Water Wars

Fuel price shock reshapes desalination investments

March 2026

noreva

The energy-water nexus in the shadow of Hormuz

The growing US desalination industry is highly primed for a shift to renewable energy as the costs of competing energy sources rise on the back of new conflict.

The US has quietly built the world's third largest desalination infrastructure over the last few decades, taking advantage of comparatively cheap energy prices to provide potable water largely to industrial consumers.

In states where desalination is already common, like California, Texas and Florida, high solar irradiation and growing deployment of utility scale solar is already making desalination using grid power or linked to PPAs more competitive.

The US desalination industry is forecast to grow 9% annually through 2030, steadily expanding its energy footprint footprint.

The US in particular is better position to shift fuel inputs as roughly 75% of its facilities rely on the electricity-based reverse osmosis membrane technology suited for brackish water, rather than the thermal facilities that characterize ocean water desalination in regions like the Middle East and North Africa.

Energy-intensive

This little-noticed but rapidly expanding corner of US infrastructure may prove especially vulnerable to persistent energy price shocks stemming from interruptions to fossil fuel exports through the Strait of Hormuz.

While the larger reverse osmosis facilities depend on grid power, a third of US facilities that often support distributed infrastructure like data centers still rely on diesel generators that are facing enormous price spikes as supplies of the refined fuel have been throttled by the ongoing Iran conflict.

Energy costs at even the most efficient desalination facilities in the US regularly account for more than 50% of the total operating cost profile, and exposure to pass-through fuel costs on the grid could also rise as US domestic natural gas prices rise in tandem with constrained global LNG supply.

Price sensitive

Desalination plants that can provide water to growing data center and industrial demand have received backing from the Trump administration, with the massive 100 million gallon-per-day Harbor Island facility near Corpus Christi, Texas receiving an accelerated permit under the FAST-41 program in late 2025.

The $6 billion project would require half a terawatt of power each year to operate, scaling to roughly 2.2 TWh per year as it reaches full scale. As envisioned, Harbor Island would be the third largest desalination facility in the world, serving an area of West Texas where data center buildout is compounding water access issues already holding back shale oil and gas drilling.

At late-2025 grid power costs, the Harbor Island desalination facility would pay $44 million/year for power, climbing to $198 million/year by the time Harbor Island hits full scale production. Exposure to high-priced and volatile natural gas could be reduced by use of low-cost solar or wind power common across West Texas, matched with battery capacity to maintain throughput in reverse osmosis systems.

Accelerated timeline

While Harbor Island is moving ahead quickly, it is only one of a number of major desalination plants planned for the US. Existing facilities in the Texas cities of San Antonio and El Paso would match two large new facilities planned for equally water-stressed California. At the same per-gallon cost, the other four large facilities would require another $6-7 billion of investment.

Desalination using solar becomes more cost-effective than using natural gas or other fossil fuels at roughly 3-5 cents/watt module costs given historical fossil fuel pricing levels and current solar technology performance.

Noreva's models originally showed a 2030 break-even point for solar as a driver of US desalination given persistent low natural gas and oil pricing, but recent surges in oil and gas prices, if they hold, would move that date up to mid-decade, making solar already more likely to fuel expanding desalination efforts.

As desalination becomes cheaper because of cheaper power costs, the use of the technology is also likely to increase, creating a demand flywheel for infrastructure financing as legacy water systems age and legacy water sources come under increased pressure.

Contact:

research@noreva.ai

Noreva

675 Third Ave, 31st Floor

NY, NY 10017