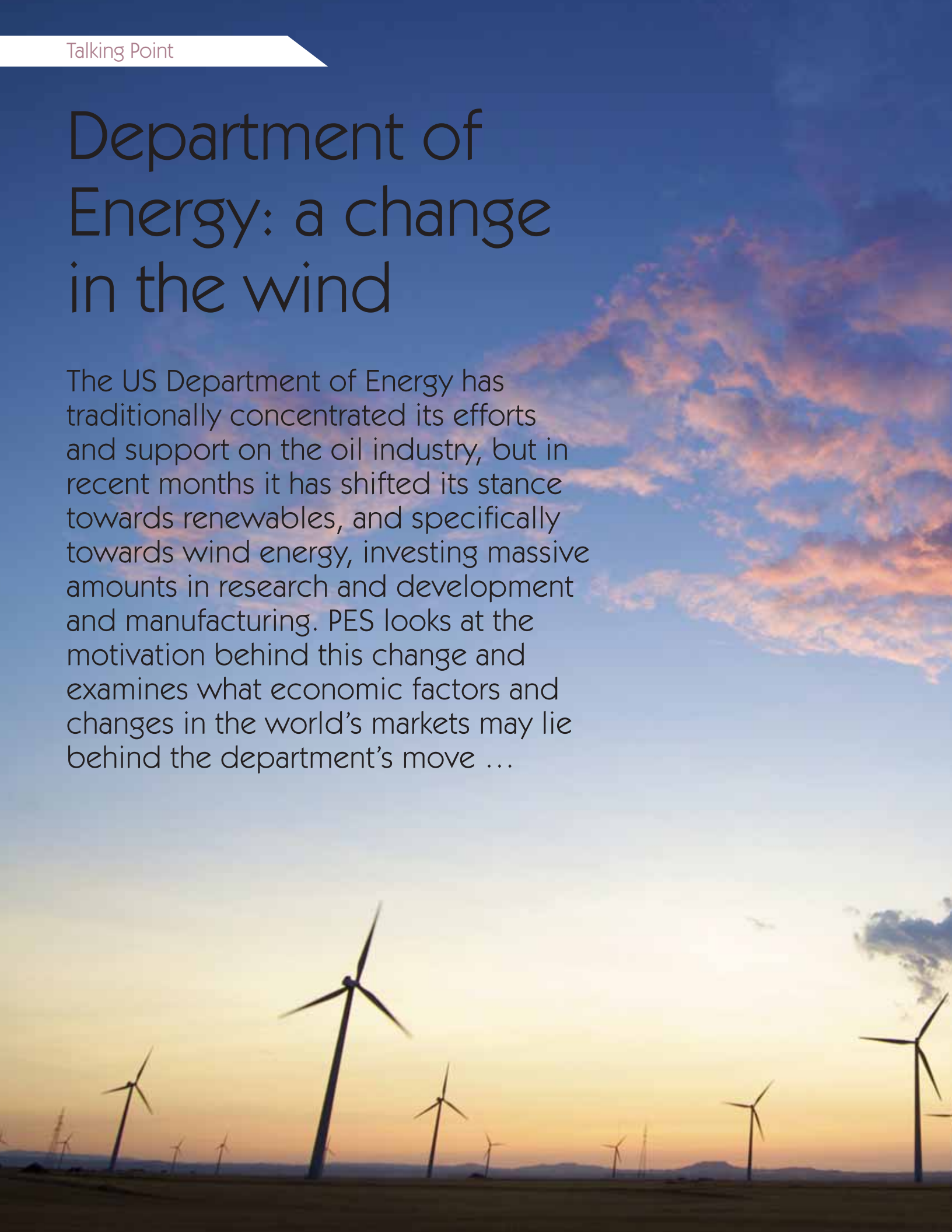
Department of Energy: a change in the wind

The US Department of Energy has traditionally concentrated its efforts and support on the oil industry, but in recent months it has shifted its stance towards renewables, and specifically towards wind energy, investing massive amounts in research and development and manufacturing. PES looks at the motivation behind this change and examines what economic factors and changes in the world's markets may lie behind the department's move …



Not since a certain Saul of Tarsus experienced the original Damascene conversion have we seen anything like it. The previously oil-infatuated Department of Energy (DOE) has performed a total volte-face and is now veering markedly towards wind as a viable alternative solution to the country's burgeoning energy problems. Certainly, it is worth examining the motivation behind the department's apparent change of heart.

It's not long of course before the trail leads firmly to the White House and to the Oval Office as President Obama muses on the nation's future energy direction. In a speech last May, the newly-elected President announced more than $467m from the American Reinvestment and Recovery Act to expand and accelerate the development, deployment, and use of geothermal and solar energy throughout the US. At the time, the President said: "We have a choice. We can remain the world's leading importer of oil, or we can become the world's leading exporter of clean energy. We can hand over the jobs of the future to our competitors, or we can confront what they have already recognized as the great opportunity of our time: the nation that leads the world in creating new sources of clean energy will be the nation that leads the 21st century global economy. That's the nation I want America to be."

So could this be the beginnings of the death knell for our oil industry? If so, it certainly seems certain commentators are happy to fight back.

In a recent Newsweek article, for instance, the economic journalist and writer, Robert J Samuelson wrote: "Considering the brutal recession and the widespread warnings of a feeble recovery, you'd expect the Obama administration to be obsessed with job creation. And so it is, say the president and his supporters. The trouble is that there's at least one glaring exception to their claims: the oil and natural-gas industries. The Obama administration is biased against them – a bias that makes no sense on either economic or energy grounds. Almost everyone loves to hate Big Oil, and even small oil, but promoting domestic drilling is simply common sense."

But for all the protests about the move away from oil as a source of energy, President Obama is merely following an example, perhaps surprisingly, set by his normally-conservative Republican immediate predecessor, George W Bush.

In April 2008 President Bush discussed renewable and alternative energy technologies and America's commitment in developing them at the Washington International Renewable Energy Conference. According to President Bush at the time: "We must all recognize that, in the long run, new technologies are the key to addressing climate change. But in the short run, they can be more expensive. And that is why I believe part of any solution means reforming today's complicated mix of incentives to make the commercialization and use of new, lower-emission technologies more competitive. Today we have different incentives for different technologies from nuclear power, to clean coal, to wind and solar energy. What we need to do is consolidate them into a single, expanded program." These are, in many ways, surprising words perhaps, not least from a native of Texas.

And speaking of Texas, what exactly is the future for our oil industry? Indeed does it have one or is the country that gave the world those iconic images of a bare-chested James Dean standing beside a derrick in Giant to be condemned to the pages of history as a major oil producer? In some respects the industry's prospects do indeed look rather bleak. Asia has been importing refined oil products like gasoline and diesel from the West for decades to keep the wheels of its economies rolling. But the tables may now be turning as the region's two largest economies – India and China – aggressively pursue capabilities to refine imported crude on their own, not only for local use but also for export.

Experts reckon these two burgeoning economies may soon be providing intense competition on the global market to refineries in the US and Europe, which could suffer losses and eventually close as a direct result. Some small European refineries have already closed, in fact, while many in the US are struggling to remain solvent. In July this year, the news agency Bloomberg reported that refineries from Germany to Hawaii – foreseeing 25 per cent idle capacity in the US and 30 per cent in Europe within five years – were weighing plans to shut or sell plants. These include big names such as Petroplus Holdings AG, Royal

Dutch Shell – one in Germany and another in Montreal – Total SA, and Chevron Corp. from the US.

"In 2008 Asia, led by India and China, exported 750,000 barrels per day (BPD) of finished petroleum products to Europe and North America, which is expected to go up to 1 million BPD by 2010," said Alan Gelder, head of Downstream Oil Americas for Wood Mackenzie, a global energy research firm.

He added: "Out of that, about 25 per cent is going to the US and the rest to other markets. However, that amount of exports, along with lower demand in the US, is pushing down refineries' margins globally and more so in the US where refineries, particularly those on the East Coast and Gulf Coast regions, are resorting to utilization cuts."

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So what of the alternatives? Let's put some flesh on those bare bones of the US Administration's move towards renewables and ask just how much the DOE is proposing to invest in the future of sources like wind – both on and off of our shores? To answer that, it's back to Energy Secretary Steven Chu, who recently said: "We have an ambitious agenda to put millions of people to work by investing in clean-energy technology like solar and geothermal energy. These technologies represent two pieces of a broad energy portfolio that will help us aggressively fight climate change and renew our position as a global leader in clean energy jobs. Wind energy will be a critical factor in achieving the President's goals for clean energy, while supporting news jobs. While the United States leads the world in wind energy capacity, we have to continue to support research and development as we expand renewable energy deployment."

Backing this up, Chu announced the selection of 28 new wind energy projects for up to $13.8m in funding – including $12.8m in Recovery Act funds. These projects will help address market and deployment challenges including wind turbine research and testing and transmission analysis, planning, assessments. Along with the new awards, Secretary Chu announced the release of DOE's 2008 Wind Technologies Market Report, detailing $16bn in investment in wind projects made in the US in 2008 – making the US the leader in annual wind energy capacity growth, as well as cumulative wind energy capacity.

In the report, DOE offers a comprehensive overview of developments in America's wind power market. It found that wind power capacity increased by 8,558 megawatts (MW) in 2008. This $16bn investment in wind projects made the US the fastest-growing wind power market in the world for the fourth consecutive year. Wind power contributed 42 per cent of all new US electric generating capacity in 2008 while, for the fourth consecutive year, wind power was the second-largest new resource added to the US electrical grid in nameplate capacity. The report, which has been issued annually since 2007, analyzes a range of developments in the wind market, including trends in wind project installations, turbine size, turbine prices, wind project costs, project performance, and wind power prices. Additionally, the report details trends in project financing, a key concern for the wind industry in the current economic climate, as well as trends in project ownership, public policy, and the integration of wind power into the electrical grid.

Other key findings of the report include:

- The US still leads the world in annual capacity growth and also overtook Germany to take the lead in cumulative wind capacity. For the fourth consecutive year, the US led the world in wind capacity additions, capturing roughly 30 per cent of the worldwide market
- The cumulative wind capacity installed in the US at the end of 2008 would, in an average year, be able to supply roughly 1.9 per cent of the nation's electricity consumption
- Soaring demand for wind has spurred expansion of wind turbine manufacturing in the US. As a result of this continued expansion, the American Wind Energy Association (AWEA) estimates that the share of domestically-manufactured wind turbine components has grown from less than 30 per cent in 2005 to roughly 50 per cent in 2008, and that roughly 8,400 new domestic manufacturing jobs were added in the wind sector in 2008 alone
- Texas led all states with 7,118 MW of total wind capacity installed, followed by Iowa (2791 MW) and California (2517 MW). Seven states now have more than 1,000 MW installed, and 13 have more than 500 MW
- Iowa and Minnesota have the highest levels of wind penetration (in-state wind generation as a percentage of all in-state generation).
- Seven states have wind penetration levels greater than five per cent while six utilities have in excess of 10 per cent wind on their systems
- Wind power remained competitive in wholesale power markets in 2008, with average wind power prices at or below the low end of the wholesale power market price range, although upward pressure on wind power prices looks set to continue

So as the pendulum of the energy industry in the US swings away from oil and towards wind and renewables, it seems the country really is in a state of flux with regard to the future of its power – the balance of power is changing. Speaking in South Africa, the late British Prime Minister Harold Macmillan once observed: "The wind of change is blowing through this country," might we now, one wonders, expect President Obama to invert those words and claim that future changes in the US might well involve at their centre, wind?

Steven Chu

U.S. DEPARTMENT OF ENERGY