



TESLA Life and Legacy - Harnessing Niagara

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— Harnessing Niagara —

The Niagara Falls Power Project was an act of pure technological optimism. Americans had dreamed of pressing the Falls into "an honest day's work" since the first pioneer sawmill had been built there in 1725. But schemes for extracting power had never been adequately conceived.

Since his childhood, Tesla himself had dreamed of harnessing the power of the great natural wonder. And in late 1893, his dream became a reality, when Westinghouse was awarded the contract to create the powerhouse.

The contract came as a result of a failed competition spearheaded by the international Niagara Falls Commission. The commission, charged with planning the power project, had solicited proposals from experts around the world only to reject them all. The schemes ranged from a system using pneumatic pressure to one requiring ropes, springs and pulleys. And there were proposals to transmit DC electricity, one endorsed by Edison. At the head of the commission was Lord Kelvin, the famous British physicist, who had been as opposed to alternating current as Edison until he attended the Chicago Exposition. Now, a strong convert to AC, Kelvin and his commission asked Westinghouse to use alternating current to harness the power of the falls.

The construction period was traumatic for engineers, mechanics and workers, but it weighed most heavily on investors. Project backers included several of the wealthiest men in America and Europe, including: J. P. Morgan, John Jacob Astor, Lord Rothschild, and W. K. Vanderbilt. After a five-year nightmare of doubt and financial crises, the project approached completion. Tesla had not doubted the results for a moment. The investors, however, were not at all sure the system would work. While the machines were running smoothly in Tesla's three-dimensional imagination, they were still unproved and expensive.

But the worries were unwarranted. When the switch was thrown, the first power reached Buffalo at midnight, November 16, 1896. The *Niagara Falls Gazette* reported that day, "The turning of a switch in the big powerhouse at Niagara completed a circuit which caused the Niagara River to flow uphill." The first one thousand horsepower of electricity surging to Buffalo was claimed by the street railway company, but already the local power company had orders from residents for five thousand more. Within a few years the number of generators at Niagara Falls reached the planned ten, and power lines were electrifying New York City. Broadway was ablaze with lights; the elevated, street railways, and subway system rumbled; and even the Edison systems converted to alternating current.

But there were complications. Both the Westinghouse and General Electric corporations were morally and financially drained by the War of the Currents. Years of litigation, the absorption of Edison's company and others by professional managers at GE, and the financial teetering of Westinghouse all contributed to a takeover. This was the era of the Robber Barons, and one of the biggest was ready to make his move. J. P. Morgan, hoping to bring all U.S. hydroelectric power under his control, proceeded to manipulate stock market forces with the intention of starving out Westinghouse and buying the Tesla patents. Thanks in part to Tesla,

Catch a ride on a current and see how hydroelectric power works. Our [virtual journey](#) takes you from waterfall to generator to power line.



[Niagara Falls, from Goat Island, circa 1867](#) (Courtesy Library of Congress)



[Lord Kelvin visiting the Westinghouse Company, 1897](#)



[A Niagara generator under construction at Westinghouse in Pittsburg, 1894](#)



[Edward Dean Adams power station at Niagara](#) (Courtesy Smithsonian Institution)

this did not happen.

Westinghouse called on the inventor, pleading for an escape from the initial contract that gave Tesla generous royalties. In a magnanimous and history-making gesture, Tesla said he tore up the contract. He was, after all, grateful to the one man who had believed in his invention. And he was convinced that greater inventions lay ahead. The Westinghouse Electric Company was saved for future triumphs. Tesla, although sharing the glory, was left forever afterward in recurring financial difficulties.



George and Marguerite
Westinghouse at Niagara Falls, circa
1895

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