

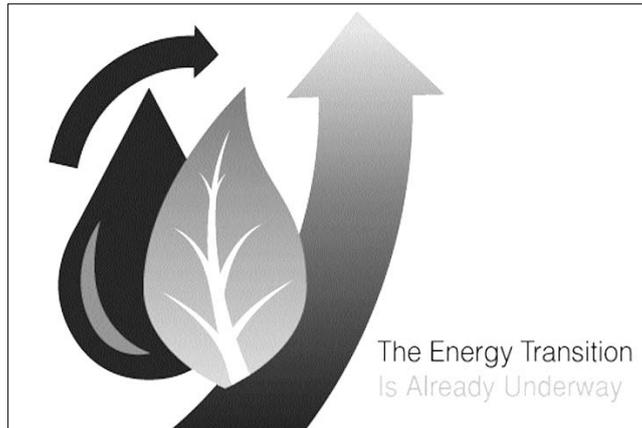
# The Energy Transition Is Already Underway

By Geoffrey Styles

Lately I've been struck by the number of new groups and proposals calling for America to begin the transition to cleaner energy. We even heard this call from the Oval Office several weeks ago. Yet while there's clearly much more to be done to wean ourselves from our reliance on oil and other high-carbon fuels, I'm baffled by the suggestion that this process didn't actually begin long ago—not just in the last year and a half—with policies and R&D initiatives put in place by at least the previous two administrations. Perhaps it's fashionable to ignore our progress to date, because acknowledging it serves as a reminder that the process will require decades to complete, and that the end-point might not resemble the one we imagined when we began.

Let's start by recognizing that a massive energy transition is already well under way on many fronts, including the development of advanced biofuels, nearly-mature wind power, highly fuel-efficient vehicles, electric vehicles, solar power that's not just a science fair project, and a range of other technologies and policies for reducing oil consumption and greenhouse gas emissions. These didn't just appear spontaneously; most required literally decades of effort to get to this point. So if we're already headed down this path, rather than arguing about starting out should we rather be asking how much we can do now to accelerate this shift?

Take fuel economy, which seems simple, because we all understand miles per gallon, or think we do. But how many people realize that the incremental fuel savings from higher mpg shrink as mpg increases? The chart below shows the annual fuel consumption for a car driving 12,000 miles per year, about the national average, versus fuel economy in mpg. The improvement in Corporate Average Fuel Economy of new cars between 1978 and 2008, from about 20 mpg to 27 mpg, has already saved a very substantial 160 gal/yr per car, while the increase to 34 mpg by 2016, the new CAFE target, will save another 90 gal/yr. However, advancing from there to 44 mpg, roughly equivalent to the 2012 EU target of 130 grams of



CO<sub>2</sub> per kilometer, would save only an extra 80 gal/yr. That's no reason not to move ahead with more efficient cars, but we must recognize that we've already captured the steep part of a curve that is now flattening out, as the cost/benefit of each successively-harder increment diminishes, unless they burn no oil at all. That's where biofuels and EVs come in.

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The Renewable Fuels Standard established by Congress in 2007 calls for a quantity of advanced and cellulosic biofuels by 2022 that exceeds what we currently get from corn ethanol. The problem is that at this point, after many years of hard work developing these technologies, there is not a single commercial-scale cellulosic biofuel facility design that has been built, tested and certified for profitable replication on the scale required, despite a special production tax credit of \$1.01/gal. Nor do I conclude that's for lack of the government, private investors and big

companies like ExxonMobil, Chevron, Shell, and BP throwing plenty of R&D dollars at the challenge. Within a few years we might be at the point at which billions of extra dollars for advanced biofuels would result in hundreds of such facilities actually being built, but then plenty of experts thought we would already be at that point by now, including the EPA, which had to ratchet back its cellulosic ethanol quota for this year from a level equal to the annual output of one corn ethanol plant to the quantity that a corn ethanol plant produces every three weeks or so.

The prospect for EVs looks more immediate—though still on a relatively small scale—with GM and Nissan launching flagship models later this year. However, as I noted in a recent webinar, every million EVs running entirely on electricity would save 31,000 barrels per day of gasoline, or about 0.3% of our current usage, and that's assuming they would replace cars getting today's average mpg, rather than

Prius-type non-plug-in hybrids, as seems likelier to me. It's going to take a whale of a lot of EVs to make a real difference, and it's not yet obvious that offering more than the current \$7,500 in consumer tax credits to buy them, or handing out more than the billions that have already been given to car companies—including some that have never built a mass-produced car—is going to put a lot more of these vehicles on the road in the next few years than would happen under existing policies that are still



playing out.

However attractive energy visions such as the President's might be, even to me, there are practical limits to additional activism at a point when so many wheels have already been set in motion. I do understand that the nation is riveted by the oil spill, and that transforming this interest into support for a broader energy agenda could be a once-in-a-generation opportunity. At the same time, I worry about an approach that relies on expanding already-unstable financial incentives for clean energy deployment at a time when the deficit has taken on the aspect of a black hole threatening to devour our future, energy and otherwise. To see the energy transition really take off, we must reach the point at which the alternatives are unambiguously better/faster/cheaper than oil, or can at least match its cost and convenience in its primary transportation energy uses, and are not merely better for the environment—as important as that is. We're not there yet, but we've clearly already begun the journey.

## BP oil spill impact will be felt for years to come

The repercussions of the BP Gulf of Mexico oil spill will be felt within the industry globally for many years to come, a leading PGCC oil official said on Sunday.

Badr Jafar, executive director of UAE-based Crescent Petroleum, said the whole industry would be under greater scrutiny as a result.

He said the Persian Gulf region would play a central role in ensuring the global market remains well supplied. "With the fallout from the oil spill in the US Gulf of Mexico, the Persian Gulf region's central role is set to grow," he said.

"The recent tragic events in the Gulf of Mexico have given all participants in the energy industry, producers and consumers alike,

cause for thought," he added.

"We at Crescent have no doubt that the repercussions of the spill for the industry are going to be felt for many years to come. One unquestionable outcome is that the whole oil and gas industry will now be under great scrutiny and will be held, justifiably, to the highest possible safety and environmental standards."

He said the deepwater drilling for oil and gas was likely to face not only more regulation but also the threat of reduced or delayed investment.

The International Energy Agency (IEA) estimates that by 2015 the US Gulf of Mexico oil production could be 100,000 to 300,000 barrels of oil per day lower than previous forecasts.

Jafar said the Persian Gulf region's focus on onshore and shallow water production safeguards it from many of the new problems facing the deepwater industry.

However, he added that more oil industry investment was likely to be needed to ensure adequate production is maintained.

"We believe the Persian Gulf's private sector will play a key role in contributing to the continued security of the global oil system," Jafar said. "That is why we are actively investing in the oil and gas sector within and outside the region. The Gulf of Mexico incident has shocked the industry and the world; we will do our part in ensuring it does not lead to an economic shock as well."

## The age of ethanol A dysfunctional system may become more so

"AMERICA'S sensible fuel," reads a TV advertisement, while a soothing melody plays in the background. Other ads tout a fuel that promotes peace and is economical, home-produced, clean and renewable. So what is this magic potion? Ethanol, of course. Growth Energy, a lobby group, is spending \$2.5m on America's first national television campaign for the stuff. "No beaches have been closed due to ethanol spills," one ad notes. Growth Energy planned the campaign before the BP disaster, but the push could hardly be better timed.

After the oil spill Barack Obama declared that "the time to embrace a clean energy future is now." Biofuels will be part of that future. However, most policymakers agree that the industry must move beyond corn ethanol, which is less efficient than the sugar-derived stuff and pushes food prices upwards. The new Renewable Fuel Standard (RFS2), which took effect on July 1st, limits conventional ethanol to 15 billion gallons of the annual 36 billion gallons of renewable fuel

that must be used for transport by 2022, and the administration has just announced extra funding for algae-based biofuels (see article). But with a viable new biofuel yet to emerge, lobbyists are still pushing to support the old one.

Corn ethanol should not be maligned, argues Tom Buis of Growth Energy. While next-generation biofuels, such as cellulosic ethanol, are struggling to come of age, corn ethanol is well-established. Between 2000 and 2008 it shot from 1% to 7% of America's fuel supply. Regulators have given ethanol a few recent boosts. In February the Environmental Protection Agency (EPA) concluded that ethanol emits 20% less greenhouse gas than petrol. In June the agriculture department noted that ethanol plants have become more efficient. But the industry wants more. Production will soon hit the "blend wall", when ethanol will meet 10% of fuel demand; the EPA allows blends of up to 10% ethanol (more might corrode engines). The industry wants the EPA to raise that cap to 15%,

though in June the agency delayed a ruling.

In the meantime, ethanol's advocates want to extend their existing perks and add others. A tariff on ethanol imports and a tax credit for blenders are due to expire in December—these should be renewed, lobbyists insist. The government should also require most new cars to be flex-fuel vehicles (FFVs), able to use blends of up to 85% ethanol. And petrol stations should be required to install pumps that blend petrol with ethanol.

Ethanol's advocates say that such measures will bridge the gap between today's biofuel and those of the future. FFVs and a higher blend limit, for example, would help grain ethanol expand but would also open the market for cellulosic fuel. In the meantime, corn ethanol continues to enjoy its subsidies. Between 2005 and 2009 the tax credit for blending petrol with ethanol cost \$17 billion. This year it will cost some \$5.4 billion. Surely the money could be better spent somewhere else.

## Doc Shows BP Ignored Own Advice In Finishing Doomed Well

A fascinating internal BP document is available on the website of the house committee investigating the oil spill. Page 9 of the document shows BP's internal recommendation from just days before the explosion that although original plans called for the installation of a "long string" of casing to complete the well, this plan was deemed too risky given complications including "formation breakdown." Instead, the recommendation was to install a safer well liner in the well.

This recommendation wasn't followed; the "long string" was installed, and the well blew out. Analyst Dan Pickering at Tudor, Pickering & Holt in a note Thursday, wrote: "Not sure why BP did not follow their own internal casing design recommendations, but activities were happening fast and furious and rarely are non-operating partners involved in these decisions. Continues to point to BP in charge of technical decisions and that the inherent risks of running a long string were known and internally debated."

This is important, because it would nullify the assertion in this Financial Times article that Anadarko had approved the well designs. It's one thing to approve a theoretical plan, but hard to pin on Anadarko the inability of BP to follow its

own ninth-inning recommendations.

This would seem to be a point in Anadarko's favor. Anadarko, as we wrote in this post last week, has gone on the offensive, accusing BP of gross negligence for the blowout. Tough talk, and wishful thinking on the part of Chief Executive Jim Hackett. Under Anadarko's operating agreement with BP, it has to convince an arbitrator of BP's gross negligence to escape its share of cleanup and damages costs.

This isn't a slam dunk. BP can make a convincing case that Transocean's engineers were there all the time and thus in a position to stop operations if they thought any grossly negligent decisions were being made. And BP and Transocean's plentiful experience drilling offshore earns them some benefit of the doubt. There's a big step from bad decisions to gross negligence. If Anadarko's accusation doesn't pan out, it could be in for \$15 billion or so of spill costs, a big enough bill to crush the company. That \$15 billion assumes a number of things. First, that Anadarko will have to pay a quarter of clean-up costs that could hit \$20 billion over several years. Second, that lawmakers will pass the "Big Oil Bailout

Prevention Act," thus eliminating retroactively the legacy \$75 million federal cost cap on damage claims (those claims covered by BP's \$20 billion escrow fund). The precedent: the Superfund Act, which forced companies to pay for toxic cleanup years after the fact. So if \$20 billion is a reasonable total of damage claims, Anadarko would be in for another \$5 billion.

Third, federal fines and penalties, which could be as high as \$20 billion if federal courts, not arbitrators, eventually rule that the spill was the result of gross negligence. There's no reason why an arbitrator and a judge couldn't make different rulings on the same evidence. In such a circumstance, Anadarko would likely have to foot billions more. Anadarko bankruptcy is worth considering for investors feeling tempted by the 50% plunge in shares since the blowout. This article from Thursday highlights a "short strangle" trading strategy on Anadarko, in which an investor sold both November \$27.50 puts and November \$40 calls, pocketing a nice premium on the bet that most bad news was priced in. Shares are \$37 now, so there's plenty of downside wiggle room to keep the trade in the money until November. Not for the faint of heart.

## Russia Holds Oil Output at Record in June, Gas Production Drops

By Anna Shiryayevskaya  
From BusinessWeek

Russian crude oil production held at 10.13 million barrels a day in June, a post-Soviet record that matches the revised figure for May, the Energy Ministry's CDU-TEK unit said in an e-mailed statement today.

Production increased 2.4 percent from June last year, according to the preliminary data. Exports dropped 4.1 percent from last month and 4.2 percent from a year earlier. OAO Bashneft, based in Bashkortostan, led the monthly growth, raising output by 1.6 percent to 280,000 barrels a day.

Production gained 20 percent on the year since billionaire Vladimir Yevtushenko agreed to buy the producer last year.

OAO Rosneft, Russia's biggest oil producer, pumped 2.26 million barrels a day, up 0.2 percent from last month and down 1.2 percent from a year earlier.