



PEAK OIL REVIEW

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1. Oil and the Global Economy

New York oil futures fluctuated around \$96 dollars a barrel last week, at one point nearly touching \$97, closing on Friday at \$95.87. This was the seventh weekly gain in a row for NY futures and the longest run of weekly price gains since 2009. Brent crude which now is up \$4 a barrel in the last two weeks, and up \$10 a barrel since early November, closed at \$113.28. Numerous factors were seen as shaping the markets last week. There is optimism among traders that the US, Chinese, Japanese, and German economies are doing better. The Euro strengthened a bit. US jobless claims were down. The China's purchasing managers index was up.

Countering this bullish news was the continued growth in US crude inventories by 2.8 million barrels and some bad data on US home sales and US manufacturing. The US pushed its debt crisis down the road a couple of months, the North Koreans are blustering about war against the south and even talking about attacking the US with nuclear-tipped ICBMs which they hope to develop some day.

Among the more interesting stories of the week was that the Seaway pipeline from Oklahoma to Houston which recently had its capacity increased to 400,000 b/d had to be slowed. This action forced NY oil futures down as the slower rate of flow hurt hopes that the great Cushing oil glut would be drained away to coastal refineries in the near future. The pipeline company is being circumspect, but it seems that the terminal at the Houston end of the pipeline was suddenly receiving more oil than it could handle so the flow had to be reduced. By week's end, however, some of the oil was being directed to another nearby terminal which at least partly solved the problem.

The steady increase in the price of benchmark Brent crude in recent weeks suggests that the global market may be tightening as the IEA feared in its last monthly report. Saudi oil production was down to 9.3 million b/d in December from the nearly 10 million b/d it maintained throughout much of 2012; Iraqi exports are slipping due to the feud with the Kurds; Syria, Sudan, and now Yemen are not exporting due to various disputes; Iran is down to about one million b/d; Libya announced that it is producing 1.1 million b/d not the 1.4-1.6 million generally thought; and to top it all off Beijing seems to have stepped up imports in December.

US natural gas prices fell last week to close at \$3.44 per million BTUs on forecasts of warmer temperatures in the Northeast this week. Long range forecasts, however, are calling for colder weather in February, but much warmer temperatures in the Midwest and Northeast in March. The \$3.60 per million level is thought to be about the point where coal becomes cheaper than gas for some utility companies which will switch back to coal at this price point.

US gasoline stockpiles fell by 1.7 million barrels the week before last, and gasoline futures in New York have been rising lately and are now up 35 cents a gallon since early November.

2. Middle East & North Africa

Political stability continues to deteriorate across the region. In Egypt mobs are back in the streets protesting the lack of economic progress and the fairness of the Morsi government. The government has called a month-long state of emergency in three cities after some 50 demonstrators were killed in clashes with police.

Syria: The death toll continues to climb and some observers believe it may now be above 100,000 with 2-3 million displaced from their homes and food production less than half normal. There was little movement in the civil war last week and some believe it will continue for an indefinite period. Government forces continue to bomb and shell towns and suburbs that are no longer considered friendly to the government. There are reports that the rebels do not have enough weapons and munitions to make further headway against well-armed government forces. The international debate over whether the diffuse rebel coalition could do more than preside over chaos in a post-Assad era continues.

Moscow continues to express its support for the Assad regime. A handful of Russian citizens were bussed out of the country to Lebanon as the airports are no longer safe for civilian aircraft. Moscow says that the bulk of the thousands of Russians living in Syria want to remain there with their families.

In the wake of the elections that are seen as a setback for the Netanyahu government, Israel is expressing strong concerns about Syria's large stock of chemical weapons falling into the hands of anti-Israeli jihadists and is warning that it will use military force to secure the weapons. Tehran in the meantime is warning that any attack on Syria will be an attack on Iran. It is easy to see how all this could deteriorate into a general mid-eastern conflagration somewhere along the line. The only good news of the week is hints that Israel has shelved any plans to attack Iran's nuclear facilities for the time being.

Iraq: The Sunni-Shiite standoff north of Baghdad worsened on Friday when the Iraqi army tried to dislodge protestors from blocking highways in predominately Sunni areas around Fallujah. Stones flew, shots were fired, and five protestors died. During the now-familiar funeral processions following the incident, two Iraqi soldiers were killed by snipers and several kidnapped. Sunni leaders then threatened to launch attacks against the Iraqi Army leading the government to pull its forces back from Fallujah. In the midst of all this turmoil, the parliament voted that Prime Minister Maliki could not run for a third term – a vote he will probably ignore.

Bombings and shootings continue across the country. One particularly egregious incident was a suicide bombing in a tent crowded with high-level Turkmen mourners which killed 35 and wounded 117 in a volatile region claimed by Kurds, Turkmen and Arabs. This incident came a day after 24 were killed in sectarian shootings and bombings around the country. While violence in Iraq is still well below the troubles of 2006-2007, the efforts by mostly Sunni jihadists to reignite a civil war between sects continues unabated.

The confrontation between Baghdad and the Kurds deepened as the government continued to negotiate with BP to rejuvenate production in an oil field claimed by both Baghdad and the Kurds. Production from this field has fallen to 260,000 b/d from 900,000 ten years ago. Baghdad is threatening to cut the funds the Kurdish province receives from the central government as a way of making the Kurds behave. Turkey's Genel oil company says it is making good progress in developing its Kurdish oil fields. The company is already producing 100,000 b/d and hopes to reach 200,000 soon. For now some of the oil is being taken to Turkey by tanker truck, but construction of a new pipeline is under consideration.

In the midst of this turmoil, the CEO of Exxon, Rex Tillerson, showed up in Baghdad to meet with Prime Minister Maliki over Exxon's situation in which it hopes to continue doing business with both Baghdad and Kurdistan.

It still remains hard to see just how Iraq will be producing 5-8 million b/d of crude by the end of the decade as all the optimistic forecasts are counting on.

North Africa: The attack on the Algerian natural gas facility at In Amenas in the Sahara desert, which resulted in the death of 37 foreign oil workers, has changed the outlook for oil and natural gas production in the region. As many of the attackers in Algeria were thought to be Libyan, the incident has set off concerns about follow-up attacks on remote oil facilities across Libya and Algeria. Concern was heightened when warnings were issued that all foreigners should leave Benghazi and that there was credible information that an attack on a Libyan oil installation was imminent.

Most observers believe the Algerian government can provide adequate security at remote sites, but Libya, with a weak central government, is a different situation. BP announced last week that it was reviewing plans to increase drilling in Libya later this year. Hundreds of foreign workers are reported to have been evacuated from Saharan oil fields already and hundreds more are said to be leaving soon. While this exodus may delay new projects, it is not expected to hurt production in the near term.

With the French army, backed by the US, driving into northern Mali, this situation has a long way to play itself out. The region, which produces some 3-4 million b/d and a large share of Europe's natural gas supply, will always be vulnerable to jihadist terrorists in isolated areas where security is very expensive.

3. Climate change

While climate scientists have been warning of the dangers of carbon emissions into the earth's atmosphere for over 20 years, the mantra of continuous growth in many key countries has been enough to overcome the warnings and there has been little progress in reducing emissions. It has become obvious that little will happen until the consequences of climate change become so bad that a critical mass agrees that something must be done no matter what the cost to economic growth.

In recent days there have been developments suggesting that at least a glimmer of serious action to reduce emissions may be somewhere ahead. The first development was the killer smog that settled over northern China, driving air quality meters off the scale and forcing China's growth-obsessed government to promise action. Beijing's initial reaction was a promise to reduce air pollution by 2 percent this year through measures such as junking 180,000 old vehicles and shutting down 44,000 small coal-fired boilers. Beijing will also reduce coal consumption by 1.8 million tons in the Beijing area. For a country that is on course to increase its coal consumption by 970 million tons between 2010 and 2015, reaching a total coal consumption of 4.3 billion tons, the newly announced measures are unlikely to have much impact.

A recent estimate by Deutsche says that China could increase its demand for crude by nearly 5 percent this year or 468,000 b/d. Given increases of this magnitude in fossil fuel consumption, smogs and other weather-related disasters are likely to continue across China and indeed much of the world in the immediate future. There is huge inertia in China's system of government and economic management in which giant state run corporations with imbedded interests in continuing economic growth will likely continue to hold sway against environmental concerns. What is new is that Beijing's smog is now so bad the government has been forced by the obvious to take official note and promise change.

In Washington, President Obama made action on climate change one of the top priorities of his second term and promised more details in his State of the Union address. Although the majority of the Congress still remains skeptical that carbon emissions are related to severe weather events, the costs of remediation such as the \$60 billion spent on Superstorm Sandy in the NY region and the billions spent on last year's Midwestern drought may eventually force a change of heart. For the immediate future, however, the administration is likely to rely on changes that can be made under existing clean air regulations that do not require Congressional approval.

Quote of the week

- "The path towards sustainable energy sources will be long and sometimes difficult. But America cannot resist this transition; we must lead it. We cannot cede to other nations the technology that will power new jobs and new industries – we must claim its promise. That is how we will maintain our economic vitality and our national treasure."

- [President Barack Obama](#)

The Briefs (clips from recent Peak Oil News dailies are indicated by date and item #)

- Unidentified attackers blew up **Yemen's** main oil pipeline, forcing the country to shut down its most lucrative source of income. Yemen's oil and gas pipelines have been repeatedly sabotaged by insurgents and tribesmen since anti-government protests created a power vacuum in 2011. (1/26, #12)
- Venezuelan President **Chavez's** condition has improved and he is now optimistic as he faces more treatment following cancer surgery, Vice President Nicolas Maduro said after meeting with Chavez in Cuba. (1/25, #11; 1/26, #13)
- **Consolidated Edison** asked New York regulators to approve a \$400 million electric and gas rate hike for 2014 to help pay for \$1 billion in infrastructure upgrades needed to harden the system against future storms. (1/26, #21)
- Irish oil and natural gas company **Providence Resources** announced a major oil discovery in the Rathlin Basin off the coast of Northern Ireland. Providence estimated the so-called Polaris Project holds 530 million barrels of oil. The company said the project is close enough to shore that it could be drilled from an onshore location. (1/26, #26)
- BP began delivering liquefied natural gas to **Israel** via an offshore buoy until the Israelis begins production of local gas from an offshore field later this year, government officials said. The buoy was built off the Israeli coast by government-owned Israel Natural Gas Lines Co. at a cost of \$134 million. (1/25, #7)
- A **Nigerian** oil company official said there were indications that public officials in the country may be involved in pipeline vandalism. (1/25, #9)
- **Japan's** imports of gas and coal increased sharply last year and look set to grow further, creating fresh challenges for a new government that is trying to bolster the country's stagnant economy. Japan may see its energy bill rise sharply in the months ahead because of persistently high and increasing prices for oil and as the recent weakening of the yen obliges it to pay more for these dollar-denominated purchases. (1/25, #13)
- A member of **Japan's** coalition government arrived in Beijing carrying a letter for the head of the Communist Party, Xi Jinping, from the Japanese Prime Minister, Shinzo Abe, to try to help calm the escalating dispute between the two countries over contested islands in the East China Sea. (1/22, #18)
- Spot **gasoline** in Los Angeles surged as Valero Energy Corp. was said to be shutting an alkylation unit at its Southern California plant next week and as Chevron and Phillips 66 reported equipment shutdowns. Valero's 78,000-barrel-a-day Wilmington refinery near Los Angeles will shut the alkylation unit for about seven to 10 days of repairs. (1/25, #19)
- **Britain's economy** contracted by a worse-than-expected 0.3 percent in the last three months of 2012, raising the possibility that it might fall back into recession for the third time since the global financial crisis. (1/25, #22)

- An **Australian company** claims it has found an untapped shale oil field with estimated reserves that could potentially put the country next to Saudi Arabia. Still, extracting the discovered treasure poses a huge technical challenge. Brisbane-based Linc Energy has two estimates by respected independent consultants claiming that drilling and seismic exploration in South Australia has discovered a potentially huge untapped shale oil deposit. (1/25, #23)
- The glaciers of the **Andes Mountains** have retreated at an unprecedented rate in the past three decades, with more ice lost than at any other time in the last 400 years. (1/24, #13)
- **China's** dependence on foreign crude oil and refined oil products is set to increase, but the government has placed a cap at 61% of total requirements for the end of the current five-year economic plan in 2015, according to a new government blueprint for energy development. (1/24, #15)
- More than a dozen energy companies were awarded exploration rights for **shale natural gas** reserves in China. The Ministry of Land and Resources said 16 companies secured the rights to explore shale reserves in 19 natural gas blocks. The winners, the ministry said, should bring more than \$2 billion in investments to shale development. (1/22, #19)
- The Obama administration has delayed a decision on the rerouted **Keystone XL oil pipeline** until after March, even though Nebraska's governor approved a plan for the section of the line running through his state. "We don't anticipate being able to conclude our own review before the end of the first quarter of this year," said Victoria Nuland, a spokeswoman at the State Department, which had previously said it would make a decision by that deadline. (1/24, #23)
- A section of the **Mississippi River** shrunk by the worst U.S. drought in 70 years will remain navigable through Feb. 20, with the channel near St. Louis at least 10 feet deep. (1/24, #24)
- A steep increase in heating costs has led many **Greeks** to switch from heating oil to wood-burning. But the price of using the cheaper fuel is growing. Illegal loggers are slashing through forests already devastated by years of summer wildfires; air pollution from wood smoke is choking the country's main cities; and there has been an increase in fires caused by carelessly attended woodstoves. (1/24, #27)
- **Russian oil production** will probably peak in the next few years as the gains from new oil fields are offset by falling output from older sites, according to Fitch Ratings. The ratings agency said Russia posted another post-Soviet oil production record in 2012, but added that significant new exploration, in particular on the Russian continental shelf, would be required over many years to increase output further. (1/23, #20)
- Baker Hughes said it expects the **US rig count** to remain flat in the first quarter compared with the end of 2012, before rising throughout the rest of the year. Outside North America, the world's third-largest oilfield services provider said it sees the drilling rig count rising by 7 percent - leaving out the Iraq rigs that only became part of the total in mid-2012. (1/24, #25)
- The **US drilling rig count** climbed by 4 units during the week ended Jan. 25, with the total number of rotary rigs reaching 1,753, Baker Hughes Inc. reported. This compares with 2,008 rigs working in the comparable week last year. (1/26, #24)

Commentary: Is Fracking a ‘Happy Solution’ to our Energy Needs?

(Note: This commentary was originally published January 2, 2013 as part of the [Advisor Perspectives](#) newsletter. Commentaries do not necessarily represent the position of ASPO-USA.)

By Richard Vodra, JD, CFP

A few weeks ago, John Mauldin [called](#) fracking a “happy solution” that will produce jobs, potentially solve our trade deficit and generate new tax revenue, though energy prices may rise in the process. But how excited should we be about the “shale revolution”?

Over the last few years, we have seen increasing enthusiasm – bordering on hype – over the idea that horizontal drilling plus hydraulic fracturing of shale rock to produce oil and gas, commonly referred to as “fracking,” is changing everything. The US is about to be the leading oil-producing nation again, says the International Energy Agency. We have 100 years of abundant gas supplies, says President Obama. In the recent election, thanks to these developments, the candidates were actually debating how soon the United States would be “energy independent.”

Largely due to fracking in North Dakota and Texas, US oil production has grown from five million b/d in 2008 to about 6.5 million now, though that is still much less than the total amount we use. Natural gas production over that time has risen from 21 trillion cubic feet per year to about 24.7 trillion cubic feet today, led by fracking for gas in Texas, Louisiana, and Pennsylvania. After decades of declining production, these reverses are big news.

That’s indisputable. The question is “how big?”

Some background

First, a bit of geology. Oil and natural gas are ancient plant life that has been transformed by millions of years of pressure into hydrocarbons and captured in rock formations rather than escaping into the air. When these pressure-cooker carbons end up with a single carbon atom, the resulting methane is what we call natural gas. When there are two, three, or four carbons, the resulting “natural gas liquids” have mostly industrial uses, and while they are often included in statistical reports of oil production, they are not “oil.” Molecules with more carbon atoms are liquids that are mostly used for transportation fuel – what we call oil. Refineries sort out all these molecules and remove various impurities. When gas and oil are found in large quantities in sandstone or other porous rock, we call that “conventional” oil or gas, because the fossil fuel can flow through pores in the rocks to reach a well. (Note that “gas” as I’m using it in this article refers to “natural gas” or methane, not to “gasoline.”)

Sometimes, though, the gas is locked up in the shale rock where it formed, and it won’t move, or the oil is so thick or partially “cooked,” that we have to use extreme “unconventional” technologies to get at it. Worldwide production of conventional oil has been on a plateau since about 2005, so we have turned to “unconventional” production to keep the wheels of the world economy turning. The Canadian tar sands, for example, are a major “unconventional” oil source.

So is fracking of shale.

Shale is a very solid rock that forms numerous thin layers. When gas is present, it is found in pores barely larger than a single gas molecule. Oil engineers have combined several technologies developed over decades to drill horizontally along a shale layer, rather than vertically through it, and to apply a high-pressure mix of water, chemicals and sand through holes in the drill pipe to shatter, or fracture, the shale, allowing the gas or oil to move to the pipe and up to the surface. Fracked wells in oil country commonly produce a mixture of oil, gas, and natural gas liquids. (Some wells target gas alone; these are called “dry gas” wells.) It turns out there is a lot of oil and gas in those rocks, if you’re willing to invest the money and energy necessary to get it, and, with technological changes, what couldn’t be extracted economically a decade ago can be today.

Fracking today

So how is this working out in the real world? Let's look at some of the impacts.

Oil and gas are priced on a spot basis, based on today's mix of supply and demand, and prices are very volatile. Because natural gas is hard to transport globally, the American price is independent of the world price, and currently is much lower. Oil, in contrast, is traded around the world and normally has a much more uniform price globally. The large increase in US gas production caused US gas prices to collapse from over \$13 per thousand cubic feet in 2008 to under \$2 briefly this year, and they remain around \$3.50. At such low prices, gas is cheaper than coal for use in electricity plants, and companies are replacing old coal plants with new gas-powered plants. Even a nuclear plant in Wisconsin was shut down in favor of gas generation. If gas prices go up, however, such decisions could prove hasty and shortsighted.

The problem is that no one can make money producing gas at \$3 per thousand cubic feet. The actual break-even price for shale gas production is estimated to be in the \$6 to \$8 range. The shale boom started when gas was higher than that, so companies eagerly paid for leasing rights and access to drilling rigs. Leases commonly require drilling to start within a few years or the lease is void, so there was a strong incentive to start production and secure the well rights. When everybody did that at once, a surplus of gas hit the market, prices collapsed, and drilling for dry gas abruptly slowed.

Two aspects of shale production make it radically different from conventional production. First, it takes a lot more energy (including many miles of steel tubing per well, for example) to extract energy out of these wells. Traditional wells have a ratio of energy returned on energy invested (EROEI) of 10- or 20-to-one, or an energy cost factor of 5 to 10%. The EROEI with fracking is in the range of 5- or 10-to-one, or a cost factor of 10 to 20%. Professor [Charles Hall](#) of the State University of New York, a recognized expert in the field, [claims](#) that modern civilization will have trouble functioning with an average EROEI under 10-15, so shale oil and gas alone could not support our civilization at its current standard-of-living. EROEI roughly correlates with financial cost, and a typical fracking oil well in Texas now costs over \$10 million to drill, compared to less than \$1 million for a conventional well.

The other thing about extraction from shale is that it ends quickly. A conventional well's production declines at about 5-8% per year, and it can remain productive for decades. By contrast, the first-year decline in shale wells is over 60%, and about 90% of a well's production occurs in the first five years. That creates a "drilling treadmill," as new wells are needed simply to replace production from wells drilled a few years before.

Further, studies by [Arthur Berman](#), [David Hughes](#), and [Rafael Sandrea](#) have analyzed well-by-well data from existing mature oil and gas shale fields and concluded that the ultimate production from these sources is likely to be much more limited than optimists claim. While fields are large, covering many counties or even states, most production comes from a few "sweet spots," where drilling opportunities are limited by quality acreage. While the Bakken field in North Dakota is producing about 750,000 b/d now, and common projections are for production to reach two million b/d in a few years, both Hughes and Sandrea project a maximum of less than one million bpd within five years, and a sharp decline after that.

That is disheartening, since a lot of current policymaking assumes that abundant and cheap gas and oil will be ours for many years to come, and the problem is what we will do with it all. Oil companies are lobbying to lift restrictions on exporting American crude oil and to build gas-exporting facilities. It has been suggested that one purpose of those proposals is to link our market to the (higher-priced) world market. By contrast, [companies](#) building new electricity generating facilities and designing new trucks are counting on cheap gas (under \$6) in the future, and they are likely to be disappointed.

The shale boom has enabled – or perhaps, some say, was itself enabled by – financial wizardry on Wall Street. Recent changes in how the SEC allows corporations to report their oil and gas reserves have made shale holdings a valuable tool for supporting stock prices, leading to a wave of fee-generating M&A activity.

Additionally, some firms are securitizing packages of leases, bringing back memories of subprime mortgages. With low interest rates, capital is plentiful, and those who wanted to explore these newly productive oilfields did not have trouble raising money, at least to get the shale boom started. Once again, the opportunities for gain in the financial economy overrode the realities of the “real” economy.

Thus, shale oil and gas may be both less plentiful and less affordable than many assume, and should not form the basis for long-term assumptions about energy independence or a new economy.

Environmental issues

Between ongoing droughts in the Midwest and superstorm Sandy in New York, more Americans are accepting the idea that the climate is changing for the worse, and that human beings and our fossil fuels are largely responsible. One attraction of natural gas is that it produces less CO₂ at the point of use than coal does, so replacing coal with gas seems to many people like prudent change.

But since a lot of methane is released in the fracking process, there is considerable [dispute](#) about what the net benefit of gas really is. Moreover, the growing use of gas in the US is not reducing the production of coal but rather is facilitating more exports of coal to China, India, and Europe. While this helps our trade balance, it does not do much for climate control.

One long-term strategy for limiting climate change is to replace fossil fuels with “renewable energy,” mostly wind and solar-based systems, while also using the energy we have more efficiently. But such alternatives are not as attractive as fossil fuels from either a cost or reliability perspective (if they were, we would already be using them), even though they may be necessary in the future. It normally takes decades for a society to transition to a new energy system, and cheap gas is making it hard to get support for these new technologies (or for nuclear, which is even more expensive than renewable energy sources).

And what about more immediate environmental concerns? The most common objection to fracking is not the false promises discussed above but its impact on the world we live in. In John Mauldin’s piece, he said that, according to “true experts, properly done, horizontal drilling and fracking pose no danger to the environment.” (Of course, “properly done,” there would be no automobile accidents or outbreaks of food poisoning, either.) Here are a few legitimate concerns that have been raised about fracking’s environmental effects:

- Fracking uses millions of gallons of water per well, most of which is unusable thereafter. There is competition for water rights between oil companies on one hand and farmers and ranchers on the other. Last summer Pennsylvania [suspended](#) fracking for a while, due to low stream flows.
- The mix of chemicals used in fracking is treated as proprietary, is not subject to much regulation, and therefore is not tested for environmental safety before use. Not surprisingly, when leakages and spills have occurred, they have harmed people and farm [animals](#).
- Possible pollution of drinking water is a matter of [considerable debate](#). Although fracking is normally done well below the water table, there are natural fissures in the rock that can allow chemicals to migrate. The [disposal](#) of used fracking water is another major source of concern, although some operators are experimenting with ways to recycle and reuse the fracking water.
- Earthquakes in areas that don’t commonly have them, including [Ohio](#) and [Oklahoma](#), have been linked to fracking activities nearby.
- The shale production process requires thousands of wells, and each well requires dozens of heavy truck trips to carry the drilling equipment, pipe, and water and chemicals to the well site, often over rural roads not built for [such intense traffic](#). In many cases it is not clear whose responsibility it is to pay for the road damage.

- The impact on a community of a blizzard of drilling activity is very disruptive, and recovery when the oil folks leave town in a year or three may be quite difficult. When it requires \$15 per hour to get people to work in a fast food restaurant, as Mauldin describes in his [story](#), people living on fixed incomes or not participating in the drilling boom will be adversely affected.
- In contrast to long-lived conventional wells, as I noted above, shale wells will likely have a short productive life. Who will be responsible for the long-term monitoring of the spent wells? The record of other extractive industries does not give cause for much optimism.

Creating a happier solution

Rex Tillerson, CEO of ExxonMobil, recently [told](#) the *Wall Street Journal* that our American system of private ownership of mineral rights, the fact that we have independent drilling companies, and our mature system of refined rules and experienced industry personnel “ensures that all natural resources are fully developed” in this country. Whatever the concerns, in other words, it is likely that extraction of oil and gas from shale deposits will continue. It is also likely that it will not turn out to be the “happy solution” that Mauldin and others want to see.

This boom (or is it a bubble?) creates a unique opportunity. The burst of new oil and gas is like winning a lottery. As most financial advisors know, sudden wealth can only enable long-term security if serious planning is involved at the outset. That’s what we should be doing now.

We need a new energy system, both because climate impacts are growing and fuel supplies are limited. Building it out will require a lot of capital and extensive labor – all fueled by a lot of energy – before the new electricity starts to flow. Rather than seeing how fast we can use up our bounty with cheaper electricity, business as usual, and disregard for the consequences, we should invest this one-time abundance to promote long-term low-carbon prosperity. If we do, once prices are back up and production has dropped back to normal levels, we will have something to base an economy on. If we don’t, we’ll just end up with a shale oil and gas hangover and nothing to show for our binge.

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