



Georgetown pumped hydro storage

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Two proposed pumped water storage projects that could expand Colorado's ability to store renewable energy - one in Fremont County and another between Hayden and Craig in the Yampa River Valley - are moving forward.

Colorado will need green energy storage of some type if it is to attain its mid-century goals of 100% renewable energy. Solar and wind power are highly variable and cannot be turned off and on, like coal and natural gas plants are.

So the search is on for ways to build large-scale storage projects to hold the energy wind and solar generate. Lithium-ion batteries are part of the answer and are being rapidly added to supplement wind and solar. But they typically have a short life span, while pumped water storage hydropower projects can operate for decades.

Pumped water storage has been refined in recent decades but the basic principles remain unchanged. Water is released from a higher reservoir to generate power when electricity is most in demand and expensive. When electricity is plentiful and less expensive, the water is pumped back up to the higher reservoir and stored until it is needed again.

This technology even today is responsible for 93% of energy storage in the United States, according to the U.S. Department of Energy. That includes Cabin Creek, Xcel Energy's 324-megawatt pumped storage unit near Georgetown. It was installed in 1967.

"These pumped-storage projects are anathema to the modern way of thinking," says Peter Gish, a principal in Ortus Climate Mitigation, the developer of the Fremont County pumped water storage project.

"But once built and operating, the maintenance costs are very, very low, and the system will last, if properly maintained, a century or longer. The capital investment up front is quite high, but when you run the financial models over 30, 50 or 60 years, this technology is, hands down, the cheapest technology on the market for [energy] storage."

Ortus Climate Mitigation wants to build a 500-megawatt pumped water storage facility on the South Slope of Pikes Peak above the town of Penrose in Fremont County. This facility - essentially a giant battery for energy storage - would require two reservoirs.

Gish hopes to have a permit from the Federal Energy Regulatory Commission in 2026. Construction would take up to five years after the permit is approved.



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In the Yampa Valley, another developer continues to plug away at a potential application for a site somewhere between Hayden and Craig. Still another idea is said to be in formulation in southwestern Colorado, but no details could be gleaned about that project.

Phantom Canyon, as Ortus calls its project in Fremont County, would require 17,000 acre-feet of water for the initial fill of the two reservoirs to be augmented by about 1,500 acre-feet annually due to losses from evaporation.

The company says it has accumulated water rights.

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