

Fracking Files

Mixing Energy, Economics, and Geopolitics

By G. Tracy Mehan III

Meghan L. O’Sullivan tells the story of how, on one hazy Sunday in late February 2016, the 935-foot, 100,000-ton *Asia Vision* was maneuvered into position by four red, white and green tugboats so as to perfectly align this behemoth with the four loading arms of the jetty at Sabine Pass terminal, “part of a one-thousand-acre facility straddling the Texas-Louisiana border.”

“With a wrench the size of a human arm, workers secured the ship to the jetty,” writes O’Sullivan. “Natural gas, which had been cooled to -260 degrees Fahrenheit and liquefied over the course of traveling through more than a mile of steel pipe and refrigerating systems, flowed into the tanker.” A few days later, the ship sailed on to Brazil with its three billion cubic feet of gas.

This historic event was the culmination of more than a decade of work by an American company, Cheniere Energy, at a cost of \$20 billion, to develop this extensive LNG operation — without ever turning a profit. Indeed, “the *Asia Vision* was the first vessel carrying LNG that shipped from the lower forty-eight states since the 1960s. After decades of fretting about its burgeoning dependency on imported energy, the United States had become an exporter of natural gas,” observes O’Sullivan in her new Simon & Schuster book *Windfall*. *How the New Energy Abundance Upends Global Politics and Strengthens America’s Power*.

The epiphany of the voyage of the *Asia Vision* illuminates the amazing developments in America’s energy sector, developments not without controversy, showcasing entrepreneurial drive, technological innovation, and a boom in the nation’s production of tight oil and shale gas through new techniques such as hydraulic fracturing and directional drilling. The impacts of this revolution in energy production encompassed everything from local land use battles to gross domestic product, international oil and gas markets, the climate change debate, geopolitics,

States into an exporter of natural gas, they convinced investors to support their efforts to convert these facilities from importing LNG to exporting it.”

The “unconventional boom” in the production of shale gas and tight oil, the “windfall,” was led by the estimable George Mitchell, the struggling petroleum engineer who pioneered hydraulic fracturing, or fracking, along with dozens of small and midsized American companies, transforming the world of energy. In 2006 the United States produced enough shale gas to heat 15 million homes a year. By 2014, it could, hypothetically heat 200 million homes. By 2015 more than half of all natural gas produced in the country came from shale, compared to just 6 percent a decade earlier.

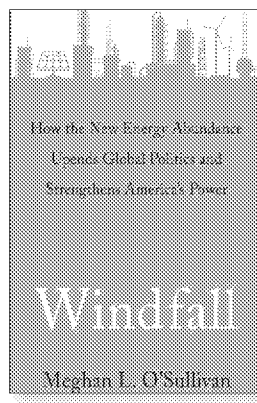
What worked for shale gas worked for tight oil, starting in the first decade of the 2000s.

Production from places like Eagle Ford in Texas and the Bakken fields in North Dakota resulted in American tight oil production surpassing Iraq’s overall production by 2014.

“In the same year, burgeoning U.S. tight oil production pushed overall American crude output to be 10 percent of the world’s supply,” writes O’Sullivan, a professor at Harvard’s Kennedy School of Government and formerly deputy national security advisor for Iraq and Afghanistan for President George W. Bush.

“Accounting for nearly half of overall U.S. crude oil production, tight oil was the driving force behind America’s oil resurgence.”

If the diligent reader were to scour O’Sullivan’s 146 pages of notes, he or she would be rewarded with the following nuggets: the number of wells in the Barnett Shale (Texas) rose from 2,070 to 17,980, an increase of 750 percent. And this: nat-



Windfall: How the New Energy Abundance Upends Global Politics and Strengthens America’s Power. By Meghan L. O’Sullivan. Simon & Schuster; 479 pages; \$29.00.

Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States. Environmental Protection Agency.

Water and Hydraulic Fracturing: A White Paper From the American Water Works Association.

and the rise and decline of nations across the globe.

The drastic reversal of the American energy situation, certainly since the 1973 OPEC embargo, is demonstrated by the fact that Cheniere “had gambled big in 2003 to build facilities on the U.S Gulf Coast to import expected waves of LNG,” which O’Sullivan calls “a second multibillion dollar wager.” She says, “Banking that this reversal of energy fortunes would turn the United

ural gas production in the Barnett grew from 834 million cubic feet a day in 2003 to 5,752 million cubic feet in 2012.

From O'Sullivan's perspective this explosive growth in domestic energy production resulted in nothing less than an "American Renaissance" of energy. "According to one study by the consultancy IHS, unconventional oil and gas production added almost 1 percent to GDP each year from 2008 to 2013, making it responsible for approximately 40 percent of all GDP growth during that period," spanning the Great Recession.

"A 2015 Harvard Business School/Boston Consulting Group report used a more inclusive methodology and calculated that oil and gas produced by fracking contributed \$430 billion — or just about 2.5 percent of GDP — to the U.S. economy in 2014 alone," O'Sullivan relates. "This amount translates into roughly \$1,400 for each American in a single calendar year and is equal to more than half the entire stimulus package passed in 2009 to fuel investments in infrastructure, education, renewable energy, and health over the course of the following decade."

According to *Windfall*, "Moody's Analytics . . . calculated that more than a quarter of a million jobs were directly created by oil- and gas-related industries between 2006 and early 2015, with most stemming from the shale gas and tight oil sectors." But the ultimate job growth was much larger than that, O'Sullivan notes. "Each of these directly created jobs was estimated to have spurred another 3.4 related jobs, making a total of over one million new jobs attributable to the boom. These new jobs were roughly equivalent to half the number of American manufacturing jobs lost from December 2007 to June 2009,

the official length of the recession, according to the National Bureau of Economic Research."

Readers should understand that the focus of *Windfall* is on the geopolitical consequences of the United States' unconventional energy boom, including the decline of Russian leverage over Europe and Ukraine, making China comfortable with energy markets rather than supporting rogue regimes to acquire energy, and the taming (somewhat) of OPEC.

Now that both shale gas and tight oil are part of a global energy market, the United States will still need to encourage more countries, especially China, to exploit their unconventional resources to keep prices in line and the supply flowing, while reducing carbon emissions in the case of gas. Europe's geology and environmental politics make it unlikely on the Continent. Yet, even as prices drop, OPEC, which can bring oil production on or off quickly, can impact prices in a global market. But the salient point of the book is the enhancement of the strategic position and leverage of the United States going forward.

O'Sullivan also seeks to justify fracking to environmentalists who see it as (a) producing just another fossil fuel, and (b) a mortal threat to renewables given its low costs and cheap price. Aside from some questionable claims that unconventional energy led to the 2015 climate pact between the United States and China as well as the Paris Agreement, she hits the mark when she notes that "the advent of shale gas enabled the United States to bring down its emissions to their lowest absolute level in twenty years. Between 2005 and 2015, U.S. CO₂ emissions related to the energy sector declined by 12 percent." She cites David Vic-

tor, a professor at the University of California, San Diego, regarding the switch from coal to natural gas in the power industry. The impact on U.S. emissions was "about twice the total effect of the Kyoto Protocol on carbon emissions in the rest of the world, including the European Union." She also argues that "there is not strong evidence to support fears that low fossil fuel prices will come at the expense of continued investment in renewables and other alternative energies."

Windfall does not delve into any water quality issues related to fracking and unconventional energy. So readers may want to consult publications by the Environmental Protection Agency and the American Water Works Association on the subject.

EPA's report "Hydraulic Fracturing for Oil and Gas," accessible at epa.gov/hfstudy, offers a review and synthesis of available scientific information concerning the relationship between hydraulic fracturing activities and drinking water resources in the United States. While recognizing that data gaps and uncertainties limit its ability to fully assess potential impacts locally and nationally, the report does outline conditions under which impacts from fracking can be frequent or severe — spills during the handling of hydraulic fracturing chemicals and discharge of inadequately treated wastewater to surface water.

AWWA's white paper "Water and Hydraulic Fracturing" is a concise, well-illustrated document providing an overview of the topic. It also provides information on the life cycle of oil and natural gas development that may present concerns to drinking water utilities and ways to mitigate risks. It is accessible at awwa.org.

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Fracking spurred GDP growth while expanding American influence in foreign affairs