



May 15, 2024

## Hydrostor

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### EXPLANATION OF HYDROSTOR A-CAES PROCESS FOSSIL FUEL EMISSIONS-FREE PROCESS AND OPERATION

The Hydrostor Advanced Compressed Air Energy Storage (A-CAES) system is an all-electric design and does not require the combustion of fossil fuels to operate either the compression process or generation process during normal operation, as described below. Accordingly, there are no direct emissions during normal operation of a Hydrostor A-CAES facility.

During the compression process, the all-electric air compressors intake ambient air and compress it into an engineered subterranean cavern system filled with water. The cavern water is displaced into a standing vertical shaft that is connected to an above-ground reservoir, forming a hydrostatic head of pressure that keeps the water from flowing back into the cavern. The hydrostatic pressure allows the compressed air to be held in the cavern system as “stored energy”. Under standard compression cycle operations, this all-electric process does not rely on fossil fuel combustion nor would corresponding combustion-related emissions occur at the A-CAES facility.

During the generation process, water from the standing water column (connected to the above ground reservoir) is gravity-fed into the cavern system. This displaces the stored, compressed air that is then discharged through all-electric turbines to generate electricity that is transmitted to the grid. No fossil fuel combustion or corresponding combustion-related emissions occur at the A-CAES facility in order to operate the electrical generation cycle; it is all-electric.

For the purposes of this explanation, “normal operation” does not include the operation of emergency backup generators or a facility’s fire protection system, which would only operate in the unlikely event of an emergency or for very limited periods to complete routine maintenance and reliability testing. These emergency systems use diesel fuel and would cause fossil fuel emissions at the facility but only when needed during an emergency or limited testing. It is also assumed that any onsite control room, administration, or maintenance buildings to support A-CAES facility operation will use all-electric space heating and there are no other fossil-fuel reliant facility support services.

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