Water supplies across the globe are being stressed by growing populations and extreme drought conditions. Indeed, of the 184 Global 500 corporations that participated in a recent water risks survey called "Moving Beyond Business As Usual: A Need for a Step Change in Water Risk Management," by international non-profit CDP found that 70% reported facing "substantive" water risks to their business, with water scarcity being a primary driver.

Thus, it should be no surprise that governmental bodies that dole out water rights are examining options to address the situation. One such option would be curtailing or limiting existing water rights or the authorizations to withdraw and consume water by permit or otherwise. In that event, having a water right may not result in the right to withdraw water.

This situation creates problems for the many energy, manufacturing, chemical, and other companies that depend on a reliable supply of water to sustain their businesses, and this regulatory climate necessitates that such companies increasingly focus on examining their "water security" to ensure reliable availability of an acceptable quantity of water when needed. A two-prong strategy can help in this situation: (a) proactively study and understand
stand where water supplies are vulnerable; and (b) implement or update water management plans to diversify water use and procurement strategies for the mitigation of water supply risks.

**VULNERABILITY OF WATER SUPPLIES**

Although water supplies are conceivably universally vulnerable, regional water supplies are more vulnerable than others in the United States. Energy companies in Texas, for example, are performing hydraulic fracturing operations amid an historic drought and are being urged by farmers and others to reduce fresh water consumption.

In Texas, the Texas Commission on Environmental Quality (TCEQ) administers a "first-in-time, first-in-right" priority permitting system for the state's surface water, which accounts for about 40% of the total water used in Texas. To the detriment of some "junior" water right holders, some of which may sell water to oil and gas producers, the TCEQ has suspended certain surface water rights to ensure that more "senior" downstream water right holders receive their share of water.

The surface water crisis in Texas is so serious that in June, the Working to Address Treaty Enforcement Rapidly (WATER) for Texas Act was introduced in the US Senate to address Mexico's failure to uphold its water obligations to the United States under the 1944 "Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande Treaty."

Groundwater, a significant source of water for oil and gas producers in Texas, is regulated by groundwater conservation districts spread across the state and is becoming increasingly more difficult to obtain. Although historically exempted from GCD rules, oil and gas well operators now face additional scrutiny from certain GCDs that are enacting rules requiring producers to submit extensive studies proving that water withdrawals for drilling and completion operations will not adversely affect neighboring landowners.

Similarly precarious is the water supply situation in Colorado, where water demand is outstripping water supply. The Colorado Department of Natural Resources projects that there will be a 20% statewide gap between water supply and demand by 2030. To make matters worse, some Colorado water supply models project as much as a 20% reduction in the state's water supply in the future.

Furthermore, interstate litigation over water supply issues is on the rise. Examples include:

- a dispute between Montana and Wyoming (Montana's lawsuit alleges that Wyoming is in breach of the Yellowstone River Compact due to excessive consumption of its allocation of Yellowstone River water);
- a dispute between Florida and Georgia (Florida filed a petition with the US Supreme Court asking the court to force Georgia to more equitably share interstate surface waters); and
- a dispute between Texas and New Mexico (Texas filed a petition with the US Supreme Court that alleges New Mexico is illegally diverting Rio Grande River water in contravention of a 1938 compact).

Water supply concerns are so well recognized that both federal and international bodies have begun studying the problem. A recent US Forest Service Report, for example, concludes that

**RISING WATER CHALLENGES**

Water poses a variety of business risks for the energy industry and could play an influential role in shaping the future energy supply mix, according to a Wood Mackenzie research report, "Troubled waters ahead? Rising water risks on the global energy industry."

Working with the World Resources Institute, Wood Mackenzie says that water risks could have the greatest impact on (1) shale gas in the US and with global expansion, (2) the upside for Middle East oil, and (3) China's future coal mining and coal-fired power plants. The report identifies regions that are more likely to see high levels of competition among local water users, increased depletion of the resource over time, and growing concerns over contamination of dwindling water supplies.

"The key water-driven business risks to the global energy industry include limited accessibility to new sources of supply, delays on project developments, increasing costs, and downtime," said Tara Schmidt, manager of Wood Mackenzie's Global Trends Service.

Overall, the energy sector is the world's largest industrial water user, at more than 15% of global supply and growing. The industry is under increasing scrutiny from the government and public on how it uses freshwater supplies.

IHS Inc. says that the battle over available water resources is driving water management issues to the forefront of US exploration and production considerations and accounts for $8 billion in spending for water services in US unconventional oil and gas plays, according to a new research report, "IHS Energy Insight – The Future of Water in Unconventionals: Water Market Opportunities."

The IHS report, produced in conjunction with CAP Resources, a Houston-based consultancy, assesses water demands and the varying characteristics of water management across 13 high-activity oil and gas plays in the continental US and existing oilfield water management from associated regions. It covers the water management value chain – acquisition, storage, transfer, hauling, treatment, and water-disposal services.

"While we expect modest growth in the overall national water management market of 13%, that national figure obscures the true potential for water management services within the unconventional oil and gas plays," said Marcus Oliver Gay, principal author of the IHS study and director of Water Information and Insight at the firm.

"Not accounting for inflation, we expect the continental US oilfield water market to grow to $38 billion by 2022, with demand for water management services in high-activity shale gas and tight oil plays to grow by nearly 40% by 2022, to roughly $11.2 billion.\n
---

---
“A comprehensive water management plan incorporates strategies for reducing consumption of water, reducing the loss or waste of water, improving or maintaining efficiency in the use of water, and increasing recycling and reuse of water.”

variations in atmospheric temperatures could cause US water supplies to become increasingly vulnerable to shortages. The Bureau of Reclamation’s recent study concluded that in the absence of timely action to ensure sustainability, water demand will likely outstrip water supply within the Colorado River Basin—which encompasses seven of the United States and two Mexican states—in the coming decades.

Highlighting water supply issues more globally, a report recently released by the Organization for Economic Co-Operation and Development recommends that governments across the globe make a fundamental change in water management practices due to the estimation that by 2050 more than 40% of the world population, or 3.9 billion people, will live in river basins under severe water stress.

Although drought and growing populations are outside the control of the organizations, the expectation is that globally governments will make water management a much higher priority and simultaneously encourage water conservation.

WATER MANAGEMENT PLANS
Companies are becoming more concerned and are evaluating how the potential “take back” or increasing restrictions on water rights could affect their operations. This matter has not gone unnoticed by shareholders. Some shareholders, recognizing that central to maintaining and growing a business in the future will be the availability of water, are out in front of the governmental bodies and are urging that some businesses develop “water security” plans.

In anticipation of government action (or shareholder demand), business leaders should begin implementing strategies sooner rather than later to ensure water security. This is good practice and may prevent a company from unexpectedly being left “high and dry.” One early step to consider is the development of a water management plan.

From a bird’s eye view, a comprehensive water management plan incorporates strategies for reducing consumption of water, reducing the loss or waste of water, improving or maintaining efficiency in the use of water, and increasing recycling and reuse of water. It also will contain best management practice measures to meet targets and goals identified within the plan, and will include short- and long-term goals for reducing regular consumption of water and will implement strategies to mitigate risks associated with losing withdrawal rights from sources of water.

For energy, manufacturing, chemical, and other companies that depend on a reliable supply of water to sustain their businesses, these plans also should include consideration of a number of alternative water sources, including surface water, ground water, reclaimed water, recycled water, water purchased by contract, and desalinated water. Given that alternative sources, such as desalinated water, may be quite costly, oil and gas producers specifically should consider adopting mitigation measures.

Additional information regarding considerations for inclusion in a plan is available by reviewing the best management practice measures developed by EPA (http://www.epa.gov/greeningepa/ water/plans.htm). Additionally, companies should determine whether their state agencies have established particular requirements for acceptable water management plans. Such is the case in Texas, where the Texas Commission on Environmental Quality has recently enacted rules requiring that certain types of water management plans be developed by surface water right holders to avoid an increased risk of having their water rights suspended.

Some companies, particularly in the E&P sector, have already developed water management plans. For those that haven’t, it’s not too late to start, but implementation of a plan tailored to a business’s specific circumstances should be developed in consultation with an experienced professional sooner rather than later.

Those companies that have a dated plan should consider a periodic review to address evolving rules, regulations, and water availability. Water demands and contingencies should be delineated in these plans for the future of the company, as well as for concerns of shareholders, governmental bodies, and other water users.