		6,026	9,107
					8,343	2,056	31,874	101,053
33	9,163	3,665	2,872				23,868	39,568
								33
	1,286	179	2,339	40	369	107	1,201	5,615
							753	753
33	24,004	4,296	46,731	287	11,793	2,163	63,722	156,129
\$5,161	\$34,299	\$11,583	\$37,210	\$32,289	\$70,633	\$163,481	\$299,520	\$700,268
\$ 97	\$ 44	\$ 23	\$ 716	\$ 25	\$ 116	\$ 74	\$ 571	\$ 2,068
5,064	34,255	11,560	36,494	32,264	70,517	163,407	298,949	698,200
\$5,161	\$34,299	\$11,583	\$37,210	\$32,289	\$70,633	\$163,481	\$299,520	\$700,268



# Notes to Financial Statements

## Note A—General

The Power Authority of the State of New York is a corporate municipal instrumentality and political subdivision of the State of New York created by the Legislature of the State by Chapter 772 of the Laws of 1931, as last amended by Chapter 521 of the Laws of 1984.

Properties and income of the Authority are exempt from taxation. However, the Authority is authorized by Chapter 908 of the Laws of 1972 to enter into agreements to make payments in lieu of taxes with respect to property acquired for any project where such payments are based solely on the value of the real property without regard to any improvement thereon by the Authority and where no bonds to pay any costs of such project were issued prior to January 1, 1972.

## Note B—Accounting Policies

(1) Accounts of the Authority are maintained in accordance with the Uniform System of Accounts prescribed by the Federal Energy Regulatory Commission (FERC).

(2) Utility plant is stated at original cost and consists primarily of amounts expended to license, construct, acquire, complete and place in operation the projects of the Authority. Such expenditures include: labor, materials, services, indirect costs and interest on bonds and notes (net of interest income on unexpended funds), reduced by revenues received for power produced (net of expenditures incurred in operating the projects) prior to the date of completion. The costs of current repairs are charged to operating expenses and renewals and betterments are capitalized. The cost of utility plant retired and the cost of removal less salvage (exclusive of nuclear plant decommissioning costs) are charged to accumulated depreciation.

(3) Depreciation is provided on a straight-line basis over the estimated useful lives of the various classes of plant, as determined by independent engineers. The depreciation provision expressed as a percent of average depreciable electric plant approximated 2.5% on an annual basis.

(4) The amortization of nuclear fuel is provided on a unit of production basis. Amortization rates are determined and periodically revised to amortize the cost of nuclear fuel over its estimated useful life. The costs of disposal of spent nuclear fuel will be met from provisions included in operating expenses (see Note G). In addition, over the estimated useful lives of its nuclear plants, the Authority is providing for decommissioning.

(5) Deferred revenues represent certain billings, related to the recovery of costs, which have been deferred and will be amortized over the life of the applicable asset.

(6) Costs incurred by the Projects' Study Fund for preliminary investigations of a project are transferred to utility plant upon the specification of a project under the Resolution. If the study does not result in a project, the costs are charged as an expense to net revenues in the period such determination is made.

(7) Unamortized debt discount and expense are amortized over the lives of the related debt issues on a straight-line basis.

(8) In accordance with the Resolution, upon completion, or the latest estimated date of completion, of each project, whichever is earlier, all revenues received from such project are required to be paid into the Revenue Fund.

(9) Funds required for all bond service payments due under the Resolution are payable on July 1 and January 1 and are made available to the Bond Trustee on the immediately preceding June 30 and December 31, by which dates such amounts are segregated for that purpose. Accordingly, at December 31, 1985 no liability is reflected in the accompanying financial statements for January 1, 1986 bond service payments of \$115,220,000.

(10) At December 31, 1985, the aggregate cost of all investments in U.S. Government securities approximated market value based upon published bid prices.

(11) Employees of the Authority are members of the New York State Employees' Retirement System (System). For personnel who became members of the System prior to July 1, 1976, the Authority contributes the entire amount determined by the System to be payable. Personnel who became members of the System on or after July 1, 1976 deposit three percent of gross salary, and the Authority contributes the balance payable to the System for these employees. Pension costs for the year ended December 31, 1985 were \$16,200,000. The Authority's employees are also covered by the Federal Insurance Contributions Act (Social Security).

(12) Sales and purchases of power between the Authority's facilities are eliminated from revenues and operating expenses.

(13) Revenues are recorded when billed. Customers' meters are read and bills are rendered on a monthly cycle basis. Fuel and purchased power costs above base-rate levels are recovered from customers served by the Poletti and Indian Point 3 plants under an energy adjustment clause. Interest costs incurred on obligations issued to purchase fuel are included as a fuel cost.

### **Note C—General Purpose Bond Resolution**

The General Purpose Bond Resolution adopted on November 26, 1974, as amended and supplemented, covers all projects of the Authority. Projects are defined in the Resolution as any project of the Authority directly or indirectly related to power generation or transmission, whether owned jointly or singly by the Authority, including any output in which the Authority has an interest, authorized by the Power Authority Act and specified in a supplemental resolution adopted at the time a series of bonds is authorized. Before bonds are issued for any new project, a prescribed earnings test must be met based on estimated revenues and operating expenses certified by an independent engineer. A Projects' Study Fund to finance preliminary efforts of the Authority to determine appropriate methods to fulfill its purposes under the Power Authority Act was established by the Resolution.

The Authority has covenanted with bondholders that at all times rates and charges will be sufficient, together with other moneys available therefor, to meet the financial requirements of the Resolution. All revenues from any completed project of the Authority (after deductions for operating expenses including necessary working capital reserves and for Projects' Study) are applied first to the payment of bond service (interest and principal installments due on outstanding bonds); then a sum equal to fifteen percent of each year's bond service is set aside in a bond reserve account; and any remaining revenues are deposited in a general reserve account. Amounts in the bond reserve account will be applied by the Bond Trustee monthly to meet any deficiency in the bond service account and may be paid to the Authority for emergency repairs or replacements.

The Resolution also provides for the retirement of bonds from amounts in the bond reserve account in excess of the bond reserve requirement. Any excess of principal amount over the cost of bonds retired is to be used for additional bond retirements. The Authority has periodically purchased such bonds when available at favorable prices.

Amounts in the general reserve account not needed to meet any deficiency in the bond service or bond reserve accounts are deposited in a subaccount to meet the costs of major repairs and replacements, renewals, additions, betterments, improvements and extensions with respect to the Authority's projects and are maintained in such subaccount in amounts necessary or desirable, as determined by the Authority, to keep the projects in good operating condition, to meet regulatory requirements, to expand project capacity or to provide facilities for the transportation of project power and energy to their markets. Amounts in the general reserve account not required for the foregoing purposes shall, at the Authority's direction, be paid to it for any lawful corporate purpose.

### **Note D—Advance Bond Refunding**

On February 26, 1985, pursuant to the Resolution and the Seventeenth Supplemental Resolution, the Authority sold for settlement and delivery on March 21, 1985, \$270,385,000 principal amount of the General Purpose Bonds, Series S. The proceeds from the sale of the Series S Bonds, after expenses and original issue discount, together with moneys held in the bond service account and bond reserve account applicable to the Series M Bonds, were deposited with the Escrow Agent and were invested in direct obligations of the United States of America, the maturing principal of and interest on which will be sufficient to pay, when due, principal, interest and applicable call premium on the \$250,000,000 principal amount of General Purpose Bonds, Series M outstanding on March 21, 1985.

As a result of the refunding and the deposit with the Escrow Agent, the Series M Bonds were deemed to have been paid pursuant to the Resolution and cease to be a liability of the Authority. Accordingly, the refunded Series M Bonds (and the deposit with the Escrow Agent) are excluded from the Balance Sheet.

The advance bond refunding charge of \$37,302,000 is the sum of (a) the difference between the total cash deposited with the Escrow Agent and the principal amount of the refunded Series M Bonds (\$26,903,000) and (b) the unamortized discount and debt expense (\$10,399,000) on the Series M Bonds. Under generally accepted accounting principles this amount is presented as an extraordinary charge to net revenues. This charge will have no effect on the Authority's continuing revenue requirements.

## Note E—Long-Term Debt

Long-term debt at December 31, 1985 was comprised of:

General Purpose Bonds	\$2,683,165,000
Adjustable Rate Tender Notes	200,000,000
	<u>\$2,883,165,000</u>

A summary of General Purpose Bonds payable follows:	Amount	Maturity January 1	Interest Rate (a)	Earliest Redemption Date Prior to Maturity (b)
Series A				1/1/85
Term Bonds	\$ 105,150,000	2010	7.875%	
Serial Bonds	25,000,000	1987 to 1995	6.50% to 7.30%	
Series B				6/1/85
Term Bonds	91,060,000	2010	8.125%	
Serial Bonds	40,000,000	1987 to 1997	6.90% to 7.90%	
Series E				10/1/86
Term Bonds	115,400,000	2010	7.25%	
Serial Bonds	20,000,000	1987 to 1994	6.00% to 6.90%	
Series F				2/1/87
Term Bonds	155,410,000	2010	6.625%	
Serial Bonds	25,000,000	1987 to 1993	5.40% to 6.10%	
Series G				1/1/88
Term Bonds	42,200,000	1999	6.40%	
Term Bonds	217,715,000	2012	6.75%	
Serial Bonds	65,200,000	1987 to 1995	5.50% to 6.20%	
Series H				1/1/89
Term Bonds	119,530,000	2009	8.00%	
Serial Bonds	26,000,000	1987 to 1999	6.80% to 7.75%	
Series J				1/1/91
Term Bonds	113,000,000	2000	9.60%	
Term Bonds	67,000,000	2006	9.75%	
Term Bonds	60,000,000	2010	8.00%	
Term Bonds	198,775,000	2020	9.875%	
Serial Bonds	54,000,000	1986 to 1995	7.20% to 9.00%	
Series N				1/1/94
Term Bonds	23,415,000	1998	9.00%	
Term Bonds	55,915,000	2003	9.50%	
Term Bonds	47,745,000	2006	9.00%	
Term Bonds	344,810,000	2017	9.75%	
Term Bonds	52,495,000	2018	6.00%	
Serial Bonds	45,270,000	1987 to 1995	6.50% to 8.75%	
Series R				1/1/95
Term Bonds	33,525,000	2005	10.25%	
Term Bonds	201,095,000	2016	10.375%	
Term Bonds	65,205,000	2018	7.00%	
Serial Bonds	50,175,000	1990 to 2001	7.75% to 10.00%	
Series S (see Note D)				1/1/95
Term Bonds	54,000,000	2003	9.625%	
Term Bonds	50,000,000	2006	9.50%	
Term Bonds	65,000,000	2009	9.75%	
Term Bonds	33,000,000	2010	7.00%	
Serial Bonds	68,385,000	1987 to 1994	6.00% to 8.00%	
	2,730,475,000			
Less: Unamortized discount	47,310,000			
Total	<u>\$2,683,165,000</u>			

(a) Interest is payable semiannually on January 1 and July 1.

(b) The Bonds are subject to redemption prior to maturity in whole or in part as provided in the supplemental resolutions authorizing the issuance of each series of bonds, beginning for each series on the date indicated, at principal amount or at various redemption prices according to the date of redemption together with accrued interest to the

redemption date. Annual maturities for the next five calendar years are as follows: 1986, \$34,210,000; 1987, \$36,090,000; 1988, \$37,910,000; 1989, \$42,290,000; and 1990, \$45,220,000.

None of the Bonds of Series D, I, K, L, O, P and Q has been or will be issued by the Authority.



**Note E (Continued)***Adjustable Rate Tender Notes:*

Pursuant to the Adjustable Rate Tender Note Resolution adopted April 30, 1985 (Note Resolution) the Authority sold for settlement and delivery on May 15, 1985

\$200,000,000 of Adjustable Rate Tender Notes (Notes).

At December 31, 1985 the Notes were outstanding as follows:

Maturity Date	Amount	Interest Rate
March 1, 2007	\$ 50,000,000	5.90%
March 1, 2016	75,000,000	5.25%
March 1, 2020	75,000,000	5.25%
	\$200,000,000	

The proceeds from the sale of the Notes, after the deposit of \$20,000,000 to the Note Debt Service Reserve Account, are being used to pay a portion of the costs of construction of the Marcy-South Transmission Line Project.

In accordance with the Note Resolution, the interest rates and the dates on which the interest rates may be adjusted can vary based on the recommendation of the Remarketing Agent appointed under the Note Resolution. The Notes may be tendered to the Authority by the holders on any adjustment date. The initial adjustment period for the Notes maturing March 1, 2007 ended September 3, 1985. Pursuant to the Remarketing Agent's recommendation, the next adjustment period for these Notes is the year ending September 3, 1986, with an interest rate for this period of 5.90%. The Notes maturing March 1, 2016 and March 1, 2020 have an initial adjustment period ending March 3, 1986.

Prior to the delivery of the Notes, the Authority entered into a supporting revolving credit agreement with a bank to provide a line of credit. Under this agreement, which terminates on March 2, 1988, the Authority may borrow up to \$200,000,000 for the purpose of paying the costs of construction of any project designated pursuant to the Resolution, including the repayment of the Notes or other obligations issued for any such purposes. The agreement provides for interest on outstanding borrowings (none outstanding at December 31, 1985) at a specified fraction of the bank's prime commercial lending rate as in effect from time to time and for a fee on the unused portion of the commitment.

**Note F — Short-Term Debt***Notes Payable:*

At December 31, 1985, the Authority had outstanding, under a master note arrangement with a bank renewed in November 1985, \$78,265,000 of short-term notes payable within one month from the date of issuance or on prior demand. The proceeds of the notes may be used to finance the costs of fuel, including the repayment of obli-

gations issued to pay the costs of such fuel, and/or costs of construction of any project designated pursuant to the Resolution. Interest is computed at a specified percentage of the 13-week United States Treasury bill rate converted to an annual yield, applied to the daily principal amount outstanding.

*Commercial Paper:*

Pursuant to a resolution adopted on April 30, 1985, the Authority authorized the issuance of up to \$50,000,000 of commercial paper notes. The proceeds from the sale of the commercial paper notes may be applied to pay the cost of construction of any project designated pursuant to the Resolution, including, without limitation, payment of commercial paper notes at their maturity. Interest on the notes may not exceed a specified percentage of the agent bank's prime commercial lending rate as in effect from time to time. At December 31, 1985, the Authority had \$50,000,000 of commercial paper notes outstanding.

Under a 1981 revolving credit agreement, as amended, with a bank, the Authority, in April 1985, increased its line of credit from \$80,000,000 to \$130,000,000 to cover the commercial paper notes. This agreement enables the Authority to borrow up to \$130,000,000 for the purposes of paying the costs of fuel and/or costs of construction of any project designated pursuant to the Resolution, including the repayment of obligations issued for any such purposes. The agreement (which expires in March 1986 and which is subject to annual extension) provides for interest on outstanding notes (none outstanding as of December 31, 1985) at a specified fraction of the bank's prime rate in effect from time to time and for a fee on the unused portion of the commitment.

**Note G — Nuclear Fuel Disposal**

In accordance with the Nuclear Waste Policy Act of 1982, the Authority in June 1983 entered into a contract with the United States Department of Energy (DOE), under which DOE, commencing not later than January 31, 1998, will accept and dispose of spent nuclear fuel. The contract provides that the Authority will pay quarterly to DOE a fee based on nuclear generation at a specified rate from April 7, 1983. In addition, the contract requires the payment to DOE of a one-time fee relating to spent nuclear fuel discharged prior to April 7, 1983 and for in-core spent fuel on that day. As permitted by the contract, the Authority presently intends to pay this one-time fee of \$58,710,000 together with interest, accrued thereon from April 7, 1983, when the Authority first ships spent nuclear fuel to an approved DOE disposal facility. As of December 31, 1985 the liability to DOE related to the one-time fee, including accrued interest from April 7, 1983, totalled \$74,710,000, all of which has been collected from customers as of December 31, 1985.

# Report of Independent Certified Public Accountants

## Note H — Commitments and Contingencies

Estimated costs to be incurred on outstanding contracts in connection with the Authority's construction programs aggregated approximately \$320,000,000 at December 31, 1985.

The Indian Point 3 Nuclear Power Plant has been experiencing steam generator tube corrosion problems, similar to problems experienced by other nuclear generators of pressurized water reactor design. While improvements made by the Authority have reduced the rate of tube degradation, recent inspections indicate the advisability of early replacement. The economic benefits of replacement, resulting from improved plant availability and reduced maintenance expenses over the remainder of plant life, are believed to exceed significantly the estimated replacement cost of \$175,000,000. The Authority has therefore initiated plans for such replacement which, if implemented, will probably take place in late 1988/early 1989 with the outage expected to last up to six months.

In September 1984, the Supreme Court of the State of New York, Oswego County, issued an order and judgment requiring the Authority to exclude from its rate for power from the Niagara and the St. Lawrence-FDR projects resold to rural and domestic consumers costs attributable to nonoperating projects unrelated to Niagara and St. Lawrence, and to refund for the benefit of rural and domestic consumers any amounts collected for such costs. In July 1985, the Appellate Division, Fourth Department affirmed the order and judgment. Discussions among the parties have resulted in a proposed but not yet finalized settlement agreement. The proposed settlement, approved by the Authority, provides, in part, for a refund of such costs, amounting to \$14,200,000 at December 31, 1985, plus interest. A provision for this refund has been accrued.

In addition to the proceeding referred to above, there are also pending before Federal and State courts and agencies actions and proceedings involving several of the Authority's existing or planned projects as well as its revenues from certain projects. The effect of these matters has delayed and may impede the Authority's construction and operation of such projects or planned projects and require the Authority to incur substantial additional costs or reduction in revenues. While the ultimate outcome of these matters is not presently determinable, the Authority's General Counsel believes that the Authority has meritorious positions which have or will be asserted in these matters.

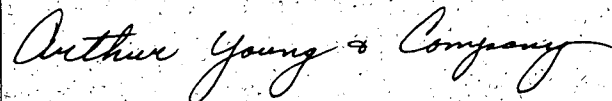
Under regulations established by the Nuclear Regulatory Commission (NRC), each licensee of a nuclear plant must provide a guarantee that assures, following a nuclear incident in the United States, that it can pay retrospective premiums up to a maximum of \$10,000,000 in each calendar year for each large power reactor it operates. The Authority has submitted to the NRC such guarantees for both its FitzPatrick and Indian Point 3 nuclear plants.

Power Authority of the State of New York  
New York, New York

We have examined the accompanying balance sheet of the Power Authority of the State of New York at December 31, 1985, and the statements of net revenues, accumulated net revenues and changes in financial position for the year then ended. Our examination was 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 statements mentioned above present fairly the financial position of the Power Authority of the State of New York at December 31, 1985, and the results of operations and changes in its financial position for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Our examination has been made primarily for the purpose of expressing an opinion on the basic financial statements taken as a whole. The summary of funds (cash basis) is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in the examination of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole.



**Arthur Young & Company**

New York, New York  
February 21, 1986

## Additional Data\*



\*The additional data have been prepared from records and other data of the Authority and have not been examined by the independent auditors.



## 1985 Sales To Customers (kwh)

### Niagara

#### Investor-Owned Utilities

New York State Electric & Gas	2,065,123,000
Rochester Gas & Electric	1,025,377,000
Niagara Mohawk	7,268,225,763 <sup>(1)</sup>

<i>Municipals &amp; Cooperatives</i>	2,370,160,049
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#### Out-of-State

Public Service Board of Vermont	326,586,000
American Municipal Power of Ohio	66,137,000
Allegheny Electric Cooperative	420,193,426
City of Cleveland	157,525,000
Connecticut Municipal Electric Cooperative	49,684,000
Massachusetts Department of Public Utilities	226,255,000
New Jersey Board of Public Utilities	44,025,000
Rhode Island Public Utilities Commission	2,493,000

#### Municipal Distribution Agencies

Nassau County Public Utility Agency	19,776,000
New York City Public Utility Service	321,529,000
Orange County	9,235,000
Rockland County	14,572,000
Suffolk County Electrical Agency	19,776,000
Westchester County Public Utility Agency	54,172,000

#### Southeast New York

Metropolitan Transportation Authority	174,999,996
---------------------------------------	-------------

### St. Lawrence-FDR

#### Investor-Owned Utilities

New York State Electric & Gas	113,997,000
Niagara Mohawk	682,569,000

<i>Municipals &amp; Cooperatives</i>	407,642,436
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#### Out-of-State

Public Service Board of Vermont	625,497,000
---------------------------------	-------------

#### Municipal Distribution Agencies

Nassau County Public Utility Agency	2,853,000
New York City Public Utility Service	62,137,000
Orange County	6,143,000
Rockland County	11,131,000
Suffolk County Electrical Agency	2,853,000
Westchester County Public Utility Agency	42,876,000

#### Others

St. Lawrence Seaway	259,522
Parks and Recreation	409,797
Niagara Frontier Transportation Authority	1,169,071

#### Industrials

Alcoa	1,943,652,935
Reynolds	2,094,968,000
General Motors	73,023,860

#### Southeast New York

Metropolitan Transportation Authority	40,935,480
---------------------------------------	------------

### Blenheim-Gilboa

#### Investor-Owned Utilities

Central Hudson	68,617,000
Con Edison	37,167,000
New York State Electric & Gas	91,656,000
Rochester Gas & Electric	18,301,000
Niagara Mohawk	94,000

### FitzPatrick

#### Investor-Owned Utilities

Central Hudson	124,955,000
Con Edison	879,335,000
Long Island Lighting Co.	308,001,000
New York State Electric & Gas	217,498,000
Orange & Rockland	71,906,000
Rochester Gas & Electric	102,784,000
Niagara Mohawk	824,959,000

<i>Municipals &amp; Cooperatives</i>	739,766,293
--------------------------------------	-------------

#### Industrials

Alcoa	1,130,875,000
Occidental	198,927,393
Air Products & Chemicals	90,394,985
Reynolds	106,803,000
Airco Industrial Gases	113,559,359
SKW Alloys	102,081,381
Grumman Corp.	61,956,772 <sup>(2)</sup>
Associated Universities, Inc.	193,120,305 <sup>(3)</sup>
General Motors	31,280,345

### Poletti/Indian Point 3

#### Investor-Owned Utilities

Con Edison	2,572,922,000
------------	---------------

#### Southeast New York

Metropolitan Transportation Authority	2,156,008,346
N.Y.C. Public Buildings	2,297,521,939
Port Authority of N.Y. & N.J.	748,411,125
N.Y.C. Housing Authority	869,481,821
New York State Office of General Services	234,441,702
Village of Ardsley	337,885
Bedford Central School District	435,600
Village of Briarcliff Manor	1,696,814
Briarcliff Manor Union Free School District	1,266,840
Village of Bronxville	1,586,489
Village of Buchanan	542,541
Byram Hills Central School District	1,507,127
Chappaqua Central School District	3,179,966
Town of Cortland	1,158,697
Croton Harmon Union Free School District	712,692
Village of Croton-on-Hudson	2,112,071
Village of Dobbs Ferry	1,071,922

Town of Eastchester	1,907,509
Eastchester Union Free School District	1,165,794
Village of Elmsford	725,422
Town of Greenburgh	17,669,653
Greenburgh Housing Authority	775,117
Town of Harrison	4,528,997
Village of Hastings-on-Hudson	904,065
Hendrick Hudson School District	1,601,760
Village of Irvington	1,203,678
Lakeland Central School District	4,550,353
Village of Larchmont	888,502
Town of Mamaroneck	823,480
Village of Mamaroneck	2,068,373
Mamaroneck Union Free School District	3,264,753
Montrose Improvement District	1,071,040
Village of Mount Kisco	2,378,263
Town of Mount Pleasant	3,662,861
Mount Pleasant Central School District	1,214,370
City of Mount Vernon	10,860,120
Mount Vernon City School District	6,229,923
Town of New Castle	3,195,411
City of New Rochelle	16,274,526
New Rochelle Municipal Housing Authority	3,610,560
Town of North Castle	1,209,733
Village of North Tarrytown	1,152,381
North Tarrytown Housing Authority	375,960
Town of Ossining	375,267
Village of Ossining	3,941,125
Ossining Union Free School District	1,829,520
City of Peekskill	9,404,793
Village of Pelham	417,951
Village of Pelham Manor	304,578
Pelham Union Free School District	1,054,702
Village of Pleasantville	1,156,565
Pleasantville Union Free School District	1,095,300
Village of Port Chester	2,586,877
Port Chester Housing Authority	1,480,092
Port Chester-Rye Union Free School District	1,686,110
City of Rye	3,648,226
Town of Rye	2,155,688
Rye Neck Union Free School District	1,061,882
Village of Scarsdale	3,123,155
Scarsdale Union Free School District	2,403,998
Village of Tarrytown	3,100,814
Union Free School District of Tarrytown	1,237,878
Thornwood Water District	361,920
Village of Tuckahoe	1,084,778
Tuckahoe Housing Authority	634,236
Tuckahoe Union Free School District	539,760
Valhalla Union Free School District	481,740
Westchester County	117,162,972
Westchester Joint Water Works	797,608
Westchester South Board of Cooperative Education Services	2,929,060
City of White Plains	19,243,308
White Plains City School District	3,685,601
White Plains Housing Authority	3,044,280
City of Yonkers	44,637,389
Yonkers Housing Authority	7,558,419
Town of Yorktown	396,624

<sup>1</sup>Energy includes 136,298,763 kwh reallocated on a temporary basis.

<sup>2</sup>Grumman received energy on a temporary basis through 2/5/85 in the amount of 3,860,187 kwh. Firm service commenced on 2/6/85.

<sup>3</sup>90,438,239 kwh was received on a temporary basis.

## Energy Transfers and Purchases for NYPA Use<sup>1</sup> (kwh)

### Energy Transferred

St. Lawrence-FDR to:	
Niagara	960,901,000 <sup>(2)</sup>
Niagara to:	
Blenheim-Gilboa	558,771,000
FitzPatrick	1,077,493,000
Poletti/IP3	1,989,366,000
Blenheim-Gilboa to:	
FitzPatrick	12,323,000
Poletti/IP3	137,233,000
FitzPatrick to:	
Poletti/IP3	101,898,000
Ashokan to:	
Poletti/IP3	14,374,000
Kensico to:	
Poletti/IP3	16,854,000

### Purchased Power For NYPA Use

Canadian sources to:	
FitzPatrick	163,838,000
Poletti/IP3	761,477,000
Investor-owned Utilities to:	
Poletti/IP3	72,793,000

<sup>1</sup>Transfers between projects are reported on a net basis and do not reflect transmission losses.

<sup>2</sup>Includes 135,528,388 kwh sold outside New York State. All other transfers in this table were for sales within the state.

## New York Power Authority Generating Facilities

Facility	Type	Net Rated Output (MW)	1985 Net Generation (MWH)
St. Lawrence-			
Franklin D. Roosevelt <sup>(1)</sup>	Hydro	800	7,282,683
Niagara	Hydro	2400	17,096,103 <sup>(2)</sup>
Blenheim-Gilboa	Pumped Storage	1000	(982,674) <sup>(2)</sup>
FitzPatrick	Nuclear	800	4,166,520
Indian Point 3	Nuclear	965	4,730,307
Poletti <sup>(3)</sup>	Oil/Gas	825	2,098,264
Ashokan	Hydro	3	14,400
Kensico	Hydro	3	16,854
<b>Total Net Generation</b>			<b>34,422,457</b>

<sup>(1)</sup>Formerly the St. Lawrence Facility.

<sup>(2)</sup>Net of Pumping Energy.

<sup>(3)</sup>Formerly the Astoria 6 Facility.

## 1985 Sales Supplemental Schedule (kwh)

Municipals & Cooperatives	Hydro Energy <sup>1</sup>	Nuclear Energy <sup>2</sup>
Akron	31,505,884	8,489,490
Andover	5,113,609	784,628
Angelica	5,736,119	1,196,675
Arcade	88,645,202	21,299,327
Bath	48,483,513	16,471,923
Bergen	7,443,866	9,251,070
Boonville	35,987,240	16,684,231
Brocton	9,833,690	0
Castile	5,875,025	573,393
Churchville	10,313,351	3,463,447
Delaware	34,844,286	1,468,707
Endicott	37,737,710	6,239,942
Fairport	205,482,617	98,785,481
Frankfort	12,460,655	3,574,472
Freeport	162,220,221	61,277,717
Greene	18,079,581	9,422,506
Green Island	8,423,679	1,210,862
Greenport	20,221,722	4,727,426
Groton	16,510,272	887,298
Hamilton	33,963,531	15,327,076
Holley	16,298,645	2,659,642
Ilion	48,689,795	12,199,974
Jamestown	318,224,000	0
Lake Placid	60,880,399	38,970,567
Little Valley	15,949,286	1,347,657
Marathon	10,814,227	4,105,448
Massena	70,906,271	42,258,084
Mayville	18,157,542	2,908,879
Mohawk	15,280,517	4,402,812
Oneida-Madison	12,733,955	1,151,959
Otsego	31,097,534	2,996,128
Penn Yan	40,553,950	12,581,809
Philadelphia	5,182,441	2,083,256
Plattsburgh	370,810,798	114,986,328
Richmondville	8,420,728	1,849,323
Rockville Centre	142,637,422	0
Rouses Point	40,435,927	29,128,807
Salamanca	41,809,078	16,270,681
Sherburne	25,918,928	30,112,405
Sherrill	52,726,591	2,444,315
Silver Springs	3,124,934	977,693
Skaneateles	18,470,085	4,795,906
Solvay	297,982,543	68,457,478
Spencerport	43,910,315	5,116,604
Springville	35,381,247	11,926,496
Steuben	51,328,631	2,011,232
Theresa	4,375,886	1,125,009
Tupper Lake	41,956,647	24,980,396
Watkins Glen	27,522,510	7,764,209
Wellsville	48,971,137	803,482
Westfield	58,368,743	8,214,043
<b>Total</b>	<b>2,777,802,485</b>	<b>739,766,293</b>

<sup>1</sup>Total hydro energy to this class of customer is supplied from the Niagara and St. Lawrence-FDR projects.

<sup>2</sup>Total nuclear energy to this class of customer is supplied from the J. A. FitzPatrick project.

## Busbar Prices for Power and Energy Sold to Authority Customers

Niagara/St. Lawrence-FDR Projects—\$1.00 per kw/month and 2.05 mills/kwh

Replacement Power sales of 445,000 kw to Niagara Mohawk and Expansion Power sales of 250,000 kw to Niagara Mohawk and New York State Electric & Gas: \$1 kw/month and 2.67 mills/kwh.

### Replacement Power Customers

Airco Carbon, Division of The BOC Group, Inc.  
 ARCO Metals Co., American Brass-Buffalo Operations  
 Atlas Steel Casting Company  
 Bethlehem Steel Corporation  
 Buffalo Color Corporation  
 Buffalo Forge Company  
 Carborundum Abrasives Company  
 Donner-Hanna Coke Joint Venture  
 Dresser Transportation Equipment Division, Dresser Industries, Inc.  
 Dunlop Tire & Rubber Corporation  
 E.I. du Pont de Nemours & Company, Inc.  
 FMC Corporation-Specialty Chemicals Division  
 General Abrasive Division, Dresser Industries, Inc.  
 General Mills, Inc.  
 Great Lakes Carbon Corporation  
 International Multi-Foods Corporation  
 Nabisco, Inc.  
 Niacet Corporation  
 Niagara Falls Water and Waste Water Treatment Plants  
 Nitec Paper Corporation  
 Occidental Chemical Corporation—Hooker Industrial & Specialty Chemicals  
 Olin Corporation  
 The Pillsbury Company  
 Prestolite Battery Division-an Allied Company  
 Republic Steel Corporation  
 SKW Alloys, Inc.  
 Sohio Electro Minerals Company  
 Sohio Engineered Materials Company  
 Spaulding Fibre Company  
 TAM Ceramics, Inc.  
 Union Carbide Corporation

### Expansion Power Customers:

Airco Carbon, Division of The BOC Group, Inc.  
 Airco Industrial Gases, Division of The BOC Group, Inc.  
 Arcata Graphics-Buffalo, An Arcata Company  
 Bethlehem Steel Corporation  
 Donner-Hanna Coke Joint Venture  
 E.I. du Pont de Nemours & Company, Inc.  
 General Mills, Inc.  
 General Motors Corporation-Harrison Radiator Division  
 Great Lakes Carbon Corporation  
 International Multi-Foods Corporation  
 Moog, Inc.  
 Nitec Paper Corporation  
 Occidental Chemical Corporation—Hooker Industrial & Specialty Chemicals  
 Olin Corporation  
 The Pillsbury Company  
 Pyron Corporation-A Pacific Tin Company  
 Republic Steel Corporation  
 SKW Alloys, Inc.  
 Sohio Electro Minerals Company  
 Sohio Engineered Materials Company  
 Spaulding Fibre Company  
 TAM Ceramics, Inc.  
 Union Carbide Corporation



*St. Lawrence-FDR Project*

Rates to:

Alcoa—\$3.762/kw/month and 7.444 mills/kwh. (Jan. 1-April 30)

\$4.168/kw/month and 8.247 mills/kwh. (May 1 - Dec. 31)

Reynolds Metals Co.—\$3.355/kw/month and 6.629 mills/kwh.

(Jan. 1 - April 30)

\$3.766/kw/month and 7.452 mills/kwh.

(May 1 - Dec. 31)

General Motors: \$1/kw/month and 2.67 mills/kwh.

St. Lawrence Seaway Development Corp. and NYS Office of Parks and Recreation: 10 mills/kwh.

*Blenheim-Gilboa Project*—\$1.90/kw/month.

a) Non-firm pumped storage energy transfers: 5.5 mills/kwh.

b) Economy energy sales: Power Authority and buyer share equally in net savings.

*James A. FitzPatrick Plant*—13.40/kw/month and 9.65 mills/kwh.

Residual energy sales to investor-owned utilities: 9.65 mills/kwh.

Reserve energy sales to investor-owned utilities: rate equal to fuel cost savings.

*Poletti/Indian Point 3 Projects*—Rates for power and energy sales to customers depend on the service provided as follows:

Service Class	\$/kw/month	Mills/kwh*
General Small		77.62
Commercial & Industrial Redistribution	9.55	37.16
Electric Traction Systems	8.07	43.53
Westchester Street Lighting		69.28
Multiple Dwellings-Redistribution	9.07	41.11
General Large	7.03	41.90
NYC Street Lighting	8.77	43.97
NYC Transit Authority Substation	8.72	41.17
NYC Transit Authority Plant	8.16	44.54
World Trade Center	9.50	41.78
NYC Public Buildings	7.22	43.79
Con Edison	16.20	24.76

\*Subject to a monthly energy charge adjustment: base energy cost is 26.349 mills/kwh.

Reserve energy sales are made to Con Edison at a rate equal to its fuel-cost savings.

Residual energy sales are made to Con Edison at a rate equal to the Authority's cost of fuel and maintenance.

Does not reflect rebate of \$22.2 million which was approved in March, 1985.

**Selected Financial Data<sup>(a)</sup>**

Project	Operating Revenues (000)	Operating Expenses (000)	Accumulated Depreciation (000)
St. Lawrence-FDR	\$ 72,562	\$ 39,364	\$141,867
Niagara	98,956	83,434	244,533
Blenheim-Gilboa	29,409	17,983	41,450
FitzPatrick	169,782	138,852	121,226
Poletti/IP 3	612,639	502,130	265,494
Ashokan/Kensico	(b)	813	767
Massena-Marcy	247,341	225,569	37,619

(a) Operating revenues and operating expenses, by project, include interproject sales and purchases of power. They do not include any of the following unallocated items:

	(000)
Other income (principally interest)	\$ 85,432
Other deductions (principally interest on debt)	191,566
Advance bond refunding charge	37,302

(b) Available energy is transferred to and sold from Poletti/IP 3.

# Trustees and Officers



From bottom left, counterclockwise,  
George L. Ingalls, Richard M. Flynn, James L. Larocca,  
Rolland E. Kidder and John S. Dyson.

Governor Mario M. Cuomo

Richard M. Flynn  
*Chairman and  
Chief Executive Officer*

George L. Ingalls  
*Vice Chairman*

John S. Dyson  
*Trustee*

James L. Larocca  
*Trustee*

Rolland E. Kidder  
*Trustee*

Leroy W. Sinclair  
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Chief Operating Officer*

J. Phillip Bayne  
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Procurement and  
Contract Administration*

John C. Brons  
*Senior Vice President  
Nuclear Generation*

Alfred Klausmann  
*Senior Vice President  
Appraisal and Compliance Services*

Bradley S. Telias  
*Secretary*

Credits:

Niagara Branch Biscuit Box, 1892:  
courtesy of Nabisco Brands, Inc.

Photographs of waterwheel,  
Roosevelt's inauguration, Robert  
Moses at ground-breaking and Pan  
American Exposition: courtesy of  
The Bettmann Archive, New  
York City.

*A General View of the Falls of  
Niagara*, painting by Alvan Fisher:  
courtesy of the Smithsonian Institu-  
tion, National Museum of  
American Art, Washington, D.C.

Photograph of music sheets from  
the collection of Mr. and Mrs. Nor-  
man MacAskill: courtesy of Virginia  
Vidler, from her book *Niagara Falls:  
100 Years of Souvenirs*.

Trustee photographs taken at The  
New York Historical Society, New  
York City.

Major photography: Mark God-  
frey, New York Power Authority staff  
photographers, Gloria Baker and  
Michele Singer.

Design: Arnold Saks Associates



# New York Power Authority

10 Columbus Circle  
New York, New York 10019