

Ludington Pumped Storage: Michigan's "Big Battery"

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With Mr. John Broschak

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Abstract

Between 1969 and 1973, Michigan's two largest utilities—Consumers Energy and DTE Energy—joined forces to build the world's largest pumped storage plant along the shores of Lake Michigan. At the time, the \$327 million project was the largest of its kind, earning it a spot on the list of Michigan's Top 10 Civil Engineering Projects for the 20th Century.

Today, the plant remains a major contributor to Michigan's electric grid—ensuring affordable, reliable energy for the state's residents. The plant's technology is unique in that it responds quickly to energy demands. When demand is low, typically at night, Ludington's reversible turbines pump water from Lake Michigan 363 feet uphill to the reservoir. And during the day, when demand for electricity is high and the cost of energy is greater, the pumps are reversed, and water flows back down through the pipes, turning turbines that produce affordable electricity.

The 27-billion-gallon man-made reservoir measures 2.5 miles long and one mile wide. It can generate over 2,000 megawatts of electricity and produce over 15,000 megawatt hours. The plant is currently undergoing a seven-year, \$800 million upgrade, with plans for completion in 2020.

This presentation will discuss the engineering marvel that is Ludington Pumped Storage, including an overview of the plant's numerous grid benefits and upgrade schedule. It will also discuss the importance of pumped storage as an energy source, comparing it to the increasingly popular topic of battery storage.

Biography

John P. Broschak is vice president of generation operations and compression for Consumers Energy, the principal subsidiary of CMS Energy. Broschak is responsible for the operation of the company's fossil-fueled, hydroelectric and renewable generating units and gas compression facilities.

Broschak last served as vice president of major projects and construction for Consumers Energy. He provided project leadership, management and administration for complex and mission-critical capital investments. He also monitored significant company business risks including air emission reduction projects at company generating plants, construction of renewable and fossil generation, and other large-scale construction projects.

Previously, Broschak was vice president of engineering for Wolf Creek Nuclear Operating Corporation in Burlington, Kansas from 2011 to 2014. Earlier, Broschak held increasingly responsible positions at Entergy and Nuclear Management Company. He began his utility career at Consumers Energy in 1992 at Palisades Nuclear Plant after serving as an officer in the U.S. Navy for six years.

Broschak earned a master's degree in business administration from the University of Chicago and a bachelor's degree in chemical engineering from Pennsylvania State University. He is a licensed professional engineer in the states of Michigan and Kansas. Broschak previously held a senior reactor operator license and project management professional certification.



Mr. John Broschak



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