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Incentives to Burn

How Federal Policies, Industry Shifts Created A Natural-Gas Crunch

Low Prices, Clean-Air Efforts Stoked Fuel's Popularity But Not Its Production

A 'Hamster Wheel' in the Gulf

For 15 years, American policy makers have embraced natural gas as the fuel of the future, touting its many virtues: clean-burning, cheap and seemingly plentiful right here at home.

But when consumers across the country open their December heating bills this month, many are likely to face a shock: natural-gas rates as much as 50% higher than a year ago. What happened?

The answer is deceptively simple. Over much of the past decade and a half, the market and the federal government have given

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energy customers plenty of incentives to use natural gas. At the same time, they have offered the oil and gas industry little encouragement to produce more.

Federal efforts to promote clean air and U.S. energy independence have fed a surge in demand, in part by creating an expanding market for natural gas among the nation's electrical utilities. Meanwhile, changes in the shape of the domestic oil and gas industry and other factors—including a tremendous oil-price crash just two years ago—have sharply curtailed U.S. oil and gas exploration, bringing little new gas into the pipeline. As a result, the U.S. now consumes more natural gas than it supplies, relying on Canada to make up most of the difference.

The nation's record-long economic expansion, the accompanying surge in energy consumption, and cold winter weather over much of the U.S. have thrown the imbalance into stark relief. On the futures market, natural gas for delivery next month is trading at more than \$8 per million British thermal units, nearly quadruple its year-earlier price of \$2.17 per million BTUs, a rally so steep it startles even those accustomed to the energy market's wild gyrations.

The situation now facing consumers is a classic supply squeeze that won't abate this winter and may persist for many winters to come. Get ready for "a decade-long problem," says Matthew Simmons, president of Houston investment bank Simmons & Co. Mr. Simmons, an industry analyst who has long warned of an impending natural-gas crisis, says it's even potentially worse than the oil shocks of 1973 and 1979. That's because in addition to heating about 53% of American homes, natural gas is also being used to generate about 16% of the country's electricity—a percentage that is still growing.

Some Insulation

Many of the U.S.'s biggest natural-gas consumers—including utilities, steelmakers and chemical producers—buy most of their gas under long-term contracts that insulate them from some of the cash market's day-to-day volatility. But in California, where natural gas powers many electricity plants and state rules until recently banned electricity producers from buying on the futures market, the cash price of gas has risen, though fleetingly, to as high as \$60 per million BTUs. The soaring prices are contributing to the meltdown of California's electricity market.

The effects of the higher prices are already beginning to filter through the economy. Home and office heating bills are on the rise, as are electricity costs in states such as California that have at least partially deregulated their electricity markets. Kaiser Aluminum Corp., based in Houston, recently laid off 550 people in Washington state after it determined that it could make more money there by reselling its energy supplies than it could producing aluminum.

Since natural gas is a critical raw material in making products ranging from fertilizer to plastics to synthetic fibers, high gas prices could eventually translate into higher prices for food and manufactured goods. That could add to inflation at home and put U.S. exporters at a disadvantage.

Seasonal Relief

No one expects natural-gas prices to stay quite so high after the winter months are over. One gauge of market expectations, early bidding on New York Mercantile Exchange gas-futures contracts for delivery months from now, indicates that gas prices probably will drop to \$5.50 by May but will remain above \$5 through the end of 2001.

That's still well above the \$2- to \$3-per-million-BTU price range that natural gas mostly has hovered within since 1985, the year Washington began its aggressive drive to decontrol the interstate transportation of gas and open up a huge new national market for the domestically produced fuel.

Back then, natural-gas producers usually sold their gas to pipeline companies, who transported it across the country and resold it to local gas utilities and other big customers. That gave the pipeline operators a lot of power in the marketplace.

To tip the power balance away from the pipeline middlemen and toward consumers and producers, the federal government ordered the pipeline companies to become "open access" carriers, essentially forcing them to transport any gas a customer wanted to ship, including gas purchased from a competing supplier. In 1992, the government forced most pipelines to abandon the business of buying and selling gas and to serve solely as transportation providers. That let customers, including producers, gas marketers and retail distributors, shop around for gas. And it effectively allowed them to buy pipeline space or resell it as needed, thereby reducing their costs.

The idea was to give gas producers direct access to the market and to create competition that would hold down prices for the consumer. Sure enough, natural-gas prices dropped. The American Gas Association, a Washington, D.C., trade group, calculates that in inflation-adjusted terms, natural-gas prices fell 25% between 1985 and 1999.

Low prices turned out to be a boon for consumers but a nightmare for producers. Marketers emerged as a new breed of middlemen that took more profits without boosting gas production. "While the costs were going down to the consumer, they weren't going down all that much to the producer, even though he was making the long-term investment," says Raymond Plank, chairman and chief executive of Apache Corp., a Houston-based energy exploration and production company. "It was a strong deterrent for our industry" to drill or produce more.

How Federal Policies and Industry Shifts Fueled a Natural-Gas Crunch

The narrower margins forced some producers out of business and encouraged others to consolidate in a bid to reduce their costs and make themselves more attractive to Wall Street. Most struggling gas producers found they couldn't simply halt production from existing wells and wait for better prices. They needed to keep drilling just to maintain their cash flows, to meet payrolls and bank commitments.

Crackdown on Coal

In 1993, as part of a plan to expand the use of natural gas, the Clinton Administration cracked down on sources of urban smog. The Environmental Protection Agency launched a broad regulatory assault on coal-fired power plants, which still produce more than half of the nation's electricity. The Department of Energy also denied financial incentives to utilities that wanted to build more nuclear power plants and large-scale hydroelectric projects. Together, those policies helped make natural gas the new fuel of choice for electricity producers, who started moving away from dirtier-burning fuels, such as coal and oil. The electricity industry started planning to bring scores of new gas-fired power plants into service, some of which weren't designed to allow for switching to other fuels.

At around the same time, big changes were under way in the structure of the domestic oil and gas industry. Many of the nation's deep-pocketed major energy companies, hoping to compete with vast state-owned producers elsewhere, began to shift their focus abroad, looking for big scores in foreign fields where production costs were lower than in the U.S. While the majors remain active in Alaska and the deepwater Gulf of Mexico, they sold or abandoned much of their production in the continental U.S. That left a greater share of domestic exploration and production in the hands of smaller independent oil companies.

Nowadays, around 7,000 relatively small independent operators, drilling on land or in the Gulf's shallow waters, account for roughly 65% of the natural gas produced in the lower 48 states.

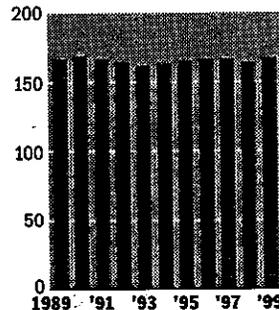
The independents face a host of problems. For starters, many of the nation's older fields are running low. In the Gulf of Mexico, the source of about a quarter of the nation's natural-gas supply, shallow-water drillers have adopted new technologies, such as 3-D seismic imaging and directional drilling, to wrest more gas from mature fields. But the additional gas has come at a cost: Fields that were experiencing 25% annual declines in production now are logging

Natural Gas: Struggling to Keep Pace

U.S. natural-gas reserves are going nowhere fast. As production lags, gas consumption, fueled by gas-fired power plants and a hot economy, is climbing fast. Imports are struggling to fill the gap.

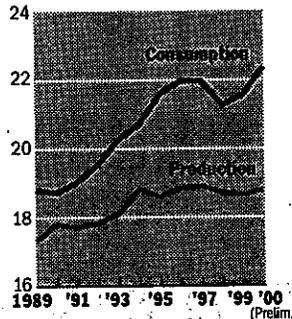
Proved Reserves

In trillions of cubic feet



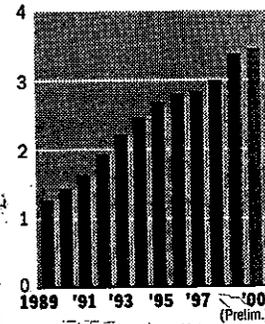
Production vs. Consumption

In trillions of cubic feet



Net Imports

In trillions of cubic feet



Source: Energy Information Administration

50% drops. "We were on this kind of hamster wheel where we were running harder just to not fall off," says Claire Farley, former president of Texaco Inc.'s North America production unit, who left the company in late 1999.

Bankers Balk

Developing new fields is a speculative and expensive undertaking, and few of the independents have access to the necessary capital. Instead, they mostly have been forced to finance new investments out of their own cash flows, which took a major hit in 1998 when oil prices tanked. Ralph Eads, an executive vice president at El Paso Energy Corp. and a former investment banker, says that lenders have become increasingly reluctant in recent years to back small, and often poorly capitalized, independents in such a risky business.

The 1998 oil-price crash spurred many of the nation's top gas producers to scale back their drilling programs. That's because when oil prices fall, natural-gas prices have traditionally been dragged down with them, discouraging exploration for both commodities, which are often found together in the same fields. But without investing in new wells, Burlington Resources Inc., a top independent based in Houston, saw its North American production decline by 8% between the third quarter of 1998 and the third quarter of 1999. Houston-based Noble Affiliates Inc. slashed its capital spending by 80% in 1999 to \$92 million; the company's production slid 20%.

"Clearly, when you have a capital budget that is that depleted, a fair amount of it is dedicated to simply maintaining your existing production and much less" to drilling new wells, says Bill McKown, Noble's assistant treasurer. Tired of dealing with the Gulf of Mexico's decline, Noble now is pursuing projects in Africa, Ecuador and Israel.

Three years of warm winters masked a looming supply squeeze. But now, with a cold winter in full swing, the supplies of natural gas that utilities store in underground reservoirs, as a sort of supply "cushion" for times of heavy demand, are down 24% from 1999 and 20% below the average of the past five years, according to the DOE, with the peak heating months of January and February still ahead. In all, the nation's natural-gas reserves have fallen to 164 trillion cubic feet, down 2% from 1997 and 20% from 1980.

Meanwhile, many of the most promising gas fields, such as those under the Rockies, off the Atlantic and Pacific Coasts and in the eastern Gulf, near Florida, are closed to drilling for environmental reasons. The National Petroleum Council, an industry advisory panel to the U.S. secretary of energy, estimates that drilling restrictions in those areas alone have put an estimated 213 trillion cubic feet of gas off limits, enough to meet the nation's natural gas needs for about nine years at current consumption levels.

Two federal agencies, the U.S. Forest

Service and the Interior Department's Bureau of Land Management, control most of the public lands in the Rockies, and industry executives say those agencies have often sided with environmental groups who want to prohibit drilling there.

Double Eagle Petroleum & Mining Co., for example, started working on a leased 23,000-acre BLM tract in northern Utah back in 1987. Early seismic tests suggested the presence of sizable natural-gas reserves in the high-mountain area. But Double Eagle, which is based in Casper, Wyo., needs to lease a 400-acre tract in the middle of its BLM leasehold from the Forest Service in order to get financing to drill, says Steve De-genfelder, a company vice president. Under pressure from a local environmental group, the Forest Service has deliberated on the lease for most of the past decade.

Donna Wilson, a spokesperson for the Forest Service office in the Wasatch Cache National Forest, says her office is preparing an environmental impact study that could settle the issue by May.

The main opposition to Double Eagle's plans has come from the High Uintas Preservation Council, run by Dick Carter, a former Forest Service employee who lives in Hyrum, Utah. The council, which Mr. Carter says has 300 to 400 members, says it believes that conservation is a far better strategy for energy security than "haphazard development" of oil and gas in the undeveloped mountains.

While many people see lots of good reasons to keep current drilling restrictions in place, the industry sees only missed opportunities. "The balance between energy needs and environmental concerns hasn't been properly struck, and now we are paying the price for it," says J. Larry Nichols, president and chief executive officer of Devon Energy Corp. in Oklahoma City.

Today, about 90% of the new power-generation facilities under construction are gas-fired. The power industry is expected to increase its annual gas demand by an average of 5.4% through 2020, more than double the 2.2% growth rate of gas consumption for the economy as a whole, the DOE says. Some observers think those estimates are too conservative; gas consumption by power plants grew at a 7.5% clip last year, and the big surge in the construction of new generating facilities is just now getting under way.

In San Diego, power-plant operators saw their gas supplies curtailed this fall because there wasn't enough gas in the pipeline system to meet their needs. The plants escaped the trouble by reducing gas use and temporarily shifting to burning oil. But California electricity officials warn that if production and storage capacity aren't beefed up, consumers will face shortages and blackouts this year.

Already, their costs have gone up. The rates Alan Wilhite's pays for gas to heat his three-bedroom house in mild-weathered Bellingham, Wash., rose 14% in August and are increasing another 26% this month due to rising gas costs. His gas bill

was \$67 in November, and with colder weather and higher prices, could exceed \$100 this month, even though he says he doesn't keep his thermostat any higher than 65 degrees.

Mr. Wilhite, a retiree, worries his rates will go even higher if his gas utility has to compete with a huge new power plant that might be built a few miles from his home. That proposed new plant's natural-gas consumption would be equivalent to more than half of all the gas consumed by the state's residential gas customers.

Industrial users, too, have reason to fear. Imperial Sugar Corp., the nation's largest sugar refiner, is strapped for cash, saddled with debt and struggling with a glut of sugar. It thought it had protected itself against any run-up in natural-gas prices this year by contracting ahead for enough gas to get it through the sugar-processing season, which typically lasts six to seven months. But this year's bumper crop of sugar beets in California extended Imperial's production run in that state by an extra month, says A. Duffy Smith, managing director of the Sugar Land, Texas, company. That forced Imperial Sugar to buy gas on the cash market.

Suddenly, instead of paying \$3 per million BTUs, Imperial faced prices of more than \$20. When the spot price in California shot up to \$60 per million BTUs in early December, the company appealed to the local air-pollution control board and won a waiver allowing it to burn oil in place of natural gas.

"Otherwise, we'd have been forced to destroy the beets," says Mr. Smith. "We weren't going to make sugar at a loss."

With gas prices so high, producers are picking up the pace, though any significant increase will take time. In the past, oil prices have dictated the pace of both oil and gas exploration, but that changed drastically last year as natural-gas prices started to climb; by year's end more than three-quarters of all drilling rigs operating in the U.S. were looking specifically for natural gas.

Major Alaska producers are pushing for a pipeline that would allow them to get that state's natural gas to the continental U.S.—but such a project probably couldn't be completed until near the end of the decade. Lacking a means of shipping out gas, Alaska producers now mostly reinject it into their wells to increase internal pressure, and thus boost oil production. A new pipeline from Canada already is bringing more gas to the Midwest. And independents are hopeful that having two former oilmen in the White House—George W. Bush and Dick Cheney—will lead to more industry-friendly drilling policies. Indeed, Mr. Bush's recent nomination of former Colorado Attorney General Gale Norton to head the Interior Department has drawn fire from environmentalists opposed to her support of experimental oil drilling in Alaska's Arctic National Wildlife Refuge and other sensitive areas.

Meanwhile, the run-up in gas prices has reinvigorated the earnings and stock prices of many of the independent gas producers that were beaten down by the 1998 oil-price crash. It also has produced huge trading profits for pipeline and marketing companies. Gas producer Burlington Resources saw its third-quarter profit triple and its stock price soar 53% to \$50.50 last year. And Dynegey Inc., a Houston power marketer and pipeline operator, said its energy trading and marketing profits jumped 80% in the third quarter. Dynegey's stock, which started last year at \$16, finished 2000 at \$56.06, making it one of year's biggest gainers on the New York Stock Exchange.

But even gas producers aren't necessarily rejoicing. They know today's steep prices will force customers to consider alternative fuel sources. "High prices are not the answered prayer of the gas industry," says Tom Price Jr., senior vice president of corporate development for Chesapeake Energy Corp. in Oklahoma City. "It just engenders hostility we'd rather avoid."