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Search

- [Home](#)
- » [Feature](#) »
- Water Shortages May Cut Short US Energy Revolution. What's Needed?

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### **Water Shortages May Cut Short US Energy Revolution. What's Needed? By: Ken Silverstein**

With the shale gas boom reverberating across the United States, the country has found an abundant and cheap energy source — one that is reducing energy costs for corporations while also cutting the emissions of industrials and utilities. But while there's plenty of natural gas, there's not now enough water to drill that gas out.

During the exploration of shale gas, a concoction of sand, water and chemicals is pumped into the ground. Some of the dirty water returns and it must either be treated or re-injected underground. Treating — or recycling — the “fracking water” optimizes a scarce resource while potentially mitigating any ecological ramifications, albeit at potentially higher costs.

Roughly 10 percent of the water used in the drilling process — called hydraulic fracturing, or fracking — is recycled, says Origin Oil. What's not recycled is disposed of, or re-injected underground. Nationally, [Downstream Strategies](#) says that in 2006 there were 35,000 wells that had been fractured that had required as much as 140 billion gallons per year of water — a number that has climbed.

What's needed? Shale gas developers must report all aspects of their water use, says Evan Hansen, president of Morgantown, WV-based Downstream Strategies, adding that this includes waste production, treatment and disposal. New technologies, he explained earlier, are needed so that the water can be recycled.

Millions of gallons of fresh water is used per fractured well. In the Marcellus Shale basin alone, 3-7 million gallons is needed per fractured well. At this pace, shale producers are encroaching on the needs of not just other water-intensive fuel sources like coal and nuclear but also on farmers who use it to irrigate their crops.

If you throw in power generation, add in another 200 billion gallons of water each day, says Susan Story, chief executive of American Waterworks, in a previous interview with this writer. Compounding that need: [droughts](#), not to mention the demands by other industries, such as the refining of petroleum.

She points to a study by the [US Environmental Protection Agency](#), which says that energy production, water supply and food production account for more than 94 percent of water withdrawals from lakes, rivers and streams.

The [National Energy Renewable Laboratory](#) has reported that the United States alone withdraws fresh water to the tune of nearly 1,500 gallons per capita each day. That includes 190 gallons a day for domestic and commercial use, 673 gallons each day for industrial use and 600 gallons every day for agricultural use.

“In many regions, the water supply is shrinking because of drought and non-sustainable pumping aquifers,” says the lab’s study. “Drought impacts in the West reduce the amount of available water for existing and planned thermal power production, urban and agricultural use, and hydropower.” Greater use of wind energy, it adds, could ease the burdens create by those fuel sources that are water-dependent.

According to the World Policy Institute, coal-and-oil-fired power plants consume roughly twice the water than that of gas-fired facilities while nuclear generation needs three times that of natural gas. Cleaner coal technologies such as coal gasification will reduce that need by as much as half but, emerging concepts like carbon capture and burial could increase consumption between 30-100 percent.

Wind and rooftop solar panels, meantime, are the most efficient forms of generation when it comes to water. However, the installed base of solar thermal electricity generation uses twice the water as coal and five times the amount as gas-fired plants. Further, corn-based bio-fuels used in transportation consume much greater amounts of water than does the drilling for traditional oil.

New technologies, though, are advancing. Today, utilities use “one-through cooling” that returns nearly all the water to its original source. But newer mechanisms use “closed loop” systems that re-circulate the water — just the kinds of innovations that Downstream’s Hansen likes.

**But is that enough? With the competition for water heating up, more solutions are necessary, including those centered on water recycling. Without such progress, America's energy revolution may get cut short and it will be the energy managers and environmental leaders who pay the price.**

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