195 Californias or 74 Texases to Replace Offshore Oil

By Chris Nelder • on May 31, 2010

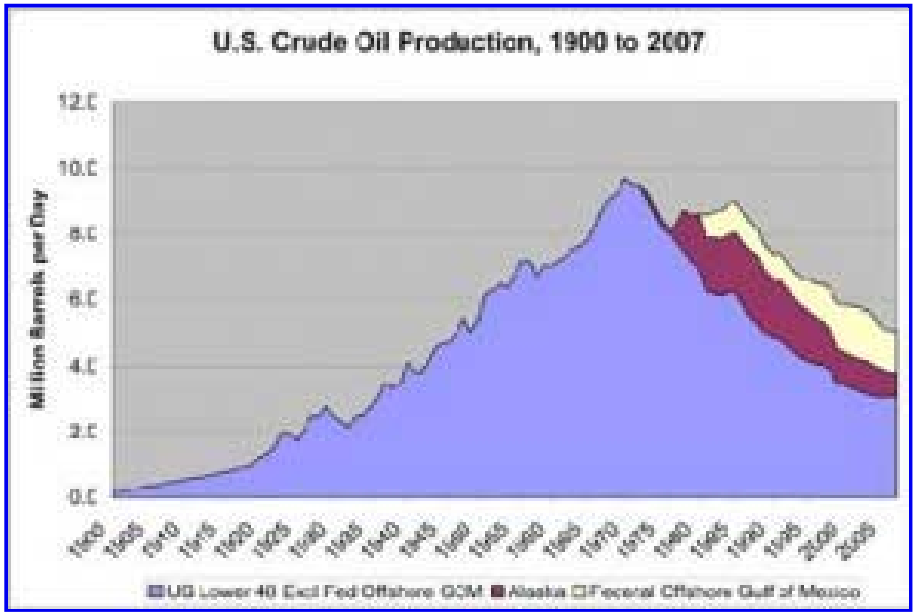
As the Deepwater Horizon rig disaster continues to unfold, the peak oil community has a "teachable moment" in which it can illuminate the reality of our energy plight. The public has had a crash course in the challenges of offshore oil, and learned a whole new vocabulary. They are more aware than ever that the days of cheap and easy oil are gone.

What they do not yet grasp are the challenges in transitioning from fossil fuels to renewables.

The Greens (anti-fossil fuel agitators) want to end offshore drilling, but don't realize that their alternatives are in the wrong scale or the wrong time frame to make a difference. The Browns (the fossil fuel industry) are in full damage-control mode while rapidly losing the public trust. Meanwhile, the politicians are focused on who's to blame and who will pay, while skirting the fundamental problem of our addiction to oil.

We need to get this conversation back on track. Let's begin with some simple facts.

Can Renewables Replace Offshore Oil?



Source: Energy Information Administration, Petroleum Navigator. Source data.

Federal offshore Gulf of Mexico has been our last great hope for domestic oil production against a four-decade declining trend. Offshore oil now accounts for 1.7 million barrels per day (mbpd), or over 30%, of our domestic production of 5.5 mbpd.What would it take to substitute wind for offshore oil? At 5.8 MBtu heat value in a barrel of oil and 3412 BTU in a kWh, 1.7 mbpd is equivalent to 2.9 billion kWh per day, or 1,059 billion kWh a year. By comparison, total 2008 wind generation was 14.23 billion kWh in Texas, and 5.42 billion kWh in California.

Therefore, to replace our offshore oil with wind, you'd need 195 Californias, or 74 Texases of wind, and probably 20 years to build it.

The Real Challenges of Energy Transition

Then there are some not-so-simple facts.

You can't simply substitute electricity for the heat value of displaced oil. You must also build an entirely new infrastructure of wires and electric engines and storage devices.

Building that new infrastructure will take decades of concerted effort and cost trillions of dollars…and require lots of petroleum, natural gas, and coal. We simply don't know how to build solar panels and wind turbines and wires and generators without them.

The U.S. dependency on oil imports has grown steadily for nearly four decades. At the same time, a global oil export crisis has been developing as oil producers consume more of their own output and Asia outbids the West for declining exports. The U.S. already spends around $300 billion a year to import two-thirds of oil supply. Without offshore production, imports would rise to over three-quarters of supply.

Our challenge is far more difficult than most people imagine.

We will have to execute energy transition even as our domestic production continues to shrink, new prospects become more risky, competition for global exports increases, our demand remains firm, and the price of oil goes above our economic pain threshold.

Our only defense against the crushing weight of these forces will be to aggressively improve efficiency.

Ten Ways to Do Absolutely Nothing about Your Offshore Oil Habit

Scale and time-to-market issues bedevil most of the typical Green alternatives.

Hybrid cars currently hold about a 3% market share in the U.S., with a lousy 295,528 units sold in 2009. Sales are growing at an anemic 6% per year. The top selling hybrid maker, Toyota, has just lost the trust of its consumers. Moreover, the sales outlook for new vehicles in general is poor in a country still in the grips of recession.

No one has shown how hybrids can scale to offset millions of barrels of crude per day in under 20 years. As far as I am aware, the only Wall Street model that

attempted it was Paul Sankey's Oct 2009 Deutsche Bank report, which I found wanting. More credible is the model from Bank of America's Tom Petrie, but it showed PHEVs taking from 15 to 40 years to get meaningful traction against oil demand.

Cash for Clunkers replaced 690,000 vehicles, or about 0.3% of the total U.S. fleet, with an average 9 mpg better fuel economy. About 300,000 barrels of gasoline per day will be saved as a result-roughly the same amount that our oil demand would increase every year under a normal 1.5% annual growth rate.

A real strategy for reducing oil demand would be far more radical. It would aim to replace car and truck transport with rail, shifting at least 25% of the load in 25 years and 50% of the load in 50 years. It would cost on the order of $100 billion per year over a 20 year period to build. But the Obama administration has only committed about $8 billion to rail under the stimulus program, while spending far more money on the dead end of road-building.

Transit-oriented development and walkable communities are excellent strategies, but they take two or three decades to execute, or at least they did in the bygone era of cheap and easy oil and credit. At the moment, most mass transit agencies are having their budgets severely slashed, and nobody is rebuilding subdivisions.

Soft solutions, like getting drivers to slow down and telecommute more often, will accomplish little beyond the margins of demand. Biofuels have severe and poorly-understood scaling issues of their own.

Oil consumption will only be marginally reduced under the American Power Act (around 0.8 mbpd by 2030, according to a recent analysis by the Petersen Institute), with its limp support for alternatives to liquid fuels and its misguided focus on carbon emissions.

Carbon pricing would have been a useful approach 30 years ago. Today it's a blunt tool, incapable of the surgical skill required to navigate energy transition through 20 years of rough water.

A Junkie's Reality

Those who would shut down offshore oil drilling might want to consider this: **Over the next 20 years, the only real alternatives to offshore drilling are to become even more dependent on oil imports at the worst possible time, or trade it for the environmental horror of tar sands and coal-to-liquids production.**

I don't want to be cavalier about the environmental damage of the oil spill. The Deepwater Horizon spill is a disaster in the same way that liver failure is a disaster for a junkie. And that is our reality: scrounging around back alleys and taking unsavory risks to get our daily fix.

Instead of knee-jerk political reactions to the oil spill, the Greens need to understand the deep, intractable problems of energy transition. Likewise, the Browns need to drop the strategies of denial and secrecy, submit to transparency, reach out to the Greens, and begin building some common ground around our mutual challenges.

This moment of truth must not be squandered. The task of the peak oil community now should be to educate the public about the real problems and realistic solutions. To focus our efforts on what goes into the engine, not what comes out of the tailpipe. And to guide the public debate in a way that unifies, not polarizes. For as Ben Franklin famously said, "We must, indeed, all hang together, or assuredly we shall all hang separately."

Chris Nelder is an energy expert who has spent a decade studying and writing about energy and related issues. He has written two books (Profit from the Peak and Investing in Renewable Energy) and over 750 articles on energy and investing, is a frequent media guest, and he lectures and consults with business and government on the future of energy. He blogs at GetREALList.com

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