

GAS LIGHT

Cheap Natural Gas Tempts The United States Away from Oil

| Edited by Gregor Macdonald

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A challenge of natural resources extraction is that the price has to be right. Very right. Low enough for consumers, and high enough for producers. This narrow price band will be very hard to maintain should the US decide to extract more of its new shale gas resource. But what choice does the country have? At current BTU Price Spreads, natural gas costs 75% less than oil. That may be too much of a discount to ignore.



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A NOTE FROM THE EDITOR

Welcome to StockTwits Macro Weekly, the weekly magazine of the StockTwits investment community. Each issue features a core essay, written by the Editor. Around this, we build in the key news events and observations, from the past week. [To have each issue sent to you, sign up here.](#)

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GAS LIGHT— Robert Bryce, author of the excellent new book [Power Hungry](#), was given space last week to write an *I Told You So* [Op-Ed in the Wall Street Journal](#) about natural gas, Boone Pickens, and wind power. The core thrust of the essay is one that publications like the journal love to flog: that wind power is unreliable and generally a waste of money. OK, sure. There's no question that wind power is intermittent and captures diffuse energy. In other words, like solar, wind power is exceedingly disadvantaged if we are trying to use it to replace fossil-fuel based power generation. This hardly seems a point worth making over and over again though Bryce (and the WSJ) seem only too delighted to oblige. But this diversion into a straw-man argument, in which wind is presumed to make a claim for itself as a straight-up replacement for fossil fuels, allows Bryce go on to make his larger--and also questionable--point that the United States is the new Saudi Arabia of natural gas. Conveniently, in an effort to make Pickens look like an old fool, Bryce also fails to point out that abundant natural gas supplies were very much part of Boone's original vision. Confused yet? Yes, indeed. Welcome to energy transition.



These spats over wind, coal, nuclear, solar, and natural gas largely arise from the fact that global crude oil production has not increased in five years. As a result the world is searching for alternative energy sources but of course nothing much compares to oil's power-packed 5.8 million btu in every 42 gallons (a barrel). Meanwhile, the United States reserves of natural gas keeps rising along with natural gas production. In 2010, for example, there's a good chance that US natural gas production will exceed the all time high set over 35 years ago, in 1973. Also, the Energy Information Administration has just [nearly doubled US reserves of natural gas](#). This

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INDU 11564 TNX 3.351 GOLD 1383.30 VIX 17.72 SPX 1258.26 DXY 80.31

StockTwits.TV: CME and Ran Squawk



One of the very cool advances that's been made recently in StockTwits. TV programming is the addition of daily news shows that give specialized updates on key global markets. This year, StockTwits.TV added daily broadcasts from both RanSquawk in Europe and also CME--The Chicago Mercantile Exchange. By clicking over to StockTwits.TV you can now start your day with a very good wrap-up of the early morning action from Europe, and, a helpful lead-in to commodity markets and futures markets from the CME.

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comes after a several year period in which the technique to extract unconventional gas, locked within shale rock, was perfected and made economic. As oil prices have continued skyward back above 90 dollars, natural gas in North America meanwhile has remained closer to 4 dollars for a million btu. While little discussed, this has opened up an enormous *btu price spread* between natural gas and oil.

When natural gas is trading at \$4.00 and oil is trading at \$92.00, the price discount offered by natural gas for an equivalent amount of btu is as much as 75%. Yes, that's right. Instead of obtaining oil's 5.8 million btu for 92 dollars, one can obtain 5.8 million btu in natural gas for 23 dollars. At bottom, this is what Robert Bryce, Boone Pickens, natural gas company CEOs, and key energy conference speakers have been debating the past three years. The economic opportunity to perform the same amount of useful labor, at 50-75% off the oil price, is not a potentiality that any economist, analyst, or policy maker can afford to ignore. Before we address the barriers to any fast transition to natural gas in the US economy, let's at least look at the rough terms here, mathematically. After all, these are big systems running at large scale, and it's best to lay out the key parts of the problem. First, the United States is on pace to consume about 6.2 billion barrels of petroleum in 2010. That is a level of petroleum demand that is down significantly from the high demand years of last decade. In addition, the US will produce 1.8 billion barrels of this oil domestically, meaning that capital will exit the country to import the other 4.4 billion barrels. Using 90 dollars a barrel, this means that the US is on pace to spend 396 billion \$USD on foreign oil, and 558 billion on total oil purchases. What's attracted natural gas believers is the following equation: instead of spending nearly 400 billion per year on foreign oil, the US has the capacity spend only 100 billion a year on natural gas, while keeping that capital inside the US economy. It's a persuasive

vision. Intoxicating, even. But switching from oil to natural gas is just not that easy.

One of the persistent ironies about natural resource extraction is that prices often need to migrate towards an impossibly narrow band, in order to smooth production. Too low, and production declines will overshoot on the downside. Too high, and demand crashes but not before a production-rush creates cost inflation and higher rates of environmental damage. This narrow band of price will be an especially hard hurdle for US natural gas and here's why: *conventional* natural gas, which was cheap to extract, remains in steep decline. All the growth is from the *new shale gas* that requires more energy, and water, to extract. Not to mention the environmental risks. If the US economy tries to massively call upon this shale gas, the price will likely skyrocket--thus eroding the btu price advantage to oil. However, if the US does not migrate away from oil, then future oil prices may send the US economy down to even lower operating levels, thus impairing the economic flows needed to conduct any transition at all, to any new energy resource. It's a dilemma.

The US still runs a 14 trillion dollar economy, but the [Compensation of Employees figure runs at 8 trillion](#). These two figures should give some insight both to the country's exposure to oil, and, to the advantages that would accrue should the US turn away now, from oil use. Given global oil depletion, the US will spend more--not less--on foreign oil most likely every year of this decade, and the next. Thus, while North American natural gas reserves contain a notable uncertainty factor as to their scalable recovery, oil does not. Global oil production has already hit a wall. This fact alone should allow the US to at least confidently push for a transition away from all new investments in highways, while incrementally moving transport demand to rail.

Jevons in New York



To the delight of energy geeks everywhere--but especially in the US--[The New Yorker went deep last week](#) into a not-very-well-known phenomenon known as the Jevons Paradox. Combining energy and economics, Jevons theorized in the 19th Century that all efficiency gains made by energy users would simply be taken up by other portions of the economy, thus causing total energy consumption to grow further. In other words, humans can't use "less" energy even when they try.

The Jevons Paradox has been a frustrating economists and transitionists for decades. Recently, Jevons has captured more fully the attention of the climate community which is finally coming to terms with the same ugly reality: efficiency gains will only promote more energy usage, and by extension more CO2 production. This is the conclusion of [Dr. Tim Garrett of the University of Utah](#), for example, who has recently been delivering a series of very clear papers and presentations showing that efficiency gains (and more CO2 production) are not new, but the general rule. Slow or No growth? Not very likely.

Progress of a Snow Train



Even before the East Coast Blizzard hit overnight, a popular theme in both Europe and the United States this week has been the relatively small amounts of snow that were needed to either slow or halt train services. [This has spawned a meme](#), both in print and on social sites, that rail travel was far superior 100 years ago. And in many cases that may be true.

Modern trains generally run on electricity. A heavy, coal-fired steam engine train passing through Winter one hundred years ago was unconstrained by such delicate engineering. [European travellers were vexed](#) that both their trains (and planes) were completely undone by either trace amounts of snow or more generally from very cold weather. This wasn't supposed to happen to the Eurostar.

This can't be all bad. The image of a Victorian era train plowing through the Cotswalds or the Sierras in the dead of winter can only add to the current transition, where increasing amounts of freight are moved over to rail. Besides, the US still has plenty of diesel powered passenger trains. Our problem is mostly in the tracks.

While the US like other western nations will suffer in the aggregate from the loss of cheap oil, there is no reason for the US to delay in adding solar, wind, and--yes--natural gas power to its grid, for the purpose of a new economy based much less on the automobile. The fact is, because of legacy infrastructure, the US cannot shift demand from oil to natural gas fast enough to pressure that new resource quickly into problematic areas. The country should stop waiting for the free-market to magically arrange such a transition, therefore, and should move more concertedly now away from oil.

--Gregor Macdonald, 27 December—Amherst, MA

