



THE MIDWEST'S BLUE WILDCARD

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Stewart Rubin

Head of Strategy and Research, Senior Director

The Midwest has suffered from a loss of manufacturing jobs over the past several decades. Many of its urban cores are demographically and economically challenged. Despite its many setbacks, the Midwest has a key asset in abundance – freshwater. The Midwest, which borders on the Great Lakes, has more than 80% of the freshwater in the United States and 20% of the freshwater in the world.

This resource was used heavily in disparate industries ranging from auto manufacturing to beer production during the Midwest's industrial zenith. Chemicals, automotive, and food processing companies require an abundant water supply. In response to a significant portion of the region's water becoming polluted, the Great Lakes Restoration Initiative was introduced in 2010, and had as its stated goal the improvement of water quality, clean shorelines and the restoration of habitats and species. According to the Environmental Protection Agency (EPA) progress report dated July 28th, 2015, this initiative has been largely successful, as 148,000 acres of wetlands, islands and coastal habitat have been reinstated, phosphorus run-off from farms reduced and invasive species repulsed.

The Midwest can benefit from this abundant resource that is scarce in other parts of the U.S. in several different ways; (1) as an innovation hub for water-intensive technologies, (2) as a region that can accommodate water-intensive industries (3) as a climate change refuge.

Innovation hub for water-intensive technologies

The Midwest has become a home for water-based technological innovations, research and development. The University of Wisconsin's Milwaukee School of Freshwater Sciences is the nation's only graduate school dedicated solely to the study of freshwater. The states of Michigan and Wisconsin, as well as their respective university systems, have focused on promoting and researching water-related industries. Grand Rapids, Michigan-based Cascade Engineering manufactures inexpensive water filters for developing countries. Michigan-based Whirlpool and Wisconsin-based Kohler have partnered to develop advanced methods of wastewater elimination. In Northeast Ohio, there is a focus on research and development involving hydraulic fracturing industrial water cleaning, water system corrosion protection and other water-related products.

The accommodation of water-intensive industries

The Midwest can grow by further accommodating water-intensive industries such as food processing and chemicals in the Great Lakes' states. Milwaukee took advantage of its lakeside location to become a world leader in the water industry. Commercial ventures that are water focused such as those involving sewage treatment, bathroom hardware, plumbing, pumps, purification, and global water health have proliferated in the largest city in Wisconsin. Milwaukee is home to more than 120 water technology companies including Badger Meter, Kohler, A.O. Smith, Siemens, Veolia, and Pentair. Evoqua Water Technologies Global Headquarters is located in Pittsburgh, PA and they have six other Midwest locations. Water-intensive industries such as chemicals, breweries, soft drinks, food processing, canning, and dairies are a natural fit for the Midwest.



Climate change refuge

Climate change may turn water scarcity into a higher priority and transform the Midwest into an attractive region for housing solutions and corporate relocation. The frequency of extended dry spells, droughts, arid conditions, water shortages, and wildfires in other parts of the nation are increased by climate change. Nine of the ten most destructive California wildfires – measured by destroyed structures including homes and commercial buildings – occurred within the last 15 years. Four of them occurred in the last two years. By acreage, nine of ten of the largest California wildfires occurred within the last 15 years, including three in the last two years. California has been experiencing chronic water shortages and companies that use significant amounts of water may be prompted to relocate.

Water shortages in many semi-arid, arid, and desert parts of the United States have already caused certain concerns to reevaluate their locational priorities. As an example, California droughts have inflated the cost of water, and water costs affect agricultural viability. An illustration is provided in the dairy industry, involving alfalfa¹ feed. Higher alfalfa irrigation costs combined with the use of new technology rendered the Midwest more attractive to dairy farmers. This has enabled farmers to achieve higher productivity levels despite colder weather in places like Michigan – currently No. 1 in the milk-production-per-cow ranking, up from 11th place in 1990 – as well as in Colorado, Wisconsin, Kansas and Iowa². In 2007, California produced 40.7 billion pounds of milk while Wisconsin produced 24.1 billion pounds of milk. However, by 2017, Wisconsin production increased 26% to 30.3 billion while California's declined 2% to 39.8 billion. California's population of dairy cows declined from 1.8 million to 1.7 million, while the number of dairy cows in the states of Iowa, Kansas, Nebraska and South Dakota increased from 478,000 to 547,000 during the same time period³.

Many farmers and municipal water systems in the West depend on groundwater. Water shortages in the West are likely to intensify because aquifers are being depleted over a few short decades, even though those aquifers will take thousands of years to recharge. Surface resources in the West, such as Lake Powell and Lake Meade, are also being drawn down over time faster than they can recharge. It is unclear how in certain parts of the West freshwater supplies can be better matched to burgeoning water demands.

California's multiyear drought recently eased, improving reservoir levels. However, while it persisted, tensions rose between residential populations and farmers about whose rights should be prioritized when there is not enough water to serve all that demand it. California is naturally arid, and in time, its water scarcity may intensify due to climate change, further stressing overtaxed aquifers. It is unlikely that a water pipeline can be built from the Great Lakes to the more arid regions of the U.S. in the near term, since the Midwest is keen on protecting its advantage. The 2008 Great Lakes Compact between the eight Lakes states, plus Ontario and Quebec, requires unanimous approval for any diversion of water outside the Great Lakes watershed. There are non-science fiction scenarios in which the Midwest may emerge as a desirable location for demographic and corporate relocation due to severe climate changes.

¹ The number of acres of alfalfa harvested in the state dropped from 1.1 million in 2006 to 700,000 in 2017. (U.S. Department of Agriculture)

² Justin Fox' Devin Nunes Isn't the Only Dairy Farmer Souring on California, A tale of resource limitations, technological progress and cows. Millions of cows" Bloomberg, October 4, 2018

³ U.S. Department of Agriculture and as reported in Justin Fox' Devin Nunes Isn't the Only Dairy Farmer Souring on California, A tale of resource limitations, technological progress and cows. Millions of cows" Bloomberg, October 4, 2018



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