FEATURE

NIAGARA FALLS: MIGHTY SOURCE OF ENERGY
By Denise Hyland

SUMMARY: Niagara Falls, one of the world's most popular tourist attractions, is also a mighty source of energy for consumers in the state of New York. Millions of kilowatts of inexpensive electrical power are produced by the powerful rush of the falling water.

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Roaring and rolling, turning white as it crashes into itself, the water rushes over the rock, pushed along as if on a conveyor belt, to become Niagara Falls.

The two million visitors who come each year to stand at the brink of the American Falls at Niagara Falls, New York, marvel at its power. The sight, sound and spray of 330,000 liters of water per second cascading over a 53-meter precipice is so magnetic that tourists are often drawn to stare into it for hours.

But those who stand in awe of Niagara's waters may not realize that the falls possess a mighty power of another kind: electricity.

Now harnessed by man, the waters of the upper Niagara River which tumble to become the American Falls are capable of producing 2.4 million kilowatts of electrical power. That's enough to light 24 million 100-watt bulbs at the same time.

Of all the world's energy sources, "Hydropower is the cheapest to generate because there is no fuel cost," said Joanne M. Willmott, of the Niagara Power Project's community relations division. Instead, the natural gravitational force of the falling water is employed.

The location of the Niagara Project, now in its 25th year of generating power, enables it to use the maximum drop of the river: 95 meters. In 1985 alone, its production of 17 billion kilowatt hours saved American homes and industries more than 28 million

barrels of oil that otherwise would have been needed to produce that amount of electricity.

The project, one of the largest producers of hydroelectricity in the world, is operated by the New York Power Authority, the largest non-federal public power agency in the United States. Principally a wholesale power supplier, the authority sells its cheap, plentiful power to both industry and utilities. Utilities then sell the power to individual consumers.

To produce electricity, water is diverted from the Niagara River four kilometers above the falls through two giant intakes. Great care is taken to assure that the beauty of the falls is not compromised: in the daylight hours of the summer tourist season, the amount of diverted water is reduced by half.

The water then flows under the city of Niagara Falls through two conduits as big as six double-track railroad tunnels. It re-emerges 7 kilometers north of the falls in an open canal between two giant power plants, one terraced above the other. This is the Niagara Power Project.

The larger plant, set in towering cliffs, captures the enormous power of the water as it falls 95 meters downhill to hit 13 turbines. The turbines are set at an angle to capture as much of the potential energy of the falling water as possible, and they in turn spin 13 generators to produce electricity.

The other plant, at the far end of the canal, fronts on a large

artificial lake, a source of additional energy when American consumers need it most. And the reservoir serves another purpose: rich in game and pan fish and surrounded by 760 hectares of parkland, it is open to public fishing.

The power project still ranks as the largest construction program ever undertaken in an urban area.

In addition to unearthing 26 million cubic meters of rock and dirt and pouring 2.8 million cubic meters of concrete, some 11,700 workers relocated roads, railroad tracks, utility lines and an entire neighborhood of 76 homes that was in the path of the two conduits. The homes were moved at the rate of two a day, with the furniture inside. Even glassware wasn't disturbed.

To further its commitment to promote industry, create jobs and keep power rates down, the Power Authority recently announced plans to increase the generating capacity of the Niagara Plant by 500,000 kilowatts -- roughly one-fifth of its current capacity.

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CAPTION:

AMERICA'S NIAGARA FALLS (with Canadian Horseshoe Falls in background, at top) is one of the world's most popular tourist attractions. The powerful rush of falling water is also a mighty source of energy for consumers in the state of New York. The New York Power Authority's Niagara Power Project (shown in aerial view at bottom), one of the world's largest hydroelectric generating stations, harnesses the waters of the Niagara river to produce 17.1 billion kilowatt hours of electricity each year. Photo from the New York State Power Authority. (No. 86-381)

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